The Impact of CEO Compensation on Firm Risk: Evidence from Indian Firms.

Student: Ruud Wilmink
Student nr: 2408511
E-mail: r.s.wilmink@student.utwente.nl
Supervisors: Prof. Dr. R. Kabir
Dr. X. Huang

Faculty: Behavioral, Management and Social Sciences (BMS)
Master: Business Administration
Track: Financial Management
Date: 05-06-2021

Acknowledgements

After finalizing this thesis my master in Business Administration (Msc) with the specialization in Financial Management at the University of Twente will come to an end. In this section I would like to thank a number of people, and speak a word of gratitude. To begin with, I would like to thank Prof. Dr. R. Kabir of the department of Finance & Accounting from the University of Twente. During the writing process of my thesis Prof. Dr. R. Kabir was my first supervisor and has provided me with valuable feedback several times. Due to his knowledge and constructive feedback it was possible to improve my work, skills and knowledge. Secondly, I would like to thank my second supervisor which was Dr. X. Huang. She is also a member of the department of Finance & Accounting from the University of Twente, and has provided me also with valuable feedback during the writing process. Because of her constructive feedback I was able to improve the quality of my work and expand my thesis into what it has finally become. Additionally, I would like to thank all the professors and University staff who were involved in my master program. Finally, I would like to speak a special word of gratitude towards my family, girlfriend and friends, without their advice on several occasions I would not have been able to deliver such a great result.

Ruud Wilmink,

June 2021

Abstract

The pay-risk relationship has received a lot of attention in the past decades. In fact, many scholars have researched the relationship between several components of CEO compensation and firm risk. However, these results may not apply to an emerging market context, because emerging markets differ in many aspects from developed markets. In addition, a lot of existing research into the pay-risk relationship has focused solely on the financial services industry, while the effect might also differ across industries. Therefore, this study investigates the pay-risk relationship in India, and whether the relationship is different across industries. To test the effect, ordinary least squares (OLS) regressions were performed with data from 86 Indian firms listed at the S&P BSE500 for the period 2014 – 2019. This study provides robust results of a significant relationship between CEO compensation and firm risk in India. Additionally, a robust significant relationship is found between CEO compensation and firm risk in labor-intensive industries, while there is no robust significant relationship found in capital-intensive industries. Furthermore, this study contributes to the existing literature by examining the pay-risk relationship across industries in an emerging market context.

Keywords: CEO pay, CEO compensation, Executive compensation, Firm risk, Risk-taking behavior, Pay-risk relationship, Corporate governance, Industry effect, India

Contents

1. Introduction

Researchers have been interested in the relationship between CEO compensation and firm risk for a long time. Originally, CEO compensation packages have been designed to maximize shareholder value, and align the interests from executives with those of the shareholders.
Because, in order to improve shareholder value, risk-averse executives need to take more risk than they naturally desire (Eisenhardt, 1989; Mehran, 1995; Smith & Watts, 1992). In fact, many scholars argue that compensation can motivate Chief Executive Officers (CEO's) to make more risky moves. To illustrate, larger compensation packages can motivate CEO's to make larger investments, employ higher levels of leverage, and encourage cash holdings, which may eventually lead to more volatile stock prices. (Coles, Daniel, & Naveen, 2006; Guo, Jalal, & Khaksari, 2015; Liu & Mauer, 2011). Many studies have focused on developed markets (Abrokwah, Hanig, & Schaffer, 2018; Coles et al., 2006; Guo et al., 2015; Hagendorff & Vallascas, 2011; Iqbal & Vähämaa, 2019; Liu & Mauer, 2011), instead of emerging markets. Developed markets are advanced economies with developed capital markets, large market capitalizations, and high levels of per capita income. Whereas, emerging markets are markets with less mature capital markets, which find themselves in a process of rapid growth and development.

A notorious example of an emerging market is India. In India CEO compensation is generally comprised out of basic salary, perquisites, other allowances, performance bonuses, commissions, and retirement benefits (Jaiswall & Bhattacharyya, 2016; Parthasarathy, Menon, & Bhattacherjee, 2006). Many components of CEO compensation do not differ from those in developed markets. For example, all the compensation components that were just mentioned are also regularly awarded to CEO's in developed markets. However, according to Jaiswall and Bhattacharyya (2016), when compared to developed markets stock options are not a common feature in total CEO compensation in India. In fact, less than 15% of S&P BSE500 firms grant stock options to their executives, and even when they do, the monetary value is usually very small (Balasubramanian, Black, & Khanna, 2010).

Indian firms also differ from firms in developed markets with respect to their corporate governance structures. To illustrate, India's corporate governance system is hybrid, and contains both elements from common law countries as well as code law countries (Sarkar & Sarkar, 2000). Furthermore, corporate governance norms and compliance by listed firms has been improved by the Securities and Exchange Board (SEBI) of India, but enforcement levels remain low (La Porta, Lopez-de-Silanes, Shleifer, Vishny, 2000). Because, firms are rarely penalized for breaching the corporate governance rules (Balasubramanian et al., 2010). Additionally, when compared to developed markets, firm ownership tends to be concentrated in the hands of either families or business groups in India (Jaiswall & Bhattacharyya, 2016). Accordingly, most board members are often related to the founder, which results in more influence over the pay setting process for the founders (Ghosh, 2006). As a result, India offers an interesting opportunity to explore the pay-risk relationship further in an emerging market context.

In similar fashion, several studies have focused on financial institutions (Guo et al., 2015; Hagendorff & Vallascas, 2011; Iqbal & Vähämaa, 2019), while compensation types can also differ across industries. For example, Abrokwah, Hanig, and Schaffer (2018) argue that the relationship between several compensation types and firm risk is different across industries. Possible explanations for these differences are industry-specific characteristics, shifting degrees of labor and capital-intensity across industries. Therefore, the objective of this thesis is to investigate the effect of CEO compensation on firm risk across industries in an emerging market such as India. Therefore, the central research question is: "What is the effect of CEO compensation on firm risk in different industries for publicly listed firms in India?". This thesis will contribute to the existing literature in several ways. Firstly, this thesis will add knowledge to the field of compensation and corporate governance studies by investigating the effect of CEO compensation on firm risk in an emerging market context. Secondly, this thesis will provide more insights into the relationship between CEO compensation and firm risk across industries.

The rest of this thesis is organized as follows. Chapter 2 will present the theoretical framework, in which the academic literature of CEO compensation and firm risk is reviewed. Chapter 3 will describe various methods that have been used in prior research to analyze the pay-risk relationship, and how the pay-risk relationship in this study will be analyzed. Chapter 4 will present the summary statistics and the results of the analysis. Finally, chapter 5 will present the conclusion based on the results, and the limitations of this study with the recommendations for future researchers.

2. Theoretical Framework

This chapter will provide a thorough description of the theoretical framework which will be used in this study. At first, the first three section's will present several theories about CEO compensation and firm risk. Secondly, section 4 will explain the various components of CEO compensation. Thirdly, section 5 will provide an explanation of CEO compensation in an emerging market context. Fourthly, section 6 will provide empirical evidence of the pay-risk relationship. Fifthly, section 7 will describe the why the effect of CEO compensation on firm risk might differ across industries, and section 8 presents empirical evidence of the pay-risk relationship across industries. Finally, in section 9 the hypotheses will be developed.

2.1 Agency Theory

In the academic literature agency theory is a well-known theory. Agency theory is concerned with the separation of ownership and control between shareholders and managers. In this context, shareholders are risk-neutral principals who commission work to risk-averse self-interested managers (Jensen, & Meckling, 1976). Shareholders are considered to be risk-neutral because they can reduce their exposure to risk by diversifying their investments. Managers on the other hand are considered to be risk-averse because they cannot diversify their employment or compensation (Eisenhardt, 1989; Mehran, 1995; Smith & Watts, 1992). According to Eisenhardt (1989), two types of agency problems can arise in this relationship. Firstly, agency problems can arise when the interests of shareholders are in conflict with those of the managers. For example, it is very difficult or expensive for shareholders to monitor what managers are actually doing, and check if they behave appropriately or not. Secondly, risk-sharing problems can arise when shareholders have a different view towards risk than managers. As a result, shareholders will prefer different actions than managers on how to deal with certain risks (Eisenhardt, 1989; Jensen & Meckling, 1976).

In order to mitigate these kind of problems a contract between both parties should be designed. According to Jensen and Meckling (1976), shareholders can motivate managers to make more risky moves, and act in their interest by incorporating incentives in these contracts. However, it can be difficult for shareholders to provide managers with the right incentives, because the interests of both shareholders and managers will always diverge in some way. According to Smith and Watts (1992) an optimal contract can be designed between both parties, but the design depends on whether the shareholders are able to check the actions of the managers or not. If shareholders are able to check the managers actions, the optimal contract will include a fixed salary and penalties for non-desirable actions. However, when shareholders are not able to check the managers actions, the optimal contract will include a share of the outcome, such as stock options, and restricted stock grants, to motivate managers to achieve the shareholders goals (Eisenhardt, 1989; Jensen & Meckling, 1976; Smith & Watts, 1992). The risk exposure of both parties depend on the situation, because when shareholders are able to actively monitor managers, the risk is carried by the risk-neutral shareholders. On the contrary, shareholders transfer part of their risk exposure to the managers when managers are compensated with a share of the outcome.

Nevertheless, numerous scholars argue that traditional agency models do not account for many aspects, and are therefore incomplete. As a result, these scholars developed new theories, which include additional dimensions in order to improve explanatory power. These theories will be discussed in the next sections.

2.2 Managerial Power Theory

Traditional agency models state that agency problems arise as a result of managerial power or rent extraction. Consequently, Bebchuk, Fried, and Walker (2002) developed the managerial power theory, because they stated that CEO compensation is often not determined by the traditional mechanisms: (1) the arm's length model of boards, (2) the power of market forces, and (3) the power of shareholders. For example, CEO compensation is quite often not determined by the arm's length model of boards, but by executives who can influence this process significantly. Additionally, market forces are quite often not strong enough to contain executives from using their influence to set compensation and to extract rents (Bebchuk, Fried, Walker, 2002; Edmans, Gabaix, Jenter, 2017).

Managerial power can play an important role in the determination of a CEO's compensation. Bebchuk and Fried (2003) argue that CEO compensation can be higher and less volatile in firms with more powerful managers. There are several reasons why managers can obtain more power. Firstly, managers can obtain more power when the board of directors is weak or ineffectual in relationship to the CEO. As an example, Armstrong, Ittner, and Larcker (2012) demonstrate that busier board members, inside lead directors, and dual class voting shares result into weaker corporate governance and ultimately higher CEO compensation. Additionally, van Essen, Otten, and Carberry (2015) find that board size is positively associated with CEO compensation, and that large boards can be ineffective in constraining managerial power, because larger boards require more time and effort in reaching consensus, and often face internal coordination and communication issues. Moreover, when a CEO serves on the board it weakens the monitoring functions of the board, and usually results in higher compensation packages for the CEO, because while serving on the board CEO's can influence other board members in determining CEO compensation (Li & Roberts, 2017; Reddy, Abidin, & You 2015).

Secondly, managers are expected to extract more rents when there are no external block holders. In fact, external block holders monitor managers more closely, which will result in a reduction of rent extraction by managers (Bebchuk & Fried, 2003). For example, van Essen et al. (2015) show that large block holders limit the rent extraction by CEO's, because these investors have large investment stakes, and protect their interests through their voting power, and informal communication with management. In contrast to studies performed in the U.S. or U.K., Reddy, Abidin, and You (2015) find that block holders in New Zealand are entrenched and do not monitor the CEO appropriately, because they are interested in personal gains and work with the CEO's to have positive accounting-based measures.

Thirdly, according to Bebchuk and Fried (2003) institutional investors monitor both the CEO and the board more intensively, because institutional investors have an obligation to their investors to improve their returns. Therefore, managers will be less tempted to extract rents when institutional investors are present. To illustrate, Croci, Gonenc, and Ozkan (2012) provide partial empirical evidence that institutional investors counteract the effect of family-control on the level of CEO compensation, and increase the level of pay. In the presence of institutional investors CEO's would receive a higher fraction of equity-based compensation, indicating that institutional investors motivate CEO's to make more risky moves in order to satisfy shareholders (Croci, Gonenc, & Ozkan 2012). Furthermore, large institutional ownership results in lower levels of CEO compensation (van Essen, Otten, & Carberry 2015). More specifically, large institutional ownership reduces total levels of CEO compensation, and incentive compensation such as stock options and bonus salary (Tosun, 2020), while small institutional owners lower long-term incentive compensation such as pensions, deferred pay and stock incentives. However, similar to ownership concentration, institutional investors are not a good mechanism for monitoring CEO compensation in New Zealand. Because institutional owners are positively associated with CEO compensation, suggesting that more institutional investors lead to higher compensation packages (Reddy et al., 2015).

Lastly, managers tend to increase their rent extraction when they are protected by antitakeover measures. Because certain measures limit shareholder rights above the takeover context, which will result in more rent extraction by managers (Bebchuk & Fried, 2003; Edmans et al., 2017). For instance, Forst, Park, and Wier (2014) find that the adoption of anti-takeover provisions results into rent extraction by CEO's, and higher levels of CEO compensation. Additionally, Mazouz and Zhao (2019) illustrate that CEO's that are protected by anti-takeover measures invest less in R&D, indicating that managers can receive higher compensation without investing in risky projects. Lastly, in a study into a protectionist anti-takeover law (Alstom Decree), Frattaroli (2020) finds that both total and equity-based CEO compensation increases after the introduction of the law, suggesting that anti-takeover laws motivate managers to extract more rents.

In the previous decades the managerial power theory has proven to be highly influential in the field of CEO compensation and corporate governance. Since its development many scholars have used it to create new theories in which compensation is determined by CEO's rather than shareholders. However, the managerial power theory is unable to explain the rapid rise in total levels of CEO compensation since the 1970s in a clear way. Possible explanations for the increase in CEO pay are weak corporate governance structures, but most indicators on corporate governance structures show that they actually have improved and not depreciated since the 1970s (Edmans et al., 2017; Frydman & Jenter, 2010). Another point of criticism on the managerial power theory is that governance structures and the level of CEO compensation may not be causal. Because governance structures are the result of decisions made by executives, directors and shareholders, and these decisions are influenced by unobservable firm and industry characteristics, which could also influence the level of CEO compensation (Edmans et al., 2017). As a result, of these arguments market-based theories have been developed which focus on the power of market forces, and how they affect the determination of CEO compensation.

2.3 Competitive Labor Market Theory

A theory that might be able to explain the rapid rise of CEO compensation since the 1970s is the competitive labor market theory. As mentioned earlier, agency theory describes that CEO compensation is the result of an efficient contract between shareholders and managers to mitigate agency problems and risk sharing problems. While on the other hand, the managerial power theory states that CEO compensation is not determined by an efficient contract between shareholders and managers, but that compensation is determined by CEO's itself when he or she obtains more power. In contrast with both theories, the competitive labor market theory states that CEO pay is the result of a competitive struggle for managerial talent between firms, or an executives outside employment opportunities (Brookman & Thistle, 2013). According to Edmans and Gabaix (2016), CEO's have more influence on firm value than normal employees, and therefore, firms may be willing to pay more salary to more talented CEOs who are better suited to improve firm value when compared to less talented CEO's.

In the past decades labor markets have become more competitive because of several reasons. Firstly, competition in labor markets has increased because of increasing firm sizes and scale effects (Edmans et al., 2017; Frydman & Jenter, 2010). According to Rosen (1981, 1982), CEO talent is more valuable in larger firms, and as a consequence larger firms offer more compensation to more talented executives. Furthermore, more talented CEO's hire more capital and labor (Edmans & Gabaix, 2016), and run firms more efficiently than less talented CEO's (Gabaix & Landier, 2008). As a result, more talented CEO's are matched more often to larger firms in an efficient labor market. Additionally, Himmelberg and Hubbard (2000) mention that a tiny increase in CEO talent can result into a large increase in firm value and compensation because of the scale of operations under the CEO's control.

Secondly, developments of firm characteristics, technologies, and product markets have caused firms to compete more intensely for managerial talent. The demand for managerial talent may have increased because of several reasons. For example, deregulation or entry by foreign firms (Cuñat & Guadalupe, 2009b, 2009a; Hubbard & Palia, 1995), improvements in communication technologies used by executives (Garicano & Rossi-Hansberg, 2005), or because of more volatile business environments (Campbell, Lettau, Malkiel, & Xu, 2001; Dow & Raposo, 2003). In addition, Jung (Henny) and Subramanian (2017) argue that changes in product markets cause firms to compete more intensively for managerial talent, because in changing product markets firms require more managerial talent to increase their productivity. To elaborate, in changing product markets consumers become more responsive to prices when products become more substitutable. Consequently, more productive firms can increase their market share by charging lower prices than less productive firms. Thus, firms require talented CEO's to be as productive as possible in order to increase their market share and profits.

A third explanation for a more competitive labor market is that firm required skills have shifted from firm-specific to general managerial skills. This shift has intensified the competition for managerial talent between firms, because when CEO's have more general transferrable skills, such as the management of a corporation, they are more demanded by all types of firms (Aivazian, Lai, & Rahaman, 2013). Thus, it has provided executives with more external employment options, which has caused compensation levels for executives to rise (Frydman, 2019; Murphy & Zabojnik, 2004; Murphy & Zabojnik, 2006). Finally, stricter corporate governance structures could have initiated a more competitive labor market. Because, according to Hermalin (2005) the job stability of a CEO declines when monitoring intensity increases. In fact, Cziraki and Jenter (2020) mention that nowadays CEO's switch jobs more often, and that replacing a CEO could improve firm performance (Jenter & Lewellen, 2017). Therefore, it is more likely for a firm to replace a CEO in order to improve firm value.

2.4 Components of CEO Compensation

Many scholars have researched CEO compensation in the past. In general, CEO compensation is comprised out of various components. According to Frydman and Jenter (2010) the compensation package awarded to a CEO involves five basic components: annual salary, annual bonus, payouts from long-term incentive plans, stock option grants, and restricted stock grants, these basic components of CEO compensation can be divided into two categories: short-term compensation and long-term incentive plans (Aggarwal, 2008). These compensation types will be discussed in the next sections.

2.4.1 Short-Term Compensation

Short-term compensation includes components which stretch as far as one single fiscal year. For example, from 1936 to the 1950s CEO compensation was primarily comprised out of annual salaries and bonuses. Firstly, annual salary is a fixed cash payment with no incentive component incorporated, and is made evenly throughout the year (Larcker & Tayan, 2015). Moreover, annual salary is set by investigating general industry salary surveys, and analyzing comparable industry peers (Murphy, 1999). However, it may be the case that future increases in salary are determined by the current performance of the firm (Aggarwal, 2008). Thus, annual salary will not motivate CEO's to engage in risky projects, because it is a guaranteed payment which is barely linked to firm performance.

Secondly, annual bonuses represent an additional cash payments which is made to the CEO when the firm is exceeding predetermined targets (Larcker & Tayan, 2015). Typically, bonuses are determined by the structure of the pay-performance relationship, and accounting-based performance measures such as earnings per share, operating income, or sales (Aggarwal, 2008; Angelis & Grinstein, 2015; Murphy, 1999). Usually, bonus plans use more than one measure to determine the bonus (Angelis & Grinstein, 2015; Murphy, 1999), and use at least one relative performance measure to compare the CEO's performance relative to the peer performance (Gong, Li, & Shin, 2011). Moreover, many firms also use non-financial measures, such as qualitative evaluations to assess a CEO's performance to determine whether a bonus will be awarded or not (Murphy, 1999).

Usually bonuses carry a predetermined maximum, and are paid either when performance thresholds or performance standards are met. The space between the threshold and the maximum bonus is called the incentive zone, because CEO's can earn larger bonuses when they perform better (Edmans et al., 2017). Consequently, bonus plans might be a good way to motivate risk-taking behavior by CEO's. Because, in general, bonuses are only awarded when a lower performance threshold is achieved. Thus, motivating the CEO to take on more risk in order to achieve a lower performance threshold (Murphy, 2013). However, according to Murphy (2013), a common issue with bonus plans is that CEO's might be motivated to manipulate their performance. To illustrate, CEO's can gain a lot by manipulating their results in order to exceed the lower threshold, whereas CEO's that perform better than the upper threshold may defer additional performance to the next period (Edmans et al., 2017).

2.4.2 Long-Term Incentive Plans

Long-term compensation includes all types of compensation that stretch beyond a single fiscal year. To illustrate, since the 1960s long-term incentive plans (LTIP's) have become significantly more important (Edmans et al., 2017). LTIP's are bonus plans which are awarded in cash or stocks when a firm performs consistent over a three- to five-year period (Aggarwal, 2008; Frydman & Jenter, 2010; Larcker & Tayan, 2015). Consistent with the optimal contracting approach, long-term incentive plans motivate risk-averse executives to take more risk, in order to improve firm value. For example, Anantharaman and Fang (2012) argue that long-term incentive plans are associated with a higher return on assets (ROE) during the 1980s. Similarly, Huang, Wu, and Liao (2013) suggest that incentive plans can be considered as a tool to motivate executives to invest more in R&D projects.

2.4.2.1 Stock Options

One way of paying out stock to CEO's is by awarding them stock option grants. According to Frydman and Jenter (2010), stock options were merely used until the 1950s, when a tax reform permitted stock option grants to be taxed at a lower rate. However, it was not before 1970 before stock options had a significant impact on total CEO compensation (Edmans et al., 2017). Stock options serve as a potential driver for the massive increase in CEO compensation, because they became very popular during the end of the twentieth century. To illustrate, stock option grants only represented 20% of total CEO compensation in 1992, but increased to 49% later in 2000 (Edmans et al., 2017; Frydman & Jenter, 2010).

Stock option grants give the owner the right to buy shares in the future at a prespecified exercise price for a prespecified period of time (Larcker & Tayan, 2015; Murphy, 2013). Usually, stock options have a life span of ten years, and are non-tradable and will forfeit when an executive leaves the firm before vesting. However, when an executive reaches the end of its tenure, it is common for the vesting period to be accelerated (Murphy, 1999). Stock options are usually granted at-the-money because of favorable accounting treatment, which means that they are granted at the exercise price on the grant date. As an example, stock options are rarely displayed on accounting statements, and will provide firms with ways of paying out deferred compensation to avoid accounting liabilities (Aggarwal, 2008). However, Edmans, Gabaix, and Jenter (2017) state that firms can choose the option valuation models themselves, which results in a significant influence over the valuation process of options. Consequently, many firms undervalue their options (Bartov, Mohanram, & Nissim, 2007), because this will result in a lower economic value to be expensed (Edmans & Gabaix, 2009). This effect is stronger in firms with weak governance systems and high CEO compensation levels (Choudhary, 2011).

Generally, according to Devers, McNamara, Wiseman, and Arrfelt (2008), stock options yield the difference between their exercise price and their current market value, if the current market value of the options is higher than the exercise price the stock options are in-the-money. As a result, options can be an excellent way to mitigate the agency problem, because, option compensation ties a CEO's salary directly to the share price, which results in an incentive for CEO's to increase shareholder value (Frydman & Jenter, 2010). However, Hall and Murphy (2003) mention that the incentive value of options depend on the stock price relative to the exercise price of the option, and that out-of-the-money options provide executives with stronger incentives relative to in-the-money options. Moreover, the incentive value of options will fall when the stock price drops significantly, because in this scenario the executive will find it difficult to realize a potential payoff (Hall & Murphy, 2003). In addition, since 2004 U.S. accounting rules have changed, which resulted in the inclusion of at- and out-of-the-money options in accounting earnings (Edmans et al., 2017), and resulted in a drop in the use of option compensation (Hayes, Lemmon, and Qiu, 2012).

2.4.2.2 Restricted Stock Grants

Another way of paying out stock to an executive is by granting him or her restricted stock. Around 2000 a CEO's salary consisted for a large part out of stock options. However, as a result of a changing legal environment options became less popular in the early part of the 21st century (Hayes et al., 2012). As a consequence, restricted stock options became more popular, because between 2000 and 2014 the use of restricted stock grants increased from 7% to 44%, and the use of options declined from 49% to 16% (Edmans et al., 2017). Moreover, Edmans et al. (2017) mention that many of these new grants are performance-based grants instead of time-vesting grants, because these grants can only be vested when one or more performance criteria are met. Moreover, these criteria are often based on accounting-based performance measures instead of stock-price based measures.

Restricted stock grants are shares with limited transferability that are awarded to executives if they stay loyal to the firm. Typically, restricted stock grants lose their restrictions when a CEO stays loyal to the firm for a specific amount of time, which is usually five years (Aggarwal, 2008; Larcker & Tayan, 2015). According to Murphy (1999), an executive needs to stay loyal to the firm in order to receive shares, because the grant will lose its validity when an executive leaves the firm early. As a result of their restrictions, restricted stock grants have several practical implications. Firstly, in order to profit from the grant executives need to stay loyal to the firm. Secondly, the interests of the shareholders are aligned with those of the CEO by tying a CEO's compensation to the performance of the firm for a specific amount of time (Aggarwal, 2008). Additionally, restricted stock grants receive favorable tax- and accounting treatment. Because executives only pay taxes once the restrictions lift, and the costs are amortized as the grant-date stock price over the period that an executive needs to stay loyal to the firm (Murphy, 1999).

Furthermore, restricted stock grants and stock options share some similarities, but they also differ in a few ways. For example, Devers et al. (2008), mention that in the case of restricted stock grants a fixed number of shares are granted to the holder, usually without an exercise price. Another difference is that the principal-agent problem can be mitigated by using restricted stock grants over stock options, because executives are obliged to hold company stock no matter what the stock price is. Stock options on the other hand, rely on the difference between the exercise price and the current market price (Hall & Murphy, 2003). Moreover, compared to stock options, restricted stock grants have immediate accumulated value, because restricted stock grants remain in-the-money after exercising, and retain accumulated value despite fluctuations in stock prices (Devers, McNamara, Wiseman, & Arrfelt, 2008). Finally, restricted stock grants motivate executives to pursue an appropriate dividend policy. Because options only reward executives when the stock price will increase, and not for increasing total shareholder value, which includes dividends (Hall & Murphy, 2003).

2.4.3 Other Compensation Types

Besides short-term compensation types and long-term incentive plans other compensation types exist. According to Frydman and Jenter (2010), perquisites, pensions and severance pay have received less attention in the academic literature, and were formally known as stealth compensation. Because, comprehensive data about these types of compensation was hard to come by until the SEC increased their disclosure requirements in 2006 (Edmans et al., 2017). Moreover, in the past, these other compensation types have functioned as a mechanism for executives to disguise the total amount of executive compensation (Bebchuk & Fried, 2003, 2006), but can also be an efficient way of contracting managers (Frydman & Jenter, 2010).

2.4.3.1 Perquisites

Perquisites are a wide variety of goods and services, which are purchased or provided by the firm to the executive. For example, the use of corporate jets, club memberships, personal security, and below-market rate loans (Edmans et al., 2017; Frydman & Jenter, 2010; Larcker & Tayan, 2015). According to Yermack (2006a), perquisites can be used to motivate executives to work hard and improve firm value. But, on the contrary, perquisites can also result in decreasing firm value when executives consume more than anticipated by shareholders, and can motivate non desirable unethical behavior. Because regular employees can react negatively to an executive who is receiving perquisites. To illustrate, Yermack (2006a) finds that stock prices of firms will fall by an average of 1.1% after stating that the CEO is using the company aircraft for personal reasons, and that these firms subsequently underperform their peers by an average of 4%. Actually, Aggarwal (2008) points out that this can be the result of executives who hide bad news for shareholders until they have acquired some form of perquisites, suggesting that executives could be more interested in rent extraction than in maximizing the wealth of shareholders. Nevertheless, perk compensation reduced after stricter disclosing requirements implemented by the SEC in 2006, because of improved monitoring and increased disclosure costs. Consequently, other components of CEO compensation increased where perk compensation decreased (Grinstein, Weinbaum, & Yehuda, 2017).

Nevertheless, as mentioned earlier, other compensation types such as perquisites can also be used as an efficient contract. Awarding managers with perks can be efficient when the desired goods and services by the manager are of lower cost for the firm (Fama, 1980), and when they provide managers with tax advantages and help improve managerial productivity (Rajan & Wulf, 2006). Additionally, Rajan and Wulf (2006) present evidence that perks can save time and improve managerial productivity, which will eventually lead to an increase in firm value. To continue, Lee et al. (2018) show that corporate jet use can actually improve firm value, because CEO's of firms with good corporate governance structures are more likely to fly to company subsidiaries and plants. However, in firms with bad corporate governance structures CEO's are more likely to use corporate jets for personal reasons, resulting in a decrease in firm value.

2.4.3.2 Pension Plans

Another form of compensation that has received more attention over the past several years are pension plans. Edmans et al. (2017), describe that pension plans are a form of inside-debt because they are unsecured and unfunded claims against the firm. Actually, inside-debt holdings could help align top executives closer to outside debtholders, because inside-debt holdings are predicted to counteract the risk-taking incentives which are created by inside equity holdings (Anantharaman & Fang, 2012). Moreover, Murphy (1999), mentions that supplemental executive retirement plans (SERPs) are an example of such pension plans. SERP's can take several forms, because the fixed benefits a CEO would receive are based on its tenure, and variable benefits are based on the economic landscape and firm performance. However, unlike standard retirement practices provided to regular employees, most pension plans awarded to top executives do not qualify for tax subsidies, because tax liability shifts largely away from the executive towards the firm. For this reason, it is not clear whether payment through pension plans is more efficient or not (Bebchuk & Fried, 2003, 2006).

Pensions can be a substantial part of CEO compensation. For example, Sundaram and Yermack (2007) study executive pensions in large firms, and mention that annual increases in pension benefits represent about 10% of total CEO compensation. They argue that CEO compensation exists out of both equity (e.g. stock options) and debt incentives (e.g. pensions), and that the balance between these two shifts away from equity towards debt during the CEO's career. Consequently, when pension grows larger, CEO's are inclined to make less risky investments, lengthen the average maturity of debt, or unlever the capital structure in order to reduce the probability of default (Sundaram & Yermack, 2007). Moreover, according to Bebchuk and Jackson (2015), it is important to include the value of pensions in total CEO compensation, because pension plans explain variation in executive pay, and its sensitivity to firm performance. They describe that the median value of a CEO's pension could add up to about 35% of the CEO's total compensation throughout its tenure.

Nonetheless, the use of pension declined after the SEC imposed stricter disclosing requirements in 2006. As an example, Cadman and Vincent (2015) point out that the use of pension plans declined among CEO's from S&P 1500 firms from 48% in 2006 to 36% in 2012.

Yet, pension plans remain a significant part of CEO compensation, because pension plans cover 15% of the average total CEO compensation, and 23% of a CEO's firm-related wealth. Additionally, they find that CEO's with more power receive higher total compensation, indicating that more powerful CEO's are able to extract more rents (Cadman & Vincent, 2015). Similarly, Stefanescu, Wang, Xie, and Yang (2018) show that executive pensions can increase, because of higher annual bonuses one year before a plan freeze and one year before retirement. And that pensions can increase when firms lower their plan discount rates when executives are suitable to retire with lump-sum benefits. These increases represent some form of rent extraction by executives, and occur more often in firms with bad corporate governance structures.

2.4.3.3 Severance Pay

Another form of compensation that is researched more often is severance pay. High level executives often negotiate formal employment agreements, which describe among other things severance arrangements when there is a separation or change in corporate control (Larcker & Tayan, 2015; Murphy, 1999). Moreover, according to Goldman and Huang (2015) firms often grant severance payments which are difficult to observe for outsiders such as last-minute enhancements to pension plans and consulting contracts, and are therefore often associated with rent extraction by managers. Edmans et al. (2017) describes two types of severance pay: (1) golden handshakes, and (2) golden parachutes.

The first component of severance payments are golden handshakes. Golden handshakes are a type of severance pay, which are awarded to retiring or fired CEO's (Edmans et al., 2017). According to Bebchuk and Fried (2006), fired executives receive separation packages, because they underperform. These packages tend to have a value of a multi-year salary (2-3 years). Moreover, Rusticus (2006) shows that severance pay is common and often determined when a CEO is hired, and that the median separation agreement adds up to two years of cash compensation. However, Yermack (2006b) finds that the board of directors often award severance pay on a discretionarily basis, and not under employment contracts. Different factors can contribute to the amount of severance pay a CEO would receive in the event of retirement or termination. For example, Cadman, Campbell, and Klasa (2016) investigate the determinants of severance pay, and show that separation agreements are efficient contracting mechanisms to provide CEO's with partial insurance for their human capital. Moreover, separation agreements can be used to mitigate agency problems by motivating CEO's to increase firm leverage and make more focused acquisitions.

The second component of severance payments are golden parachutes. According to Edmans et al. (2017), golden parachutes are a type of severance pay, which is awarded to CEO's when they lose their job because their firm is acquired by another firm. Golden parachutes were especially popular during the 1980s and 90s, and are typically determined when a CEO is hired. However, they are also often increased after the CEO is hired when for example, a merger is approved (Hartzell, Ofek, & Yermack, 2004). Additionally, Bebchuk, Cohen, and Wang (2014) show that golden parachutes cause higher acquisition premiums, but that the wealth of shareholders will decline after the adoption of golden parachutes. This is because golden parachutes provide executives with incentives to accept a takeover bid even when the executive knows that it is not in the best interest of the shareholders. Similarly, Fich, Tran, and Walkling (2013) illustrate that target shareholders benefit from higher golden parachutes, because the probability of a successful merger is higher. However, the wealth of target shareholders will decline as golden parachutes increase, because in this case managers will accept lower takeover bids. On the contrary, the wealth of the acquiring shareholders will rise, as a result of capturing additional rents from the target shareholders.

2.5 CEO Compensation in Emerging Markets

Most research about CEO compensation has focused on developed markets. However, Luo (2014) describes that scholars should also investigate CEO compensation in emerging markets, because firm structures, market features, and organizational institutions may differ from developed markets. In addition, Ghosh (2006) states that labor markets are not well developed in emerging markets, because appointed CEO's are often family of the founder, or they are appointed by the government in emerging markets. In fact, Gallego and Larrain (2012) argue that family firms differ significantly from other types of firms, because they pursue special values, managerial practices and specific family related traditions, and often keep management within the family.

Moreover, governance structures in emerging markets might differ from those in developed markets. For example, shareholders cannot influence compensation policies in developed markets, because of well-developed corporate governance structures such as external information disclosure, strict accounting rules, dispersed ownership structures, single-tier boards, and protecting laws (Luo, 2014). In contrast, Theeravanich (2013) states that executive compensation remains an issue in emerging economies, because of weak corporate governance structures and less transparency. Furthermore, in emerging markets, two-tier boards are more common, and ownership structures are less dispersed, which results in a gap between executive and non-executive board members (Luo, 2014). Finally, in emerging markets, shareholders have more influence on the compensation setting policies, because of the say-on-pay regimes (Mertens & Knop, 2010). In short, studies into CEO compensation in developed markets might not be applicable in an emerging market.

2.5.1 China

Most studies about CEO compensation in an emerging market context have been conducted in China. For example, Adithipyangkul, Alon, and Zhang (2011) investigate the determinants of CEO perk compensation, and the effect of perquisites on firm performance. They find that perquisites are rewarded to a CEO for current performance and encourage CEO's to increase firm performance in the future regardless of firm size, growth opportunities, or firm leverage. Moreover, Luo (2014) describes that Chinese firms are highlighted by several corporate governance and institutional features. For example, the ownership concentration of most Chinese listed firms is quite high, and most Chinese listed firms are state owned enterprises (SOE's). As a result, the government has significant influence over major decisions such as appointing executives and directors (Luo, 2014). In fact, Luo (2015) shows that powerful CEO's are not able to extract rents in Chinese banks, because they are closely monitored by the government, suggesting that ownership concentration and identification are an important determinant of executive compensation in Chinese banks. These results, indicate that the traditional principal-agent conflict is not much of a concern since they are monitored by large shareholders.

Additionally, Firth, Fung, and Rui (2006) examine the effect of different types of block holders on CEO compensation. They find that dominant shareholders use CEO compensation as a way to accomplish their own objectives. Because, SOE's link compensation primarily to profitability, and account their investments by the equity-method on their balance sheets. However, privately owned firms link compensation often to changes in shareholder wealth, because private block holders are interested in maximizing share prices as they can sell their shares for more money. Similarly, Firth, Fung, and Rui (2007) describe that ownership structure have a significant effect on CEO compensation, because government owned firms and firms owned by block holders award their CEO's with a lower salary. However, when there are foreign shareholders CEO compensation tends to be higher. Furthermore, Huang et al. (2013) state that equity-based compensation does not incentivize managers in SOE's to invest more in R&D, suggesting that SOE's do not award enough stock options to managers to avoid risk-aversion.

To continue, most Chinese firms have a two-tier board, which means that listed firms are supervised by a board of directors and a supervisory committee (Luo, 2014). However, according to Conyon and He (2011), a remaining concern is the fact that executives and directors are often appointed by the government, and are ineffective in monitoring executives. According to Firth et al. (2007), governance systems have evolved since the China Securities Regulatory Commission (CSRC), issued The Code of Corporate Governance for Listed Firms in China. By adopting this code firms commit to several standards for corporate governance, such as adding independent board directors to the board (Conyon & He, 2011). Moreover, Zheng et al. (2016) studies the relationship between the increase of CEO compensation and the increase of the legal environment in China. The results show that when investor protection increases executives have to give up private benefits, but that this loss in pay is compensated by an increases in total executive pay.

2.5.2 India

Another emerging market that has received more attention over the past couple of years is India. For instance, Saha and Sarkar (1999) prove that the relationship between CEO compensation and several managerial characteristics such as age, experience, and education is positive. Furthermore, Ghosh (2006) shows that CEO compensation in India depends on current year firm performance, and is largely determined by firm size instead of managerial characteristics. Because when firms grow larger, their operations become more complex, which will eventually lead to increases in CEO compensation. Additionally, CEO compensation will increase with the amount of geographical diversification, because more geographical locations of a firm will require a more dynamic CEO. As a result, the CEO will be able to bargain for a higher wage (Ghosh, 2006). Also, other studies conducted by Parthasarathy, Menon, and Bhattacherjee (2006) and Chakrabarti, Subramanian, P.R. Yadav, and Y. Yadav (2012) also find evidence that the amount of CEO compensation will increase with firm size.

However, other studies show that a firms ownership structure can also be an important determinant. To illustrate, many Indian firms are quite often controlled by families, or by business groups (Chakrabarti, Subramanian, P.R. Yadav, & Y. Yadav, 2012). In this context determinants such as age and education have no significant impact in determining CEO compensation, because a CEO would start, and grow his career in the same family business (Ghosh, 2006). Moreover, Parthasarathy et al. (2006) describe that family ownership is often referred to as companies which are held by promoters or founders of a company. They show that CEO's who are promoters of their firms earn higher salaries, with a larger part of their compensation coming from incentive pay. In similar fashion, Chakrabarti et al. (2012) demonstrate that there may be horizontal agency costs in an Indian context, because of different controlling shareholder groups. Consequently, CEO's who run firms that are part of business groups earn substantially more, and this amount will increase with the proportion of promoters equity. Furthermore, in like manner, Jaiswall and Bhattacharyya (2016) provide evidence that CEO compensation in India is not determined by board structure, but by ownership structure and CEO tenure. They show that CEO's receive more compensation in larger, more profitable, growth-oriented, geographically diversified, and older firms, but that this amount is lower in riskier firms.

Generally, compensation packages should motivate managers to increase firm value. Consistent with agency theory Jaiswall and Bhattacharyya (2016) find that CEO compensation reflects efficient contracting instead of rent extraction in India, because CEO compensation is associated with several governance variables such as ownership, board, and managerial characteristics. However, Raithatha and Komera (2016) find no pay-performance relationship for smaller and business affiliated firms, suggesting that compensation does not motivate CEO's from these firms to increase firm value. Additionally, Kohli (2018) argues that higher compensation does not necessarily lead to higher firm performance, because both institutional investors and promoters are only concerned with a firms accounting- and market-based performance, and are thus weak in monitoring management. However, in India the board of directors, and especially independent directors are efficient in monitoring management, because they effectively link a CEO's salary to firm growth and profitability.

2.5.3 Other Emerging Markets

Besides China and India the literature into CEO compensation has also focused on other emerging markets. For instance, Kato, Kim, and Lee (2007) provide the first systematic evidence on the relationship between executive compensation and firm performance in Korean firms with and without Chaebol affiliation. They find that cash compensation is significantly related to stock market performance, and that variation in executive pay can be explained by stock market performance similar to U.S. and Japanese firms. Also, accounting performance and sales measures appear to be irrelevant in determining CEO pay, and non-Chaebol firms reward their executives for increasing shareholder value, whereas this is not the case for Chaebol firms (Kato, Kim, & Lee, 2007). Furthermore, Unite, Sullivan, Brookman, Majadillas, and Taningco (2008) find a positive pay-performance relationship in the Philippines, but this relationship disappears in family owned firms. Because, family owned firms find non-performance-related group goals more important than market-and accounting based measures of performance. Moreover, they describe that group networks such as families motivate their top executives not only by pay–performance schemes.

Moreover, Houqe (2011) has examined which impact executive compensation has on firm performance in Bangladeshi firms. They find that only perquisites, such as signing bonuses, extra vacation time, special work space, company sponsored club memberships, can improve firm performance. Additionally, Chu and Song (2012) study the relation between executive compensation and earnings management and over investment in Malaysia. They show that executive compensation is positively associated with over investment, and that for each percent of overinvestment, the executive's equity value will increase by 23%, and earnings management would be explained by 12%. Finally, Al Farooque, Buachoom, and Hoang (2019) provide evidence of a positive relationship between executive compensation and firm performance in Thai firms. However, they do not find a relationship between corporate governance and executive compensation, indicating that executive compensation is not determined by corporate governance systems. These results show similarities with developed markets, and the need for effective corporate governance systems to determine executive compensation, in order to improve firm performance and value (Al Farooque, Buachoom, & Hoang, 2019).

Other scholars that have researched CEO compensation have focused on the Middle East and Latin America. To illustrate, Sheikh, Shah, and Akbar (2018) prove that firm ownership in Pakistan is often concentrated in small groups such as families, because of weak investor protection and legal systems. Furthermore, they argue that CEO's in family owned firms receive roughly the same wage as CEO's of other firms, and that ownership concentration has a positive effect on the pay setting process, indicating some form of rent extraction by executives. However, other governance variables such as board size and board independence have no significant relationship with CEO compensation, suggesting ineffective monitoring by boards in Pakistan (Sheikh, Shah, & Akbar, 2018). To continue, Gallego and Larrain (2012) explain wage inequality between managers in Argentina, Brazil and Chile, as a result of concentrated ownership. They compare family owned firms with firms that are controlled by other block holders, and find a compensation premium of 30 log points for CEO's who are not associated with the controlling shareholders. Their results are robust to firm characteristics, managerial skills such as education or tenure, and the salary of the CEO in a previous job. A large part of the premium is explained by absent founders and involved sons (Gallego & Larrain, 2012).

2.6 Empirical Evidence of the Pay-Risk Relationship

Many scholars have investigated whether CEO compensation encourages firm risk. For example, Guo, Jalal, and Khaksari (2015) study the relationship between CEO compensation and a bank's incentive to take excessive risk. Their results show that an increase in a CEO's bonus and long-term incentives will result in more volatile stock price returns. Additionally, Abrokwah et al. (2018) expand this study by examining whether this relationship varies across different industries. They find that the relationship varies across industries, because the effect of the annual bonus on firm risk in the financial services industry is negative, while being positive in the transportation, communication, gas, electric and services industries. Moreover, Gande and Kalpathy (2017) investigate whether CEO compensation is associated with the risk-taking behavior of the largest financial firms in the U.S. before the global financial crisis of 2008. Their results show that higher equity incentives resulted in an increasing amount of emergency loans, and the total days that the loans were outstanding. Finally, Iqbal and Vähämaa (2019) study the relationship between systemic risk of financial institutions and CEO compensation, and find that financial institutions who rewarded their CEO's with larger compensation packages during the global crisis in 2008 were associated with significantly higher levels of systemic risk.

Moreover, several scholars have investigated the effect of CEO compensation on multiple proxies for risk. For example, Coles, Daniel, and Naveen (2006) investigate the relationship between CEO compensation and investment policy, debt policy, and firm risk. In their study they find that a higher CEO wealth to stock volatility (vega) motivates CEO's to implement more risky policies, such as more investments in R&D, less investments in PPE, more focus on fewer business segments, and higher leverage. Similarly, Gormley, Matsa, and Milbourn (2012) examine whether changes in business risk can be explained by CEO compensation, and find that lower risk-incentives will result in diversifying acquisitions, less leverage, stockpiling cash, or in cutting R&D expenses. However, Cassell, Huang, Manuel, Sanchez, and Stuart (2012) find that CEO's with large inside debt holdings prefer less risky investments, because higher pension benefits will lead to less investments in R&D expenditures, more firm diversification, and more asset liquidity. In similar fashion, Chen (2017) finds that higher risk-taking incentives result in a significant increase in R&D

investment-cash flow sensitivity, with the effects being stronger for firms that face financial constraints.

Furthermore, Kim, Patro, and Perreira (2017) investigate the effect of a firms capital structure on the relationship between CEO compensation and managerial risk. They find that option-based compensation is less effective in motivating risk-averse managers when firm leverage is increasing, because risk-averse managers associate higher leverage with greater career concerns, and more strict monitoring by debt holders. Additionally, Liu and Mauer (2011) study the impact of CEO compensation on corporate cash holdings and the value of cash, and find that higher risk-taking incentives lead to more corporate cash holdings, and a lower marginal value of cash towards equity holders. This relationship can be explained by bondholders who anticipate more risky actions by CEO's with higher salaries, and therefore demand more cash to cover potential losses (Liu & Mauer, 2011).

Other scholars have focused more on the effect of CEO compensation on mergers and acquisitions (M&A's). For instance, Hagendorff and Vallascas (2011) examine whether the structure of CEO pay affects the risk-taking behavior of CEO's of acquiring U.S. banks. They show that CEO's are responsive to vega when engaging in acquisitions, and that CEO's with a higher vega engage in more risky deals. Similarly, Croci and Petmezas (2015) study the effect of risk-taking incentives on acquisition investments for U.S. listed firms, and find that risk-averse managers with higher risk-taking incentives engage more often in M&A's. However, in their study this relationship does only exist for CEO's who are not overconfident, because in general overconfident CEO's are not risk-averse in conducting in M&A's. Furthermore, Feito-Ruiz and Renneboog (2017) investigate he effect of equity-based compensation on the expected value generation in M&A's. Their results indicate that higher equity-based compensation will result into higher abnormal returns from takeovers. However, this effect will dissolve when there is a large block holder at the firm, suggesting that the effect of equity-based pay can be substituted by concentrated ownership. Finally, Amewu and Alagidede (2019) study the post-merger effect of CEO compensation on firm risk, and find that cash compensation can reduce the post-merger risk of acquirers, but that systematic is increased when managers are awarded with stock-based incentives.

2.7 The Pay-Risk Relationship Across Industries

Most research into CEO compensation has focused solely on the financial services industry. However, compensation levels tends to vary across industries due to several factors, and as a result the relationship with risk should also vary. According to the competitive labor market theory, firms compete with each other for managerial talent, and offer more compensation to more talented managers because they run firms more effectively. This theory predicts that compensation levels should be higher in industries where firms compete more intensively for managerial talent, and therefore differ from other types of industries.

In fact, Favilukis and Lin (2016) describe that firms in more labor-intensive industries award more compensation to their executives, and as a result, are more sensitive to equity returns when compared to more capital-intensive firms, because these type of firms are more vulnerable to business cycle fluctuations. More labor-intensive firms could be more vulnerable to business cycle fluctuations because they do not own their most important production factor labor, but instead rent it from willing individuals who can leave whenever they want (Donangelo, 2014). As a result, managers become more mobile across industries in a competitive labor market, and are able to dictate a higher salary. Especially, when they possess more general skills instead of firm-specific skills. However, according to Donangelo

(2014), firm's that operate in industries where labor mobility is high are more exposed to systematic risk, because cash flows to shareholders become more sensitive to industry-shocks when labor mobility is high. Therefore, firms compensate CEO's in labor-intensive industries, such as financial services, trade and manufacturing to minimize the risk that is created by labor mobility (Abrokwah et al., 2018). For example, according to Aggarwal (2008), higher compensation does not have to lead to higher firm risk in labor-intensive industries, because firms in these type of industries might simply compensate their executives to remain with the firm instead of leaving it. In similar fashion, Murphy and Zabojnik (2006) mention that firms offer their CEO's higher salaries when they operate in an industry with a more competitive labor market.

On the contrary, according to Abrokwah et al. (2018), capital-intensive firms, such as mining, utilities, airlines, railroads, cruise lines, hotels and restaurants, are less vulnerable to these type of business fluctuations. Because, in general, machines serve as most important production factor in these type of businesses, which they own. As a result, these type of businesses are less exposed to these type of business cycle fluctuations, and firms are not compensating their executives to just remain with the firm, but to take more risk in order to improve firm value.

2.8 Empirical Evidence of the Pay-Risk Relationship across Industries

A handful academics have researched the pay-risk relationship across industries. For example, John and Qian (2003) analyze the pay-performance relationship between the banking- and manufacturing sector. They show that banking CEO's earn on average higher salaries, and that banks are on average larger, take less risk, hire less capital, and employ significantly higher levels of leverage when compared to manufacturing firms. In addition, Houston and James (1995) provide evidence that the structure of CEO pay also can differ across industries. Actually, CEO's of U.S. banks receive on average less cash compensation, and a smaller proportion of their total compensation in the form of equity when compared to CEO's in other industries. Similarly, Ang, Lauterbach, and Schreiber (2002) document that CEO compensation structures of U.S. banking CEO's differ from those of other top managers, because their compensation is higher, and they receive more incentives. Moreover, Aggarwal and Samwick (1999) provide evidence that compensation contracts for CEO's differ across industries, because it depends on the level of competitiveness in the industry. They show that firms in more competitive industries find rival firm performance very important, and use it as benchmark to determine the salary of their CEO as it increases when competitors perform better.

Other scholars offer evidence of differences in the pay-risk relationship due to labor market characteristics. For example, Donangelo (2014) shows that CEO's earn a higher salary in industries where they are more mobile to move in and out, and that this is causing a firms operating leverage to rise. Thus increasing a firm's exposure to systematic risk. Furthermore, Favilukis and Lin (2016) illustrate that when compensation increases it negatively forecasts future stock price returns, and that this relationship has more strength in more labor-intensive industries. Additionally, Abrokwah et al. (2018) provide evidence that the pay-risk relationship varies across industries. They show that the bonus share of CEO compensation has a negative impact on firm risk in labor-intensive industries such as the financial services industry, whereas it has a positive impact in capital-intensive industries such as the transportation, communication, gas, electric and services sectors.

2.8.1 Reversed Causality

Nevertheless, some scholars argue that firm risk drives CEO compensation and not the other way around. For example, Jensen and Meckling (1976) stated that firms attempt to solve the traditional agency problem between managers and shareholders by providing carefully constructed incentives to managers. Moreover, Smith and Watts (1992) study explanations for corporate financing-, dividend-, and compensation-policy choices, and show that agency theory is better in explaining cross-sectional variation in financial, dividend, and compensation policies than other theories. Furthermore, Gaver and Gaver (1993) extent Smith and Watts (1992) by providing additional evidence of the relationship between the investment opportunity set and several corporate policies including compensation policy. They find that growth firms award their executives with higher compensation packages, and more stock options than non-growth firms. Finally, Murphy (1999) presents a thorough description of CEO compensation and trends in CEO compensation. The paper focuses on the level and structure of CEO compensation and examines the relationships between CEO compensation and firm performance, and between sensitivities in CEO compensation and subsequent firm performance.

There are also more recent studies that focus on CEO compensation as dependent variable. To begin with Low (2009) investigates the relationship between equity-based compensation and risk-taking behavior by managers. According to Low (2009), managers are awarded with higher risk-taking incentives after an exogenous increase in takeover protection, which resulted in lower firm risk, and a decrease in firm value. Additionally, D'Mello and Miranda (2014) study the effect of equity-based compensation on the policy choices made by managers. They find that firms experience higher unsystematic and total levels of risk after awarding equity-based compensation to their executives. These results show that equity-based compensation reduces horizontal agency costs by motivating risk-averse managers to take more risk. Lastly, Heron and Lieb (2017) demonstrate that the subjective value of an executive's stock options increases when stock price returns become more volatile, and that stock option grants increase the risk appetite of executives.

2.9 Hypothesis Development

According to agency theory the principal-agent problem can be mitigated by designing a contract between shareholders and managers. Actually, shareholders can incorporate incentives in these contracts to motivate risk-averse managers to make more risky moves in order to maximize firm value and shareholder wealth. The design of an efficient contract depends on whether the shareholders can monitor the managers or not. When shareholders can monitor managers closely the optimal contract will include a fixed salary and penalties for non-desirable actions. In contrast, when they cannot closely monitor managers, the optimal contract will include a share of the outcome, such as stock options, or restricted stock grants, to motivate managers to achieve the shareholders goals. In general, managers can be incentivized to act in the interest of the shareholders by awarding them annual bonuses, long-term incentive plans, or other compensation types such as perquisites, pensions or severance payments. Based on these arguments agency theory predicts positive relationship between the level of CEO compensation and firm risk.

Another potential explanation for a positive relationship between CEO compensation and firm risk stems from the competitive labor market theory. Because, in this theory, more talented managers are matched to larger firms, because they are able to run larger firms more efficiently, hire more capital and labor, and grow their firms larger. Therefore, firms will pay higher premiums to attract more talented CEO's who can improve firm value. In fact, firm size, and several managerial characteristics could explain the level of CEO compensation in India, indicating that managerial talent may be a factor in determining the amount of CEO pay. Overall, in order to run larger firms more efficiently and expand their business, it is expected that more talented CEO's invest more in R&D and less in PPE, hire more external capital (debt), and stockpile less cash. Thus, the competitive labor market theory also predicts a positive relationship between risk-taking incentives and firm risk.

Consistent with both approaches, several scholars have provided evidence of the relationship between risk-taking incentives and firm risk. For example, Coles et al. (2006) shows that higher risk-taking incentives lead to more investments in R&D, less investments in PPE, and more debt financing. Similarly, Gormley et al. (2012) demonstrate that lower risk-incentives will result in less investments in R&D expenditures, less debt financing, and more cash hoarding. Moreover, Cassell et al. (2012) illustrates that inside debt holdings such as pensions will lead to less investments in R&D expenditures, and Chen (2017) shows that higher risk-taking incentives result in a significant increase in R&D investment-cash flow sensitivity.

However, according to Luo (2014) agency theory may not apply in emerging markets such as India, because of weak investor protection and unfledged capital markets. Generally, emerging markets have underdeveloped governance systems and labor markets. Because appointed CEO's are often family of the founder, or they are appointed by the government, and can influence the pay setting process significantly. Consequently, emerging markets are often associated with rent extraction by managers, which will result in a negative relationship between other compensation types and firm risk. Additionally, many firms are controlled and owned by families in India, which also can result in rent extraction practices. Because quite often family owned firms will not hire external managers, and will instead install family members in important positions in the firm. Rent extraction can lead to managerial slack, because when managers are powerful they do not have to make risky decisions in order to earn a good salary. For this reason, powerful managers are expected to invest less in R&D and more in PPE, employ lower levels of leverage, and stockpile more cash. Based on earlier arguments the following hypothesis is formulated:

Hypothesis 1: Higher CEO compensation will lead to lower firm risk.

2.9.1 Moderating Effect of Industry

As mentioned earlier, agency theory predicts that the principal-agent problem can be solved by incorporating several compensation components which can motivate CEO's to take more risk in order to maximize firm value and shareholder wealth. In contrast, the managerial power theory predicts that not the board or shareholders determine executive pay, but that executives themselves dictate their own pay when they have enough power to do so. However, according to the competitive labor market theory CEO pay is the result of a competitive struggle for managerial talent between firms.

This theory is based on the argument that managerial talent has become more important in determining CEO compensation, because more talented CEO's hire more capital and labor and run firms more efficiently than less talented CEO's. As a result, labor markets have become more competitive and firms are more inclined to offer higher salaries to more talented CEO's. There are several explanations for the increasing amount of competition in labor markets. For example, firm required skills have shifted from firm-specific skills to more general managerial skills. For this reason, CEO's have become more mobile and demanded by other firms across industries when they are in possession of more general managerial skills instead of firm-specific skills. This has resulted in higher salaries for these CEO's, because they are able to dictate higher salaries through a more competitive labor market.

In line with these arguments several scholars have provided empirical evidence of the increasing amount of salary in labor-intensive industries. For example, as mentioned earlier, Ang et al. (2002) provide evidence that the structure of pay for U.S. banking CEO's is different from those of other industries, and that this structure is broadly consistent with models in labor economics. In addition, John and Qian (2003) demonstrate that CEO's of U.S. banks receive higher compensation than CEO's of manufacturing firms. Moreover, Aggarwal and Samwick (1999) show that CEO compensation increases when firms operate in a more competitive industry. Similarly, Murphy and Zabojnik (2006) illustrate that compensation levels are higher for CEO's who operate in an industry where labor markets are more competitive, and outside hiring is prevalent. Finally, Donangelo (2014) and Favilukis and Lin (2016) show that more labor-intensive firms award higher compensation to their executives because they have become more mobile across industries.

Nevertheless, the ability of CEO's to be more mobile across industries has also resulted in an additional source of firm risk. To illustrate, firms are more exposed to systematic risk when they operate in more labor-intensive industries where labor mobility is high, because in these industries cash flows to shareholders become more sensitive to industry-shocks. In order to minimize this type of risk, firms in more labor-intensive industries may overcompensate their executives to minimize this type of risk. These predictions are in line with previous research. To illustrate, Houston and James (1995) provide evidence that compensation contracts in the labor-intensive U.S. banking sector are not designed to encourage excessive risk taking, and that managers are not awarded with incentives to engage in risky projects. Moreover, Abrokwah et al. (2018) demonstrate that a CEO's bonus share is negatively related to firm risk in the financial services industry, whereas it has a positive impact in the transportation, communication, gas, electric and services sectors. Based on these arguments it is expected that CEO's in labor-intensive industries are compensated to remain with their firm, and thus minimize the possibility of cash flows becoming more sensitive to industry shocks. As a result, hypothesis 2a is formulated:

> **Hypothesis 2a:** Higher CEO compensation will result into lower firm risk in labor-intensive industries.

On the contrary, capital-intensive industries are less exposed to these types of additional systematic risk, because in most cases firms in these type of industries own their most important production factor, which are machines. Therefore, firms in these types of industries may simply compensate their executives to encourage risk-taking behavior. As a result hypothesis 2b is formulated:

> **Hypothesis 2b:** Higher CEO compensation will result into higher firm risk in capital intensive industries.

3. Method

This chapter will describe the methodological approach that this thesis will follow. The first section will discuss research methods that have been used in previous research. Section two will provide a thorough description of the research model, including all variables and data.

3.1 Prior Research

Previous studies have used several methods to investigate the relationship between CEO compensation and firm risk. For example, numerous studies have used ordinary least squares (OLS) regression (Cassell, Huang, Manuel, Sanchez, & Stuart, 2012; Gormley, Matsa, & Milbourn 2012; Guo et al., 2015; Iqbal & Vähämaa, 2019; Kim, Patro, & Perreira, 2017). While other studies have used either tobit regression (Croci & Petmezas, 2015; Feito-Ruiz & Renneboog, 2017), or the population-averaged model estimation technique (Abrokwah et al., 2018), or the generalized method of moment (GMM) (Amewu & Alagidede, 2019; Chen, 2017) as their main method. Moreover, multiple studies have complemented their main analysis by using additional methods, such as two-stage least squares (2SLS), three-stage least squares (3SLS), tobit regression, and logit regression to complement their main analysis (Abrokwah et al., 2018; Coles et al., 2006; Croci & Petmezas, 2015; Gande & Kalpathy, 2017; Guo et al., 2015; Hagendorff & Vallascas, 2011; Liu & Mauer, 2011). Finally, most studies that have researched the effect of CEO compensation on firm risk have included fixed effects in their models (Amewu & Alagidede, 2019; Cassell et al., 2012; Chen, 2017; Coles et al., 2006; Croci & Petmezas, 2015; Feito-Ruiz & Renneboog, 2017; Gande & Kalpathy, 2017; Gormley et al., 2012; Iqbal & Vähämaa, 2019; Kim et al., 2017).

3.1.1 OLS Regression

OLS regression is a common statistical technique for researchers to analyze relationships between two or more variables. According to De Veaux, Velleman, and Bock (2016), regression can provide both prediction and explanation to the researcher. Additionally, the ordinary least squares (OLS) procedure is used to estimate the regression variate by predicting the dependent variable for every observation in the dataset. The procedure sets weights for the regression variate to minimize the differences between the predicted and actual values (Hair, Black, Babin, & Anderson 2014). In regression analysis researchers can choose between simple or multiple regression. When the model includes one dependent and one independent variable it is called simple regression, whereas multiple regression involves a model with one dependent variable and two or more independent variables (De Veaux, Velleman, & Bock, 2016). Moreover, the variables that are included into the model should be metric, or should be rescaled into metric variables by using dummy variables. Also, in general, other variables have an impact on the relationship that is investigated, thus control variables are often included in OLS models to control for the impact of other variables. However, OLS regression does not account for the presence of possible outliers in the dataset , and may be subject to endogeneity problems.

3.1.2 Instrumental Variables Approach

In order to solve endogeneity issues researchers can perform instrumental variables approach. For example, researchers can use 2SLS regression or 3SLS regression. The 2SLS regression is an extension of the widely used OLS method, and is used when the error terms of the dependent variable are correlated with one or more independent variables (Angrist &

Imbens, 1995). In other words, there are unobserved variables which are correlated with firm risk, and if the independent variables want to be valid, they need to be correlated with the endogenous regressor, and not with the error terms (Gande & Kalpathy, 2017). To account for this problem, the 2SLS method uses a predictor (instrumental variable) that is not correlated with the dependent variable. In 2SLS regression, the first step is to create an unbiased estimate of the independent variable by creating a new variable by using an instrumental variable. Subsequently, the unbiased estimate will replace the actual value of the independent variable.

In addition, Zellner and Theil (1992) argue that in traditional models structural disturbances may be correlated across different equations, but that within each separate equation the structural disturbances must be homoscedastic and serially uncorrelated. They extent the 2SLS method into the 3SLS method by allowing unobserved variables to be correlated across separate equations, and by allowing restrictions among coefficients of different equations. Specifically, the 3SLS method enhances the efficiency of equation-by-equation estimation, by reckoning with correlations across equations (Zellner & Theil, 1992). The method attempts to make an efficient estimation of the regression variate in three steps. Firstly, the estimates of the residuals will be obtained for all equations by using the 2SLS method. Subsequently, the most optimal instrument will be calculated by using the estimated residuals, and finally by using the optimal instrument all equations will be determined (Zellner & Theil, 1992).

Nonetheless, there are some limitations to the instrumental variables approach. To illustrate, Guo et al. (2015) mention that researchers first need to find instruments before they can use the instrumental variables approach, which can be difficult. Furthermore, when using 3SLS regression it is more likely for the specification error to multiply when using a large amount of equations (Coles et al., 2006). As a result, it is not desirable to use 3SLS regressions when using a large amount of equations, because when a single equation in 3SLS is mis-specified, all 3SLS estimates tend to be inconsistent (Zellner & Theil, 1992).

3.1.3 Other Types of Regression

Other types of regression have also been used in the academic literature. For example, several scholars have used the tobit model. According to Amemiya (1984), Tobit models are some form of regression models in which the dependent variable is constrained. These models are also referred to as censored or truncated regression models. Because, the model is called truncated when observations outside a specific range are lost , and censored when at least one exogenous variable is observed. For example, Coles et al. (2006) estimate their R&D regressions by using the Tobit model, because a large number of firms in their sample have zero R&D. By the same token, Gande and Kalpathy (2017) use the Tobit analysis in quite a different manner by using the Tobit model to account for selection bias. They mention that there is still a possibility of selection bias after addressing the endogeneity issue. To address this issue they model the probability of seeking emergency financial assistance and the size of emergency loans at the same time.

Another type of regression that is sometimes used by researchers is the logistic or logit regression. According to Hair, Black, Babin, and Anderson (2014) logit regression models are a combination of multiple regression and multiple discriminant analysis. Similar to multiple regression, the method uses one or more independent variables to predict the dependent variable. However, in contrast to multiple regression, logit regression models often use a dependent variable which is not metrically scaled. But, furthermore, the method is very similar to multiple regression, because when the dependent variable is specified correctly the basic factors considered in multiple regression will be applied (Hair et al., 2014). Generally, logit regression models have an advantage over discriminant analyses, because they do not require the assumption of multivariate normality, and can employ both metric and nonmetric independent variables. However, this advantage can also be a limitation since the dependent variable can only be binary (Hair et al., 2014).

Finally, several researchers have also applied fixed effects to their regression models. To begin with, researchers often use OLS regression to conduct their analysis, however when they combine this method of analysis with a dynamic panel data set covering data on different firms for several years, the results may be biased. Because, when using OLS regression in combination with a dynamic panel dataset unobservable firm, industry and year-level variations can result in correlation between the residuals across observations (Amewu & Alagidede, 2019). As a result, researchers often include fixed effects in their regression models, because fixed effect models allow researchers to control for unobservable firm, industry and year-level variations (Hair et al., 2014). However, there are some disadvantages in including fixed effects in a research model. For example, Bell, Fairbrother, and Jones (2019) and Mátyás and Sevestre (2008) describe that time-invariant independent variables could not be included in a fixed effects model, because time-invariant independent variables will lose their effect when employing a fixed effects model. Moreover, Mátyás and Sevestre (2008) state that a fixed effect model could be problematic when researchers use unbalanced panels. Lastly, fixed effects models are inconsistent and lose degrees of freedom when the sample size is large with relatively short periods, and fixed effect models require a decent amount of variation in the independent variables (Amewu & Alagidede, 2019).

3.1.4 Population-Averaged Model Estimation Technique

Another method that is used in prior research is the population-averaged estimation technique. According to Hubbard et al. (2010) population-averaged models are generally used in place of basic regression approaches when multiple explanatory variables are correlated with each other, and thus violating the independence assumption made by traditional regression procedures. Typically, population averaged models are estimated with the generalized estimating equation (GEE) technique. Furthermore, Ziegler and Vens (2010) describe that GEE is an extension of generalized linear models (GLM), because they allow for correlations among the observations. An advantage of this estimation technique is that it does not require a correct specification of the multivariate distribution but only of the mean structure. Despite being used more often in medical research, Abrokwah et al. (2018) apply the method of population averaged models in a business context. Because they include both the percentage of bonus and the percentage of long-term incentives simultaneously in their regression. These variables are highly correlated with each other because they measure in a certain way the same concept, namely a CEO’s compensation level.

3.1.5 Generalized Method of Moments (GMM)

A few researchers have also attempted to mitigate the endogeneity problem by using the GMM method. According to Zsohar (2012), the GMM method is a statistical method which can be employed when researchers have no access to a fully specified model. The GMM method uses observed economic data and combines it with information about population moment conditions to produce estimates of the unknown parameters in the model. Moreover, Hall (2009) states that this method is frequently used in economics and finance, and that this method enables researchers to obtain consistent and asymptotically normally distributed estimators of the parameters of statistical models. The method attempts to estimate the parameters of a probability distribution, such as the mean and standard deviation for a normal distribution, and estimates these parameters by determining the possible values of the distribution parameters that provide the best fitting (moments) based on the mean, variance, skewness and kurtosis of the sample.

Generally, the GMM method is used to address endogeneity issues and account for omitted variables. For example, Amewu and Alagidede (2019) argue that GMM models can provide an answer to biased OLS estimates due to reverse causality, autocorrelation, and heteroskedastic error terms. Moreover, Chen (2017) mentions that the GMM method can be used to address dynamic panel bias, in which unobservable firm, industry and year-level variations can result in correlation between the residuals across observations. However, in similar fashion to the instrumental variables approach the GMM model requires the researcher to find external exogenous variables, which can be difficult and time consuming (Amewu & Alagidede, 2019). In addition, Roodman (2006) describes that various tests must be performed in order to ensure instruments validity, and adequate moment conditions. More specifically, the Hanson-J-test must be performed to test whether the instruments are valid or not, and the Arrellano-Bond test must be performed to ensure that there is no autocorrelation.

3.1.6 Endogeneity Issues

Earlier it was briefly mentioned that OLS regression may be subject to endogeneity problems. OLS parameter estimates may be biased, because of endogeneity problems. For instance, Amewu and Alagidede (2019) argue that corporate governance studies who investigate the relationship between two variables often run into endogeneity issues, and that these issues can lead to spurious results. According to Wintoki, Linck, and Netter (2012), assuming that the dependent variable and the independent variable are totally autonomous of each other, endogeneity issues often arise in corporate governance studies, because of simultaneity and unobservable heterogeneity issues. For example, Gande and Kalpathy (2017) and Iqbal and Vähämaa (2019) indicate that CEO equity-incentives are in reality often highly correlated, and thus endogenous. In addition, multiple scholars have argued that it is hard to identify the causal effect of CEO compensation on firm risk, because they are jointly determined (Abrokwah et al., 2018; Coles et al., 2006; Gormley et al., 2012; Kim et al., 2017).

Endogeneity problems can be solved by using the instrumental variables approach. However, as mentioned earlier, researchers first need to find an appropriate instrument before they can use the instrumental variables approach, and this process can be very difficult and time consuming. An easier solution to the endogeneity problem presents itself in the form of lagged variables. To illustrate, Abrokwah et al. (2018) and Guo et al. (2015) use lagged independent variables in order to control for the possibility that the independent variables are jointly determined. In other words, they lag their compensation variables in order to ensure that risk is indeed explained by compensation, and not the other way around. Another solution is to use variables that are ahead, for example, Kim et al. (2017) calculate their risk variable in the 12, 24, and 36 month period immediately after the fiscal year in which executive compensation is measured. Similar to lagged variables this approach will ensure that compensation explains risk, and not the other way around.

3.2 Research Models

In order to investigate the effect of CEO compensation on firm risk in the context of an emerging market, this study will use two regression models. In line with previous empirical literature both models will be estimated by OLS regression (Cassell et al., 2012; Feito-Ruiz & Renneboog, 2017; Gormley et al., 2012; Guo et al., 2015; Iqbal & Vähämaa, 2019; Kim et al., 2017). The first OLS regression model will include one-year lagged explanatory variables, and test the first hypothesis, and evaluate whether higher CEO compensation will lead to lower firm risk. Additionally, in line with Abrokwah et al. (2018) and Chen (2017), the second model will be expanded with an interaction term between the compensation variable and the industry dummy variable to test the second hypothesis, and evaluate whether the relationship between CEO compensation and firm risk differs across industries. Both models are defined as follows:

$$RISK_{f,t} = \beta_0 + \beta_1 CEOPAY_{f,i,t-1} + \beta_2 Controls_{f,i,t-1} + \beta_3 IndustryDummy_i + \beta_4 Year\ Dummies_t + \varepsilon_{f,i,t} \quad (1)$$

$$RISK_{f,t} = \beta_0 + \beta_1 CEOPAY_{f,i,t-1} + \beta_2 Controls_{f,i,t-1} + \beta_3 IndustryDummy_i + \beta_4 (CEOPAY_{f,i,t-1} \times Industry\ Dummy) + \beta_5 Year\ Dummies_t + \varepsilon_{f,i,t} \quad (2)$$

Where:

$RISK_{f,t}$ = The level of firm risk for firm f at time t.

$CEOPAY_{f,i,t-1}$ = The amount of compensation for the CEO of firm f that operates in industry i, at time t-1 (lagged one year).

$Controls_{f,i,t-1}$ = The corporate governance variables and firm characteristics that apply to firm f that operates in industry i, at time t-1 (lagged one year).

$Industry\ Dummy_i$ = Industry dummy that reflects a specific industry.

$Year\ Dummies_t$ = Time dummies that reflect the different years.

$CEOPAY_{f,i,t-1} \times Industry\ Dummy$ = An interaction effect between the compensation variable and the industry dummy for firm f that operates in industry i, at time t-1 (lagged one year).

$\varepsilon_{f,i,t}$ = Standard error term for firm f that operates in industry i, at time t.

3.3 Main Variables

3.3.1 Dependent Variable

The dependent variable in this study will be firm risk. Prior research has used various proxies for firm risk. For example, several scholars have attempted to capture firm risk through a firms investment policy (Cassell et al., 2012; Chen, 2017; Coles et al., 2006) measured by CAPEX and different R&D ratio's, or debt policy measured by book- or total leverage (Cassell et al., 2012; Coles et al., 2006; Kim et al., 2017). Furthermore, other measures for firm risk that have been used in prior research are cash holdings (Liu & Mauer, 2011), the Merton distance to default risk model (DD) (Hagendorff & Vallascas, 2011), or the sum of acquisition values scaled by firm size in the previous year (Croci & Petmezas, 2015). However, Coles et al. (2006) describe that the effect of corporate policies is reflected by the volatility of its stock price return. For example, several researchers have used the standard deviation of monthly stock price returns to capture firm risk-taking behavior instead of measuring it through the riskiness of corporate policies (Abrokwah et al., 2018; Amewu & Alagidede, 2019; Guo et al., 2015; Kim et al., 2017). In line with prior research, this study will use the standard deviation of monthly stock price returns as dependent variable (*RISK*), where the standard deviation is estimated with 12 months of stock price returns prior to the end of the fiscal year. The stock price return for a single month is calculated by subtracting the closing stock price of month t from the closing stock price of month t-1, and then dividing this number with the closing stock price of month t-1.

3.3.2 Independent Variable

The independent variable in this study will be CEO compensation. Prior research has used several measures for CEO compensation. For instance, many scholars have used the change in the dollar value of an executive's wealth for a one percent change in the annualized standard deviation of stock price returns (vega), and the change in the dollar value of the executive's wealth for a one percent change in the stock price (delta) (Chen, 2017; Coles et al., 2006; Gande & Kalpathy, 2017; Hagendorff & Vallascas, 2011; Iqbal & Vähämaa, 2019; Kim et al., 2017; Liu & Mauer, 2011). Additionally, others have used the log of total CEO compensation measured by the sum of annual salary, annual bonus and long-term incentive plans, or the log of cash compensation (Croci & Petmezas, 2015), or CEO to firm debt/equity ratio (Cassell et al., 2012), or the natural logarithm of one plus the total CEO equity compensation divided by total CEO compensation (Feito-Ruiz & Renneboog, 2017). In this study, in similar fashion with prior research (Ghosh, 2006; Jaiswall & Bhattacharyya, 2016; Parthasarathy et al., 2006), CEO compensation will be measured by the natural logarithm of inflation-adjusted total CEO compensation (*LNCEOPAY*)[1].

3.3.3 Control Variables

This thesis will follow previous research in adding control variables to further control for possible endogeneity problems. More specifically, the regressions will contain several variables regarding a firms ownership structure, the characteristics of the CEO, and regarding firm-specific characteristics.

3.3.3.1 Ownership characteristics

Several studies that have researched CEO compensation in India have included several corporate governance variables as control variables. For example, many studies include several ownership characteristics such as the percentages of shares held by either promoters, institutional investors (Jaiswall & Bhattacharyya, 2016; Parthasarathy et al., 2006), non-institutional investors, or a combination of the three (Chakrabarti et al., 2012; Kohli, 2018). Because the Indian corporate landscape is dominated by ownership of large family businesses, and usually, members of these families are inclined to overpay themselves. In contrast,

[1] Stock options are excluded in total CEO compensation, because approximately three quarters of the sample did not award stock options to their CEO. This observation is consistent with the arguments of Jaiswall and Bhattacharyya (2016) who argue that stock options grants are not common in India.

institutional investors and non-institutional investors are in minority in India (Kohli, 2018), where institutional investors should prevent executives from overpaying themselves and ensuring fair pay (Bebchuk & Fried, 2003). Concerning a firms ownership structure, in line with prior research this study will add the percentages of shares held by institutional investors (Chakrabarti et al., 2012; Jaiswall & Bhattacharyya, 2016; Jaiswall & Raman, 2019), and non-institutional investors (Kohli, 2018) to control for the effect of ownership characteristics on the pay-risk relationship.

3.3.3.2 CEO characteristics

Other scholars have also included certain CEO characteristics in their models. For example, according to Boyd (1994) CEO's are more likely to extract rents when they are also chairman of the board, because when the role of CEO and chairman of the board is not separated, the CEO has more influence over the determination of pay. As a result, multiple scholars have used a dummy variable: CEO duality (Jaiswall & Bhattacharyya, 2016; Kohli, 2018; Parthasarathy et al., 2006). Additionally, as mentioned earlier, relatives of controlling families are more likely to extract rents, because they are in control. Consequently, Jaiswall and Bhattacharyya (2016) included a dummy variable: promoter CEO in their model. Lastly, various scholars have included the current age of the CEO and the amount of years that the CEO has served the firm (Coles et al., 2006; Croci & Petmezas, 2015; Guo et al., 2015). These scholars include these variables, because the age and tenure of a CEO are often associated with the risk-aversion level of the CEO, where CEO's become more risk averse when they get older and serve the firm longer (Coles et al., 2006; Serfling, 2014). To control for CEO specific characteristics, in line with Coles et al. (2006), Croci and Petmezas (2015), and Guo et al. (2015) this study will use the current age of the CEO (*CEO AGE*), and the current tenure of the CEO (*CEOTENURE*). The tenure of the CEO will be measured by the natural logarithm of the tenure of the CEO at the end of the fiscal year.

3.3.3.3 Firm characteristics

Additionally, many scholars have used firm characteristics as control variables. For example, many studies have controlled for firm size, because larger firms have easier access to external funds, which may motivate them to employ more aggressive investment and financial policies (Cassell et al., 2012). In addition to firm size, several scholars use profitability measures such as return on assets (ROA) (Coles et al., 2006), or return on equity (ROE) to control for a firms profitability (Abrokwah et al., 2018; Guo et al., 2015). Moreover, other control variables that are often included are the market-to-book ratio (MTBR) and sales growth to control for investment and growth opportunities (Amewu & Alagidede, 2019; Cassell et al., 2012; Coles et al., 2006; Gande & Kalpathy, 2017; Kim et al., 2017; Liu & Mauer, 2011). These variables are often included, because high growth firms may be inclined to take more risk (Cassell et al., 2012). Additional control variables that scholars use are the standard deviation of a firms stock price returns for a certain period of time (Cassell et al., 2012; Coles et al., 2006; Gande & Kalpathy, 2017), leverage (Cassell et al., 2012; Chen, 2017; Gande & Kalpathy, 2017; Kim et al., 2017; Liu & Mauer, 2011), and surplus cash (Cassell et al., 2012; Coles et al., 2006; Croci & Petmezas, 2015), to control for a firms past performance, its historical firm financing decisions, and available funds to invest in new projects (Coles et al., 2006).

This thesis will incorporate several firm-specific control variables. More specifically, firm size (*FSIZE*) measured by the natural logarithm of total assets will be used (Cassell et al., 2012; Guo et al., 2015). In addition, return on assets (*ROA)* measured by net income divided by total assets will be added to control for a firms profitability (Coles et al., 2006). Furthermore, *SGROWTH* will be added to control for a firms investment and growth opportunities, where *SGROWTH* is measured by subtracting sales in year t with sales in year t-1, and then dividing this number by total assets (Jaiswall & Raman, 2019). Finally, *LEVERAGE* will be added to control for a firms historical financing decisions, where *LEVERAGE* will be measured by total debt divided by total assets (Raithatha & Komera, 2016).

Table 1
Variable Definitions.

Variable	Description	Source
RISK	The standard deviation of monthly stock price returns over the 12-month period before the end of the fiscal year, where the stock price return for a single month is calculated by subtracting the closing stock price of month t from the closing stock price of month t-1, and then dividing this number with the closing stock price of month t-1.	(Abrokwah et al., 2018; Amewu & Alagidede, 2019; Guo et al., 2015; Kim et al., 2017)
Independent variable:		
LNCEOPAY	The natural logarithm of inflation-adjusted total CEO compensation. Total CEO compensation comprises out of salary, allowances, commission/incentive pay, perquisites, and retirement benefits. Total CEO compensation is inflation-adjusted to mitigate heteroskedasticity (Jaiswall & Bhattacharyya, 2016) by dividing it by the sum of one and cumulative consumer price inflation since March 2013.	(Ghosh, 2006; Jaiswall & Bhattacharyya, 2016; Parthasarathy et al., 2006)
Ownership characteristics:		
INST	The percentage of shares held by institutional investors at the end of the fiscal year.	(Chakrabarti et al., 2012; Jaiswall & Bhattacharyya, 2016; Kohli, 2018; Parthasarathy et al., 2006)
NONINST	The percentage of shares held by non-institutional investors at the end of the fiscal year.	(Kohli, 2018)
CEO characteristics:		
CEOAGE	The current age of the CEO at the end of the fiscal year.	(Coles et al., 2006; Croci & Petmezas, 2015; Guo et al., 2015)
CEOTENURE	The current tenure of the CEO at the end of the fiscal year.	(Jaiswall & Raman, 2019)
Firm characteristics:		
FSIZE	Firm size measured by the natural logarithm of total assets.	(Cassell et al., 2012; Guo et al., 2015)
ROA	Return on assets measured by net income / total assets in year t.	(Coles et al., 2006)
SGROWTH	Sales growth measured by sales in year t minus sales in year t-1, divided by total assets.	(Jaiswall & Raman, 2019)
LEVERAGE	Leverage measured by total debt / total assets in year t.	(Raithatha & Komera, 2016)

3.4 Data & Sample

The effect of CEO compensation on firm risk in publicly listed firms in India will be investigated by constructing a sample of Indian firms that are listed at the Bombay Stock Exchange (BSE). Gathering data about CEO compensation can be very difficult, because disclosure of CEO compensation data can differ substantially across firms. Assuming larger firms disclose their compensation data better than smaller firms, the 499 largest all firms listed at the S&P BSE 500 index were selected by using Bureau van Dijk's database ORBIS. This is a widely used database, which provides data about a large amount of firms worldwide. The initial sample includes financial institutions and government- and state-owned enterprises. However, these type of firms were excluded from the initial sample. Because, the business models of these types of firms are different when compared to other firms. To illustrate, for normal firms high levels of leverage would indicate financial distress, whereas this is normal for financial firms. Additionally, government- and state-owned enterprises have an economic role to serve the public, and are quite often not profit-orientated and highly affected by governmental decisions (Fama & French, 1992). As a result, the initial sample size of 499 was reduced to 125.

After constructing the sample, the data collection procedure started with data collection for all the variables for a period of six years. In fact, for all variables data was collected for the fiscal years 2019, 2018, 2017, 2016, 2015, and 2014. The dependent variable *RISK* was calculated using stock price data which was collected via ORBIS. In addition, to the stock price data various firm-specific data was gathered from ORBIS to subsequently construct the variables *FSIZE*, *ROA*, *SGROWTH*, and *LEVERAGE*. Moreover, when compared to U.S. firms, compensation data for Indian firms cannot be obtained from a database such as Compustat Execucomp. Therefore, the required compensation data for the independent variable *LNCEOPAY* will be collected manually by means of annual reports. Also, not only the compensation data but also the data for the other CEO characteristics *CEO AGE* and *CEO TENURE*[2] where collected manually via annual report. The shareholding patterns required for the variables *INST*, and *NONINST* where gathered via the website from the BSE[3].

Eventually, after all data was gathered the sample was narrowed down further, because of missing values and partial data. All cases with critical missing values were removed from the sample. Moreover, cases in which the CEO was replaced during the fiscal year were also removed from the sample, because these cases have partial compensation data, and will result in biased results. As a result, the final sample is comprised of 86 firms who were observed for a maximum amount of 377 times[4] (see Table 2). This sample size will be large enough to make sure that the results are generalizable. Finally, extreme values within the dataset will be winsorized consistent with prior literature (Abrokwah et al., 2018; Guo et al., 2015). In order to mitigate the effect of striking outliers all values below the 1st percentile will be assigned the same value as the 1st percentile, and all values above the 99th percentile will be assigned the same value as the 99th percentile. Winsorizing the extreme values in my dataset, and not removing these values will result in a higher statistical power, which will benefit my study. The statistical analysis will be conducted via SPSS 27.

[2] The data about the CEO's age and tenure were mainly gathered via annual reports. However, in some cases it was not disclosed in the annual reports. Consequently, other digital resources such as ORBIS or Bloomberg were consulted.

[3] https://www.bseindia.com/index.html

[4] For the period 2019 – 2016 DLF Ltd. employed two CEO's. Accordingly, data on both CEO's was collected and included in the dataset.

Table 2
Sample construction.

Initial sample size	Description	Nr. of excluded firms
499	All firms listed on the S&P BSE 500	-
Revised sample size		
425	All firms who are defined as bank, financial company, or insurance company in ORBIS were excluded from the sample, because of differing business models.	74
125	All firms who have a public authority, state, or government as ultimate owner are excluded, because of differing business models.	300
86	All firms with critical missing values are deleted.	39

3.5 Industry Classification

In this thesis the effect of CEO compensation on firm risk is investigated in general, and across industries. As a consequence, the industry classifications based on NACE Rev. 2 of all firms are included in the dataset. In ORBIS a firms industry classification can be identified by either using U.S. Standard Industrial Classification (SIC), North American Industry Classification System (NAICS), or NACE Rev. 2 codes. The U.S. SIC codes categorize firms by their business activities by assigning them four-digit codes, and originated in 1937 to help analyze economic activity across industries[5] (Office of Statistical). Nevertheless, since 1997 most U.S. SIC codes had been replaced mostly by six-digit NAICS codes, in order to standardize industry data collection[6]. NACE Rev. 2 codes are used to categorize firms based on their economic activities in the European Union. These NACE Rev. 2 codes are based on classifications of the UN Statistical Commission (UNSTAT), Eurostat, and national classifications, which relate strongly to each other, allowing for worldwide comparability[7].

Previous research is often not clear in which industry classification codes are used to assign a specific industry to a firm. In addition, ORBIS does not provide national industry classifications for Indian firms. Therefore, I will assign all firms in my sample NACE Rev. 2 codes to identify their industry, because UNSTAT, Eurostat, and national classifications all relate to each other and can be compared on a global level. The NACE Rev. 2 codes are classified into 21 different classifications, which range from “Agriculture, Forestry and Fishing” to ”Activities of Extraterritorial Organisations and Bodies”. The sample is comprised out of 86 firms from 10 different industries. Because the sample firms represent more than half of the NACE Rev. 2 categories, some of the categories only contain one or two firms, which could be problematic.

To increase validity, consistent with Smirnova & Zavertiaeva (2017) all industries will be regrouped into new groups based on their NACE Rev. 2 classifications, in order to obtain an increased amount of observations per industry. Since this study investigates differences in the pay-risk relationship across labor- and capital-intensive industries, the 10 different industries have been regrouped into 2 new categories: (1) Labor-intensive industries, and (2) Capital-intensive industries. The 2 groups are composed based on the study performed by Abrokwah et al. (2018), they identify the financial services, trade, and manufacturing sectors as more labor-intensive industries. On the contrary, the transportation, communication, electricity and gas services sectors, are identified as capital-intensive sectors. Consequently, the first category

[5] https://www.census.gov/history/pdf/sichistory1957.pdf
[6] https://www.census.gov/naics/
[7] https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF

includes the industries: A - Agriculture, forestry and fishing[8], G - Wholesale and retail trade, C – Manufacturing, F – Construction, M - Professional, scientific and technical activities[9]. The second category contains the following industries: B - Mining and quarrying, H - Transportation and storage, L – Real estate activities, J - Information and communication, and D - Electricity, gas, steam and air conditioning supply. In Table 3 an overview is provided which describes the amount of firms prior- and after the reclassification. For a more detailed format of the industry (re)classification see Appendix A.

Table 3
Industry classification prior and after reclassification.

NACE Rev. 2 classification	**Nr. of firms before reclassification**	**Reclassification group**	**Nr. of firms after reclassification**
A - Agriculture, forestry and fishing	1		
G - Wholesale and retail trade; repair of motor vehicles and motorcycles	3		
C - Manufacturing	64	Labor-intensive industries	71
F - Construction	2		
M - Professional, scientific and technical activities	1		
B - Mining and quarrying	2		
H - Transportation and storage	1		
L – Real estate activities	3	Capital-intensive industries	15
J - Information and communication	8		
D - Electricity, gas, steam and air conditioning supply	1		

3.6 *Robustness Checks*

To ensure that the results obtained from the OLS regressions will hold under alternative circumstances, their robustness will be tested. Prior research has used several methods to ensure the robustness of their results. For example, most research includes control variables and fixed effects in their models to ensure that their results are robust to unobserved effects. In addition, a handful of scholars has log-transformed the dependent variable firm risk to ensure robustness against heteroskedasticity issues (Abrokwah et al., 2018; Guo et al., 2015).

Moreover, to control for endogeneity issues several academics have included lagged explanatory variables in their models (Abrokwah et al., 2018; Coles et al., 2006; Guo et al., 2015; Iqbal & Vähämaa, 2019), or estimated the regressions with another method (Abrokwah et al., 2018; Coles et al., 2006; Gande & Kalpathy, 2017; Guo et al., 2015; Hagendorff & Vallascas, 2011). Furthermore, to ensure that the results are robust to the impact from outliers, several scholars have either winsorized the data (Abrokwah et al., 2018; Cassell et al., 2012; Feito-Ruiz & Renneboog, 2017; Hagendorff & Vallascas, 2011; Iqbal & Vähämaa, 2019; Kim et al., 2017), or estimated the regressions with median values (Coles et al., 2006; Gande & Kalpathy, 2017; Guo et al., 2015). Additionally, to ensure that the results are robust from multicollinearity, prior studies sometimes estimate separate regressions for variables which are highly correlated (Gande & Kalpathy, 2017; Iqbal & Vähämaa, 2019). Finally, multiple scholars use alternative proxies for the dependent (Abrokwah et al., 2018; Cassell et al., 2012; Guo et al., 2015;

[8] Agriculture, forestry, and fishing is not mentioned in the study by Abrokwah et al. (2018). However, in many cases this industry is identified as labor-intensive since many tasks still require handwork (Martin, 1983).
[9] The Professional, scientific and technical activities sector is identified as labor-intensive, because activities in this sector require a high degree of expertise and training (https://www.bls.gov/iag/tgs/iag54.htm).

Hagendorff & Vallascas, 2011; Kim et al., 2017), and independent variable (Coles et al., 2006; Gande & Kalpathy, 2017; Gormley et al., 2012; Kim et al., 2017).

This study will test the results on their robustness in several ways. At first, consistent with prior research (Abrokwah et al., 2018; Cassell et al., 2012; Feito-Ruiz & Renneboog, 2017; Hagendorff & Vallascas, 2011; Iqbal & Vähämaa, 2019; Kim et al., 2017) the impact of outliers will be reduced by winsorizing the data at the 1st and 99th percentile. Secondly, in line with most research into CEO compensation and firm risk, the regressions will be estimated by including control variables to ensure robust results against omitted variables. Thirdly, consistent with prior literature (Abrokwah et al., 2018; Coles et al., 2006; Guo et al., 2015; Iqbal & Vähämaa, 2019) all explanatory variables, including the control variables will be lagged by a one-year period to address possible endogeneity issues. Fourthly, to ensure that the results are robust to multicollinearity separate regression models will be estimated for all variables (Gande & Kalpathy, 2017; Iqbal & Vähämaa, 2019).

Fifthly, in line with both Abrokwah et al. (2018) and Guo et al. (2015), the dependent variable *RISK* will be log-transformed to mitigate heteroskedasticity concerns. Sixthly, in line with Cassell et al. (2012), Hagendorff and Vallascas (2011), and Kim et al. (2017) the dependent variable will be replaced with an alternative measure. More specifically, the dependent variable (*RISK*) will be replaced with *LEVERAGE*, which is an alternative measure for firm risk (Coles et al., 2006; Gormley et al., 2012; Kim et al., 2017). Additionally, logit regression estimations will be constructed to further check the results against endogeneity issues (Abrokwah et al., 2018; Guo et al., 2015; Hagendorff & Vallascas, 2011). In these regressions the dependent variable has been transformed into a dummy-based variable, which will exhibit a value of one when the volatility of monthly stock price returns for a 12 month period is greater than the median value of all firms in the sample, and zero otherwise. Finally, the regressions will be estimated with two-year lagged explanatory variables to ensure further robustness.

4. Summary Statistics & Results

This chapter will describe the summary statistics with the results of regression models. Section 1 will discuss the summary statistics, and what these results mean. Section 2 will present the bivariate analysis in which all variables are analyzed on their mutual correlations. Finally, section 3 will present and discuss the results of both regression models, and the additional robustness checks that were made.

4.1 Summary Statistics

In Table 4 a statistical summary of the data is presented. It can be seen that the 12-month standard deviation of a firms monthly stock price returns is on average 0.100 for S&P BSE 500 firms, with a standard deviation of 0.043 median value of 0.090. The mean is slightly bigger than the median, which indicates that the distribution is slightly skewed to the right. These results differ from previous research. To illustrate, Jaiswall and Bhattacharyya (2016) report that the mean 12-month standard deviation of a firms stock price returns is 0.031, that the standard deviation is 0.013, and that the median is 0.029. In addition, Jaiswall and Raman (2019) show that the mean 12-month standard deviation of a firms stock price returns is 0.155, with a standard deviation of 0.075, and a median value of 0.138. The results reported by these studies are lower than the results that I report. A potential explanation for these lower numbers is that these studies employ much bigger samples, where the first one uses a sample with 6045 observations, and the latter a sample with 5045 observations. However, it is also possible that the average 12-month standard deviation of monthly stock price returns became more volatile more recently in India.

Additionally, CEO's of S&P BSE 500 firms were awarded an average price-deflated salary of Rs. 32.54 million between 2013 and 2019[10]. Moreover, the standard deviation is Rs. 30.09 million median, and the median price-deflated salary is Rs. 23.87 million respectively. Similar to the risk variables, these results indicate that the distribution is somewhat skewed to the right, because the mean is bigger than the median. When compared to previous research, these results seem to differ. To illustrate, Jaiswall and Bhattacharyya (2016) document that CEO's of Indian firms earn on average a price-deflated salary of Rs. 11.7 million, and that the standard deviation is Rs. 17.6 million, with a median price-deflated salary of Rs. 5.9 million. Moreover, Jaiswall and Raman (2019) illustrate that the average price-deflated salary is Rs. 11.9 million, with a standard deviation of Rs. 22 million, and a median price-deflated salary of Rs. 6.1 million in India. In similar fashion to *RISK* my results are different from those presented in prior research. As mentioned earlier, these differences might be the result of differing samples over different periods of time, or CEO's earned simply higher salaries. In addition, similar to my study prior research exhibits a large gap between the mean price-deflated salary and the maximum price-deflated salary, which indicates skewed data to the right. In order to ensure that the results are reliable, this study uses log-transformations for the compensation variable to correct for the highly skewed data. For additional information on the distributions before and after the log-transformations see Appendix B.

Furthermore, as illustrated in Table 4, the average Indian firm was owned for 19% by institutional investors, and for 17% by non-institutional investors. These results are comparable to those found by Jaiswall and Bhattacharyya (2016), and Parthasarathy et al. (2006). They document similar averages to this study by describing that the mean ownership by institutional investors was 16% and 18% respectively in India. These numbers confirm the description made by Kohli (2018) that among investors, institutional investors and non-institutional investors are

[10] This amount of compensation is equivalent to approximately 455.504 U.S. dollars. This number is calculated by multiplying Rs. 32.54 million with 0.014, which is the exchange rate between Rs. And USD on the 19th of May 2021.

in minority in India. However, when compared to her study, my ownership characteristics differ somewhat. For example, Kohli (2018) describes that the average Indian firm is owned for 24% by institutional investors, while it is owned for 23% by non-institutional investors. In contrast, Chakrabarti et al. (2012) reports a lower mean for the percentage of shares held by institutional investors (8%). In like manner to the previous sections it is possible for other studies to have found different estimates, because their samples differ, but it is also possible that the presence of (non-) institutional investors declined since 2018 in the average S&P BSE500 firm.

Table 4
Descriptive statistics.

Variables	Obs.	Mean	Std. Dev	Min	Median	Max
RISK	377	0.100	0.043	0.040	0.090	0.262
CEOPAY (Rs. in millions)	367	32.54	30.09	1.59	23.87	160.96
Ownership characteristics						
INST	377	0.19	0.11	0.00	0.18	0.52
NONINST	377	0.17	0.10	0.01	0.15	0.43
CEO characteristics						
CEO AGE	365	54.89	7.66	36.00	54.00	74.00
CEO TENURE	376	8.78	9.15	0.00	5.50	42.00
Firm characteristics						
FSIZE (Rs. in billions)	377	120.14	275.83	1.13	32.61	2020.43
ROA	377	0.099	0.076	-0.050	0.096	0.347
SGROWTH	377	0.071	0.168	-0.353	0.058	0.960
LEVERAGE	377	.442	.188	.069	.436	.854

This table reports a statistical summary of the data after winsorizing all the values at the 1st and 99th percentile, and before the log transformations of the explanatory variables. All variables are defined in Table 1.

To continue, the average CEO of an Indian S&P BSE500 firm was 54,89 years old, and occupied the position of CEO for a particular firm almost 9 years (8,78). Prior research documents slightly different numbers. For example, Coles et al. (2006) describe that the average CEO in the United States is 54 years old, and serves the firm 7 years. In similar fashion, Croci et al. (2012) documents that CEO's in continental Europe are on average 53.44 years old, and additionally, Jaiswall and Raman (2019) report that the average CEO in India serves the firm 7.2 years. On the contrary, a more recent study in the U.S. reports that CEO's in the United States are on average 64.13 years old, and that they serve their firm on average 11.93 years (Guo et al., 2015). Since the majority of these prior studies are not performed in an Indian context they cannot be properly compared with this study. However, Jaiswall and Raman (2019) present a good comparison for a CEO's tenure in India. Similar to their study the CEO tenure variable has a skewed distribution, because the standard deviation is particularly large (9.15), and the median (5.50) is lower than the mean. These results indicate that this variable has a skewed distribution to the right, which is consistent with prior research (Jaiswall & Raman, 2019). To solve this issue, they use a log-transformed variant of the variable to obtain a variable that is normally distributed. For this reason, I will also use a log-transformed variable. For additional information on the distributions before and after the log transformations see Appendix B.

Finally, the last part of Table 4 describes the summary statistics for the firm characteristics. It can be seen that the average amount of total assets was on average Rs. 120.14 billion for S&P BSE500 firms between 2019 and 2014, with a standard deviation of Rs. 275.83

billion, and a median value of Rs. 32.61 billion. Moreover, the largest firm in the sample employed Rs. 2020.43 billion worth of total assets between 2019 and 2014, whereas the smallest firm in the sample employed only Rs. 1.13 billion. These results are different from prior research, because Jaiswall and Raman (2019) illustrate that the average Indian S&P BSE500 firm employed Rs. 45.7 billion of total assets between 2002 and 2015, with a median value of Rs. 9.8 billion, and a standard deviation of Rs. 217.4 billion. When compared to prior research it can be noted that listed Indian firms have become larger in size. In fact Indian firms grew on average by approximately 163% between 2002 and 2019. Additionally, similar to prior research my results show that the mean value is significantly larger than the median value, which indicates highly skewed data to the right. To mitigate concerns regarding skewed data I will use a log-transformed variable of *FSIZE.* For additional information on the distributions before and after the log-transformations see Appendix B.

Additionally, the average Indian S&P BSE500 firm experienced a return on their assets of 9.9% between 2019 and 2014. Previous research documents different estimates. For example, Parthasarathy et al. (2006) show that Indian firms had on average a ROA of 14.5% between 2004 and 2005. Moreover, Jaiswall and Bhattacharyya (2016) document a mean ROA of 12% for Indian firms between 2002 and 2013, and finally Jaiswall and Raman (2019) report an average ROA of 14.1% for Indian firms between 2002 and 2015. When compared to these studies it can be seen that the average return on assets is falling. This could indicate that Indian firms might have over-invested in their assets that have failed to produce more earnings. Moreover, the average S&P BSE500 firm financed its operations with 44,2% of debt financing relative to total assets. This estimate is higher than the averages of 29,06% (Raithatha & Komera, 2016) and 29% (Chadha & Sharma, 2016) documented by prior research. Considering the fact that Indian S&P BSE500 firms grew by 169% between 2002 and 2019, the increasing amount of leverage could indicate that Indian firms financed their growth with additional debt financing. Furthermore, sales grew with 7.1% between 2019 and 2014 in the average S&P BSE500 firm. This is surprising when considering the fact that the average return on assets declined, and possibly indicated over investments in assets that failed to produce more earnings. When compared to prior research, this number is somewhat low, because Jaiswall and Raman (2019) document a higher sales growth in their study with a comparable sample of 17,7%. This number can be lower, because Indian firms are indeed over-investing in assets that fail to produce additional earnings.

4.2 Bivariate Analysis

To analyze the pairwise correlations between all the variables Pearson's correlation matrix was used. In Table 5 the pairwise correlations between variables are presented. The first two columns present the most interesting results, because the first column shows the correlations between *RISK* and all the other independent variables, and the second column shows the correlations between the compensation variable and the other independent variables.

To begin with the first column, *RISK* is negatively and significantly correlated at the 1% level with *LNCEOPAY* (-.203**). Additionally, both ownership characteristics are significantly correlated with *RISK* at the 1% level, where institutional ownership illustrates a significant negative correlation (-.276**), and non-institutional ownership a significant positive correlation (.335**). *CEO AGE* is not significantly correlated with *RISK*, whereas the other CEO characteristic *CEO TENURE* is significantly correlated with the dependent variable at the 1% level (.211**). Finally, in the first column two of the four firm characteristics show a significant correlation with the dependent variable, where *ROA* illustrates a significant negative correlation (-.295**) with *RISK*, and LEVERAGE a significant positive correlation (.258**) with *RISK*.

Meanwhile, it is interesting to see that in the second column *LNCEOPAY* exhibits a significant correlation at the 1% level with both ownership characteristics. In fact, *LNCEOPAY* is significantly and positively correlated with the amount of institutional investors (.164**), whereas it is significantly and negatively correlated with the amount of non-institutional investors (-.253**). To continue, *LNCEOPAY* shows a significant and positive correlation with the age of the CEO at the 1% level (.161**), whereas it does not exhibit a significant correlation with CEO TENURE (-.088). Additionally, among the firm characteristics there are three significant correlations. The amount of price-deflated compensation is significantly and positively correlated with firm size (.443**), *ROA* (.115*) and LEVERAGE (.209**).

The remaining columns illustrate the correlations among the control variables. It can be seen in column 3 that the amount of institutional investors is significantly correlated with three other variables. Notably, *INST* exhibits a significant and negative correlation at the 1% level with *NONINST* (-.386**), which is not surprising because both variables measure the ownership structure of a firm. In addition, *INST* is also significantly correlated at the 1% level with *FSIZE* (.377**), and *LEVERAGE* (-.136**). Moreover, in column 4 it can be seen that *NONINST* is significantly correlated at the 1% level with two variables: *CEO TENURE* (.135**) and *FSIZE* (-.369**). Next, in column 5 *CEO AGE* shows a positive significant correlation with *CEO TENURE* at the 1% level (.403**), while *CEO TENURE* shows a significant negative correlation at the 1% level with *FSIZE* (-.185**). In addition, column 7 illustrate two significant correlations at the 1%, where *FSIZE* is significantly and negatively correlated with *ROA* (-.187**), and significantly and positively correlated with *LEVERAGE* (.269**). Finally, in column 8 *ROA* illustrates significant correlations with *SGROWTH* (.128*) and *LEVERAGE* (-.438**), while *SGROWTH* is significantly and negatively correlated with *LEVERAGE* in column 9 (-.106*).

Table 5
Pearson's correlations.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(1) RISK	1									
(2) LNCEOPAY	-.203**	1								
(3) INST	-.276**	.164**	1							
(4) NONINST	.335**	-.253**	-.386**	1						
(5) CEO AGE	-.101	.161**	.017	.000	1					
(6) CEO TENURE	.211**	-.088	-.048	.135**	.403**	1				
(7) FSIZE	.009	.443**	.377**	-.369**	.008	-.185**	1			
(8) ROA	-.295**	.115*	.068	-.097	.023	-.074	-.187**	1		
(9) SGROWTH	.039	-.027	.018	.024	.019	.054	.013	.128*	1	
(10) LEVERAGE	.258**	.209**	-.136**	.063	-.007	.059	.269**	-.483**	-.106*	1

*This table reports the Pearson correlations with their statistical significance. All variables are explained in detail in Table 1, and the sample construction is discussed in detail in section 3.4 and Table 2. * Correlation is significant at the 5% level.** Correlation is significant at the 1% level.*

Overall the correlation matrix shows that many variables are significantly correlated with each other. Correlations are considered to be strong when they are between (-)1.0 and (-)0.5, moderate when they are between (-)0.5 and (-)0.3, and weak when they are between (-)0.3 and (-)0.1. In the correlation matrix there are seven significant correlations who have coefficients between (-)0.5 and (-)0.3, with the highest significant correlation being (-.483**). These correlations are considered to be moderate, and not very strong. However it can still influence the results significantly. Moreover, the correlation matrix shows 17 correlations who have coefficients between (-)0.3 and (-)0.1, as mentioned earlier these correlations are considered to be weak, and will probably not affect the regressions. But, in order to mitigate concerns regarding multicollinearity, all regressions were run separately before running the complete models with all variables simultaneously. Besides this, variance inflation factor (VIF) tests were conducted after running the complete models, to ensure that the results are robust to multicollinearity issues. These tests produce a score which should not exceed 10. If it exceeds this threshold multicollinearity is an issue, otherwise not. In my case all VIF values were below this threshold, which means that my results will likely be robust against multicollinearity issues.

4.3 Results

This study examines the effect of CEO compensation on firm risk, and whether this effect is different across industries. This section will present and discuss the results of the regressions. More specifically, the first section will discuss the results of the first model, the second section will discuss the results of the second model, and the third section will discuss the results of the additional robustness tests.

4.3.1 The Pay-Risk Relationship

This study investigates the effect of CEO compensation on firm risk. In order to investigate this effect a first hypothesis was formulated, which predicts that more compensation will lead to less firm risk. Thus, OLS regressions were performed to test the first hypothesis. Table 6 reports the tabulated results from the OLS regressions, in which the dependent variable *RISK* is measured by the 12-month standard deviation of monthly stock price returns. The first 10 columns each contain results from separate regressions, in which each independent variable is regressed separately with the dependent variable. For example, the first column presents the results for the separate regression between *RISK* and *LNCEOPAY.* Additionally, these columns also contain the coefficients for the *CAPITAL-INTENSIVE INDUSTRY DUMMY*, because this dummy variable is part of the interaction effect which tests the second hypothesis. Next, columns 11 and 12 present the results for both models, in which column 11 presents the results for the first model, and column 12 presents the results for the second model. In these final two columns all variables are included simultaneously in the regressions. This section will present and discuss the results applicable to the first model, which are presented in the first column and in columns 3 through 11.

To begin with, the first column describes the results from the separate regression between *RISK* and *LNCEOPAY.* It can be seen that the coefficient of *LNCEOPAY* is highly significant at the 1% level (-.009*******), while the *CAPITAL-INTENSIVE INDUSTRY DUMMY* does not illustrate a significant coefficient (-.001). When the regressions are estimated with all the variables simultaneously the results remain similar. In column 11 it can be seen that the significance level of *LNCEOPAY* decreases slightly to the 5% level with a coefficient of -.006******[11], and that the industry dummy variable also remains insignificant (.007). These results imply that when all other variables in the model remain constant, and *LNCEOPAY* is increased with one unit *RISK* decreases with 0.06%[12]. My results are comparable to those found by Iqbal and Vähämaa (2019) who find a significant negative relationship between the pay-risk sensitivity and systematic risk. However, my results differ from those found by other scholars. Some scholars found a significant

---

[11] The significance level of *LNCEOPAY* decreases slightly, because the compensation variable is significantly correlated with several variables. For example, when the regression is estimated without *INST* or *NONINST* the significance level returns to the 1% level for the compensation variable.

[12] When *LNCEOPAY* is included in the analysis without the log-transformation an increase of Rs. 1 million in a CEO's price-deflated salary will lead to a significant decrease in *RISK* by 0.022%.

relationship between various measures for CEO compensation and various measures for firm risk (Chen, 2017; Coles et al., 2006; Gande & Kalpathy, 2017; Gormley et al., 2012; Liu & Mauer, 2011), and others found no significant relationship (Ghosh, 2006; Jaiswall & Bhattacharyya, 2016).

To continue, in columns 3 and 4 the results for the separate regressions for the ownership characteristics are presented. It can be seen that both ownership characteristics illustrate highly significant coefficients at the 1% level, where *INST* exhibits a coefficient of -.117*** in column 3, and *NONINST* a coefficient of .154*** in column 4. In the complete first model in column 11 these numbers remain similar to those presented in the separate regressions. To illustrate, *INST* shows a highly significant negative coefficient of -.084***, whereas *NONINST* shows a highly significant positive coefficient of .115***. These results indicate that *RISK* decreases with 8.4% when institutional investors gain one more percent of ownership, and that *RISK* increases with 11.5% when non-institutional investors own one more percent of the shares. It looks like that in the presence of institutional investors CEO's are taking less risk. However, this is not what one would expect from an agency perspective, because according to Bebchuk and Fried (2003) in the presence of institutional investors stock price returns should increase and not decrease when agency theory applies. Thus it appears that institutional investors are inefficient in constraining CEO's from overpaying themselves. On the other hand, non-institutional investors cause CEO's to take more risk and thus improve shareholder value, which is consistent with agency theory and might imply the presence of blockholders.

Additionally, columns 5 and 6 present the results for the separate regressions for the CEO characteristics. Column 5 highlights a significant negative coefficient at the 10% level of -.001* for *CEO AGE*, whereas *LNCEOTENURE* shows a positive highly significant coefficient at the 1% level of .009**[13]. These results remain significant in the complete model in column 11. In fact, the significance level of CEO AGE increases to the 1% level with a coefficient of -.001***, while the coefficient of *LNCEOTENURE* (.010***) remains similar to the one presented in column 6. This means that when all other variables remain constant and the CEO becomes one year older, firm risk decreases with 0.01%. In addition, the results indicate that a one unit increase in *LNCEOTENURE* will result in an increase of 1% in firm risk when all other variables remain constant[14]. The first result is consistent with Coles et al. (2006) and Serfling (2014), both argue that CEO's become more risk-averse when they get older. However, the second result is in contrast with both studies, because their results indicate that longer tenures should lead to less risk-taking by CEO's.

Furthermore, columns 7 till 10 present the results for the separate regressions for the firm characteristics. Only two firm characteristics illustrate a significant relationship with *RISK* in the separate regressions. In column 8 *ROA* illustrates a negative significant relationship with *RISK* (-.163***), and in column 10 *LEVERAGE* illustrates a positive significant relationship with *RISK* (.056***). Both results remain significant in the complete model. *ROA* exhibits a highly significant coefficient of -.085*** in column 11, while *LEVERAGE* shows a significant coefficient of .025* in column 11. These results are consistent with Kim et al. (2017) who also report a positive significant relationship between stock price volatility and leverage. However, the results for *ROA* are in contrast with prior research, which documents a positive relationship between

[13] The significance level of *CEO AGE* increases, because of multicollinearity. To elaborate, *CEO AGE* is significantly correlated with both *LNCEOPAY* and *CEO TENURE*, when *CEO TENURE* is excluded from the analysis the significance level for *CEO AGE* returns to 10%.

[14] When *LNCEOTENURE* is included in the analysis without the log-transformation an increase of 1 year in a CEO's tenure will lead to a significant increase in *RISK* of 0.119%.

ROA and different risk measures (Coles et al., 2006). As mentioned earlier, this could be the result of Indian firms that were over-investing in total assets, which in turn have failed to produce additional earnings. Another explanation might be that Indian firms performed on average below their targets between 2014 and 2019, which can result into a negative risk-return relationship. These results imply that when all other variables remain constant an increase of 1 per cent in *ROA* will lead to a decrease of 8.5% in firm risk, whereas a one per cent increase in *LEVERAGE* results in an increase of 2.5% in firm risk.

Finally, it is curious to see that the significance of *LEVERAGE* drops from 1% in the separate regression to 10% in the complete model[15]. *LNFSIZE* and *SGROWTH* also exhibit surprising results. Both variables show an insignificant coeffect of .001 and .019 in the separate regressions, while they both illustrate significant coefficients in the complete model with .007******* and .030****** respectively[16]. This implies that when all other variables remain constant an increase of one unit in *LNFSIZE* results in an increase in firm risk of 0.07%[17]. In addition, will a one percent increase in *SGROWTH* result in an increase of 3% in firm risk when all other variables remain constant. The results of *SGROWTH* in the complete model are corresponding with the results found by Coles et al. (2006) who find a significant positive relationship between risk measured by R&D and capital expenditures and sales growth. In the end after including all variables simultaneously in the regression, the first model accounts for 34.6% of the variation in the dependent variable *RISK*.

To summarize, it appears that there is enough evidence to support the first hypothesis, because more CEO compensation will lead to a significant decrease in firm risk as measured by the 12-month standard deviation of a firms monthly stock price returns. This negative relationship between pay and risk is consistent with the managerial power theory, and implies that CEO's in India can influence the pay-setting process significantly and are able to extracting rents.

4.3.2 The Pay-Risk Relationship across Industries

This study also examines whether the effect of CEO compensation on firm risk is different across industries. In order to test whether the effect is different across industries a second hypothesis was formulated, which predicts that the relationship between CEO pay and firm risk is different across industries. More specifically, hypothesis 2a stated that higher CEO compensation should result into lower firm risk in labor-intensive industries, whereas hypothesis 2b predicted that higher compensation should lead to higher firm risk in capital-intensive industries. The second hypothesis was tested via a second regression model, in which the original model was expanded with an interaction term between *LNCEOPAY* and the *CAPITAL-INTENSIVE INDUSTRY DUMMY*

---

[15] The significance level of *LEVERAGE* decreases, because this variable is significantly correlated with other variables. To elaborate, *LEVERAGE* is moderately correlated with *ROA*, which results in a lower significance level when both variables are included in the same model. In fact, *LEVERAGE* becomes highly significant at the 1% level as in the separate regressions when the regression is estimated without *ROA*.

[16] Similar to *LEVERAGE, FSIZE* and *SGROWTH* become significant in column 11, because of multicollinearity. In fact, *FSIZE* is moderately correlated with multiple variables, and when the ownership characteristics are removed from the regression *FSIZE* loses its significance. Moreover, *SGROWTH* is weakly correlated with *ROA* and *LEVERAGE*, and when *LEVERAGE* is removed from the regression *SGROWTH* becomes insignificant.

[17] When *LNFSIZE* is included in the analysis without the log transformation an increase of Rs. 1 billion in total assets will result in a significant increase in *RISK* of 0.003%.

variable. In this model labor-intensive industries serve as reference group. As mentioned earlier, the results for the second model are tabulated in columns 2 and 12 in Table 6.

At first the second column illustrates the results from the separate regression between *RISK* and the interaction term (*LNCEOPAY*CAPITAL-INTENSIVE INDUSTRY DUMMY*). It can be seen that *LNCEOPAY* exhibits a negative and highly significant coefficient at the 1% level of -.012*******, and the *CAPITAL-INTENSIVE INDUSTRY DUMMY* shows a significant relationship with *RISK* at the 5% level (-.203******). Additionally, it can be seen that in the fourth row of the second column that the interaction term *LNCEOPAY*CAPITAL-INTENSIVE INDUSTRY DUMMY* is also significant (.012******). The compensation variable and the interaction term remain both significant in the complete second model in column 12, while the *CAPITAL-INTENSIVE INDUSTRY DUMMY* turned insignificant(-.140). In fact, *LNCEOPAY* shows a significant negative coefficient of -.009*****, while the significance level for the interaction term decreases from the 5% level to the 10% level with a coefficient of .009*****[18].

These result are in line with Abrokwah et al. (2018), and illustrate that firms in labor intensive industries compensate their CEO's to decrease firm risk, while CEO's in capital-intensive industries are compensated to increase risk-taking. Since labor-intensive industries serve as reference group, these results mean that when *LNCEOPAY* increases with one unit the amount of firm risk will fall by 0.09% in labor-intensive industries, and that firm risk will rise with 0.09% in capital-intensive industries when all other variables remain constant[19]. All the other results from the control variables remain qualitatively similar to those presented in the previous section. The only result that does change is the result from *LEVERAGE*, which becomes more significant. However, this result does likely change, because of correlation with other variables in the complete model as discussed earlier.

Overall, at first sight it seems that there is enough evidence to provide support for the second hypothesis. An increase of one unit in *LNCEOPAY* results in a significant decrease of *RISK* in labor-intensive industries, which means that there is enough evidence for hypothesis 2a. This implies that CEO's of S&P BSE500 firms are indeed overcompensated to ensure their loyalty to their firm, and mitigate the additional source of risk that is created by labor mobility. Moreover, when pay is increased in capital-intensive industries this results in a significant increase in *RISK,* and thus providing enough evidence for hypothesis 2b. However, this result becomes insignificant when the regression is estimated with variables that are not log-transformed. Therefore this results is not robust, and implies that there is not enough evidence that firms in capital-intensive industries simply compensate their CEO to increase risk-taking. After all, when the second regression model is estimated with all variables simultaneously, it accounts for 35% of the variation in the dependent variable *RISK*.

[18] The significance level of *LNCEOPAY*CAPITAL-INTENSIVE INDUSTRY DUMMY* decreases because the dummy is significantly correlated with other variables in the model. The ownership characteristics are both significantly correlated with both the compensation variable and the interaction term, when the regressions are estimated with each ownership variable separately *LNCEOPAY* becomes significant at the 1% level as in the separate regressions.

[19] When *LNCEOPAY* and *LNCEOPAY*CAPITAL-INTENSIVE INDUSTRY DUMMY* are included in the analysis without the log transformation an increase of Rs. 1 million in a CEO's price-deflated salary will lead to a significant decrease in *RISK* of 0.026% in labor intensive-industries, while an increase in a CEO's price-deflated salary will lead to an insignificant increase of 0.013% in capital-intensive industries.

Table 6
Firm risk and CEO compensation.

	Regressions											
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
INTERCEPT	.254***	.303***	.125***	.078***	.134***	.091***	.089***	.121***	.103***	.080***	.124***	.167***
	(6.091)	(6.420)	(21.176)	(13.398)	(7.982)	(15.787)	(2.900)	(22.514)	(20.484)	(11.561)	(2.865)	(3.341)
LNCEOPAY	-.009***	-.012***									-.006**	-.009***
	(-3.583)	(-4.207)									(-2.584)	(-3.083)
CAPITAL-INTENSIVE INDUSTRY	-.001	-.203**	.006	.002	-.003	-.005	-.003	.000	-.003	.002	.007	-.140
DUMMY	(-.247)	(-2.191)	(1.148)	(.441)	(-.500)	(-.869)	(-.578)	(-.084)	(-.471)	(.420)	(1.173)	(-1.627)
LNCEOPAY*		.012**										.009*
CAPITAL-INTENSIVE INDUSTRIES		(2.180)										(1.707)
Ownership characteristics												
INST			-.117***								-.084***	-.077***
			(-5.565)								(-3.986)	(-3.605)
NONINST				.154***							.115***	.111***
				(7.100)							(5.122)	(4.971)
CEO characteristics												
CEOAGE					-.001*						-.001***	-.001***
					(-1.805)						(-3.826)	(-3.962)
LNCEOTENURE						.009***					.010***	.010***
						(4.258)					(4.879)	(4.926)
Firm characteristics												
LNFSIZE							.001				.007***	.007***
							(.517)				(3.692)	(3.446)
ROA								-.163***			-.085***	-.079***
								(-5.847)			(-2.847)	(-2.663)
SGROWTH									.019		.030**	.031**
									(1.423)		(2.458)	(2.497)
LEVERAGE										.056***	.025*	.030**
										(4.877)	(1.920)	(2.261)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	367	367	377	377	365	376	377	377	377	377	355	355
Adjusted R^2	.072	.082	.113	.154	.047	.083	.039	.120	.044	.096	.346	.350

*This table reports the results from the OLS regressions of RISK, for 86 firms listed at the S&P BSE500 for the period of 2014-2019. Columns 1-10 report the results for the regressions of RISK with each independent variable separately. The last two columns present the results for the complete first and second model by including all variables simultaneously, where column 11 reports the results for model 1, and column 12 reports the results for model 2. Unstandardized coefficients are reported with the t-statistics between parentheses. All variables are explained in detail in Table 1. All independent variables are lagged by a one-year-period. *, **, *** Significantly different from zero at the 10%, 5%, and 1 % levels respectively, using a two-tailed test.*

4.3.3 Robustness Checks

This study uses a panel dataset which covers multiple years. Up to this point several measures have been taken to ensure the robustness of the results and mitigate biases associated with panel data. For example, the dataset is winsorized at the 1^{st} and 99^{th} percentile to mitigate the impact from outliers. Additionally, all regressions are estimated with VIF values, and run separately before running the complete model with all variables to ensure robust results against multicollinearity. Moreover, all regressions include one-year-lagged explanatory variables, which include control variables and time and industry dummies. However, several additional robustness checks were conducted in order to ensure robust results.

In the first robustness check, all regressions were performed with a log-transformed dependent variable (*LNRISK*). The results of this robustness check are presented in Table C1 in Appendix C. In this table it can be seen that in the first regression model in column 11 the significance levels of *LNCEOPAY* decrease to the 10% level when compared to the original regressions. However, similar to the original regressions *LNCEOPAY* illustrates a significant relationship with *LNRISK*. Therefore, it seems that these results are robust against heteroskedasticity issues. Additionally, it can be seen that the significance level of the relationship between *LNCEOPAY* and *LNRISK* in labor-intensive industries decreases to the 5% level in the second model in column 12. Additionally, the interaction term between *LNCEOPAY* and the *CAPITAL-INTENSIVE INDUSTRY DUMMY* highlighted a significant positive relationship with *RISK* in the original regressions. However, it appears that this result is not robust against heteroskedasticity issues, because it turns insignificant when *LNRISK* is used as dependent variable.

To continue, in the second robustness check the regressions were estimated with an alternative measure for firm risk (*LEVERAGE*). The results for this robustness check are tabulated in Table C2 in Appendix C. The original results showed a significant negative relationship at the 5% level between CEO compensation and firm risk. In Table C2 it can be seen that *LNCEOPAY* exhibits a significant positive relationship with *LEVERAGE* at the 1% level, which is higher than the significance level found in the original results. In contrast with the original results, *LEVERAGE* illustrates a positive and significant relationship with *LNCEOPAY*, which is surprising to see. On the other hand, it can be seen in Table C2 that *LNCEOPAY* exhibits a positive and significant relationship in the second regression model in column 11 at the 1% level, and that the interaction term is significantly and negatively related to *LEVERAGE*. These results are different from the original results, because, the original results showed a significant negative relationship between CEO compensation and firm risk in labor-intensive industries, while this relationship was positive and significant in capital-intensive industries. It appears that when *LEVERAGE* is used as dependent variable the original relationships are reversed. Therefore, these results provide evidence of a robust significant relationship between CEO compensation and firm risk. However, the original results are not robust to the use of this alternative risk measure, because the direction of the original relationship has changed in this robustness test.

Additionally, in the third robustness check logit regressions were estimated with an indicator dependent variable which returned a value of one when *RISK* was larger than the median value of a specific firm, and zero otherwise. In Table C3 in Appendix C the results for this additional robustness check are presented. As mentioned earlier, the original results provided evidence of a significant negative relationship between CEO compensation and firm risk. In Table C3 it can be seen that these results remain quite similar to those found in the original regressions, because in the first regression model in column 11 *LNCEOPAY* illustrates a significant negative relationship with *RISK* at the 5% level. However, the results for the second regression model in the 12^{th} column are different from the original results. At first, these results appear similar, because the compensation variable illustrates a significant negative relationship with firm risk at the 5%. This significance level is slightly lower than the original significance level of 1%. However, it is more interesting to see that the interaction term turns insignificant in this robustness check. It appears that the relationship between *LNCEOPAY* and *RISK* is robust, and that this relationship is also robust in labor-intensive industries. However, this relationship is not robust in capital-intensive industries.

Finally, the fourth additional robustness check involved estimating the regressions with two-year lagged explanatory variables to ensure further robustness of the results. The results for this robustness check are presented in Table C4 in Appendix C. In this table it can be seen that the main results remain qualitatively similar to those found in the original analysis. For example, in the first regression model in column 11 it can be seen that the compensation variable is significantly and negatively associated with the amount of firm risk. Further, it can be seen that *LNCEOPAY* illustrates a significant negative relationship with firm risk at the 1% level in labor-intensive industries, and that this relationship is positive and significant in capital-intensive industries. These results are consistent with the results from the original analysis. Therefore, it appears that the main results are robust against the use of two-year lagged explanatory variables.

5. Concluding Remarks

In this chapter the concluding remarks will be discussed. The first section of this chapter will present the conclusion, which is based on the results who are discussed in the previous chapter. The second section will provide an overview of the limitations of this study and what the possible implications are for future researchers.

5.1 Conclusion

This study has attempted to examine the effect of CEO compensation on firm risk in an emerging market context. In developed markets a CEO's compensation contract has been designed to maximize shareholder value, and align the interests of the CEO with those of the shareholders. However, this efficient contract may not apply to emerging markets, because in emerging markets CEO's have often significant influence over the pay setting process. CEO's can influence this process significantly when they are able to obtain more power within the firm. In emerging markets they can obtain more power because of several reasons. Firstly, in emerging markets corporate governance systems and labor markets are quite often underdeveloped. Secondly, CEO's are often related to the founder of a company or appointed by the government in emerging markets. In addition, many scholars have researched this relationship in the financial services industry, while the effect might also be different across industries because of industry-specific characteristics, shifting degrees of labor and capital-intensity. As a consequence, of the above reasons the relationship might differ from the relationship found in developed markets, and it might be different for different industries. Therefore, the following central research question was formulated: "What is the effect of CEO compensation on firm risk in different industries for publicly listed firms in India?".

After reviewing literature from prior studies into the pay-risk relationship two hypotheses were formulated to find an answer to this research question. The first hypothesis predicted that higher CEO compensation should lead to lower firm risk in Indian firms. The second hypothesis consisted of hypothesis 2a and 2b, and predicted that higher CEO compensation will lead to lower firm risk in labor-intensive industries, but into higher firm risk in capital-intensive industries. To test both hypotheses two research models were created. The first research model was created to evaluate whether higher CEO compensation will lead to lower firm risk, and contained a compensation variable, several control variables, and year- and industry-dummy variables. The second research model was an expansion of the first research model, where the first research model was expanded with an interaction term between the compensation variable and the industry dummy. This model was created to test the second hypothesis, and evaluate whether the pay-risk relationship differs across industries. Later, data was gathered manually via annual reports, and via ORBIS to construct a sample, of 86 Indian firms listed at the S&P BSE500 for the period of 2014-2019. Finally, both hypotheses were tested statistically by performing OLS regressions.

The main goal of this thesis was to investigate the effect of CEO compensation on firm risk in an emerging market context. This study has found several interesting results. At first, this study has provided evidence of a significant negative relationship between CEO compensation and firm risk. These results are robust to the use of a log-transformed dependent variable, an indicator dependent variable with logit regression estimations, and two-year lagged explanatory variables. Nevertheless, the direction of this negative relationship surprisingly turns positive when *LEVERAGE* is used as an alternative measure for firm risk. Based on these results there is not a clear direction of the relationship between pay and firm risk in India, and thus hypothesis 1 cannot be supported. Yet, this study has provided enough evidence to confirm a significant relationship between CEO compensation and firm risk in India.

Secondly, this study has provided evidence of a significant negative relationship between CEO compensation and firm risk in labor-intensive industries, and a positive significant relationship in capital-intensive industries. The pay-risk relationship in labor-intensive industries is robust against the use of a log-transformed dependent variable, an indicator dependent variable with logit regression estimations, and two-year lagged explanatory variables. However, the relationship in capital-intensive industries is not robust to the use of these alternative measures, where this relationship is only robust against the use of two-year explanatory variables. In addition, the direction of both relationships change when an alternative measure of firm risk is used. Accordingly, there is not enough evidence to support hypothesis 2a and 2b, but there is enough evidence to confirm that there is a significant relationship between CEO compensation and firm risk in labor-intensive industries.

Overall, this thesis has found a significant relationship between CEO compensation and firm risk, and that this relationship is also significant in labor-intensive industries. However, both hypotheses could not be supported. Therefore it would be difficult to present a solid answer to the central research question. However, based on the results the best answer that can be provided to the central research question is as follows: There is a robust significant effect of CEO compensation on firm risk in India. This effect is also robust and significant in labor-intensive industries, while capital-intensive industries do not show a robust significant effect between CEO compensation and firm risk.

5.2 Limitations & Recommendations

Despite a thorough investigation of the pay-risk relationship, several limitations remain. At first, the sample only contains large Indian firms listed at the S&P BSE500 to investigate the effect from CEO compensation on firm risk. However, the effect may be different in smaller firms. Additionally, this study focuses solely on the Indian corporate sector, while there may be differences between corporate landscapes among emerging markets. For example, when compared to India two-tier boards are more common in China, and Chinese executives are more often appointed by the government instead of large family business groups (Conyon & He, 2011). These are just two small examples to illustrate that differences exist across emerging markets. As a result, the results of this study may not be applicable to other emerging markets. To put it differently, future researchers may look into the possibility to include both large and small firms from multiple emerging markets when investigating the effect across emerging markets.

Secondly, the final sample size of 86 firms is relatively small when compared to prior research, where sample sizes vary from 209 firms (Kohli, 2018) to as much as 3100 firms (Raithatha & Komera, 2016). Moreover, this study has attempted to investigate the effect of CEO compensation on firm risk across different industries. The final sample contained 86 firms across 10 different industries, however some industries were very unrepresented containing only as much as one- or two firms respectively. As a consequence, new industry groups were created. Nevertheless, despite reclassifying the 10 different industries into labor-intensive and capital intensive industries, the subsamples remain relatively small. Especially, the capital-intensive industries are poorly represented. For these reasons, the results may vary when including more firms in the sample. In other words, a recommendation for future researchers may be to include a sufficient amount of firms in the sample, and ensure that the industry groups have an adequate size when investigating the effect across industries.

Thirdly, this study uses data that is collected for a period of six consecutive years. But, when compared to other studies that investigate the effect from CEO compensation on firm risk, the time frame from 2014 to 2019 is relatively short. To illustrate, Guo et al. (2015) use a time series from

1992 to 2008, and Abrokwah et al. (2018) extend this time series with seven years resulting in a time-series from 1992 to 2015. As a result, this study may not capture the entire effect from CEO compensation on firm risk over a wider time period. Thus a recommendation for future researchers is to include a larger time frame when conducting a time-series. Moreover, a large part of the dataset was collected by hand from annual reports. Consequently, it is possible that during this process some errors have been made in entering the data. Because, my University had no access to a database which included compensation data, I would recommend future researchers to use the Prowess database. This database is maintained by the Centre for Monitoring Indian Economy (CMIE), and reports the financial performance of Indian companies[20].

Fourthly, this study examines the pay-risk relationship by using total firm risk and total CEO compensation as variables. Despite using the amount of leverage as an additional risk variable many other measures for the amount of firm risk exist. For example, Coles et al. (2006) measure firm risk by a firms investment policy, and the amount of business segments. In addition, Gormley et al. (2012) use cash holdings as another proxy for firm risk. Hagendorff and Vallascas (2011) use the Merton distance to default risk model (DD), and finally, Croci and Petmezas (2015) measure risk by the sum of acquisition values scaled by firm size in the previous year. To continue, a CEO's compensation package contains many components which can motivate an executive to take more risk. For example, a lot of research shows that the bonus share and the long-term incentive share do motivate CEO's to take more risk (Frydman & Jenter, 2010; Murphy, 2013). As a result, a recommendation to future researchers would be to look into the possibility of analyzing the pay-risk relationship by incorporating other types of compensation and other proxies for firm risk.

[20] See https://prowessdx.cmie.com/kommon/bin/sr.php?kall=wdispreq for more information.

6. References

Abrokwah, S., Hanig, J., & Schaffer, M. (2018). Executive compensation and firm risk: An examination across industries. *Review of Accounting and Finance*, *17*(3), 359–382. https://doi.org/10.1108/RAF-09-2016-0131

Adithipyangkul, P., Alon, I., & Zhang, T. (2011). Executive perks: Compensation and corporate performance in China. *Asia Pacific Journal of Management*, *28*(2), 401–425. https://doi.org/10.1007/s10490-009-9162-3

Aggarwal, R. K. (2008). Executive compensation and incentives. In *Handbook of Empirical Corporate Finance SET* (Vol. 2, pp. 497–538). Woodhead Publishing Limited. https://doi.org/10.1016/B978-0-444-53265-7.50009-3

Aggarwal, R. K., & Samwick, A. A. (1999). Executive compensation, strategic competition, and relative performance evaluation: Theory and evidence. *Journal of Finance*, *54*(6), 1999–2043. https://doi.org/10.1111/0022-1082.00180

Aivazian, V. A., Lai, T. kei, & Rahaman, M. M. (2013). The market for CEOs: An empirical analysis. *Journal of Economics and Business*, *67*, 24–54. https://doi.org/10.1016/j.jeconbus.2013.02.001

Al Farooque, O., Buachoom, W., & Hoang, N. (2019). Interactive effects of executive compensation, firm performance and corporate governance: Evidence from an Asian market. *Asia Pacific Journal of Management*, *36*(4), 1111–1164. https://doi.org/10.1007/s10490-018-09640-2

Amemiya, T. (1984). Tobit models: A survey. *Journal of Econometrics*, *24*(1–2), 3–61. https://doi.org/10.1016/0304-4076(84)90074-5

Amewu, G., & Alagidede, P. (2019). Executive compensation and firm risk after successful mergers and acquisitions in Africa. *Managerial and Decision Economics*, *40*(6), 672–703. https://doi.org/10.1002/mde.3037

Anantharaman, D., & Fang, V. W. (2012). Executive Debt-Like Compensation. In *Journal of Chemical Information and Modeling* (pp. 139–156). https://doi.org/10.1017/CBO9781107415324.004

Ang, J., Lauterbach, B., & Schreiber, B. Z. (2002). Pay at the executive suite: How do US banks compensate their top management teams? *Journal of Banking and Finance*, *26*(6), 1143–1163. https://doi.org/10.1016/S0378-4266(01)00165-0

Angelis, D. De, & Grinstein, Y. (2015). Performance terms in CEO compensation contracts. *Review of Finance*, *19*(2), 619–651. https://doi.org/10.1093/rof/rfu014

Angrist, J. D., & Imbens, G. W. (1995). Two-Stage Least Squares Estimation of Average Causal Effects in Models with Variable Treatment Intensity. *Journal of the American Statistical Association*, *90*(430), 431. https://doi.org/10.2307/2291054

Armstrong, C. S., Ittner, C. D., & Larcker, D. F. (2012). Corporate governance, compensation consultants, and CEO pay levels. *Review of Accounting Studies*, *17*(2), 322–351. https://doi.org/10.1007/s11142-012-9182-y

Balasubramanian, N., Black, B. S., & Khanna, V. (2010). The relation between firm-level corporate governance and market value: A case study of India. *Emerging Markets Review*, *11*(4), 319–340. https://doi.org/10.1016/j.ememar.2010.05.001

Bartov, E., Mohanram, P., & Nissim, D. (2007). Managerial discretion and the economic determinants of the disclosed volatility parameter for valuing ESOs. *Review of Accounting Studies*, *12*(1), 155–179. https://doi.org/10.1007/s11142-006-9024-x

Bebchuk, L. A., & Fried, J. M. (2003). Executive compensation as an agency problem. *Journal of Economic Perspectives*, *17*(3), 71–92. https://doi.org/10.1017/CBO9780511817410.026

Bebchuk, L. A., & Fried, J. M. (2006). Pay without Performance: Overview of the issues. *Academy of Management Perspectives*, *20*(1), 5–24. https://doi.org/10.4324/9780429300981-2

Bebchuk, L. A., Fried, J. M., & Walker, D. I. (2002). Managerial power and rent extraction in the design of executive compensation. *University of Chicago Law Review*, *69*(3), 751–846. https://doi.org/10.2307/1600632

Bebchuk, L. A., & Jackson, J. R. J. (2015). Executive Pensions. In *NBER working paper series* (Vol. 30). https://doi.org/10.1017/CBO9781107415324.004

Bebchuk, L., Cohen, A., & Wang, C. C. Y. (2014). Golden parachutes and the wealth of shareholders. *Journal of Corporate Finance*, *25*, 140–154. https://doi.org/10.1016/j.jcorpfin.2013.11.008

Bell, A., Fairbrother, M., & Jones, K. (2019). Fixed and random effects models: making an informed choice. *Quality and Quantity*, *53*(2), 1051–1074. https://doi.org/10.1007/s11135-018-0802-x

Boyd, B. K. (1994). Board control and ceo compensation. *Strategic Management Journal*, *15*(5), 335–344. https://doi.org/10.1002/smj.4250150502

Brookman, J. T., & Thistle, P. D. (2013). Managerial compensation: Luck, skill or labor markets? *Journal of Corporate Finance*, *21*(1), 252–268. https://doi.org/10.1016/j.jcorpfin.2013.03.001

Cadman, B., Campbell, J., & Klasa, S. (2016). Are ex ante CEO severance pay contracts consistent with efficient contracting? *Journal of Financial and Quantitative Analysis*, *51*(3), 737–769. https://doi.org/10.1017/S0022109016000375

Cadman, B., & Vincent, L. (2015). The Role of Defined Benefit Pension Plans in Executive Compensation. *European Accounting Review*, *24*(4), 779–800. https://doi.org/10.1080/09638180.2014.959979

Campbell, J. Y., Lettau, M., Malkiel, B. G., & Xu, Y. (2001). Have individual stocks become more volatile? An empirical exploration of idiosyncratic risk. *Journal of Finance*, *56*(1), 1–43. https://doi.org/10.1111/0022-1082.00318

Cassell, C. A., Huang, S. X., Manuel Sanchez, J., & 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. https://doi.org/10.1016/j.jfineco.2011.10.008

Chadha, S., & Sharma, A. K. (2016). An Empirical Study on Capital Structure in Indian Manufacturing Sector. *Global Business Review*, *17*(2), 411–424. https://doi.org/10.1177/0972150915619817

Chakrabarti, R., Subramanian, K., Yadav, P. P., & Yadav, Y. (2012). Executive compensation in India. In *Research Handbook on Executive Pay* (pp. 435–465). https://doi.org/10.4337/9781781005101.00030

Chen, L. (2017). Managerial incentives, R&D investments and cash flows. *Managerial Finance*, *43*(8), 898–913. https://doi.org/10.1108/MF-01-2017-0010

Choudhary, P. (2011). Evidence on differences between recognition and disclosure: A comparison of inputs to estimate fair values of employee stock options. *Journal of Accounting and Economics*, *51*(1–2), 77–94. https://doi.org/10.1016/j.jacceco.2010.09.004

Chu, E. Y., & Song, S. I. (2012). Executive compensation, earnings management and over investment in malaysia. *Asian Academy of Management Journal of Accounting and Finance*, *8*(SUPPL.), 13–37. https://doi.org/10.2139/ssrn.2050862

Coles, J. L., Daniel, N. D., & Naveen, L. (2006). Managerial incentives and risk-taking. *Journal of Financial Economics*, *79*(2), 431–468. https://doi.org/10.1016/j.jfineco.2004.09.004

Conyon, M. J., & He, L. (2011). Executive compensation and corporate governance in China. *Journal of Corporate Finance*, *17*(4), 1158–1175. https://doi.org/10.1016/j.jcorpfin.2011.04.006

Croci, E., Gonenc, H., & Ozkan, N. (2012). CEO compensation, family control, and institutional investors in Continental Europe. *Journal of Banking and Finance*, *36*(12), 3318–3335. https://doi.org/10.1016/j.jbankfin.2012.07.017

Croci, E., & Petmezas, D. (2015). Do risk-taking incentives induce CEOs to invest? Evidence from acquisitions. *Journal of Corporate Finance*, *32*, 1–23. https://doi.org/10.1016/j.jcorpfin.2015.03.001

Cuñat, V., & Guadalupe, M. (2009a). Executive compensation and competition in the banking and financial sectors. *Journal of Banking and Finance*, *33*(3), 495–504. https://doi.org/10.1016/j.jbankfin.2008.09.003

Cuñat, V., & Guadalupe, M. (2009b). Globalization and the provision of incentives inside the firm: The effect of foreign competition. *Journal of Labor Economics*, *27*(2), 179–212. https://doi.org/10.1086/599817

Cziraki, P., & Jenter, D. (2020). *The market for CEOs* (Issue July). https://doi.org/10.2139/ssrn.3644496

D'Mello, R., & Miranda, M. (2014). Introduction of equity-based compensation and impact on firm policies. *Advances in Financial Economics*, *17*, 153–192. https://doi.org/10.1108/S1569-373220140000017005

De Veaux, R. D., Velleman, P. F., & Bock, D. E. (2016). Stats: Data and Models. In *Pearson Education* (Fourth Edi). Pearson Education. https://doi.org/10.1198/tech.2005.s317

Devers, C. E., McNamara, G., Wiseman, R. M., & Arrfelt, M. (2008). Moving closer to the action: Examining compensation design effects on firm risk. *Organization Science*, *19*(4), 548–566. https://doi.org/10.1287/orsc.1070.0317

Donangelo, A. (2014). Labor mobility: Implications for asset pricing. *Journal of Finance*, *69*(3), 1321–1346. https://doi.org/10.1111/jofi.12141

Dow, J., & Raposo, C. C. (2003). CEO compensation, change, and corporate strategy. *Journal of Finance*, *60*(6), 2701–2727. https://doi.org/10.1111/j.1540-6261.2005.00814.x

Edmans, A., & Gabaix, X. (2009). Is CEO pay really inefficient? A survey of new optimal contracting theories. *European Financial Management*, *15*(3), 486–496. https://doi.org/10.1111/j.1468-036X.2009.00500.x

Edmans, A., & Gabaix, X. (2016). Executive compensation: A modern primer. *Journal of Economic Literature*, *54*(4), 1232–1287. https://doi.org/10.1257/jel.20161153

Edmans, A., Gabaix, X., & Jenter, D. (2017). Executive compensation: A survey of theory and evidence. In *ECGI Working Paper* (Issue July). https://doi.org/10.2139/ssrn.2992287

Eisenhardt, K. M. (1989). Agency Theory: An assessment and review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.1159/000169659

Fama, E. (1980). Agency problems and the theory of the firm. *Journal of Political Economy*, *88*(2), 288–307. https://doi.org/10.1017/CBO9780511817410.022

Fama, E. F., & French, K. R. (1992). Required Return on Investments in Construction. In *The Journal of Finance* (Vol. 47, Issue 2, pp. 427–465). https://doi.org/10.1061/(asce)0733-9364(1989)115:1(109)

Favilukis, J., & Lin, X. (2016). Does wage rigidity make firms riskier? Evidence from long-horizon return predictability. *Journal of Monetary Economics*, *78*, 80–95. https://doi.org/10.1016/j.jmoneco.2016.01.003

Feito-Ruiz, I., & Renneboog, L. (2017). Takeovers and (excess) CEO compensation. *Journal of International Financial Markets, Institutions and Money*, *50*(June), 156–181. https://doi.org/10.1016/j.intfin.2017.06.003

Fich, E. M., Tran, A. L., & Walkling, R. A. (2013). On the importance of golden parachutes. In *Journal of Financial and Quantitative Analysis* (Vol. 48, Issue 6). https://doi.org/10.1017/S002210901300063X

Firth, M., Fung, P. M. Y., & Rui, O. M. (2006). Corporate performance and CEO compensation in China. *Journal of Corporate Finance*, *12*(4), 693–714. https://doi.org/10.1016/j.jcorpfin.2005.03.002

Firth, M., Fung, P. M. Y., & Rui, O. M. (2007). How ownership and corporate governance influence chief executive pay in China's listed firms. *Journal of Business Research*, *60*(7), 776–785. https://doi.org/10.1016/j.jbusres.2007.01.014

Forst, A., Park, M. S., & Wier, B. (2014). Insider entrenchment and CEO compensation: Evidence from initial public offering firms. *Journal of Management Accounting Research*, *26*(1), 101–120. https://doi.org/10.2308/jmar-50622

Frattaroli, M. (2020). Does protectionist anti-takeover legislation lead to managerial entrenchment? *Journal of Financial Economics*, *136*(1), 106–136. https://doi.org/10.1016/j.jfineco.2019.03.014

Frydman, C. (2019). Rising through the ranks: The evolution of the market for corporate executives, 1936–2003. *Management Science*, *65*(11), 4951–4979. https://doi.org/10.1287/mnsc.2018.3080

Frydman, C., & Jenter, D. (2010). CEO compensation. *Annual Review of Financial Economics*, *2*, 75–102. https://doi.org/10.1146/annurev-financial-120209-133958

Gabaix, X., & Landier, A. (2008). Why has CEO pay increased so much? *Quarterly Journal of Economics*, *123*(1), 49–100. https://doi.org/10.1162/qjec.2008.123.1.49

Gallego, F., & Larrain, B. (2012). CEO compensation and large shareholders: Evidence from emerging markets. *Journal of Comparative Economics*, *40*(4), 621–642. https://doi.org/10.1016/j.jce.2012.02.003

Gande, A., & Kalpathy, S. (2017). CEO compensation and risk-taking at financial firms: Evidence from U.S. federal loan assistance. *Journal of Corporate Finance*, *47*, 131–150. https://doi.org/10.1016/j.jcorpfin.2017.09.001

Garicano, L., & Rossi-Hansberg, E. (2005). *Organization and Inequality in a Knowledge Economy* (No. 11458; NBER Working Paper Series, Issue June).

Gaver, J. J., & Gaver, K. M. (1993). Additional evidence on the association ebtween the investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Accounting and Economics*, *16*, 125–160.

Ghosh, A. (2006). Determination of executive compensation in an emerging economy: Evidence from India. *Emerging Markets Finance and Trade*, *42*(3), 66–90. https://doi.org/10.2753/REE1540-496X420304

Goldman, E. M., & Huang, P. P. (2015). Contractual vs. actual separation pay following CEO turnover. *Management Science*, *61*(5), 1108–1120. https://doi.org/10.1287/mnsc.2014.1988

Gong, G., Li, L. Y., & Shin, J. Y. (2011). Relative performance evaluation and related peer groups in executive compensation contracts. *Accounting Review*, *86*(3), 1007–1043. https://doi.org/10.2308/accr.00000042

Gormley, T. A., Matsa, D. A., & Milbourn, T. (2012). CEO compensation and corporate risk: Evidence from a natural experiment. *Journal of Accounting and Economics*, *56*(2–3), 79–101. https://doi.org/10.1016/j.jacceco.2013.08.001

Grinstein, Y., Weinbaum, D., & Yehuda, N. (2017). The economic consequences of perk disclosure. *Contemporary Accounting Research*, *34*(4), 1812–1842. https://doi.org/10.1111/1911-3846.12343

Guo, L., Jalal, A., & Khaksari, S. (2015). Bank executive compensation structure, risk taking and the financial crisis. *Review of Quantitative Finance and Accounting*, *45*(3), 609–639. https://doi.org/10.1007/s11156-014-0449-1

Hagendorff, J., & Vallascas, F. (2011). CEO pay incentives and risk-taking: Evidence from bank acquisitions. *Journal of Corporate Finance*, *17*(4), 1078–1095. https://doi.org/10.1016/j.jcorpfin.2011.04.009

Hair, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2014). *Multivariate Data Analysis* (7th ed.). Pearson Education Limited.

Hall, A. R. (2009). Generalized method of moments. *A Companion to Theoretical Econometrics*, 230–255. https://doi.org/10.1002/9780470996249.ch12

Hall, B. J., & Murphy, K. J. (2003). The trouble with stock options. *Journal of Economic Perspectives*, *17*(3), 49–70. https://doi.org/10.1257/089533003769204353

Hartzell, J. C., Ofek, E., & Yermack, D. (2004). What's in it for me? CEOs whose firms are acquired. *Review of Financial Studies*, *17*(1), 37–61. https://doi.org/10.1093/rfs/hhg034

Hayes, R. M., Lemmon, M., & Qiu, M. (2012). Stock options and managerial incentives for risk taking: Evidence from FAS 123R. *Journal of Financial Economics*, *105*(1), 174–190. https://doi.org/10.1016/j.jfineco.2012.01.004

Hermalin, B. E. (2005). Trends in corporate governance. *Journal of Finance*, *60*(5), 2351–2384. https://doi.org/10.1111/j.1540-6261.2005.00801.x

Heron, R. A., & Lieb, E. (2017). Do stock options overcome managerial risk aversion? Evidence from exercises of executive stock options. *Management Science*, *63*(9), 3057–3071. https://doi.org/10.1287/mnsc.2016.2485

Himmelberg, C., & Hubbard, R. (2000). *Incentive pay and the market for CEOs: An analysis of pay-for-performance sensitivity.* http://papers.ssrn.com/sol3/papers.cfm?abstract_id=236089

Houqe, M. N. (2011). Executive compensation and corporate performance: Evidence from an emerging market. *Corporate Ownership and Control*, *8*(3 F), 505–510. https://doi.org/10.22495/cocv8i3c5p1

Houston, J. F., & James, C. (1995). CEO compensation and bank risk Is compensation in banking structured to promote risk taking? *Journal of Monetary Economics*, *36*(2), 405–431. https://doi.org/10.1016/0304-3932(95)01219-2

Huang, Y. T., Wu, M. C., & Liao, S. L. (2013). The relationship between equity-based compensation and managerial risk taking: Evidence from China. *Emerging Markets Finance and Trade*, *49*(SUPPL2), 107–125. https://doi.org/10.2753/REE1540-496X4902S206

Hubbard, A. E., Ahern, J., Fleischer, N. L., Laan, M. Van Der, Lippman, S. A., Jewell, N., Bruckner, T., & Satariano, W. A. (2010). To GEE or not to GEE: Comparing population average and mixed models for estimating the associations between neighborhood risk factors and health. *Epidemiology*, *21*(4), 467–474. https://doi.org/10.1097/EDE.0b013e3181caeb90

Hubbard, R. G., & Palia, D. (1995). Executive pay and performance Evidence from the U.S. banking industry. *Journal of Financial Economics*, *39*(1), 105–130. https://doi.org/10.1016/0304-405X(94)00816-J

Iqbal, J., & Vähämaa, S. (2019). Managerial risk-taking incentives and the systemic risk of financial institutions. *Review of Quantitative Finance and Accounting*, *53*(4), 1229–1258. https://doi.org/10.1007/s11156-018-0780-z

Jaiswall, S. S., & Bhattacharyya, A. K. (2016). Corporate governance and CEO compensation in Indian firms. *Journal of Contemporary Accounting and Economics*, *12*(2), 159–175. https://doi.org/10.1016/j.jcae.2016.06.001

Jaiswall, S. S., & Raman, K. K. (2019). Sales growth, CEO pay, and corporate governance in India. *Journal of Accounting, Auditing and Finance*. https://doi.org/10.1177/0148558X19825672

Jensen, Michael, C., & Meckling, William, H. (1976). Theory of the firm: Managerial behavior, agency costs and ownership structure. *Journal of Financial Economics*, *3*(4), 305–360. https://doi.org/10.1177/0018726718812602

Jenter, D., & Lewellen, K. (2017). Performance-induced CEO turnover. In *Discussion Paper* (Issue 768). https://doi.org/10.2139/ssrn.1570635

John, K., & Qian, Y. (2003). Incentive features in CEO compensation in the banking industry. *Economic Policy Review*, *April*, 109–121.

Jung, H. W., & Subramanian, A. (2017). CEO talent, CEO compensation, and product market competition. *Journal of Financial Economics*, *125*(1), 48–71. https://doi.org/10.1016/j.jfineco.2017.04.005

Kato, T., Kim, W., & Lee, J. H. (2007). Executive compensation, firm performance, and Chaebols in Korea: Evidence from new panel data. *Pacific Basin Finance Journal*, *15*(1), 36–55. https://doi.org/10.1016/j.pacfin.2006.03.004

Kim, K., Patro, S., & Pereira, R. (2017). Option incentives, leverage, and risk-taking. *Journal of Corporate Finance*, *43*, 1–18. https://doi.org/10.1016/j.jcorpfin.2016.12.003

Kohli, M. (2018). Impact of ownership type and board characteristics on the pay–performance relationship: Evidence from India. *Indian Journal of Corporate Governance*, *11*(1), 1–34. https://doi.org/10.1177/0974686218763853

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Corporate Governance and Corporate Finance: A European Perspective*, *58*, 3–27. https://doi.org/10.4324/9780203940136

Larcker, D. F., & Tayan, B. (2015). *Quick guide | CEO compensation: Data*. https://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/cgri-quick-guide-08-ceo-compensation.pdf%0Ahttps://www.gsb.stanford.edu/sites/gsb/files/publication-pdf/cgri-quick-guide-17-ceo-compensation-data.pdf

Lee, L. F., Lowry, M., & Shu, S. (2018). Are all perks solely perks? Evidence from corporate jets. *Journal of Corporate Finance*, *48*, 460–473. https://doi.org/10.1016/j.jcorpfin.2017.11.014

Li, M., & Roberts, H. (2017). Director and CEO pay reciprocity and CEO board membership. *Journal of Economics and Business*, *94*, 54–65. https://doi.org/10.1016/j.jeconbus.2017.10.002

Liu, Y., & Mauer, D. C. (2011). Corporate cash holdings and CEO compensation incentives. *Journal of Financial Economics*, *102*(1), 183–198. https://doi.org/10.1016/j.jfineco.2011.05.008

Low, A. (2009). Managerial risk-taking behavior and equity-based compensation. *Journal of Financial Economics*, *92*(3), 470–490. https://doi.org/10.1016/j.jfineco.2008.05.004

Luo, Y. (2014). Executive compensation in emerging markets: Theoretical developments and empirical evidence. In *Corporate Governance and Corporate Social Responsibility: Emerging Markets Focus* (pp. 499–529).

Luo, Yongli. (2015). CEO power, ownership structure and pay performance in Chinese banking. *Journal of Economics and Business*, *82*, 3–16. https://doi.org/10.1016/j.jeconbus.2015.04.003

Martin, P. L. (1983). Labor-intensive agriculture it is becoming vulnerable to cheaper produce from other countries. *Scientific American*, *249*(4), 54–59.

Mátyás, L., & Sevestre, P. (2008). The econometrics of panel data: Fundamentals and recent developments in theory and practice. In *Hendri Theil's Contributions to Economics and Econometrics* (Issue June).

Mazouz, K., & Zhao, Y. (2019). CEO incentives, takeover protection and corporate innovation. *British Journal of Management*, *30*(2), 494–515. https://doi.org/10.1111/1467-8551.12330

Mehran, H. (1995). Executive compensation structure, ownership, and firm performance. *Journal of Financial Economics*, *38*(2), 163–184. https://doi.org/10.1016/0304-405X(94)00809-F

Mertens, G., & Knop, N. (2010). The Impact of ownership and board structure on CEO compensation in the Netherlands. In *Rotterdam School of Management* (Issue July).

Murphy, K. J. (1999). Executive compensation. In *Handbook of Labor Economics* (Vol. 3, pp. 2486-2557). https://doi.org/10.1561/0500000046

Murphy, K. J. (2013). Executive compensation: Where we are, and how we got there. In *Handbook of the Economics of Finance* (Vol. 2, Issue PA). Elsevier B.V. https://doi.org/10.1016/B978-0-44-453594-8.00004-5

Murphy, K. J., & Zabojnik, J. (2004). CEO pay and appointments : A market-based explanation for recent trends. *The American Economic Review*, *94*(2), 192–196.

Murphy, K. J., & Zabojnik, J. (2006). Managerial capital and the market for CEOs. In *Queen's Economics Department* (No. 1110; Queen's Economics Department Working Paper). https://doi.org/10.2139/ssrn.984376

Parthasarathy, A., Menon, K., & Bhattacherjee, D. (2006). Executive compensation, firm performance and governance. *Economic and Political Weekly*, *54*(4), 4139–4147.

Raithatha, M., & Komera, S. (2016). Executive compensation and firm performance: Evidence from Indian firms. *IIMB Management Review*, *28*(3), 160–169. https://doi.org/10.1016/j.iimb.2016.07.002

Rajan, R. G., & Wulf, J. (2006). Are perks purely managerial excess? *Journal of Financial Economics*, *79*(1), 1–33. https://doi.org/10.1016/j.jfineco.2005.01.003

Reddy, K., Abidin, S., & You, L. (2015). Does corporate governance matter in determining CEO compensation in the publicly listed companies in New Zealand? An empirical investigation. *Managerial Finance*, *41*(3), 301–327.

Roodman, D. (2006). *How to do Xtabond2: An Introduction to Difference and System GMM in Stata* (Issue 103). https://doi.org/10.2139/ssrn.982943

Rosen, S. (1981). The Economics of superstars. *The American Economic Review*, *71*(5), 845–858. https://doi.org/10.2307/1803469

Rosen, S. (1982). Authority , control , and the distribution of earnings. *The Bell Journal of Economic*, *13*(2), 311–323.

Rusticus, T. O. (2006). *Executive severance agreements*. https://www.gsb.stanford.edu/facseminars/pdfs/Rusticus_Executive_Severance.pdf

Saha, B., & Sarkar, S. (1999). Schooling, informal experience, and formal sector earnings: A study of Indian workers. *Review of Development Economics*, *3*(2), 187–199. https://doi.org/10.1111/1467-9361.00060

Sarkar, J., & Sarkar, S. (2000). Large shareholder activism in corporate governance in developing countries: Evidence from India. *International Review of Finance*, *1*(3), 161–194. https://doi.org/10.1111/1468-2443.00010

Serfling, M. A. (2014). CEO age and the riskiness of corporate policies. *Journal of Corporate Finance*, *25*, 251–273. https://doi.org/10.1016/j.jcorpfin.2013.12.013

Sheikh, M. F., Shah, S. Z. A., & Akbar, S. (2018). Firm performance, corporate governance and executive compensation in Pakistan. *Applied Economics*, *50*(18), 2012–2027. https://doi.org/10.1080/00036846.2017.1386277

Smirnova, A. S., & Zavertiaeva, M. A. (2017). Research in international business and finance which came first , CEO compensation or firm performance ? The causality dilemma in European companies. *Research in International Business and Finance*, *42*(July), 658–673. https://doi.org/10.1016/j.ribaf.2017.07.009

Smith, C. W., & Watts, R. L. (1992). The investment opportunity set and corporate financing, dividend, and compensation policies. *Journal of Financial Economics*, *32*(3), 263–292. https://doi.org/10.1016/0304-405X(92)90029-W

Stefanescu, I., Wang, Y., Xie, K., & Yang, J. (2018). Pay me now (and later): Pension benefit manipulation before plan freezes and executive retirement. *Journal of Financial Economics*, *127*(1), 152–173. https://doi.org/10.1016/j.jfineco.2017.10.006

Sundaram, R. K., & Yermack, D. L. (2007). Pay me later: Inside debt and its role in managerial compensation. *Journal of Finance*, *62*(4), 1551–1588. https://doi.org/10.1111/j.1540-6261.2007.01251.x

Theeravanich, A. (2013). Director Compensation in Emerging Markets: A Case Study of Thailand. *Journal of Economics and Business*, *70*, 71–91. https://doi.org/10.1016/j.jeconbus.2013.05.001

Tosun, O. K. (2020). Differences in CEO compensation under large and small institutional ownership. *European Financial Management*, *26*(4), 1031–1058. https://doi.org/10.1111/eufm.12252

Unite, A. A., Sullivan, M. J., Brookman, J., Majadillas, M. A., & Taningco, A. (2008). Executive pay and firm performance in the Philippines. *Pacific Basin Finance Journal*, *16*(5), 606–623. https://doi.org/10.1016/j.pacfin.2006.12.002

van Essen, M., Otten, J., & Carberry, E. J. (2015). Assessing managerial power theory: A meta-analytic approach to understanding the determinants of CEO compensation. *Journal of Management*, *41*(1), 164–202. https://doi.org/10.1177/0149206311429378

Wintoki, M. B., Linck, J. S., & Netter, J. M. (2012). Endogeneity and the dynamics of internal corporate governance. *Journal of Financial Economics*, *105*(3), 581–606. https://doi.org/10.1016/j.jfineco.2012.03.005

Yermack, D. (2006a). Flights of fancy: Corporate jets, CEO perquisites, and inferior shareholder returns. *Journal of Financial Economics*, *80*(1), 211–242. https://doi.org/10.1016/j.jfineco.2005.05.002

Yermack, D. (2006b). Golden handshakes: Separation pay for retired and dismissed CEOs. *Journal of Accounting and Economics*, *41*(3), 237–256. https://doi.org/10.1016/j.jacceco.2006.01.001

Zellner, A., & Theil, H. (1992). Three-stage least squares: Simultaneous estimation of simultaneous equations. *Advanced Studies in Theoretical and Applied Econometric* (Vol. 23, pp. 147–178). Springer. https://doi.org/10.1007/978-94-011-2546-8_10

Zheng, Z., Zhou, L. A., Sun, Y., & Chen, C. (2016). Executive compensation and legal investor protection: Evidence from China's listed firms. *Review of Development Economics*, *20*(1), 39–47. https://doi.org/10.1111/rode.12209

Ziegler, A., & Vens, M. (2010). Generalized estimating equations. *Methods of Information in Medicine*, *49*(5), 421–425. https://doi.org/10.3414/me10-01-0026

Zsohar, P. (2012). Short introduction to the generalized method of moments. *Hungarian Statistical Review*, *16*, 150–170.

7. Appendices

7.1 Appendix A: Industry classifications before- and after restructuring.

Firm	Industry before reclassification	Industry after reclassification
3M INDIA LTD	Manufacturing	Labor-intensive
ABB INDIA LTD	Manufacturing	Labor-intensive
ABBOTT INDIA LTD	Manufacturing	Labor-intensive
ACC LTD	Manufacturing	Labor-intensive
ADANI ENTERPRISES LTD	Wholesale and retail trade	Labor-intensive
AIA ENGINEERING LTD	Manufacturing	Labor-intensive
AKZO NOBEL INDIA LTD	Manufacturing	Labor-intensive
ALKYL AMINES CHEMICALS LTD	Manufacturing	Labor-intensive
ALLCARGO LOGISTICS LTD	Manufacturing	Labor-intensive
AMBUJA CEMENTS LTD	Manufacturing	Labor-intensive
ASTRAZENECA PHARMA INDIA LTD	Manufacturing	Labor-intensive
BASF INDIA LTD	Manufacturing	Labor-intensive
BATA INDIA LTD	Manufacturing	Labor-intensive
BAYER CROPSCIENCE LTD	Manufacturing	Labor-intensive
BERGER PAINTS INDIA LTD	Manufacturing	Labor-intensive
BLUE DART EXPRESS LTD	Transportation and storage	Capital-intensive
BRITANNIA INDUSTRIES LTD	Manufacturing	Labor-intensive
CADILA HEALTHCARE LTD	Manufacturing	Labor-intensive
CASTROL INDIA LTD	Manufacturing	Labor-intensive
COFORGE LTD	Information and communication	Capital-intensive
COLGATE-PALMOLIVE (INDIA) LTD	Manufacturing	Labor-intensive
COROMANDEL INTERNATIONAL LTD	Manufacturing	Labor-intensive
CRISIL LTD	Professional, scientific and technical activities	Labor-intensive
CUMMINS INDIA LTD	Manufacturing	Labor-intensive
D. B. CORP LTD	Information and communication	Capital-intensive
DHANUKA AGRITECH LTD	Manufacturing	Labor-intensive
DLF LTD	Real estate activities	Capital-intensive
EPL LTD	Manufacturing	Labor-intensive
ESAB INDIA LTD	Manufacturing	Labor-intensive
FIRSTSOURCE SOLUTIONS LTD	Wholesale and retail trade	Labor-intensive
FORCE MOTORS LTD	Manufacturing	Labor-intensive
GE POWER INDIA LTD	Manufacturing	Labor-intensive
GLAXOSMITHKLINE PHARMACEUTICALS LTD	Manufacturing	Labor-intensive
GRAPHITE INDIA LTD	Manufacturing	Labor-intensive
GRINDWELL NORTON LTD	Manufacturing	Labor-intensive
HATHWAY CABLE & DATACOM LTD	Manufacturing	Labor-intensive
HINDUSTAN UNILEVER LTD	Manufacturing	Labor-intensive
HINDUSTAN ZINC LTD	Mining and quarrying	Capital-intensive

(*continued on next page*)

Appendix A (*continued*)

HONEYWELL AUTOMATION INDIA LTD	Information and communication	Capital-intensive
INOX LEISURE LTD	Information and communication	Capital-intensive
IRB INFRASTRUCTURE DEVELOPERS LTD	Construction	Labor-intensive
J.K.CEMENT LTD	Manufacturing	Labor-intensive
JAGRAN PRAKASHAN LTD	Manufacturing	Labor-intensive
JK TYRE & INDUSTRIES LTD	Manufacturing	Labor-intensive
JOHNSON CONTROLS-HITACHI AIR CONDITIONING INDIA LTD	Manufacturing	Labor-intensive
JTEKT INDIA LTD	Manufacturing	Labor-intensive
KANSAI NEROLAC PAINTS LTD	Manufacturing	Labor-intensive
LINDE INDIA LTD	Manufacturing	Labor-intensive
MAHARASHTRA SCOOTERS LTD	Manufacturing	Labor-intensive
MAHINDRA LIFESPACE DEVELOPERS LTD	Real estate activities	Capital-intensive
MARUTI SUZUKI INDIA LTD	Manufacturing	Labor-intensive
MINDTREE LTD	Information and communication	Capital-intensive
NESTLE INDIA LTD	Manufacturing	Labor-intensive
OBEROI REALTY LTD	Real estate activities	Capital-intensive
PFIZER LTD	Manufacturing	Labor-intensive
PHILLIPS CARBON BLACK LTD	Manufacturing	Labor-intensive
PRESTIGE ESTATES PROJECTS LTD	Construction	Labor-intensive
RALLIS INDIA LTD	Manufacturing	Labor-intensive
SANOFI INDIA LTD	Manufacturing	Labor-intensive
SCHAEFFLER INDIA LTD	Manufacturing	Labor-intensive
SEQUENT SCIENTIFIC LTD	Manufacturing	Labor-intensive
SIEMENS LTD	Manufacturing	Labor-intensive
SKF INDIA LTD	Manufacturing	Labor-intensive
SRF LTD	Manufacturing	Labor-intensive
STERLITE TECHNOLOGIES LTD	Manufacturing	Labor-intensive
SUN TV NETWORK LTD	Information and communication	Capital-intensive
T.V. TODAY NETWORK LTD	Information and communication	Capital-intensive
TASTY BITE EATABLES LTD	Manufacturing	Labor-intensive
TATA COFFEE LTD	Manufacturing	Labor-intensive
TATA CONSULTANCY SERVICES LTD	Information and communication	Capital-intensive
THERMAX LTD	Manufacturing	Labor-intensive
TIMKEN INDIA LTD	Manufacturing	Labor-intensive
TORRENT PHARMACEUTICALS LTD	Manufacturing	Labor-intensive
TORRENT POWER LTD	Electricity, gas, steam and air conditioning supply	Capital-intensive
TRIDENT LTD	Manufacturing	Labor-intensive
TTK PRESTIGE LTD	Manufacturing	Labor-intensive
TVS MOTOR COMPANY LTD	Manufacturing	Labor-intensive
ULTRATECH CEMENT LTD	Manufacturing	Labor-intensive

(*continued on next page*)

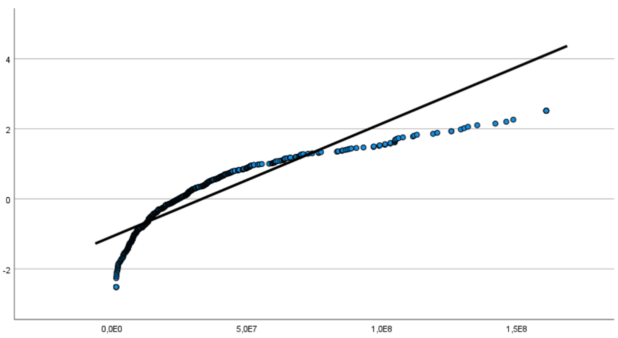
Appendix A (*continued*)

VEDANTA LTD	Mining and quarrying	Capital-intensive
VENKY'S (INDIA) LTD	Agriculture, forestry and fishing	Labor-intensive
VINATI ORGANICS LTD.	Manufacturing	Labor-intensive
WABCO INDIA LTD	Wholesale and retail trade	Labor-intensive
WELSPUN INDIA LTD	Manufacturing	Labor-intensive
WHIRLPOOL OF INDIA LTD	Manufacturing	Labor-intensive
WOCKHARDT LTD	Manufacturing	Labor-intensive
ZYDUS WELLNESS LTD	Manufacturing	Labor-intensive

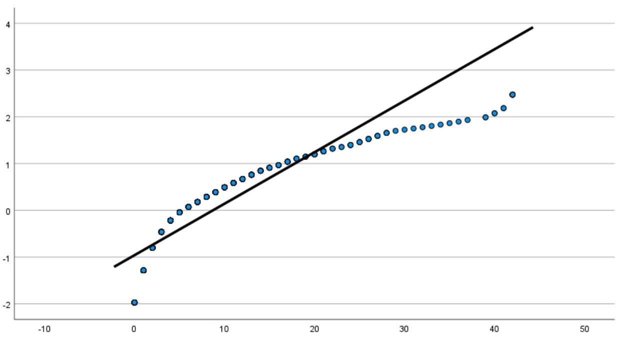
7.2 Appendix B: Normality plots before and after log transformation.

Before log-transformation

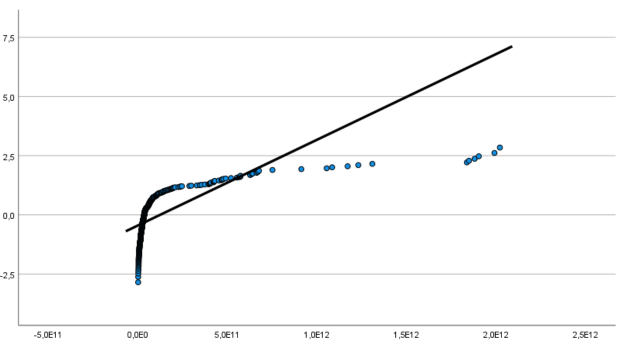
Normal Q-Q Plot of *CEOPAY*



Normal Q-Q Plot of *CEOTENURE*

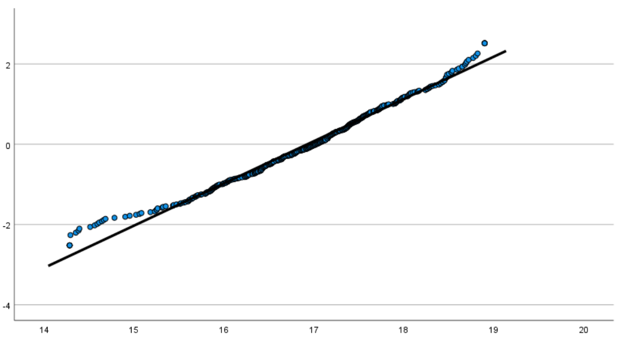


Normal Q-Q Plot of *FSIZE*

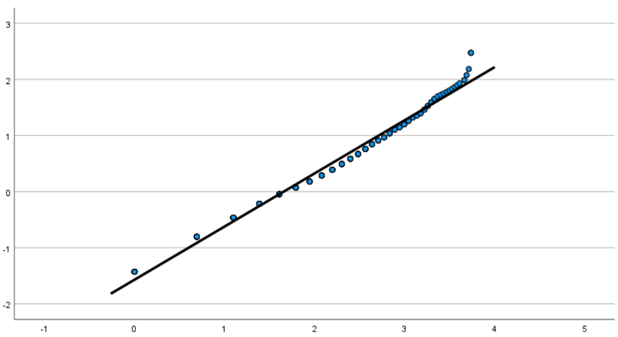


After log-transformation

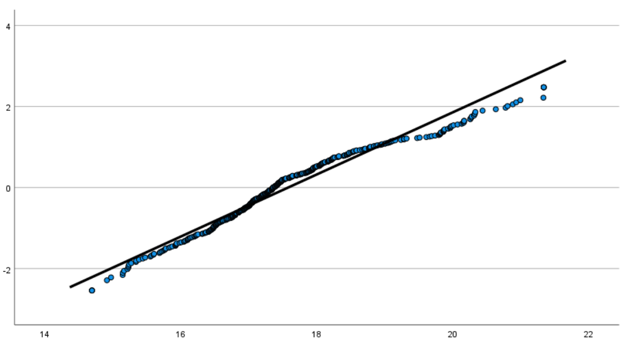
Normal Q-Q Plot of *LNCEOPAY*



Normal Q-Q Plot of *LNTENURE*



Normal Q-Q Plot of *LNFSIZE*



7.3 Appendix C: Robustness Checks

Table C1

Robustness test against heteroskedasticity by replacing *RISK* with *LNRISK*.

	Regressions											
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
INTERCEPT	-1.050***	-.649	-2.150***	-2.570***	-2.155***	-2.467	-2.425***	-2.170***	-2.359***	-2.562***	-2.180***	-1.861***
	(-2.762)	(-1.505)	(-39.867)	(-47.995)	(-14.053)	(-47.147)	(.005)	(-44.965)	(-51.650)	(-40.658)	(-5.515)	(-4.079)
LNCEOPAY	-.075***	-.098***									-.044*	-.060**
	(-3.392)	(-3.920)									(-1.947)	(-2.369)
CAPITAL-INTENSIVE	-.002	-1.642*	.071	.031	-.020	-.032	-.017	.010	-.013	.032	.074	-1.014
INDUSTRY DUMMY	(-.043)	(-1.607)	(1.370)	(.645)	(-.370)	(-.642)	(-.315)	(.209)	(-.246)	(.642)	(1.460)	(-1.294)
LNCEOPAY*		.097*										.064
CAPITAL-INTENSIVE		(1.943)										(1.392)
INDUSTRIES												
Ownership characteristics												
INST			-1.063***								-.747***	-.698***
			(-5.562)								(-3.892)	(-3.581)
NONINST				1.355***							.943***	.919***
				(6.849)							(4.628)	(4.497)
CEO characteristics												
CEOAGE					-.003						-.008***	-.009***
					(-1.202)						(-3.233)	(-3.339)
LNCEOTENURE						.080***					.085***	.085***
						(4.334)					(4.549)	(4.582)
Firm characteristics												
LNFSIZE							.005				.054***	.050***
							(.319)				(2.983)	(2.778)
ROA								-1.690***			-1.155***	-1.116***
								(-6.760)			(-4.271)	(-4.110)
SGROWTH									.201		.330***	.333***
									(1.641)		(2.922)	(2.952)
LEVERAGE										.511***	.171	.209*
										(4.848)	(1.436)	(1.714)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	367	367	377	377	365	376	377	377	377	377	355	355
Adjusted R^2	.065	.073	.108	.142	.038	.080	.034	.140	.041	.091	.341	.342

*This table reports the results from the OLS regressions of the natural logarithm of RISK (LNRISK), for 86 firms listed at the S&P BSE500 for the period of 2014-2019. Columns 1-10 report the results for the regressions of LNRISK with each independent variable separately. The last two columns present the results for the complete first and second model by including all variables simultaneously, where column 11 reports the results for model 1, and column 12 reports the results for model 2. Unstandardized coefficients are reported with the t-statistics between parentheses. All variables are explained in detail in Table 1. All independent variables are lagged by a one-year-period. *, **, *** Significantly different from zero at the 10%, 5%, and 1 % levels respectively, using a two-tailed test.*

Table C2
Robustness test by replacing *RISK* with *LEVERAGE*.

	Regressions										
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**
INTERCEPT	-.457**	-.756***	.447***	.428***	.441***	.415***	-.467***	.550***	.446***	-.949***	-1.345***
	(-2.586)	(-3.803)	(16.531)	(15.623)	(5.965)	(16.160)	(-3.691)	(25.387)	(20.248)	(-5.528)	(-7.132)
LNCEOPAY	.052***	.069***								.057***	.076***
	(5.063)	(6.007)								(5.743)	(7.239)
CAPITAL-INTENSIVE INDUSTRY	-.063***	1.160***	-.062**	-.067***	-.081***	-.072***	-.107***	-.052**	-.068***	-.078***	1.437***
DUMMY	(-2.630)	(2.977)	(-2.397)	(-2.676)	(-3.144)	(-2.927)	(-4.498)	(-2.384)	(-2.760)	(-3.485)	(4.277)
LNCEOPAY*		-.072***									-.089***
CAPITAL-INTENSIVE INDUSTRIES		(-3.145)									(-4.519)
Ownership characteristics											
INST			-.076							-.222**	-.275***
			(-.790)							(-2.602)	(-3.289)
NONINST				.033						.160*	.185**
				(.327)						(1.748)	(2.074)
CEO characteristics											
CEOAGE					.000					-.001	-.001
					(-.134)					(-1.040)	(-.673)
LNCEOTENURE						.012				.016*	.015*
						(1.330)				(1.940)	(1.803)
Firm characteristics											
LNFSIZE							.051***			.035***	.038***
							(7.210)			(4.431)	(4.892)
ROA								-1.175***		-1.006***	-1.008***
								(-10.457)		(-9.146)	(-9.424)
SGROWTH									-.109*	-.047	-.049
									(-1.837)	(-.930)	(-.988)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	367	367	377	377	365	376	377	377	377	355	355
Adjusted R^2	.074	.096	.011	.010	.017	.017	.132	.236	.019	.388	.421

*This table reports the results from the OLS regressions of LEVERAGE, for 86 firms listed at the S&P BSE500 for the period of 2014-2019. Columns 1-9 report the results for the regressions of LEVERAGE with each independent variable separately. The last two columns present the results for the complete first and second model by including all variables simultaneously, where column 10 reports the results for model 1, and column 11 reports the results for model 2. Unstandardized coefficients are reported with the t-statistics between parentheses. All variables are explained in detail in Table 1. All independent variables are lagged by a one-year-period. *, **, *** Significantly different from zero at the 10%, 5%, and 1 % levels respectively, using a two-tailed test.*

Table C3
Robustness test against endogeneity by estimating logit regressions and replacing *RISK* with *VOLDUMMY.*

	Regressions											
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
INTERCEPT	6.404***	8.276***	1.023***	-1.121***	.349	-.558*	-.073	.831***	-.023	-.940***	3.272	3.272
	(2.121)	(2.472)	(.311)	(.313)	(.804)	(.285)	(1.473)	(.283)	(.237)	(.248)	(3.572)	(3.572)
LNCEOPAY	-.370***	-.480***									-.444**	-.444**
	(.123)	(.144)									(.197)	(.197)
CAPITAL-INTENSIVE INDUSTRY	.287	-6.995	.607**	.397	.140	.080	.155	.297	.159	.358	-3.669	-3.669
DUMMY	(.281)	(4.623)	(.294)	(2.86)	(.280)	(.274)	(.277)	(.284)	(.270)	(.279)	(6.041)	(6.041)
LNCEOPAY*		.431										.263
CAPITAL-INTENSIVE		(273)										(.355)
INDUSTRIES												
Ownership characteristics												
INST			-5.738***								-4.895***	-4.895***
			(1.177)								(1.426)	(1.426)
NONINST				6.755***							5.179***	5.179***
				(1.256)							(1.568)	(1.568)
CEO characteristics:												
CEOAGE					-.005						-.036*	-.036*
					(.014)						(.020)	(.020)
LNCEOTENURE						.354***					.451***	.451***
						(.103)					(.142)	(.142)
Firm characteristics												
LNFSIZE							.005				.336**	.336**
							(.083)				(.138)	(.138)
ROA								-8.431***			-6.278***	-6.278***
								(1.658)			(2.256)	(2.256)
SGROWTH									.386		1.058	1.058
									(.647)		(.801)	(.801)
LEVERAGE										2.180***	.765	.765
										(.593)	(.934)	(.934)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	367	367	377	377	365	376	377	377	377	377	355	355
Pseudo R^2	.077	.085	.126	.147	.042	.078	.038	.138	.039	.085	.338	.338

*This table reports the results from the logit regressions of a dummy based dependent variable (VOLDUMMY) which indicates one when RISK is higher than the median value of 86 firms listed at the S&P BSE500 for the period of 2014-2019, otherwise zero. Columns 1-10 report the results for the regressions of VOLDUMMY with each independent variable separately. The last two columns present the results for the complete first and second model by including all variables simultaneously, where column 11 reports the results for model 1, and column 12 reports the results for model 2. Unstandardized coefficients are reported with robust standard errors between parentheses. All variables are explained in detail in Table 1. All independent variables are lagged by a one-year-period. *, **, *** Significantly different from zero at the 10%, 5%, and 1 % levels respectively, using a two-tailed test.*

Table C4
Robustness test by lagging the independent variables by a two-year period.

	Regressions											
Independent variables	**(1)**	**(2)**	**(3)**	**(4)**	**(5)**	**(6)**	**(7)**	**(8)**	**(9)**	**(10)**	**(11)**	**(12)**
INTERCEPT	.254***	.304***	.125***	.082***	.143***	.095***	.115***	.123***	.106***	.078***	.176***	.239***
	(5.746)	(5.972)	(19.499)	(13.177)	(7.684)	(15.443)	(3.446)	(21.545)	(20.001)	(10.631)	(3.596)	(4.251)
LNCEOPAY	-.010***	-.013***									-.009***	-.012***
	(-3.659)	(-4.157)									(-3.185)	(-3.873)
CAPITAL-INTENSIVE INDUSTRY	-.002	-.196*	.005	.001	-.004	-.004	-.002	.000	-.003	.003	.005	-.205**
DUMMY	(-.344)	(-1.961)	(.831)	(.182)	(-.569)	(-.694)	(-.339)	(-.021)	(-.426)	(.475)	(.768)	(-2.169)
LNCEOPAY*		.012*										.012**
CAPITAL-INTENSIVE INDUSTRIES		(1.944)										(2.226)
Ownership characteristics												
INST			-.106***								-.064***	-.055***
			(-4.562)								(-2.641)	(-2.257)
NONINST				.137***							.088***	.083***
				(5.639)							(3.357)	(3.183)
CEO characteristics												
CEOAGE					-.001**						-.001***	-.001***
					(-2.059)						(-3.228)	(-3.364)
LNCEOTENURE						.007***					.008***	.008***
						(2.943)					(3.518)	(3.545)
Firm characteristics												
LNFSIZE							-.001				.005**	.005**
							(-.295)				(2.326)	(2.012)
ROA								-.168***			-.074**	-.067*
								(-5.403)			(-2.134)	(-1.955)
SGROWTH									-.005		-.005	-.004
									(-.322)		(-.315)	(-.272)
LEVERAGE										.061***	.042***	.051***
										(4.817)	(2.837)	(3.309)
Year dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	287	287	295	295	286	294	295	295	295	295	278	278
Adjusted R^2	.079	.088	.100	.131	.048	.062	.036	.124	.036	.107	.303	.313

*This table reports the results from the OLS regressions of RISK, for 86 firms listed at the S&P BSE500 for the period of 2014-2019. Columns 1-10 report the results for the regressions of RISK with each independent variable separately. The last two columns present the results for the complete first and second model by including all variables simultaneously, where column 11 reports the results for model 1, and column 12 reports the results for model 2. Unstandardized coefficients are reported with the t-statistics between parentheses. All variables are explained in detail in Table 1. All independent variables are lagged by a two-year-period. *, **, *** Significantly different from zero at the 10%, 5%, and 1 % levels respectively, using a two-tailed test.*