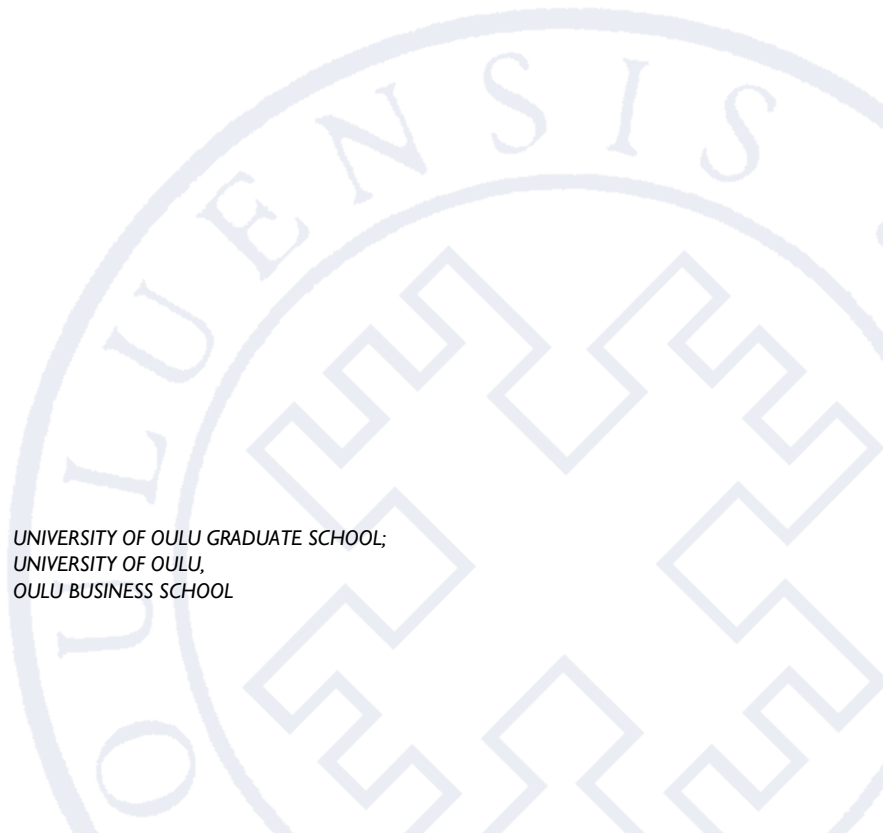


Bianca Beyer

EXECUTIVE COMPENSATION
AND CORPORATE INSIDERS'
PERSONAL TRAITS

UNIVERSITY OF OULU GRADUATE SCHOOL;
UNIVERSITY OF OULU,
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BIANCA BEYER

**EXECUTIVE COMPENSATION AND
CORPORATE INSIDERS' PERSONAL
TRAITS**

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Abstract

This dissertation contributes to the literature on chief executive officers' (CEO) compensation schemes in publicly listed companies from a behavioural perspective. It revolves around personal attributes of both the remunerated executives and those designing their pay packages as determinants of the structure and level of managerial pay. Incorporating personal traits in empirical corporate governance research, though of high importance, is challenging due to limited data availability. With a unique dataset of electronically recorded corporate insiders' personal characteristics, this dissertation contributes to the existing literature.

The first essay documents a positive relation between CEOs' past criminal behaviour and the riskiness of their current compensation arrangements. Particularly, the compensation of criminally convicted CEOs is more sensitive to firm performance, and their base salary significantly lower than that of their peers. These findings contribute to the still sparse empirical evidence for the theoretically established concept of optimal compensation contracts being designed with an individual's risk preferences in mind.

The second essay explores the relation between the board of directors' cognitive and non-cognitive abilities and CEO compensation packages. It documents a strong positive association between the sensitivity of CEO pay to firm performance and a board's average IQ. The effects of a board's non-cognitive abilities on CEO pay vary along the firm performance distribution. Employing the setting of managerial compensation and a rich data set on male directors' social, emotional and cognitive intelligence, the essay contributes to the literature on board composition and board performance.

The third essay provides evidence that more motivated directors compensate CEOs more efficiently. Boards with a higher motivation to exert monitoring effort are linked to lower levels of CEO pay and better firm performance. Directors' motivation is measured as that proportion of their personal wealth which is invested in the monitoring target. Directly capturing the monitoring target's relative importance to the monitors via the uniquely available measure of personal wealth is an important contribution of the third essay, as it eliminates potential mechanical relations arising from conventional measures.

Keywords: agency theory, board of directors, corporate governance, executive compensation, incentives, managerial power theory, optimal contracting theory, personal traits, risk aversion

Beyer, Bianca, Johdon palkitsemisjärjestelmät ja sisäpiiriläisten henkilökohtaiset ominaisuudet .

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Tiivistelmä

Tämä väitöskirja laajentaa aikaisempaa tutkimuskirjallisuutta tarkastelemalla, miten julkisesti noteerattujen yhtiöiden sisäpiiriläisten henkilökohtaiset ominaisuudet vaikuttavat toimitusjohtajien palkitsemisjärjestelmiin. Aihetta lähestytään tutkimalla toimitusjohtajien ja heidän palkkioistaan päättävien tahojen ominaisuuksia. Yleensä henkilökohtaisten ominaisuuksien käyttäminen empiirisessä corporate governance -tutkimuksessa on haastavaa, koska aineistoa on saatavilla rajoitetusti. Väitöskirja laajentaakin tutkimussuuntausta käyttämällä uniikkia aineistoa sisäpiiriläisten ominaisuuksista.

Ensimmäisessä osatutkimuksessa tutkitaan toimitusjohtajien saamiin rikostuomioiden ja heidän palkkiorakenteiden välistä yhteyttä. Tulosten mukaan tuomion saaneiden toimitusjohtajien palkka vaihtelee enemmän yrityksen taloudellisen menestymisen mukaan ja heidän peruspalkkansa on merkittävästi alhaisempi kuin muiden toimitusjohtajien. Tulokset viittaavat tuomittujen riskisempään palkkiorakenteeseen, tuoden näin lisätietoa optimaalisia palkitsemisjärjestelmiä ja yksilön riskipreferenssejä käsittelevään kirjallisuuteen.

Toisessa osatutkimuksessa tarkastellaan hallituksen jäsenten kognitiivisten ja ei-kognitiivisten ominaisuuksien yhteyttä toimitusjohtajien palkkioihin. Hallituksen keskimääräisen älykkyysoسامäärän havaitaan olevan positiivisesti yhteydessä siihen, kuinka herkästi toimitusjohtajan palkka vaihtelee yrityksen taloudellisen menestyksen mukaan. Tulosten mukaan hallituksen ei-kognitiivisten ominaisuuksien vaikutukset toimitusjohtajan palkkaan vaihtelevat yrityksen taloudellisesta menestyksestä riippuen. Tutkimus tarkastelee johdon palkitsemismekanismia hyödyntäen runsasta aineistoa hallituksen jäsenten sosiaalisesta, emotionaalista ja kognitiivisesta älykkyydestä tuoden näin lisätietoa hallituksen kokoonpanosta ja suorituskyvystä.

Kolmas osatutkimus antaa empiiristä näyttöä siitä, että motivoituneemmat hallituksen jäsenet palkitsevat toimitusjohtajia tehokkaammin kuin vähemmän motivoituneet jäsenet. Tulosten mukaan matalampi toimitusjohtajan palkka ja yrityksen parempi taloudellinen menestys ovat yhteydessä hallituksen korkeampaan keskimääräiseen motivaatioon. Tutkimuksen kontribuutioon nousee uniikkista, henkilökohtaiseen varallisuuteen pohjautuvasta motivaation mittarista, joka kuvastaa valvonnan kohteen suhteellista tärkeyttä hallituksen jäsenelle.

Asiasanat: agenttiteoria, corporate governance, hallitus, henkilökohtaiset ominaisuudet, johdon palkitseminen, johtajan valta -teoria, kannustinjärjestelmät, optimaalinen sopimusteoria, riskihakuisuus

To my extended family, by blood and by choice.

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Risking that this section becomes somewhat a bulleted list of things I am grateful for, I would also like to use this opportunity to thank Professor Wayne Landsman for having me at the accounting department at the University of North Carolina for eight months, an experience which ignited new levels of passion for and deepened my understanding of accounting research.

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May 2021

Bianca Beyer

Original essays

This thesis is based on the introductory chapter and the following essays, which are referred throughout the text by their Roman numerals:

- I Beyer, B., Kallunki, J.-P., Nilsson, H., & Rossi, A. (2018). Are convicted CEOs paid differently? Evidence from unique Swedish data. Manuscript.
- II Beyer, B., Kallunki, J.-P., & Nilsson, H. (2020). The smartest guys in the [board]room: Directors' intelligence, CEO compensation, and firm performance. Manuscript.
- III Beyer, B., Kallunki, J.-P., Nilsson, H., & Rossi, A. (2020). Paywatch—Directors' skin in the game and executive compensation. Manuscript.

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1 Introduction

1.1 Background

No other top earners' compensation is, seemingly, as discussed and criticized as that of CEOs, by the general public to practitioners to researchers alike. With an average S&P 500 CEO earning about 264 times more than an average employee in the same company in 2019 (Salvador, 2020), and a 940% increase in US CEO pay since the 1980s (Mishel & Wolfe, 2019), concerns about the determinants and righteousness of senior executives' levels of pay drive media coverage and research questions in the accounting and finance academic community.¹

From a microeconomic perspective, the compensation contract between a manager and the shareholders is the direct channel through which the manager's strategic and operational decisions are steered to create firm value (Berle & Means, 1932). In a perfect and complete world that is free from any friction, an optimal compensation contract pays the exact 'right' amount to attract the needed talent, induce the required level of risk to encourage the undertaking of positive net present value investments, prevent the manager from shirking, and avoid excessive rent extraction (Jensen & Meckling, 1976). As information about both what kind of CEO is hired and which kinds of actions she takes once hired is incomplete, the compensation arrangement is supposed to control for interest alignment between owners of the company and the CEO contractually (Arrow, 1964). However, the real world suffers from frictions such as power imbalances, excess demand for CEO talent, and insufficient information about a CEO's abilities and preferences. This complicates the design of such 'just right' compensation contracts.

What would be a 'fair' level of CEO pay? Following the quest for potential insight into the black box of managerial pay is as pressing as it is topical. Yet, the endeavour of distinguishing between appropriate and excess levels of remuneration empirically is continuously challenged by the collusion between abstract theoretical assumptions and empirically observable decisions by real-world persons. For assessing whether an existing contract is optimal or efficient, one would need to know exactly the determinants of such contract. Theory identifies numerous economic determinants that control for firm performance and the required effort

¹ In an international comparison, these seemingly exorbitantly high numbers for US CEOs are not even leading: when adjusted for the national GDP, Indian and South African CEOs' pay ratio relative to the country's average earner is 100 to 150 percentage points higher than those of US CEOs (Lu & Melin, 2016).

and risk levels when predicting optimal levels of CEO pay, but the theoretically identified determinants according to which the individuals involved may vary are limited, and mainly restricted to a manager's type and risk preferences. Mainly, three literature strands have evolved to identify such determinants for CEO pay. The managerial power assumption (Bebchuk & Fried, 2003, 2004; Bebchuk, Grinstein, & Peyer, 2010), an empirical-evidence-based perspective, assigns unexplained observed levels of CEO pay to an excessive rent extraction explanation, and opposes the theoretical predictions of the optimal contracting theory in the context of standard agency models (Grossman & Hart, 1983; Holmstrom & Milgrom, 1987). On the other hand, and in keeping with agency models, the shareholder value perspective theoretically explains parts, but not all, of these observed excess CEO pay levels by allowing for heterogeneity in both the firms that employ CEOs, and the CEOs themselves (Gabaix & Landier, 2008; Terviö, 2008). Unlike the managerial power explanation, both the shareholder value perspective, which builds on efficient labour market theories and allows for a matching of CEO-firm-pairs, and standard agency models assume the existence of equilibria and optimal CEO pay levels.

Recent evidence shows, once again, that there might not yet exist one final and universal explanation for variation in CEO pay: tracking CEOs across different companies, Coles and Li (2020) find a 'sticky' compensation style following them. However, if CEOs and firms were perfect matches, as predicted by efficient labour market theories, one would not observe any differences once a CEO changes: that is, each incoming CEO would be a perfect replica of the outgoing CEO, unless the firm *plans* to change strategy, and deliberately changes the CEO style.² Much in line with this, in the last few years, there has been growing acceptance that the collection of individuals' personal traits determining optimal levels of CEO pay is still rather incomplete. How could one predict optimal levels of pay without knowing all the inputs that need to be included in the prediction? As Thaler (2016) notes in a recent survey on behavioural economics, it is impossible to model optimal behaviour with limited theoretical assumptions while simultaneously predicting actual behaviour. Rather, he suggests, more descriptive research is needed to identify the manifold variation in individuals who are making decisions. With regard to predicting real-world 'optimal' CEO compensation contracts, this

² Coles and Li (2020) control for this endogenous decision of firms by utilizing exogenous CEO turnovers, such as sudden deaths. As it is unlikely that the death of a CEO coincides with a firm planning to change strategy across all firms that randomly experience CEO deaths in the sample, their findings are likely to capture CEO-fixed effects.

means that the personal traits of the individuals involved in designing, enforcing and reacting to the compensation arrangements should be taken into consideration much more.

1.2 Purpose and contribution of the dissertation

This dissertation expands on the literature on senior executives' pay packages from a behavioural perspective by considering how different corporate insiders' heterogeneous personal characteristics influence the structure, design and payoff of those pay packages. In particular, the dissertation examines CEOs' pay from two different angles, both of which examine how the effects of corporate insiders' behavioural characteristics are channelled, through their actions, on the level and structure of managerial pay: one perspective considers the compensated manager and her characteristics herself, and the other addresses the issue via a monitoring body's characteristics—in this case, the board of directors. Three essays seek to answer, amongst others, the following questions: How does a managers' appetite for risk shape her compensation contract, and what consequences for the level of her pay arise from that? How do the directors' abilities influence the design and outcome of a manager's pay package? Finally, how does a board of directors' monitoring willingness affect the manager's pay package?

The first essay examines a CEO's pay from the perspective of the CEO herself being a determinant for the level and structure of her pay package. Graham, Li and Qiu (2012) establish in an influential study that controlling for a manager's personality explains a large portion of the cross-sectional variation in pay, incremental to, and as a substitute for, the explanatory power of firm characteristics. In particular, the personal characteristics of CEOs can explain variation in pay in two ways. First, variation in pay across CEOs arises because of the matching of certain types of CEOs to certain types of firms on an efficient labour market (Terviö, 2008), in which case the fixed effect would be a manager-firm-fixed effect.³ Second, if not only pay varies with different managers, but also firm performance, it is likely that the captured effect, indeed, represents a manager-specific pay effect. In line with this, Coles and Li (2020) show that, conjointly with pay package structures, firm policies also change with the CEO changing, even if the CEO change is

³ If it were possible to fully control for the heterogeneity in firms, the manager-fixed effect would thus disappear, as managers 'sort' into their preferred firm types even when changing jobs (Edmans & Gabaix, 2011).

exogenously induced. While both of these studies control for a manager's fixed effect as a 'package' combining a unique mix of various personality traits, the first essay of my dissertation opens up this 'package' and examines one of the managers' traits in particular, namely, their absolute risk preferences. In doing so, we particularly contribute to the empirical literature on the theoretical link between risk propensity and incentive pay, which Graham, Harvey and Puri (2013) declare as sparse. The authors are among the first to provide direct evidence for this theoretical prediction to be observed in the real world.⁴ Unlike them, however, who use survey-based data and compensation preferences instead of observed compensation, we employ a CEO's past criminal convictions as a proxy for managerial risk preferences and directly link it to her realized remuneration. The advantage of this time-invariant proxy is two-fold: First, it is measured independently of firm performance and is, thus, less challenging for the identification strategy than risk measures such as wealth (B. Becker, 2006), which is usually highly correlated with skills and past performance, or overconfidence measures such as option-holding periods (Malmendier & Tate, 2005), which are directly correlated with the performance of the company the CEO is managing. The criminal convictions of a CEO were measured before she became CEO and are independent of her profession and, therefore, unrelated to the firm she manages. Second, our proxy captures absolute risk aversion, which is expected to not vary over time or according to factors such as age (Serfling, 2014), tenure (Wu, Levitas, & Priem, 2005) and wealth (B. Becker, 2006). Lastly, the fact that the criminal convictions are unknown to the board of directors strengthens the assumption that the relation we observe between the CEO's pay and her risk preferences stems from inherent preferences, instead of a board's precautionary measures.

The second and third essays consider CEO pay from the perspective of the board of directors. As the main monitoring body, the board of directors is responsible for hiring and firing the CEO, negotiating efficient contracts, and enforcing those in such a way that they reward good performance and punish bad performance (Hermalin & Weisbach, 1998). If a board is unable or unwilling to operate at arm's length (see Boyd, 1994; Hillman & Dalziel, 2003), compensation contracts might be inefficient as a result of being decoupled from firm performance (Jensen & Murphy, 1990) and rewarding the manager independent of effort

⁴ Since Graham et al.'s (2013) study on the link between managerial pay and risk preferences, a number of empirical studies have been conducted which, at least in addition to their main tests, examine pay and risk preferences, such as Cain and McKeon (2016), O'Reilly et al. (2014), and Sunder et al. (2017).

(Bebchuk & Fried, 2004). Inefficient contracts or board oversight might also result in poorly performing managers entrenching themselves, to the current and future detriment of shareholders (Shleifer & Vishny, 1989). The personality traits of directors, such as skill and motivation, have merely an indirect effect on firm outcomes, as they first and foremost affect the composition of the board (Adams & Ferreira, 2009). Thus, the challenges in identifying determinants for CEO compensation from the perspective of the board of directors are two-fold: in addition to the usual obstacles of data availability on personality traits, predictions for how these traits interplay in a dynamic team setting need to be established.

Tackling the directors' ability to monitor, the second essay examines executive compensation from a monitoring environment perspective. The board of directors might have constraints in terms of their abilities when it comes to exerting monitoring efforts.⁵ Directors' skills, much like other skill proxies in labour market research, are usually measured as outcomes that are likely to be driven by innate skills and abilities, such as professionalism (Wahid & Welch, 2019), experience (Kor & Sundaramurthy, 2009), expertise (Güner, Malmendier, & Tate, 2008) and education (Khanna, Jones, & Boivie, 2014), which bear mixed results with regard to their link to firm outcomes. As it is not entirely clear whether a high-skill person will have the same performance in a team setting as individually (Woolley, Aggarwal, & Malone, 2015; Woolley, Chabris, Pentland, Hashmi, & Malone, 2010), determinants of team dynamics should also be considered in the context of the board's work. In our study, we directly examine directors' levels of cognitive and non-cognitive abilities, aggregated at the team level, and the associations of these abilities with the design and level of CEO compensation packages. Generally, an individual's intelligence quotient (i.e., her cognitive abilities) is assumed to be a good predictor for mental performance (Spearman, 1927). However, in the case of performance in teams, non-cognitive intelligence features, such as accountability, empathy and the capability to read others, are also important (Prati, Douglas, Ferris, Ammeter, & Buckley, 2003; Rapisarda, 2002).

The third essay addresses a board's failure to operate at arm's length from a slightly different angle and examines the willingness of the board of directors to oversee management, rather than their ability to do so. Specifically, we employ the board of directors' relative incentives to monitor the CEO. Falato, Kadyrzhanova,

⁵ It is important to note that in this perspective, an increased level of CEO power over the board would be considered to have an impact on the board's willingness, and not their ability, to monitor. Not jeopardizing the benevolence of the manager it oversees might imply important career concerns, but does not hinder a board from exerting its monitoring function *per se*.

and Lel (2014), Fich and Shivdasani (2006), Masulis and Mobbs (2014) and others note that because directors have only limited amounts of time and attention to spare, they are to pick which company to invest their monitoring efforts in. We examine the differential effects the directors' relative monitoring effort has on CEO compensation and firm performance. In our study, we measure the directors' incentive to monitor as that fraction of their personal wealth which is invested in the respective company—their *skin in the game*—averaged per board. A similar measure has already been established in the literature for management monitoring: Fich, Harford and Tran (2015) rank the relative importance with which institutional investors weigh their portfolio companies by the fraction that each company constitutes to the portfolio, finding that, in the case of being a mergers and acquisitions target, companies ranking higher in monitors' portfolios experience higher bid completion rates and higher premia. Zerni, Kallunki and Nilsson (2010), who use the same *skin in the game* measure as our study, relate increased board incentives to better governance outcomes and higher quality audits when shareholders are entrenched. Using the invested amount relative to the total wealth of the investor (here, the monitoring body) instead of the invested amount relative to the total value of the firm mitigates the mechanical size effects and represents an intuitive measure of the investment target's importance to the investor.

1.3 Data

A combination of comprehensive nationwide databases maintained in electronic form by Swedish authorities represents the main source of information on personal traits and characteristics of individuals. The Swedish War Archive contains data on military enlistment, which was mandatory for Swedish males until 2010. Data on cognitive and non-cognitive abilities, measured around a combat's age of 18, are obtained from this database. These data are employed to measure board directors' abilities. Through the Swedish National Council for Crime Prevention (Brå), data on criminal convictions for all individuals who have been found guilty by a court of law or received summary punishment from prosecutors since 1974 are available. Combined with data from the Swedish National Police Board, which provide information on all Swedish citizens who have been under investigation for a serious crime since 1991 (even in the absence of a conviction), the data allow us to construct empirical proxies for personal risk preferences. The empirical measures of abilities and criminal convictions are time invariant, as they have been recorded prior to the managers and directors entering the sample.

Swedish tax authorities (Skatteverket) provide data on individuals' personal wealth, which include information on real estate ownership, taxable labour income, bank holdings and mutual funds, and investments in debt securities. These data are reported on an annual basis and are available until 2007. Information about stockholdings is reported biannually and obtained through the Nordic Central Securities Depository or NCSD, which now has been bought by Euroclear Sweden. Information about board members' positions is obtained from the Swedish Financial Supervisory Authority (Finansinspektionen), which is comparable with the US-based Securities and Exchange Commission (SEC).

The person-level data on individuals' wealth, their criminal background and their cognitive and non-cognitive abilities are highly confidential. This is especially sensitive when using data on easily identifiable individuals due to their unique positions in the firm, such as CEOs. Therefore, anonymous and randomly generated identifiers are used as personal keys. Further, the data are handled under strict precautionary measures, such as storage in a password-protected environment disconnected from the internet. For such sensitive data, results are reported only at an aggregate level to disable traceability. The Regional Ethical Review Board in Umeå, Sweden, has approved of the use of these data in the empirical research enclosed in this dissertation.

2 Theory

2.1 Compensation contracts: The setting

2.1.1 Decision theory

According to the decision theory, executive compensation is described as an, initially, fairly straightforward set-up of two players aiming to maximize their respective utilities in situations of uncertainty: the owner(s) of the firm (the shareholders) and the manager of the firm (the CEO). This process of utility maximization is realized through the actions each player takes. In other words, the players are continuously making decisions in a sequence of situations of uncertainty, by keeping the overall goal of their utility maximization in mind (Morgenstern & von Neumann, 1953; Ross, 1973). Even though an individual's utility function is not observable, the player's individual personal traits play an important role in shaping it, as those traits define what a player will ultimately derive utility from (Marris, 1963; Thaler, 2016). The compensation contract is the link connecting these two players to one another (Arrow, 1964).

Rational choices

An economic agent, from a neo-classical viewpoint, makes a decision by rationally weighing the benefits of an outcome against the costs occurring to achieve this outcome, and then deciding on whichever path yields the highest benefits below the line (Muth, 1961). For example, the owners of a firm weigh the benefits of hiring an external manager to run the firm for them against the costs of outsourcing their decision-making, and ultimately decide on the action (i.e., hiring or not hiring) based on whether the benefits outweigh the costs. The obvious benefits include increased, specific expertise for strategic decision-making in the firm context, additional resources (such as the time the manager can devote to this decision-making), and the possibility for centralized, quick decision-making, as opposed to having to vote on each strategic decision with a large number of owners. For instance, Bennesen, Pérez-González and Wolfenzon (2020) show how, absent a centralized decision-maker such as the CEO, firms are not operating at their maximum efficiency. However, these benefits are off-traded against potential costs,

such as the cash-flow-decreasing remuneration of the manager and having to trust an outsider to behave like an insider (Jensen & Meckling, 1976).

The greatest real-world challenge to this continuous cost-benefit analysis prior to a decision is that the economic agent can only rely on probabilities of outcome rather than certain outcomes: she needs to make a decision about the trade-off for *expected* future benefits minus *expected* future costs, calculated as their respective probabilities of occurrence. For instance, while it is fairly easy for the owners of a firm to estimate the pecuniary cost of remuneration when hiring the manager, the bottom-line outcome of hiring her is ultimately determined by the probability of the hired manager being trustworthy or not and delivering the promised effort.

Similar to the shareholders' decision-making process, the soon-to-be manager takes her actions by weighing costs against benefits, such as, for example, signing the contract offered. For her, the costs of accepting the position are a mix of risk and disutility, where the latter can be of a pecuniary (i.e., the opportunity costs she foregoes by not signing elsewhere) or a non-monetary nature (e.g., the leisure time she foregoes by signing, see also Edmans & Gabaix, 2011). The risk she must bear is determined by the fact that, unlike the shareholders, whose only skin in the game is, by definition, their ownership of the firm, the manager will enter with her entire livelihood, as this job will be her primary source of income.⁶ How much weight she places on this risk depends on her risk preferences, and how important the foregone leisure time is to her depends on her other personal preferences. Consequently, both a manager's risk propensity and her disutility are affected by her personal traits, and both will determine the decision to accept or reject an offered contract.⁷

Her personal traits also affect the utility the manager derives from signing the contract, which, again, is both of a pecuniary and a non-pecuniary nature. On the trade-off between these two kinds of utility, Focke, Maug and Niessen-Ruenzi (2017) provide evidence for CEOs accepting lower pay levels when hired by prestigious firms. Similarly, a risk-seeking manager might value the uncertainty that comes with investing in new projects on a company-level more than the monetary compensation for such risk. Providing some evidence on this assumption,

⁶ It is usually assumed that the shareholders hold shares not only of this, but also of many other firms, and can thus diversify any unsystematic, company-related risk away by holding a balanced portfolio.

⁷ In this initial set-up, the shareholders are considered a homogenous group deriving utility from the maximization of firm value. However, when groups of shareholders have different monitoring incentives through different voting rights and/or holding periods, their traits presumably have a mediating effect on executive compensation. This will be discussed further in section 2.2.4.

Cain and McKeon (2016) link risk-prone CEOs to firms with riskier corporate strategies – absent any additional risk premium.

Bounded rationality

The rational decision-making process requires economic agents to estimate correct probabilities for all possible outcomes and to, subsequently, solve an optimization problem. However, making *theoretically* optimal decisions necessitates the availability of perfect and complete information, a sufficient time frame, and for the agents to be of homogenous skills—approximately equalling the skills a theoretical economist has for solving the optimization problem on paper (Simon, 1955). While early economists like Adam Smith, Irving Fisher, and John Maynard Keynes were aware of these strong theoretical assumptions colliding with real-world constraints, the neo-classical approach has abstracted those constraints away for the sake of simplicity (see Thaler, 2016). Recently, the growing field of *behavioural economics* has been consistently re-implementing bounds to rational decisions in economic theory and corporate finance. These bounds to rationality, which can consist of time and information constraints or cognitive biases, may prompt an individual to assign distorted probabilities and, therefore, estimate expected outcomes incorrectly (see Simon, 1955).

Allowing for constraints to rationality has several real-world implications for decision-making in the contracting context. For instance, shareholders do not have complete information about the manager they hire (see also section 2.1.3). While, in theory, this is solved through the contractual agreement, their information constraints and biases might impair their ability to formulate an accurate and efficient compensation contract (Edmans, Gabaix, & Jenter, 2017). For example, an overconfident manager could ‘oversell’ her skills to the shareholders, without being concerned about them learning about her true skills and punishing or firing her. Similarly, by actually believing in her higher worth herself, an overly optimistic manager might overestimate her opportunity costs and aim to negotiate a higher remuneration than what her skills are truly worth. While cognitive biases and other bounds to rationality might not affect individuals’ utility functions, they influence how individuals solve for the optimum. Empirically, bounds to rationality might, at times, be indistinguishable from a theoretically rational decision. For instance, let us consider two different contracts—one of high variability (i.e., high risk) and one of low variability (i.e., low risk). A rationally acting, risk-averse manager will refuse to accept the contract with high variability in expected outcome: she prefers

a contract that is sure to pay off \$100 over a contract that pays off \$200 with a 50% chance, even though the expected values of the outcomes are exactly the same. On the contrary, a risk-seeking manager would prefer the less certain contract, and a risk-neutral manager would be indifferent to either option. However, in the context of bounded rationality, the observed outcome might be similar: an overconfident manager would opt for the high-variability contract, hoping to gain \$200, while assigning a disproportionate probability of the \$0 occurring.⁸ Thus, while risk-prone, rational players accept a higher dispersion of gain occurrence and overconfident players miscalculate the likelihood of these gains occurring in the first place, the decision one ultimately observes would be exactly the same. Apart from this, cognitive biases allow for a wider spectrum of outcomes. For instance, the overconfident or optimistic manager would not only accept the more volatile contract with the same expected outcome, but, perhaps, even a contract with a lower expected outcome, *if only* the upper bound were relatively higher.

2.1.2 Outsourcing decision-making: The separation of ownership and control

By making the profit-maximizing decision to outsource the management of the firm, and thereby separating ownership of the firm from control over it, shareholders create a setting prone to agency problems (Berle & Means, 1932; Jensen & Meckling, 1976). They assign the responsibility of decision-making to an outside party (an agent), that is, the manager, while they, as the principals, bear the consequences of these decisions themselves. Naturally, the profit-maximizing goals of the shareholders diverge from those of the manager: the principal requires return on their capital investment, which is generated by increasing the value of the firm the agent manages. However, the agent does not want to solely depend on the returns she creates through managing the firm, as these, in turn, do not depend on her actions alone. Therefore, she maximizes her utility through a mix of benefits that come with managing said firm, such as reputation, power, non-monetary benefits and monetary gains, both independent of firm performance and performance-based. It is in the best interest of the owners to align the realization of

⁸ Humphery-Jenner, Lisic, Nanda and Silveri (2016) document that overconfident CEOs accept and even demand high levels of incentive-based pay, as their overconfidence lets them assign disproportionate probabilities to future high payoffs.

these diverging goals in such a way that the actions of the manager lead to the maximization of firm performance.

A CEO's decision consistency and impact

The decisions the manager makes, even though they are on behalf of the shareholders, are in line with her personal preferences. The effects of her personal 'flavour' on firm outcomes are three-fold. First, her characteristics affect the way her compensation contract will be designed and, subsequently, they shape her reactions to the contract's implications. Finally, her personality will also spice the entire corporate environment (Hambrick & Mason, 1984). That is, the 'tone at the top' ultimately trickles down through the top management team and, eventually, affects the corporate culture for all employees. In line with this notion, Ou, Waldman and Peterson (2018) show that having a humble manager run the firm increases the work-flow and team spirit of the entire top management team, leading to smoother team performance and, ultimately, better overall firm performance.

What influences the manner in which someone makes decisions, or, in other words, the behavioural pattern she tends to hold on to, is commonly defined as a personal trait in psychology research (see, for instance, Epstein, 1979).⁹ This means that an individual facing a number of similar situations of uncertainty makes decisions in a consistent manner throughout.¹⁰ Cronqvist, Makhija and Yonker (2012) show that this is true regardless of whether the setting is of a private or professional nature, by providing evidence for managers' personal financial leverage being mirrored in the capital structures of the firms they manage. Similarly, firms run by overconfident managers are found to overinvest when facing cash abundance (Malmendier & Tate, 2005). CEOs who are risk-prone and seek novel

⁹ Epstein (1979) acknowledges that behavior can still vary with situations, even if they are of a similar nature. He explains that this does not defeat, however, the existence of personality traits—it merely confirms an interdependency of traits with situational circumstances (i.e., an *interactionism*). Building on this intuition, Benmelech and Frydman (2015) use exogenous variation in the form of military assignment, and find a relation between these (CEO) life experiences and corporate management through a mix of inherent traits and the environment shaping them. One explanation for their findings could be that leadership skills inherent in those CEOs were enhanced during their military service, or that their inherent skills led them to thrive in the military, and this in turn 'trained' their leadership traits. Although the authors attempt to eliminate endogeneity from the choice of whether to serve in the military, becoming a CEO afterwards still remains a choice and is, thus, subject to endogeneity problems. After all, not all people serving in the military become a CEO.

¹⁰ One could say that this is, at least to some extent, evidence that individuals consistently solve for the optimum defined by their (unobservable) utility functions.

experiences, so-called sensation seekers, have their firms invest relatively more in innovation (Sunder, Sunder, & Zhang, 2017), and risk-seeking CEOs, measured as them enjoying piloting airplanes in their leisure time, are also working for firms with higher return volatility and a riskier corporate strategy (Cain & McKeon, 2016). This holds true for acquired traits, too: CEOs with daughters emphasize diversity and employee relations in their corporations more (Cronqvist & Yu, 2017); ex-military CEOs differ significantly in their leadership styles from non-military CEOs (Benmelech & Frydman, 2015; Malmendier, Tate, & Yan, 2011); and a CEO's risk propensity decreases with her age (Serfling, 2014).

Evidence for individual managers' consistent decision-making is ample, and, therefore, present even when—or perhaps because—they are hired to make decisions in the shareholders' stead.¹¹ Nevertheless, it remains challenging to disentangle whether managers self-select into firms that meet their appetite for novelty, risk, safety and similar needs, or whether they change the corporate structure once they run the company; and it might, actually, be a mix of both.¹² For instance, Fee, Hadlock and Pierce (2013) provide some evidence for a firm deliberately selecting managers that match the required style of the firm, while Coles and Li (2020) show that the manager's preferred corporate strategies are consistently traceable across the different companies she is employed at.

2.1.3 The challenge: Incomplete information

Given that principals outsource decision-making to a manager who follows her own line of preferences, the problem of diverging interests inevitably arises. Theoretically, diverging interests could always be accounted for via contracts, by imposing penalties for a party deviating from the agreement, *if* both parties had a complete set of information given. However, as the agent, naturally, has private information not known to the principal, how would the principal know that a

¹¹ By providing early evidence for the existence of a 'manager-fixed effect' which explains large parts of the observed heterogeneity in firms' investment and financing behavior, Bertrand and Schoar (2003) are among the first to point out a 'black box of preferences', or personal traits, that varies across managers.

¹² Even if the corporate strategy changes with employment of a new manager, it could be a) the manager who initiates the change, or b) the start of a new strategy being the reason for the manager to sign the contract at this company in the first place. In establishing patterns of financial leverage preferences, Cronqvist et al. (2012) find evidence for both an endogenous matching process of managers with firms who need these traits, and managers 'imprinting' their own preferences on firms when enabled through weak governance mechanisms (see also Cronqvist & Yu, 2017, for the imprinting explanation).

potentially poor outcome is due to the agent's actions alone, and not due to other, external circumstances?

Agreeing to a penalty in case of non-fulfilment of her part, measured based on the outcome alone, is risky for the agent—and for the principal, it is risky to not do so: the principal bears the entire risk of the firm potentially defaulting, and the agent only bears the risk associated with her contract. Yet, the agent is to make all the decisions that determine the future of the firm—a future that is very likely to continue way beyond her tenure as the manager. Information asymmetries, i.e., incomplete information about the decisions of the hired manager, are at the heart of the agency problem, and the reason why the agency setting becomes a problem in the first place.

Aligning actions: The 'second-best' solution

Aligning diverging goals is both costly and, due to the dynamic nature of the setting, prone to creating new (agency) problems, or so-called *disincentives* (Murphy, 2013). The agency costs are offset against benefits of authority delegation, with the bottom-line result ultimately being determined by the information asymmetries mediating the given setting.

According to the contracting theory, the *first-best* solution when compensating an agent for her effort can be achieved by maintaining perfect information about her actions, for example, through close and constant monitoring (see, e.g., Grossman & Hart, 1983). However, in the setting of hiring someone to manage a corporation, being informed about their actions at all times is not possible due to several reasons. First, the manager has a complex multi-task job profile, the nature of which necessitates an outsourcing of the management of the firm to begin with (Holmstrom & Milgrom, 1991). Therefore, not only is it impossible for the shareholders to directly observe and monitor each decision the manager makes but doing so would also defy the whole purpose of appointing an agent in the first place. Second, relying instead on the outcome of the actions as a proxy for the level of effort exerted is not justified, as the manager's actions are not the sole drivers of the observed outcome. Further, some consequences of her actions are only incurred in the long run, while the short-run outcome might misleadingly indicate different, perhaps greater managerial effort exertion.

Instead of observing outcome as a proxy for effort and compensating the agent accordingly, under the *second-best* solution, the principals would simply make the agent one of them. The result of this solution would be identical to that of the first-

best one, if the agent was risk-neutral (and both the agent and the principal were liable unlimitedly, see Grossman & Hart, 1983). By becoming an owner herself, the agent's actions would be aligned with the shareholders' interests by definition, rendering any external monitoring redundant.¹³

However, unlike the principals, the agent cannot diversify away the risk imposed on her through the firm. This is why selling her the company is a solution of second-best quality, as in this scenario, the owners need to compensate the agent for the risk-sharing imposed on her. This additional compensation then creates a mix of returns for the agent, part of which is dependent on the company's performance and, to some extent, the agent herself, and part of which is safely guaranteed, i.e., the so-called risk premium. The risk premium is what makes the second-best solution second, as it is increasing in cost with the agent's risk aversion. Further, it defies the purpose of aligning the agent's interests with those of the shareholders: the greater the part of a compensation package that does not move with firm performance, the less the agent is concerned about said performance. Lastly, the performance-based part of the pay package creates new problems, as binding the agent's pay to relatively short-term firm performance discourages her from considering long-term returns, given the time frame of a firm's life cycle relative to the agent's tenure (Peng & Röell, 2008a, 2008b). Binding the pay to long-term performance via option-based compensation, however, will increase the risk-averse manager's dislike of uncertainty, and might hinder investments in risky yet positive net present value projects (Brisley, 2006).¹⁴ To round up the dilemma, the agent's limited liability leads to yet another problem: in case of poor performance, the worst punishment for a manager is getting fired, but she would never be required to reimburse what she has caused the principals to lose.

Instead of completely aligning the agent's actions contractually, or monitoring her every move, firms usually adopt a mix of both solutions. A board of directors is employed to act in the shareholders' stead, while additional mechanisms mitigating information-asymmetry, such as owners' sophistication (Kim & Verrecchia, 1994), concentration of ownership (Shleifer & Vishny, 1986), and higher transparency (Jongjaroenkamol & Laux, 2017; Lambert, Leuz, & Verrecchia,

¹³ This theoretical assumption relies on homogenous shareholders and does not account for diverging voting rights, entrenchment problems, shareholders with different holding horizons, and similar real-world frictions.

¹⁴ Whether options induce short-termism or create long-term incentives is highly contingent on the vesting schedule (see Brisley, 2006).

2007) help to foster the monitoring environment and complement incomplete contracts.¹⁵

Moral hazard and adverse selection

Information asymmetries affect the setting of executive compensation both before and after the manager is hired. Before the hiring process, shareholders lack knowledge about the manager's skills, and run the risk of adversely selecting a 'bad' manager (see Akerlof, 1970).¹⁶ After hiring, shareholders fail to observe the manager's actions, which exposes them to insufficient risk sharing, or so-called moral hazard (Holmstrom, 1979). Although these *ex-ante* and *ex-post* settings are theoretically distinguishable, they are intertwined in the real world. The risk of the hired manager shirking, stealing or engaging in otherwise firm-value-deteriorating behaviour is higher when the selected manager is of adverse quality and vice versa, the likelihood of a low-effort-type manager outperforming her peers is relatively lower.

Through often costly screening processes *ex ante*, in the pre-negotiation period, shareholders can deduce the agent's traits and future behaviour from her past actions. For example, Falato, Li and Milbourn (2015) establish a positive relation between post-hiring firm performance and pre-hiring publicly observable CEO credentials, such as reputational and professional track records. Allgood, Farrell and Kamal (2012) show that CEOs whose tenure exceeds a certain number of years experience higher initial compensation levels, indicating that they were identified as a good match *ex ante*. Additionally, learning models allow for shareholders to detect the manager's true skills after hiring, and predict the turnover rate to increase with managers who have been selected adversely (e.g., Jenter & Lewellen, 2019).

Ex post, the nature of the agent's actions being partially unobservable to the shareholders bears multiple risks. The agent might settle for living a quiet life instead of running the firm's operations in the best interest of the shareholders, for example, by foregoing positive net present value projects to avoid a decline in current cash flows or an increase in cash flow riskiness. For instance, when managers feel safe from being turned over forcefully, they reduce their productivity

¹⁵ Hermalin and Weisbach (2012) note that there is, however, an optimal level of disclosure of actions, and beyond this optimum, increases in disclosure can actually increase compensation costs.

¹⁶ Akerlof establishes in his 1970 seminal work that through the mechanism of the market, ultimately, there will only be adverse types of a good in the market. This might be one reason why standard agency models assume that the general manager is effort averse.

levels and start shirking (Bertrand & Mullainathan, 2003). On the other end of the continuum of unobservable moral hazard is value-destroying excess productivity in the form of empire building (Jensen, 1986). Such managerial strategies satisfy the manager's desire for status, power and safety without adding to firm value. Some examples of such strategies are extensive expansions of business through foreign operations (Hope & Thomas, 2008), excessive and partially value-destroying mergers and acquisitions (Malmendier & Tate, 2005, 2008) and unnecessary diversification of operations such as through conglomerate mergers (Amihud & Lev, 1981; Harford, 1999). Moreover, as the perceived achievement in growing the firm can signal a manager's ability, she might have additional career incentives to expand the firm beyond what is profitable from a shareholders' perspective (Marris, 1963).

While the compensation contract shall control for moral hazard, this agency-borne problem can even be exacerbated through a sub-optimal contract.^{17, 18} Harford and Li (2007) find that mergers and acquisitions often render the manager's pay less sensitive to poor firm performance but more sensitive to good performance, relative to the pre-acquisition situation. Performance-based contracts, which shall account for the non-observability of the manager's actions, might incentivize her to manipulate earnings numbers to meet or beat performance targets (Healy, 1985). Alternatively, she might engage in so-called real earnings management, by altering operational decisions for the mere purpose of hitting the earnings target (Cohen, Dey, & Lys, 2008). The effect of both earnings manipulation and real earnings management is particularly pronounced when precise earnings targets are specified in the contract (Bennett, Bettis, Gopalan, & Milbourn, 2017). Additionally, the fact that stock and option prices depend on earnings numbers motivates the manager to manipulate earnings (Bergstresser & Philippon, 2006; Li & Wang, 2016). Armstrong, Larcker, Ormazabal and Taylor (2013) remark that this observed, indirect effect on earnings manipulation is actually driven by a manager's portfolio *vega*, i.e., her wealth's sensitivity to changes in the firm risk she is exposed to—

¹⁷ For a detailed discussion, see Murphy's (2013) review on contract-induced '(Dis)Incentives'.

¹⁸ Some moral hazard might even be anticipated by the principal and implemented in the contract implicitly. By allowing a CEO to make excessive use of perks, such as a private jet, parts of her utility basket could be satisfied to the extent that no additional compensation is needed to motivate her. This would be equivalent to a rank-and-file employee being allowed (as in, not punished for) the use of the company's stamps for their own merit: theoretically, it can be defined as stealing from the company, but, ultimately, the costs of a couple of stamps are outweighed by the employee's satisfaction of having this possibility (see Fama, 1980).

over and above any effect of the sensitivity of the manager's wealth to a change in the stock price of the firm (i.e., the portfolio *delta*).

Contract-induced moral hazard in the form of over- or underinvestment can stem from two situations. First, with a bonus-based performance contract, any misalignment of horizons leads to the investment-return horizon exceeding the contract's performance-target horizon (Peng & Röell, 2008b, 2014). Even an extreme moral hazard, such as fraudulent behaviour, can partially be reasoned out, as detection usually occurs in much later, future periods, while the immediate returns concurrently inflate earnings. Additionally, once a performance target is hit, the manager is inclined to shift any residual excess performance to the next period, where it will count towards another bonus payment. Second, contract-induced moral hazard incentives can stem from equity-based pay exposing the manager to undiversifiable risk, which she tries to minimize through underinvesting or unnecessary diversification (see Murphy, 2013).

Ultimately, what kind of hidden actions a manager will engage in, and whether she will engage in any at all, is not only conditional on the opportunities provided and induced through incentive-based compensation, but also conditional on her personality traits and the severity of the adverse selection. This prediction holds only under the assumption that not every individual will engage in morally hazardous behaviour, given the chance.¹⁹ As seen in section 2.1.2, the decisions individuals make are highly dependent on their characteristics, which are reflected in behavioural patterns throughout their lifetime. For instance, not all managers with cash abundance will overinvest and start building empires through value-destroying mergers or acquisitions, but if a manager is overconfident, she might (Malmendier & Tate, 2005, 2015). Similarly, the tendency to misreport can be associated with a CEO's overconfidence (Schrand & Zechman, 2012), and unnecessary or unprofitable mergers and acquisitions with a narcissistic personality (Aktas, De Bodt, Bollaert, & Roll, 2016). Further, cognitive biases such as relying on reference points (i.e., anchoring), optimism, and overconfidence determine a variety of miscalculations in mergers (M. Baker, Pan, & Wurgler, 2012), and in investments in general (M. Baker & Wurgler, 2013).

¹⁹ The chance is given through the temptation of not being held accountable for all actions, merely because of their non-observability, while accountability further varies with governance settings. However, as Thaler (2016) remarks, real-world individuals are more moral than the theoretical economic agent. If variation in the goodness of people is allowed for, a plausible explanation for not observing moral hazard consistently across the total population is not just a lack of possibilities, but rather, different managerial traits, such as the capacity or the need to be doing 'the right thing'.

Mediating moral hazard: The board of directors

The board of directors, as the owners' representatives, fulfil the task of selecting the manager and negotiating the compensation contract *ex ante*, and monitoring her actions to reward and punish her *ex-post* (see Adams, 2017; Adams, Hermalin, & Weisbach, 2010; Hermalin & Weisbach, 2001). As the monitoring abilities of the board of directors can hypothetically substitute for incentive-induced control, this body may substantially mediate the needed incentive strength.

Research on the board traits which potentially matter in shaping an optimal monitoring environment yields ambiguous results. For instance, more independent directors are generally considered to be more efficient monitors (Nguyen & Nielsen, 2010), unless the CEO handpicked them. The latter case, with directors again being dependent on the CEO's benevolence, can lead to an effect opposite to the intended one (Lambert, Larcker, & Weigelt, 1993; Main, O'Reilly III, & Wade, 1995). Bigger boards (Boone, Casares Field, Karpoff, & Raheja, 2007; Eisenberg, Sundgren, & Wells, 1998) or those with busier directors (Ferris, Jagannathan, & Pritchard, 2003) are found to be negatively associated with monitoring ability, as they might contain free riders and struggle with decision-making. Some other traits of directors related to monitoring willingness and ability are, for instance, gender (Adams, Almeida, & Ferreira, 2009), diversity (Carter, Simkins, & Simpson, 2003) and individuals' skills (Adams, Akyol, & Verwijmeren, 2018). The effects of these traits can vary in direction and magnitude with the *status quo* of a board (Ahern & Dittmar, 2012) and other firm characteristics (Demsetz & Lehn, 1985).

Generally, both better contracts and more efficient monitoring are expected to arise from an unbiased, independent board negotiating with the manager at arm's length (Bebchuk & Fried, 2004; Bebchuk, Fried, & Walker, 2002). Excessive CEO pay is decreasing and CEO turnover sensitivity to firm performance increasing in board quality (Faleye, Hiotash, & Hoitash, 2011). The fact that the board of directors is supposed to be a mere proxy for shareholders, however, introduces yet another conflict of interests to the setting: much like the manager's, also the directors' objectives diverge from those of the principals. Directors have limited resources, such as time and attention, to spend on the companies they monitor, and they fail to allocate these resources equally (Falato et al., 2014; Masulis & Mobbs, 2014). Further, they are not always compensated via equity themselves—sometimes intentionally, in order to sustain their independence—which drives them farther from thinking like a shareholder (Hirshleifer & Thakor, 1994; Maug, 1997). The mediating effect of directors on optimal, efficient contracts is, thus, conditional

on the respective company's relative importance to them, in addition to their ability to function at arm's length.

2.2 Determinants of [optimal] compensation contracts

The theoretical framework for the design of compensation contracts, identifying specifically which determinants affect the structure and level of CEO pay, is threefold. In standard agency models (see section 2.2.1), which are usually based on a one-firm, one-agent setting, the manager's outside options are considered as exogenous and only affect her opportunity costs or participation constraint. This initial perspective can be developed into the second, so-called shareholder perspective (see section 2.2.2) by expanding the exogenous setting with a competitive labour market, where managers and firms endogenously match. This view allows for more variation in pay, as both the shareholders' (or firms') needs and the manager's preferences can be considered (Edmans & Gabaix, 2011; Terviö, 2008). Opposing both theories, which hypothetically offer tractable solutions for optimal contracts, is the rather evidence-driven managerial power perspective (see section 2.2.4). This view abstracts from contracts as an optimal tool for interest alignment altogether, and is based on the assumption that powerful managers would rather use this channel as a means to set their own pay and extract rents from the companies they run (Bebchuk & Fried, 2003, 2004).

2.2.1 Variation in pay in standard agency models

Standard agency models, which heavily rely on abstract versions of the real world, clearly identify the determinants with which a compensation contract *can* vary with regard to structure and level of pay. The problem, and one cue for an 'optimal' contract not being easily predictable in most cases, is that they do so under different sets of—partially very strong—assumptions.²⁰ Typically, both the agent and the firm are viewed as exogenously given (one-firm-one-agent setting), and rationality in both the principal and agent are assumed. The only ways in which the personalities of the agents in the standard agency models can differ are with regard

²⁰ The cue is the following: If not even theoretical models can easily agree on a common definition of an optimal contract, how can we possibly know whether what is observed in the real world is close to or far from an optimum?

to their risk preferences and their effort preferences.²¹ Therefore, the optimal incentive strength, which, in concert with the manager's participation constraint, ultimately defines the optimal level of pay is dependent on firm risk and the CEO's level of risk aversion as well as her marginal effect on firm value (G. P. Baker & Hall, 2004; Holmstrom & Milgrom, 1987). Typically, compensation contracts observed in the real world are usually a mix of different pay practices, which result in piecewise linear functional forms containing a mix of base salary, stock and options (see Edmans & Gabaix, 2016).²²

Stock-based compensation induces effort exertion, while option-based compensation motivates the manager to abstain from foregoing risky, but positive net present value projects (Dittmann, Yu, & Zhang, 2017; Smith & Stulz, 1985). The future value of the stock options expands her horizon from short termism towards considering the long-term firm value. A similar effect arises from tying the manager's wealth to return volatility (Coles, Daniel, & Naveen, 2006). However, while the principals' desired level of agent effort is strictly increasing, the required level of risk, clearly, has an optimum and, naturally, a turning point: given that firms are usually levered, the manager might be tempted to invest in risky, seemingly value-adding, but actually negative net present value projects, as neither her nor the shareholders, but instead the creditors, bear this downside risk (Jensen & Meckling, 1976). To account for that, CEOs might additionally be compensated with inside debt holdings, such as deferred compensation and pension benefits, which, in turn, decreases their willingness to invest in risky projects again (Cassell, Huang, Sanchez, & Stuart, 2012). To circumvent this cycle of problems, bonus banks are, at times, implemented to account for managerial myopia (Zhu, 2018). With such a pay practice, parts of the bonuses are paid out over future periods, conditional on persevering performance.²³

Another issue with adjusting the incentive strength lever in compensation packages is that this will adjust the manager's risk preferences. With increasing wealth, which might rise mechanically via the risk premium associated with

²¹ However, March and Shapira already note in 1987 that the observed risk-taking of managers seems to differ from the theoretically predicted risk-taking, alluding to there being bounds to the theoretically assumed rationality.

²² Linear contracts would constitute only stock-based pay, and convex contracts would be comprised of only options-based pay. See section 2.1.3 for an explanation about why the linear second-best contract of only rewarding the agent with firm value is not feasible due to her risk aversion and limits to liability.

²³ A similar solution would be to implement so-called clawbacks in the compensation contract, such that bonuses which are paid out might have to be paid back, or are clawed back, if performance does not persist. This, however, is rather rare in practice (see Edmans & Gabaix, 2016, p. 1265).

stronger incentives (Cheng, Hong, & Scheinkman, 2015), risk aversion decreases (B. Becker, 2006). This, in turn, renders the strength of incentives with regard to the required effort level as too low. Wealth also increases through previously granted bonuses for rewarding past performance—a determinant that principals need to keep in mind when setting incentive levels throughout time (Core & Guay, 1999).

2.2.2 Variation in pay in [efficient] labour markets

Considering the agent and the firm no longer as exogenously given, but, instead, as endogenously matching in a competitive labour market allows for additional variation in pay (see Gabaix and Landier, 2008; Terviö, 2008). Efficient markets price goods as a function that increases with their perceived quality and demand. Therefore, it is not only the respective company's need for a certain managerial trait that determines the matching process, but also whether the company can afford it: the trade-off between compensating the given manager or choosing the next best one is what determines the shareholders' willingness to hire this one. In this setting, similar to a standard agency model, the manager's participation constraint does not only depend on whether the risk premium meets her risk preferences, but also on whether her disutility implies higher opportunity costs as she would earn more in a different firm. However, the characteristics of the manager play a more important role in such a matching-setting, as opposed to the standard agency models, as the manager's disutility allows for more variety in this setting. When tracking managers throughout different companies, one can find a persistent managerial fixed effect on their own pay, which is also related to their respective managing styles (Coles & Li, 2020; Graham et al., 2013, 2012). This effect explains incremental variation in pay, over and above the effects of other economic determinants, and reduces the coefficient for the determinant firm size, on average, by about 40%. This means that not only does a company pay for a certain managerial trait, but also, the manager self-selects into companies that will do so, for example, by selecting a firm of a certain size. Based on a similar notion, Pan (2017) finds evidence for large, research-intensive firms matching with talented managers, and for those firms paying a premium both for the manager's talent, expertise and innovative skills and in order to outbid competing firms, anticipating a relatively higher marginal utility for production outcomes.

Although still in its infancy, empirical research examining which skills matter in the CEO labour market has found multiple priced managerial traits. For instance,

due to her outside opportunities, an executive with a broad spectrum of work experience is valued higher than a manager with a narrower, specialist background (Custódio, Ferreira, & Matos, 2013). Outside managers coming from lower positions in well-performing firms are awarded for the anticipated value they carry over to their new employer (Fee & Hadlock, 2003). Similarly, firms pay a premium for CEOs with high educational and reputational credentials (Falato et al., 2015). Nevertheless, a trait in high demand does not equal this trait being value enhancing *per se*; rather, it is the perceived value that determines a good's price. Like any other 'efficient' market, the market for CEOs can be off:²⁴ so-called superstar CEOs, for instance, are in high demand because they are *perceived* to be of good quality, even though they fail to deliver subsequently (Malmendier & Tate, 2009). Vice versa, if the superstar effect is, instead, with the firm, shareholders can save on remunerating managers: in a matching market, some managers offset monetary gains for particular characteristics they value in a company, for instance, the reputational benefits they gain by working for a 'superstar firm'. Focke et al. (2017) show that CEO pay is significantly lower in such prestigious companies. These findings can be expanded to situations where managers' preferences match with other firm characteristics, which similarly satisfy a manager's utility in the absence of pecuniary gains: while for a risk-averse manager, the risk premium increases with incentive strength and firm risk, a risk-prone manager might deliberately select into riskier firms. That is, the risk lover trades off her need for uncertain situations with compensation for a riskier pay package. Indeed, Cain and McKeon (2016) find risk-prone CEOs to be related to riskier companies, riskier corporate strategies and higher performance-pay sensitivity, in the absence of higher levels of risk premia. Additionally, overconfidence appears to be a valued trait: Campbell, Gallmeyer, Johnson, Rutherford and Stanley (2011) find managers with moderate levels of optimism to be forcefully turned over less frequently. One reason for their findings could be that compensating individuals with such traits is cost-efficient for

²⁴ Thaler (2016) raises the concern that financial markets, despite being probably the most efficient markets there are, still are off by a value factor of about two (pointed out first by Black, 1986), and that in times of so-called bubbles, this deviation increases. He remarks that it is, thus, not unlikely that the labour market [for CEOs] might also be off by some value points per CEO. Perhaps, a CEO market can also, therefore, have the tendency to create bubbles around certain managers—after all, it is even more challenging to accurately estimate the value creation abilities of an individual than those of a financial security.

companies, as moderately overconfident managers accept smaller stock option grants and bonus payments, and overall, lower levels of total pay (Otto, 2014).²⁵

Market failures

In a competitive market, firms adjust their pay levels relative to each other. However, even if one firm's governance is weak and of poor quality, with suboptimal levels of managerial pay, its peers will still adjust their pay accordingly, lest they lose valuable talent. The entire market then ratchets up to remain competitive (Dicks, 2012). Further, if one trait is seen as profitable without actually delivering increased performance, the market will also experience distortions, as observed with the so-called *superstar CEO* effect (Malmendier & Tate, 2009). If high talent is present, but limited, employers fail to outweigh the costs of strong incentives against their benefits, and the over-taking bonus culture leads to market distortions (Bénabou & Tirole, 2016).

Similarly, government interference, or failed government interference, can shift the market equilibrium. Although government intervention might be needed to account for deviations from perfect competition and zero power imbalances, which challenge decentralized self-regulation (Bator, 1958), regulating a somewhat efficient market requires caution. Given that the numerous determinants for an optimal contract vary across firms, imposing a one-size-fits-all solution can have severe effects. Eventually, intervention might even lead to contradictory results, such as higher pay for all CEOs. For instance, when the government simply caps the maximum pay at a certain level, firms who were below the threshold before might be tempted to raise their pay up to the limit now, ultimately rewarding their managers for mediocre performance (see Dittmann, Maug, & Spalt, 2013).²⁶

The advantage of having information available about peers is that managers' performance targets may be set relative to those of their peers. This would, in turn, keep any excessive pay low, as this method can help evaluate whether the observed performance is a result of actual effort or sheer luck, increasing in value not due to

²⁵ Optimism is generally thought of as one of two parts of overconfidence: While over-optimism refers to an overestimation of the mean, i.e., a too high (low) estimate of the expected positive (negative) outcome, miscalibration refers to a too narrow estimation of the variance of outcomes, i.e., the probability of the negative outcome happening in the first place (Hribar & Yang, 2016).

²⁶ According to Edmans and Gabaix (2016), Murphy (2013) and others, under the Clinton administration in 1993, this is exactly what happened in the U.S: The \$1 million cap on CEO pay tax deductions intending to control excessive rent extraction led to companies raising the deductible pay to \$1 million, even if it was below that cap before.

managerial effort (Holmstrom, 1979, 1982). For the manager, this can be desirable, as it protects her from being fired when the entire industry or market is doing badly. However, some challenges to this method and, thus, to achieving market equilibrium, are, amongst others, the selection of the correct peer group (Albuquerque, 2009) and the fact that the method decreases the incentive strength for the manager. The former becomes increasingly difficult in the face of opaqueness about peer managers' personal traits, and the latter raises compensation costs again, at last (Dittmann et al., 2013). Finally, as CEOs tend to get dismissed for bad market performance despite the relative peer group evaluation (Jenter & Kanaan, 2015), they might ultimately demand premia for bearing this additional risk.

2.2.3 Variation in pay due to CEO power

Opposing any explanation for variation in the optimal levels of CEO compensation is the assumption that contracts are simply suboptimal because of powerful managers setting their own pay (Bebchuk & Fried, 2003, 2004). According to this perspective, any level of pay that cannot be explained by economic determinants, market forces, talent and other personal characteristics, arises due to the board of directors failing to operate at arm's length. Further, this view posits that rather than compensation being a remedy for misalignments of interests between shareholders and managers, it might itself be the source of these misalignments: the fact that the incentives of directors diverge from that of the shareholders enables CEOs to largely extract resources from the firm without even raising any suspicion.

CEO power can arise from intrinsic traits, such as skill (Falato et al., 2015) and other personal traits. For instance, studies find CEOs with narcissistic personality traits (O'Reilly III, Doerr, Caldwell, & Chatman, 2014) or particularly charismatic CEOs (Tosi, Misangyi, Fanelli, Waldman, & Yammarino, 2004) to be overcompensated. Both inherited power, such as in firms where the CEO belongs to the founding family (Chen, Cheng, & Dai, 2013), or self-chosen power, through a manager handpicking the directors who shall monitor her (Lambert et al., 1993), CEO duality (Boyd, 1994), or interlocked boards (Bizjak, Lemmon, & Whitby, 2009; Hallock, 1997), are often classified as situations of weak governance (Edmans et al., 2017). When a CEO is powerful, she might be able to extract rents opportunistically. For instance, Core, Holthausen and Larcker (1999) find CEO compensation to be higher when the CEO is also chairman of the board, when she handpicks the directors, and when a board has more outside directors and is

larger—all of these being characteristics of relatively greater managerial power. Further, these findings are negatively related to firm performance, and the effects are dampened in the presence of a block holder, i.e., an environment with increased monitoring. Similarly, Chen et al. (2013) find that firms with CEOs related to the founding family have a lower turnover sensitivity to poor performance. Indeed, entrenchment problems, like the manager entrenching herself from being replaced (Shleifer & Vishny, 1989), are particularly prevalent in family firms, where shareholder rights might be unevenly distributed and shareholders might be differentially incentivized (see section 2.2.4 for more on heterogenous shareholders). An entrenched manager can successfully create mechanisms against being ousted, such as anti-takeover provisions, while simultaneously extracting higher levels of pay (Gompers, Ishii, & Metrick, 2003). Similarly, Jenter and Lewellen (2015) find that the positive relation between the probability of a firm becoming a mergers and acquisitions target and a CEO's closeness to retirement decreases with stronger governance mechanisms, for it is usually the target CEO who loses her job.

Rent extraction can also manifest in the form of the manager setting pay schemes that have (too) easily achievable performance targets (Abernethy, Kuang, & Qin, 2015; Morse, Nanda, & Seru, 2011) or are, otherwise, decoupled from firm performance (Jensen & Murphy, 1990). In some cases, managers resort to manipulating earnings numbers to just meet a performance target (Bennett et al., 2017). Generally, a manager engages in moral hazard to extract 'hidden' compensation either directly through rents, or indirectly through saving on effort (see also section 2.1.3). Both have consequences beyond the mere diversion of cash, as any remuneration other than the one settled in the contractual agreement simultaneously changes the manager's incentives and, consequently, her future interest alignment with that of the shareholders. For instance, if a manager sells her stock just before a negative earnings announcement, not only does she trade on insider information to the detriment of shareholders, but also, she reduces her incentive strength, allowing for further rent extraction through decreases in effort (Bettis, Bizjak, & Lemmon, 2001). Further, the usage of perks and opaque pay schemes, such as equity grants and option plans, in general, or entire parts of compensation plans that are not observable by shareholders, in particular, are part of the rent extraction explanation from the managerial power perspective (Bebchuk & Fried, 2004; Kuhnen & Zwiebel, 2008).

While some aspects, such as option backdating (Lie, 2005; Yermack, 1997), large bonus payments for acquisitions absent obvious value increases (Grinstein &

Hribar, 2004), and incentive rigging (Morse et al., 2011) do not offer much room for alternative arguments other than a rent extraction explanation, other features are more ambiguous. For instance, the claim that managers are paid for luck when markets do well (Bebchuk & Fried, 2004; Bertrand & Mullainathan, 2001) can be argued against by them also being undeservedly punished for bad luck and suffering turnovers when industries or markets do badly (Jenter & Kanaan, 2015). Golden handshakes, i.e., excessive severance payments upon forced departure (Bebchuk & Fried, 2003), might seem like a reward for bad performance, but may also keep the manager from entrenching herself (Almazan & Suarez, 2003) or, even worse, manipulating earnings in order to not raise grounds for being ousted in the first place (Ali & Zhang, 2015). When options are repriced upon stock price declines, rather than this being a reward for poor performance, it might be a necessity to re-establish the now dampened incentive strength (Manso, 2011).

Finally, it appears to simply be impossible to clearly distinguish between managerial power and an efficient contracting explanation at times. For instance, large firms can attract and afford more skilled CEOs, who are also more expensive to hire, both because of their skills and their increased bargaining power (Gabaix & Landier, 2008). Further, the extensive room for agency problems in larger firms requires a sharper compensation contract with stronger incentives, and this additionally raises the level of pay through an adjusted risk premium (see Edmans & Gabaix, 2016, pp. 1254/1256). In a similar vein, better monitoring can also, paradoxically, increase pay levels. For instance, a better functioning board might need to compensate the manager relatively higher because their greater monitoring power raises both the manager's required effort—and thus her disutility—and her risk of being dismissed upon poor performance (Adams et al., 2010; Cronqvist & Fahlenbrach, 2013).

2.2.4 Additional explanations for variation in pay

Besides the determinants for optimal contracts that standard agency frameworks anticipate, and assignment of the remaining variation to managerial power, there are still numerous other explanations for the observed cross-sectional pay disparities. As discussed, performance-based contracts can be ineffective in controlling, or worse, even amplify the agency problem (see sections 2.1.3 and 2.2.3); alternatively, possible market inefficiencies might be responsible for the observed unexplained variation (see section 2.2.2). Additionally, heterogeneous levels of intrinsic motivation in managers are hard to account for empirically.

Generally, as Thaler (2016) remarks, attempting to predict actual behaviour by characterizing optimal behaviour does not account for the discrepancies between the abstract economic agent and real-world persons. In the context of compensation contracts, this applies not only to the manager and her traits, but also to the individuals at the other end of the negotiation table.

Optimal for who? Heterogeneous shareholders

Just like the real-life manager is often abstractly viewed as a rational economic agent, so are the principals. One source of unexplained variation in executive pay stems from persistently assuming the homogeneity of shareholders, and a perfect alignment of their interests with those of the board of directors. In reality, shareholders' preferences are rarely perfectly aligned, and this heterogeneity can affect compensation through two different channels. First, if individuals' utility functions differ across shareholders, their respective *definitions* of an optimal contract diverge. Like that, a manager's myopic behaviour might actually be intentionally induced through an optimal contract dominated by short-term, speculative investors (Bolton, Scheinkman, & Xiong, 2006; Cadman & Sunder, 2014; Li & Wang, 2016), or controlling minority shareholders who bear little risk while having large voting power (Cronqvist & Nilsson, 2003). Similarly, founding-family shareholders might rather side with a CEO belonging to the family than with other, outside shareholders (Chen et al., 2013; Morck, Shleifer, & Vishny, 1988). Second, if shareholders' monitoring abilities differ, their *capacities to design* a contract which is optimal (i.e., maximizes shareholder value, on average) diverge. Empirical research has established that sophistication of investors (Cronqvist & Fahlenbrach, 2013; Hartzell & Starks, 2003) and concentration of ownership, for instance, through large block holders (Brickley, Lease, & Smith, 1988; Clifford & Lindsey, 2016; Core et al., 1999), generally improve the monitoring environment, increase pay-performance sensitivities and reduce pay-levels.

Occasionally, chains of principal-agent relationships create problems that make optimal contract design conditional on investors' personal traits. The actual capital providers might not be in touch with the firm's operations but delegate the investing activity to asset managers. This reduces the dispersion of investor traits, and instead, emphasizes a single asset manager's characteristics. For instance, hedge fund managers who fancy powerful sports cars also manage their investments less rationally, in a riskier way, and in a rather overconfident manner (Brown, Lu, Ray,

& Teo, 2018).²⁷ A whole strand of literature outside the scope of this dissertation examines investor biases and their non-rational beliefs and preferences (see M. Baker & Wurgler (2013) for a survey on the other end of the spectrum, namely, rational managers in irrational markets).

Heterogeneous monitors

Institutional investors, who have the capacity to exert better monitoring than retail investors, might differ in their motivation to do so just like any other monitoring body. Monitoring is a costly process, and diverse investments require shareholders to rank their portfolios according to the investments' relative importance (Fich et al., 2015). Correspondingly, a board of directors can have interests that are less aligned with those of the shareholders, or weaker abilities to enforce an optimal contracting design. Similar to a high CEO-power situation, directors that are dependent on the manager's benevolence in one way or another have decreased interest in monitoring her sufficiently. For instance, companies in which CEOs are enabled to exercise backdated options expand this practice, not seldom, also to the board of directors, or the very idea is borne through interlocked boards in the first place (Bebchuk et al., 2010). Moreover, when a board is too large to agree on efficient monitoring (Eisenberg et al., 1998), the directors are too busy to allocate their time evenly across all firms they monitor (Falato et al., 2014; Ferris et al., 2003; Field, Lowry, & Mkrtchyan, 2013) or the given manager's task system is simply more complex than that in other firms (e.g., because the firm is larger, see Gayle & Miller, 2009), monitoring is complicated further. Generally, a board of directors which itself is monitored more closely will also follow their own monitoring duties more rigorously. Examining the monitoring environment from both the shareholders' and the board of directors' perspectives conjointly, Liu, Low, Masulis and Zhang (2020) show that in the case of institutional investor monitors being distracted, board monitoring also decreases.²⁸

²⁷ It is, thus, possible that these investors imprint their preferences on the design of compensation contracts, too, satisfying their needs, similar to Bolton et al.'s (2006) findings.

²⁸ See also section 2.1.3 (Mediating moral hazard: The board of directors), for a more detailed explanation on how the board's characteristics help shape the compensation contract.

3 Summary of original essays

3.1 Essay 1: Are convicted CEOs paid differently? Evidence from unique Swedish data

In the first essay, we use CEOs' past criminal behaviour as a measure of their risk preferences to examine the effect of these preferences on their compensation arrangements. According to contracting theory, managers' compensation packages will be designed with their risk preferences in mind, as their attitude towards risk ultimately influences firm outcomes (Holmstrom, 1979; Holmstrom & Milgrom, 1987). For instance, motivating a risk-averse manager to take on risky, yet profitable, investments is one such role of compensation arrangements (Smith & Stulz, 1985). Further, tying a manager's pay to firm outcomes aligns the manager's long-term goals with those of the shareholders (Dittmann et al., 2017; Grossman & Hart, 1983). This, however, increases in costs for a company with increasing risk aversion of a manager. Despite the theoretical predictions, empirical evidence on managerial risk preferences is rare, mainly due to data availability constraints. In this study, we examine empirically how the level and riskiness of an individual's compensation package varies with their risk preferences.

Using an individual's criminal tendencies as a proxy for their risk attitude has different implications, depending on the underlying economic theory. According to the neo-classical approach, which defines criminal individuals as rational risk takers, these economic agents weigh the gain from engaging in a crime against the potential cost of detection and then take a rational decision (G. S. Becker, 1968; Ehrlich, 1973). Behavioural economics acknowledges constraints to this rationality and links criminal behaviour to overconfidence and sensation seeking (Eide, Rubin, & Shepherd, 2006; Garoupa, 2003). Both theoretical approaches link individuals engaging in criminal actions to a higher likelihood of accepting uncertain situations, which is why we use observed criminal behaviour as a proxy for individuals' risk preferences.

Employing the Swedish proprietary sample described in 1.3, we find that CEOs who identify as being more risk tolerant receive a pay package that is more sensitive to firm performance. This is consistent with agency theory, which further predicts that tying a manager's pay to firm performance is less costly for the firm with decreasing risk aversion (i.e., increasing risk propensity) of an individual. By testing whether the level of the CEO's compensation differs, we find that there are

significant differences in the levels of total pay and the fixed part of the pay package (the base salary) in the case of a CEO who identifies as being more risk prone. Particularly, CEOs with past criminal convictions receive about 10% lower levels of total pay and fixed pay than their counterparts, on average. Further, on exploring a labour market explanation and examining the performance of those companies that are run by more risk-prone CEOs, we find no evidence for these CEOs being worse managers.

3.2 Essay 2: The smartest guys in the [board]room: Directors' intelligence, CEO compensation, and firm performance

The second essay addresses the design of efficient compensation contracts from a different angle, by looking at the board of directors and examining a board's abilities and the structure of CEO pay packages. We look at two different measures of board's skills, namely their cognitive ability scores (i.e., IQ) and their non-cognitive abilities, such as mental strength, leadership skills, and emotional maturity, and examine whether and how these measures play into the design and level of CEO compensation.

In the accounting literature, but also in other social sciences disciplines, it is common practice to use factors, such as education, prior work experience, profession or even demographic measures, as proxies for ability (Herrnstein & Murray, 1994; Wai, 2014). The consensus is that the higher someone's cognitive skills and abilities, the better they are at succeeding in professions that require demanding mental work (Adams, Keloharju, & Knüpfer, 2018). Moreover, in the literature examining the functioning of the board of directors, proxies such as financial expertise, professional experience, educational degree and others, are commonly used to account for a director's or a board's ability (e.g., Güner et al., 2008; Khanna et al., 2014). However, succeeding in a team is different from succeeding as an individual, and psychology scholars agree that it requires more, or even other, skills than high cognitive abilities to conduct a well-functioning team. Woolley et al. (2010) find that group intelligence is not simply the aggregate of individual group members' intelligence, and Prati et al. (2003) show that emotional, rather than cognitive, intelligence is of crucial importance for team cohesion. The optimal composition of the board of directors, as a team having to agree on critical topics and take decisions of utmost importance, thus, might depend on abilities of its members other than cognitive skills, in order to make for a well-functioning board.

We find, and show empirically, that boards with higher abilities do design compensation contracts differently. Specifically, we partition the sample into boards with below-median cognitive (non-cognitive) abilities and those with above-median cognitive (non-cognitive) abilities and examine a CEO's pay's co-movement with firm performance. All directors in our sample have above-average scores, on average, in both cognitive and non-cognitive skills when compared with the total population. Still, the differential effect between the lower and upper halves of the population of board members is statistically significant.

With regard to board members' cognitive abilities, we find CEO pay to be more sensitive to firm performance. That is, lower levels of pay are found in firms that are performing poorly. With regard to board members' non-cognitive abilities, we find mixed results that are dependent on firm performance. Along the performance distribution, we find CEO pay to be more sensitive to firm performance when firms are performing extremely well or extremely poorly in the case of boards with high non-cognitive abilities. For the mid-part of the performance distribution, we find no significant effect of boards' non-cognitive abilities on CEO pay-performance sensitivity.

3.3 Essay 3: Paywatch—Directors' skin in the game and executive compensation

The third essay, which also looks at the agency problem through the corporate governance lens, examines the board of directors' motivation to monitor a manager effectively, and how this affects the level and structure of CEO pay.

Masulis and Mobbs (2014) show that board members rank the firms they monitor by personal preferences and allocate their effort exertion accordingly. It is not uncommon for directors to hold multiple directorships, and directors' attention and time are limited resources (Falato et al., 2014). Therefore, boards—and other monitoring bodies—make informed decisions about which companies in their portfolio to monitor the closest. In line with this, Fich et al. (2015) establish that measuring the monitoring target's relative significance to the monitoring body eradicates potential noise in incentive measures. Generally, any form of effort exertion is predicted to increase with incentive strength, i.e., the extent with which the individual's wealth varies with the outcome of her effort exerted (Jensen & Meckling, 1976). This also holds for the board of directors in the context of monitoring the management (Cornelli, Kominek, & Ljungqvist, 2013). However, in the context of CEO compensation, the story can go both ways: on the one hand,

more efficient contracts lead to a compensation scheme that is more closely aligned with shareholders' interest, and might result in lower levels of CEO pay due to reduced excess pay (Bebchuk & Fried, 2004). On the other hand, better monitors increase the pressure on a CEO, with a higher risk of dismissal and greater disutility (cost of effort). This might lead to higher levels of observed CEO pay, as the CEO demands to be compensated for these additional strains (Cronqvist & Fahlenbrach, 2013).

We capture a board's motivation to exert monitoring effort as the average proportion of board members' personal wealth invested in the monitoring target (i.e., their *skin in the game*) and show empirically that more wealth vested is related to lower levels of CEO compensation, better firm performance, and greater CEO wealth-performance sensitivity. Our measure differs from conventional ownership fraction measures in one important way: we scale the value invested in the monitoring target by individuals' personal wealth, and not by the value of the firm. This captures directly the significance of the monitoring target to the board member, without diluting it by potential mechanical relations between firm size, board members' ownership fraction and CEO pay.

Specifically, we find that the mean CEO in our sample earns about 4% less when a board has 10 percentage points more of their wealth vested in the monitoring target. Further, our results continue to hold in a setting of exogenously driven variation in the motivation measure. Among busy directors, we distinguish between the ones whose portfolio experiences a shock and those whose portfolio does not. A shock is identified as an extraordinarily large change in market value in a director's portfolio firm that is unrelated to the monitoring target, which, ultimately, affects the denominator in the director's skin in the game measure. Using this setting, we control for any decisions a board member might make simultaneously regarding their proportion of wealth invested in the monitoring target and CEO compensation levels. Finally, we find that those firms, whose boards have more skin in the game, also outperform their counterfactuals.

List of references

- Abernethy, M. A., Kuang, Y. F., & Qin, B. (2015). The influence of CEO power on compensation contract design. *The Accounting Review*, *90*(4), 1265–1306.
- Adams, R. B. (2017). Boards, and the directors who sit on them. In B. E. Hermalin & M. S. Weisbach (Eds.), *The Handbook of the Economics of Corporate Governance* (1st ed., Vol. 1). Amsterdam, North-Holland: Elsevier B.V.
- Adams, R. B., Akyol, A. C., & Verwijmeren, P. (2018). Director skill sets. *Journal of Financial Economics*, *130*(3), 641–662.
- Adams, R. B., Almeida, H., & Ferreira, D. (2009). Understanding the relationship between founder-CEOs and firm performance. *Journal of Empirical Finance*, *16*(1), 136–150.
- Adams, R. B., & Ferreira, D. (2009). Women in the boardroom and their impact on governance and performance. *Journal of Financial Economics*, *94*(2), 291–309.
- Adams, R. B., Hermalin, B. E., & Weisbach, M. S. (2010). The role of boards of directors in corporate governance: A conceptual framework and survey. *Journal of Economic Literature*, *48*(1), 58–107.
- Adams, R. B., Keloharju, M., & Knüpfer, S. (2018). Are CEOs born leaders? Lessons from traits of a million individuals. *Journal of Financial Economics*, *130*(2), 392–408.
- Ahern, K. R., & Dittmar, A. K. (2012). The changing of the boards: The impact on firm valuation of mandated female board representation. *The Quarterly Journal of Economics*, *127*, 137–197.
- Akerlof, G. A. (1970). The market for “lemons”: Quality uncertainty and the market mechanism. *The Quarterly Journal of Economics*, *84*(3), 488–500.
- Aktas, N., De Bodt, E., Bollaert, H., & Roll, R. (2016). CEO narcissism and the takeover process: From private initiation to deal completion. *Journal of Financial and Quantitative Analysis*, *51*(1), 113–137.
- Albuquerque, A. (2009). Peer firms in relative performance evaluation. *Journal of Accounting and Economics*, *48*(1), 69–89.
- Ali, A., & Zhang, W. (2015). CEO tenure and earnings management. *Journal of Accounting and Economics*, *59*(1), 60–79.
- Allgood, S., Farrell, K. A., & Kamal, R. (2012). Do boards know when they hire a CEO that is a good match? Evidence from initial compensation. *Journal of Corporate Finance*, *18*(5), 1051–1064.
- Almazan, A., & Suarez, J. (2003). Entrenchment and severance pay in optimal governance structures. *The Journal of Finance*, *58*(2), 519–547.
- Amihud, Y., & Lev, B. (1981). Risk reduction as a managerial motive for conglomerate mergers. *Bell Journal of Economics*, *12*(2), 605–617.
- Armstrong, C. S., Larcker, D. F., Ormazabal, G., & Taylor, D. J. (2013). The relation between equity incentives and misreporting: The role of risk-taking incentives. *Journal of Financial Economics*, *109*(2), 327–350.
- Arrow, K. J. (1964). The role of securities in the optimal allocation of risk-bearing. *The Review of Economic Studies*, *31*(2), 91–96.

- Baker, G. P., & Hall, B. J. (2004). CEO incentives and firm size. *Journal of Labor Economics*, 22(4), 767–798.
- Baker, M., Pan, X., & Wurgler, J. (2012). The effect of reference point prices on mergers and acquisitions. *Journal of Financial Economics*, 106(1), 49–71.
- Baker, M., & Wurgler, J. (2013). Behavioral corporate finance: An updated survey. In *Handbook of the Economics of Finance* (Vol. 2). Elsevier B.V.
- Bator, F. M. (1958). The anatomy of market failure. *Quarterly Journal of Economics*, 72(3), 351–379.
- Bebchuk, L. A., & Fried, J. M. (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives*, 17(3), 71–92.
- Bebchuk, L. A., & Fried, J. M. (2004). *Pay without performance: The unfulfilled promise of executive compensation*. Cambridge, MA: Harvard University Press.
- Bebchuk, L. A., Fried, J. M., & Walker, D. I. (2002). Managerial power and rent extraction in the design of executive compensation. In *Harvard Law School John M. Olin Center for Law, Economics, and Business Discussion Paper Series* (Vol. 366).
- Bebchuk, L. A., Grinstein, Y., & Peyer, U. (2010). Lucky CEOs and lucky directors. *The Journal of Finance*, 65(6), 2363–2401.
- Becker, B. (2006). Wealth and executive compensation. *The Journal of Finance*, 61(1), 379–397.
- Becker, G. S. (1968). Crime and punishment: An economic approach. In *The economic dimensions of crime*. London, UK: Palgrave Macmillan.
- Bénabou, R., & Tirole, J. (2016). Bonus culture: Competitive pay, screening, and multitasking. *Journal of Political Economy*, 124(2), 305–370.
- Benmelech, E., & Frydman, C. (2015). Military CEOs. *Journal of Financial Economics*, 117(1), 43–59.
- Bennedsen, M., Pérez-González, F., & Wolfenzon, D. (2020). Do CEOs matter? Evidence from hospitalization events. *The Journal of Finance*, 75(4), 1877–1911.
- Bennett, B., Bettis, J. C., Gopalan, R., & Milbourn, T. (2017). Compensation goals and firm performance. *Journal of Financial Economics*, 124(2), 307–330.
- Bergstresser, D., & Philippon, T. (2006). CEO incentives and earnings management. *Journal of Financial Economics*, 80(3), 511–529.
- Berle, A. A., & Means, G. C. (1932). *The modern corporation and private property*. New York, NY: Routledge.
- Bertrand, M., & Mullainathan, S. (2001). Are CEOs rewarded for luck? The ones without principals are. *Quarterly Journal of Economics*, (August), 901–932.
- Bertrand, M., & Mullainathan, S. (2003). Enjoying the quiet life? Corporate governance and managerial preferences. *Journal of Political Economy*, 111(5), 1043–1075.
- Bertrand, M., & Schoar, A. (2003). Managing with style: The effect of managers on firm policies. *The Quarterly Journal of Economics*, 118(4), 1169–1208.
- Bettis, J. C., Bizjak, J. M., & Lemmon, M. (2001). Managerial ownership, incentive contracting, and the use of zero-cost collars and equity swaps by corporate insiders. *Journal of Financial and Quantitative Analysis*, 36(3), 345–370.

- Bizjak, J., Lemmon, M., & Whitby, R. (2009). Option backdating and board interlocks. *The Review of Financial Studies*, 22(11), 4821–4847.
- Black, F. (1986). Noise. *The Journal of Finance*, 41(3), 528–543.
- Bolton, P., Scheinkman, J., & Xiong, W. (2006). Executive compensation and short-termist behaviour in speculative markets. *Review of Economic Studies*, 73(3), 577–610.
- Boone, A. L., Casares Field, L., Karpoff, J. M., & Raheja, C. G. (2007). The determinants of corporate board size and composition: An empirical analysis. *Journal of Financial Economics*, 85(1), 66–101.
- Boyd, B. K. (1994). Board control and CEO compensation. *Strategic Management Journal*, 15(5), 335–344.
- Brickley, J. A., Lease, R. C., & Smith, C. W. J. (1988). Ownership structure and voting on anti-takeover amendments. *Journal of Financial Economics*, 20, 267–291.
- Brisley, N. (2006). Executive stock options: Early exercise provisions and risk-taking incentives. *The Journal of Finance*, 61(5), 2487–2509.
- Brown, S., Lu, Y., Ray, S., & Teo, M. (2018). Sensation seeking and hedge funds. *The Journal of Finance*, 73(6), 2871–2914.
- Cadman, B., & Sunder, J. (2014). Investor horizon and CEO horizon incentives. *The Accounting Review*, 89(4), 1299–1328.
- Cain, M. D., & McKeon, S. B. (2016). CEO personal risk-taking and corporate policies. *Journal of Financial and Quantitative Analysis*, 51(1), 139–164.
- Campbell, T. C., Gallmeyer, M., Johnson, S. A., Rutherford, J., & Stanley, B. W. (2011). CEO optimism and forced turnover. *Journal of Financial Economics*, 101(3), 695–712.
- Carter, D., Simkins, B. J., & Simpson, W. G. (2003). Corporate governance, board diversity and firm value. *The Financial Review*, 38, 33–53.
- Cassell, C. A., Huang, S. X., Sanchez, J. M., & Stuart, M. D. (2012). Seeking safety: The relation between CEO inside debt holdings and the riskiness of firm investment and financial policies. *Journal of Financial Economics*, 103(3), 588–610.
- Chen, X., Cheng, Q., & Dai, Z. (2013). Family ownership and CEO turnovers. *Contemporary Accounting Research*, 30(3), 1166–1190.
- Cheng, I. H., Hong, H., & Scheinkman, J. A. (2015). Yesterday's heroes: Compensation and risk at financial firms. In *The Journal of Finance* (Vol. 70).
- Clifford, C. P., & Lindsey, L. (2016). Blockholder heterogeneity, CEO compensation, and firm performance. *Journal of Financial and Quantitative Analysis*, 51(5), 1491–1520.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre- and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757–787.
- Coles, J. L., Daniel, N. D., & Naveen, L. (2006). Managerial incentives and risk-taking. *Journal of Financial Economics*, 79(2), 431–468.
- Coles, J. L., & Li, Z. (Frank). (2020). Managerial attributes, incentives, and performance. *The Review of Corporate Finance Studies*, 9, 256–301.
- Core, J. E., & Guay, W. R. (1999). The use of equity grants to manage optimal equity incentive levels. *Journal of Accounting and Economics*, 28(2), 151–184.

- Core, J. E., Holthausen, R. W., & Larcker, D. F. (1999). Corporate governance, chief executive officer compensation, and firm performance. *Journal of Financial Economics*, 51(3), 371–406.
- Cornelli, F., Kominek, Z., & Ljungqvist, A. (2013). Monitoring managers: Does it matter? *The Journal of Finance*, 68(2), 431–481.
- Cronqvist, H., & Fahlenbrach, R. (2013). CEO contract design: How do strong principals do it? *Journal of Financial Economics*, 108(3), 659–674.
- Cronqvist, H., Makhija, A. K., & Yonker, S. E. (2012). Behavioral consistency in corporate finance: CEO personal and corporate leverage. *Journal of Financial Economics*, 103(1), 20–40.
- Cronqvist, H., & Nilsson, M. (2003). Agency costs of controlling minority shareholders. *Journal of Financial and Quantitative Analysis*, 38(4), 695–719.
- Cronqvist, H., & Yu, F. (2017). Shaped by their daughters: Executives, female socialization, and corporate social responsibility. *Journal of Financial Economics*, 126(3), 543–562.
- Custódio, C., Ferreira, M. A., & Matos, P. (2013). Generalists versus specialists: Lifetime work experience and chief executive officer pay. *Journal of Financial Economics*, 108(2), 471–492.
- Demsetz, H., & Lehn, K. (1985). The Structure of Corporate Ownership: Causes and Consequences. *Journal of Political Economy*, 93(6), 1155–1177.
- Dicks, D. L. (2012). Executive compensation and the role for corporate governance regulation. *The Review of Financial Studies*, 25(6), 1971–2004.
- Dittmann, I., Maug, E., & Spalt, O. G. (2013). Indexing executive compensation contracts. *The Review of Financial Studies*, 26(12), 3182–3224.
- Dittmann, I., Yu, K. C., & Zhang, D. (2017). How important are risk-taking incentives in executive compensation? *Review of Finance*, 21(5), 1805–1846.
- Edmans, A., & Gabaix, X. (2011). The effect of risk on the CEO market. *The Review of Financial Studies*, 24(8), 2822–2863.
- Edmans, A., & Gabaix, X. (2016). Executive compensation: A modern primer. *Journal of Economic Literature*, 54(4), 1232–1287.
- Edmans, A., Gabaix, X., & Jenter, D. (2017). Executive compensation: A survey of theory and evidence. In B. E. Hermalin & M. S. Weisbach (Eds.), *The Handbook of the Economics of Corporate Governance* (1st ed., Vol. 1). Amsterdam, North-Holland: Elsevier B.V.
- Ehrlich, I. (1973). Participation in illegitimate activities: A theoretical and empirical investigation. *Journal of Political Economy*, 81(3), 521–565.
- Eide, E., Rubin, P. H., & Shepherd, J. M. (2006). Economics of crime. In *Foundations and Trends in Microeconomics* (Vol. 2). Hanover, MA: Now Publishers Inc.
- Eisenberg, T., Sundgren, S., & Wells, M. T. (1998). Larger board size and decreasing firm value in small firms. *Journal of Financial Economics*, 48(1), 35–54.
- Epstein, S. (1979). The stability of behavior: I. On predicting most of the people much of the time. *Journal of Personality and Social Psychology*, 37(7), 1097–1126.
- Falato, A., Kadyrzhanova, D., & Lel, U. (2014). Distracted directors: Does board busyness hurt shareholder value? *Journal of Financial Economics*, 113(3), 404–426.

- Falato, A., Li, D., & Milbourn, T. (2015). Which skills matter in the market for CEOs? Evidence from pay for CEO credentials. *Management Science*, *61*(12), 2845–2869.
- Faleye, O., Hiotash, R., & Hoitash, U. (2011). The costs of intense board monitoring. *Journal of Financial Economics*, *101*(1), 160–181.
- Fama, E. F. (1980). Agency problems and the theory of the firm. In *Journal Political Economy* (Vol. 88).
- Fee, C. E., & Hadlock, C. J. (2003). Raids, rewards, and reputations in the market for managerial talent. *The Review of Financial Studies*, *16*(4), 1315–1357.
- Fee, C. E., Hadlock, C. J., & Pierce, J. R. (2013). Managers with and without style: Evidence using exogenous variation. *The Review of Financial Studies*, *26*(3), 567–601.
- Ferris, S. P., Jagannathan, M., & Pritchard, A. C. (2003). Too busy to mind the business? Monitoring by directors with multiple board appointments. *The Journal of Finance*, *58*(3), 1087–1111.
- Fich, E. M., Harford, J., & Tran, A. L. (2015). Motivated monitors: The importance of institutional investors' portfolio weights. *Journal of Financial Economics*, *118*(1), 21–48.
- Fich, E. M., & Shivdasani, A. (2006). Are busy boards effective monitors? *The Journal of Finance*, *61*(2), 689–724.
- Field, L., Lowry, M., & Mkrtychyan, A. (2013). Are busy boards detrimental? *Journal of Financial Economics*, *109*(1), 63–82.
- Focke, F., Maug, E., & Niessen-Ruenzi, A. (2017). The impact of firm prestige on executive compensation. *Journal of Financial Economics*, *123*(2), 313–336.
- Gabaix, X., & Landier, A. (2008). Why has CEO pay increased so much? *Quarterly Journal of Economics*, *123*(1), 49–100.
- Garoupa, N. (2003). Behavioural economic analysis of crime: A critical review. *European Journal of Law and Economics*, *11*(3), 131–136.
- Gayle, G. L., & Miller, R. A. (2009). Has moral hazard become a more important factor in managerial compensation? *American Economic Review*, *99*(5), 1740–1769.
- Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, (February).
- Graham, J. R., Harvey, C. R., & Puri, M. (2013). Managerial attitudes and corporate actions. *Journal of Financial Economics*, *109*(1), 103–121.
- Graham, J. R., Li, S., & Qiu, J. (2012). Managerial attributes and executive compensation. *The Review of Financial Studies*, *25*(1), 144–186.
- Grinstein, Y., & Hribar, P. (2004). CEO compensation and incentives: Evidence from M&A bonuses. *Journal of Financial Economics*, *73*(1), 119–143.
- Grossman, S. J., & Hart, O. D. (1983). An analysis of the principal-agent problem. *Econometrica*, *51*(1), 302–340.
- Güner, A. B., Malmendier, U., & Tate, G. (2008). Financial expertise of directors. *Journal of Financial Economics*, *88*, 323–354.
- Hallock, K. F. (1997). Reciprocally interlocking boards of directors and executive compensation. *Journal of Financial and Quantitative Analysis*, *32*(3), 331–344.

- Hambrick, D. C., & Mason, P. A. (1984). Upper Echelons: The organization as a reflection of its top managers. *The Academy of Management Review*, 9(2), 193–206.
- Harford, J. (1999). Corporate cash reserves and acquisitions. *The Journal of Finance*, 54(6), 1969–1997.
- Harford, J., & Li, K. (2007). Decoupling CEO wealth and firm performance: The case of acquiring CEOs. *The Journal of Finance*, 62(2), 917–949.
- Hartzell, J. C., & Starks, L. T. (2003). Institutional investors and executive compensation. *The Journal of Finance*, 58(6), 2351–2374.
- Healy, P. M. (1985). The effect of bonus schemes on accounting decisions. *Journal of Accounting and Economics*, 7(1–3), 85–107.
- Hermalin, B. E., & Weisbach, M. S. (1998). Endogenously chosen boards of directors and their monitoring of the CEO. *The American Economic Review*, 88(1), 96–118.
- Hermalin, B. E., & Weisbach, M. S. (2001). Boards of directors as an endogenously determined institution: A review of the economic literature. In *National Bureau of Economic Research* (Vol. 3).
- Hermalin, B. E., & Weisbach, M. S. (2012). Information disclosure and corporate governance. *The Journal of Finance*, 67(1), 195–234.
- Herrnstein, R. J., & Murray, C. A. (1994). *The bell-curve: Intelligence and class structure in American life*. Free Press.
- Hillman, A. J., & Dalziel, T. (2003). Boards of directors and firm performance: Integrating agency and resource dependence perspectives. *The Academy of Management Review*, 28(3), 383–396.
- Hirshleifer, D., & Thakor, A. V. (1994). Managerial performance, boards of directors and takeover bidding. *Journal of Corporate Finance*, 1(1), 63–90.
- Holmstrom, B. (1979). Moral hazard and observability. *The Bell Journal of Economics*, 10(1), 74–91.
- Holmstrom, B. (1982). Moral hazard in teams. *The Bell Journal of Economics*, 13(2), 324–340.
- Holmstrom, B., & Milgrom, P. (1987). Aggregation and linearity in the provision of intertemporal incentives. *Econometrica*, 55(2), 303–328.
- Holmstrom, B., & Milgrom, P. (1991). Multitask principal-agent analyses: Incentive contracts, asset ownership, and job design. *Journal of Law, Economics, and Organization*, 7, 24–52.
- Hope, O.-K., & Thomas, W. B. (2008). Managerial empire building and firm disclosure. *Journal of Accounting Research*, 46(3), 591–626.
- Hribar, P., & Yang, H. (2016). CEO overconfidence and management forecasting. *Contemporary Accounting Research*, 33(1), 204–227.
- Humphery-Jenner, M., Lisic, L. L., Nanda, V., & Silveri, S. D. (2016). Executive overconfidence and compensation structure. *Journal of Financial Economics*, 119, 533–558.
- Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.

- Jensen, M. C., & Meckling, W. H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, 3, 305–360.
- Jensen, M. C., & Murphy, K. J. (1990). CEO incentives — It's not how much you pay, but how. *Harvard Business Review*, 3, 138–153.
- Jenter, D., & Kanaan, F. (2015). CEO turnover and relative performance evaluation. *The Journal of Finance*, 70(5), 2155–2184.
- Jenter, D., & Lewellen, K. (2015). CEO preferences and acquisitions. *The Journal of Finance*, 70(6), 2813–2852.
- Jenter, D., & Lewellen, K. (2019). Performance-induced CEO turnover. In *SSRN Electronic Journal*.
- Jongjaroenkamol, P., & Laux, V. (2017). Insider versus outsider CEOs, executive compensation, and accounting manipulation. *Journal of Accounting and Economics*, 63(2–3), 253–261.
- Khanna, P., Jones, C. D., & Boivie, S. (2014). Director human capital, information processing demands, and Board effectiveness. *Journal of Management*, 40(2), 557–585.
- Kim, O., & Verrecchia, R. E. (1994). Market liquidity and volume around earnings announcements. *Journal of Accounting and Economics*, 17(1–2), 41–67.
- Kor, Y. Y., & Sundaramurthy, C. (2009). Experience-based human capital and social capital of outside directors. *Journal of Management*, 35(4), 981–1006.
- Kuhnen, C. M., & Zwiebel, J. H. (2008). Executive pay, hidden compensation and managerial Entrenchment. In *SSRN Electronic Journal*.
- Lambert, R. A., Larcker, D. F., & Weigelt, K. (1993). The structure of organizational incentives. *Administrative Science Quarterly*, 38(3), 438–461.
- Lambert, R. A., Leuz, C., & Verrecchia, R. E. (2007). Accounting information, disclosure, and the cost of capital. *Journal of Accounting Research*, 45(2), 385–420.
- Li, Z., & Wang, L. (2016). Executive compensation incentives contingent on long-term accounting performance. *The Review of Financial Studies*, 29(6), 1586–1633.
- Lie, E. (2005). On the timing of CEO stock option awards. *Management Science*, 51(5), 802–812.
- Liu, C., Low, A., Masulis, R. W., & Zhang, L. (2020). Monitoring the monitor: Distracted institutional investors and board governance. *The Review of Financial Studies*, 61(2), 1–43.
- Lu, W., & Melin, A. (2016). The best and worst countries to be a rich CEO.
- Main, B. G. M., O'Reilly III, C. A., & Wade, J. (1995). The CEO, the board of directors and executive compensation: Economic and psychological perspectives. *Industrial and Corporate Change*, 4(2), 312–320.
- Malmendier, U., & Tate, G. (2005). CEO overconfidence and corporate investment. *The Journal of Finance*, 60(6), 2661–2700.
- Malmendier, U., & Tate, G. (2008). Who makes acquisitions? CEO overconfidence and the market's reaction. *Journal of Financial Economics*, 89(1), 20–43.
- Malmendier, U., & Tate, G. (2009). Superstar CEOs. *The Quarterly Journal of Economics*, (November), 1593–1638.

- Malmendier, U., & Tate, G. (2015). Behavioral CEOs: The role of managerial overconfidence. *Journal of Economic Perspectives*, 29(4), 37–60. American Economic Association.
- Malmendier, U., Tate, G., & Yan, J. (2011). Overconfidence and early-life experiences: The effect of managerial traits on corporate financial policies. *The Journal of Finance*, 66(5), 1687–1733.
- Manso, G. (2011). Motivating innovation. *The Journal of Finance*, 66(5), 1823–1860.
- March, J. G., & Shapira, Z. (1987). Managerial perspectives on risk and risk taking. *Management Science*, 33(11), 1404–1418.
- Marris, R. (1963). A model of the “managerial” enterprise. *The Quarterly Journal of Economics*, 77(2), 185–209.
- Masulis, R. W., & Mobbs, S. (2014). Independent director incentives: Where do talented directors spend their limited time and energy? *Journal of Financial Economics*, 111(2), 406–429.
- Maug, E. (1997). Boards of directors and capital structure: Alternative forms of corporate restructuring. *Journal of Corporate Finance*, 3(2), 113–139.
- Mishel, L., & Wolfe, J. (2019). CEO compensation has grown 940% since 1978.
- Morck, R., Shleifer, A., & Vishny, R. W. (1988). Management ownership and market valuation: and empirical analysis. *Journal of Financial Economics*, 20, 293–315.
- Morgenstern, O., & von Neumann, J. (1953). *Theory of games and economic behavior*. Princeton university press.
- Morse, A., Nanda, V., & Seru, A. (2011). Are incentive contracts rigged by powerful CEOs? *The Journal of Finance*, 66(5), 1779–1821.
- Murphy, K. J. (2013). Executive compensation: Where we are, and how we got there. In *Handbook of the Economics of Finance* (Vol. 2). Elsevier B.V.
- Muth, J. F. (1961). Rational expectations and the theory of price movements. *Econometrica*, 29(3), 315–335.
- Nguyen, B. D., & Nielsen, K. M. (2010). The value of independent directors: Evidence from sudden deaths. *Journal of Financial Economics*, 98(3), 550–567.
- O’Reilly III, C. A., Doerr, B., Caldwell, D. F., & Chatman, J. A. (2014). Narcissistic CEOs and executive compensation. *Leadership Quarterly*, 25(2), 218–231.
- Otto, C. A. (2014). CEO optimism and incentive compensation. *Journal of Financial Economics*, 114(2), 366–404.
- Ou, A. Y., Waldman, D. A., & Peterson, S. J. (2018). Do humble CEOs matter? An examination of CEO humility and firm outcomes. *Journal of Management*, 44(3), 1147–1173.
- Pan, Y. (2017). The determinants and impact of executive-firm matches. *Management Science*, 63(1), 185–200.
- Peng, L., & Röell, A. (2008a). Executive pay and shareholder litigation. *Review of Finance*, 12(1), 141–184.
- Peng, L., & Röell, A. (2008b). Manipulation and equity-based compensation. *American Economic Review*, 98(2), 285–290.

- Peng, L., & Röell, A. (2014). Managerial incentives and stock price manipulation. *The Journal of Finance*, 69(2), 487–526.
- Prati, L. M., Douglas, C., Ferris, G. R., Ammeter, A. P., & Buckley, M. R. (2003). Emotional intelligence, leadership effectiveness, and team outcomes. *The International Journal of Organizational Analysis*, 11(1), 21–40.
- Rapisarda, B. A. (2002). The impact of emotional intelligence on work team cohesiveness and performance. *The International Journal of Organizational Analysis*, 10(4), 363–379.
- Ross, S. A. (1973). The economic theory of agency: The principal's problem. *The American Economic Review*, 63(2), 134–139.
- Salvador, G. (2020). S&P 500 CEOs received average of \$14.8 Million in Total Compensation in 2019.
- Schrand, C. M., & Zechman, S. L. C. (2012). Executive overconfidence and the slippery slope to financial misreporting. *Journal of Accounting and Economics*, 53(1–2), 311–329.
- Serfling, M. A. (2014). CEO age and the riskiness of corporate policies. *Journal of Corporate Finance*, 25, 251–273.
- Shleifer, A., & Vishny, R. W. (1986). Large Shareholders and Corporate Control. In *Source: Journal of Political Economy* (Vol. 94).
- Shleifer, A., & Vishny, R. W. (1989). Management entrenchment. The case of manager-specific investments. *Journal of Financial Economics*, 25, 123–139.
- Simon, H. A. (1955). A behavioral model of rational choice. *The Quarterly Journal of Economics*, 69(1), 99–118.
- Smith, C. W., & Stulz, R. M. (1985). The determinants of firms' hedging policies. *The Journal of Financial and Quantitative Analysis*, 20(4), 391.
- Spearman, C. (1927). *The abilities of man*. New York, NY: Macmillan.
- Sunder, J., Sunder, S. V., & Zhang, J. (2017). Pilot CEOs and corporate innovation. *Journal of Financial Economics*, 123(1), 209–224.
- Terviö, M. (2008). The difference that CEOs make: An assignment model approach. *American Economic Review*, 98(3), 642–668.
- Thaler, R. H. (2016, July 1). Behavioral economics: Past, present, and future. *American Economic Review*, Vol. 106, pp. 1577–1600. American Economic Association.
- Tosi, H. L., Misangyi, V. F., Fanelli, A., Waldman, D. A., & Yammarino, F. J. (2004). CEO charisma, compensation, and firm performance. *Leadership Quarterly*, 15(3), 405–420.
- Wahid, A. S., & Welch, K. (2019). Professional Directors and Governance Quality. *Contemporary Accounting Research*, 36(4), 2238–2282.
- Wai, J. (2014). Investigating the world's rich and powerful: Education, cognitive ability, and sex differences. *Intelligence*, 46(1), 54–72.
- Woolley, A. W., Aggarwal, I., & Malone, T. W. (2015). Collective intelligence and group performance. *Current Directions in Psychological Science*, 24(6), 420–424.
- Woolley, A. W., Chabris, C. F., Pentland, A., Hashmi, N., & Malone, T. W. (2010). Evidence for a collective intelligence factor in the performance of human groups. *Science*, 330(6004), 686–688.

- Wu, S., Levitas, E., & Priem, R. L. (2005). CEO tenure and company invention under differing levels of technological dynamism. *Academy of Management Journal*, 48(5), 859–873.
- Yermack, D. (1997). Good Timing: CEO stock option awards and company news announcements. *The Journal of Finance*, LII(2), 449–476.
- Zerni, M., Kallunki, J.-P., & Nilsson, H. (2010). The entrenchment problem, corporate governance mechanisms, and firm value. *Contemporary Accounting Research*, 27(4), 1169–1206.
- Zhu, J. Y. (2018). Myopic agency. *Review of Economic Studies*, 85(2), 1352–1388.

Original essays

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