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**Impact of CEO Industry-Specific vs. General Managerial Experience on Firm
Performance, Risk-Taking Behavior and CEO Compensation**

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Abstract

This paper investigates the impact of CEO cross-industry and specific-industry experience on firm performance, risk-taking behavior, and CEO compensation. Using hand-collected data for a large cross-section of CEOs over 1992-2017, we find that CEOs with cross-industry experience are not likely to help improve firm performance, tend to invest less on R&D, and are likely to receive pay premium. On the other hand, we document a nonmonotonic relation between CEOs' specific-industry experience and firm performance as well as R&D. Particularly, CEOs' specific-industry experience leads to higher firm performance and R&D investments until it reaches a certain threshold, especially among high growth firms. This paper contributes to the literature that examines the impact of CEO characteristics on firm performance and other firm outcomes by documenting the effect of cross-industry and specific-industry experience on these outcome variables.

Key words: CEO, Industry Experience, Firm Performance, Risk-Taking Behavior, CEO Compensation

1. INTRODUCTION

Given the importance of CEO role in the boardroom, operations, corporate control and decision-making, a large body of academic research has been devoted to the relationship between CEO characteristics and firm outcomes. CEO characteristics have drawn attention of researchers in strategic management (e.g. Karaevli, 2007), human resource management (e.g. Bragaw & Misangyi, 2017), finance (e.g. Custodio & Metzger, 2013) and other fields of study. Upper echelon perspective states that differences in observable and psychological characteristics of top executives result in different organizational strategic choices (Hambrick & Mason, 1984). However, the existing literature is inadequate when it comes to exploring the potential impact of the depth and breadth of CEO industry experience on important business aspects. CEO industry experience provides network connections, knowledge and complementary insights that help them anticipate

industry conditions and trends and interpret business situations more effectively. CEO industry experience also matters because economic forces affect firms in the same or related industries in a similar way. Hence, the stronger the link between a firm's industry and its related industries, the greater the value of knowledge and insights gathered from prior experience in related industry. Strong economic link can be understood from high correlation between the stock returns of the firm's industry and its related industries (Dass et al., 2013). To provide a deeper understanding of how CEO industry experience influences different business aspects, this study will address the following related questions: How does CEO industry experience influence firm performance, risk-taking behavior and CEO compensation? Do these relationships vary depending on growth profile of firms? Literature in corporate finance mostly focused on analyzing the prior industry experience of directors of board (e.g. Faleye et al., 2018; Wang et al., 2015; Kang et al., 2017; Dass et al., 2013 etc.). Our study contributes to existing literature to fill this gap by exclusively focusing on CEO industry experience instead of directors' industry experience.

The objective of this study is to examine how CEO industry experience influences firm performance, risk-taking decisions and CEO compensation. A newly hired CEO is considered to have specific-industry experience if he/she has experience in top executive positions, e.g. CEO, CFO, COO etc. in different firms of the same industry. Custódio et al. (2013) have classified these CEOs as a specialist CEO who spent their whole professional career in a single industry, i.e. these CEOs have depth of industry experience. On the other hand, a newly hired CEO is said to have general managerial experience (skills not specific to any industry or firm and transferable across industries) if he/she has experience in top executive positions in industries other than the one he/she is currently employed. These CEOs have breadth of industry experience. Custódio et al. (2013) have classified these CEOs as a generalist CEO. Murphy & Zábojnik (2004) have argued

that there has been an increase in the relative importance of general managerial skills and a decrease in the importance of firm-specific managerial skills and knowledge in the CEO job. Frydman (2019) confirms this shift to the importance of general managerial skills for top executives. We have focused on the CEO mobility across industries to understand this trend in labor market. Using a unique hand-collected dataset on 1,127 CEOs of S&P 500 companies for the period 1992-2017, this paper provides evidence that cross-industry and specific-industry experience of CEO have significant influence on firm performance, risk-taking and CEO compensation. We control for many firm-specific variables and CEO characteristics in our analysis. The empirical findings indicate to the negative impact of CEO cross-industry experience on firm performance and risk-taking but positive influence on CEO compensation. On the other hand, the result shows an inverted U-shaped relationship between CEO specific-industry experience and both firm performance and risk-taking.

This paper is structured as follows: section 2 provides an overview of literature on the relationship between CEO characteristics, particularly CEO industry experience and business-related parameters as well as testable hypotheses. Section 3 describes the data, variables and research methods. The empirical analysis and findings are presented in section 4. Finally, section 5 makes concluding remarks and discusses the implications of the result as well as contribution of the paper.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

Brockman et al. (2016) find that insiders have a 58% probability of possessing specialist skills while outsiders have a 57% probability of possessing generalist skills. Boards can recruit an outsider CEO with the hope that he/she can serve as the catalyst for change. Sometimes firms look outside for new CEOs either because of a lack of qualified internal candidates (Howard, 2001) or

a need for the new perspectives, skills, or knowledge that can be gained from outsiders. Huson et al. (2004) notes that outside successor CEOs positively affect performance change. However, outsider CEOs can be from either the same, i.e. related industry or a different industry. The increase in hiring cross-industry CEOs in sectors such as consumer goods and services, life sciences, technology, and media over the last decades has received significant attention from researchers. This phenomenon may point to the increasing necessity of unique benefits associated with cross-industry general managerial skills of CEO. Investigating whether firm performance, risk-taking behavior and CEO compensation vary with regard to different type of CEO industry experience has implications for board of directors overseeing succession planning.

2.1 CEO Industry Experience and Firm Performance

There are numerous studies that have examined firm performance from different standpoints. One stream of existing literature has investigated the relationship between firm performance and CEO characteristics such as age, gender, tenure, educational and professional qualification etc. Our paper contributes to the vast literature on CEO characteristics by examining the potential impact of CEO industry experience on firm performance.

Job-related knowledge, skills, and abilities are expected to enhance job performance. Motivations for hiring within-industry CEO come from the fact that such hiring is not only an opportunity for firms to learn from other firms in the same industry but also may speed up decision making. Compared to the generic skills of an outside-industry successor, the industry-specific skills of intra-industry successors may be readily transferable to firms in the same industry (Castanias & Helfat, 1991). Custódio et al. (2013) find that, compared to firms with generalist CEOs, firms with specialist CEOs have slightly higher accounting performance and stock market

performance. So, a positive relationship between specific-industry experience and firm performance is expected.

However, the opposing view is that hiring CEOs with prior industry success does not necessarily mean that the same formula will work in the new firm in the same industry. Successful adaptation and transition are very important to understanding the new company's employees, products, structure, culture, and politics. One notable view is that experience from past events may act as "knowledge corridors," making it difficult for them both to adjust their decision-making and act differently in new contexts (Hamori & Koyuncu, 2015). Simply to say, "Old habits die hard" is a reason behind low performance of CEOs with prior experience in this post in the same industry. One explanation for this finding may be the fact that the job-specific experience CEOs gain in their prior CEO job is likely to interfere with their performance in their new job. Hence, prior experience slows down learning in a new context because some knowledge and skills need to be "unlearned" before learning in the new context can take place (Morrison & Brantner, 1992). These arguments lead to our first research hypothesis:

Hypothesis 1: *There is an inverted U-shaped relationship between specific-industry experience and firm performance.*

There has been an increasingly common practice of appointing more generalist CEOs with the aim of improving firm performance. Although CEOs with more general managerial experience are expected to earn a significant pay premium, whether their prior industry experience is associated with higher firm performance remains inadequately researched. Empirical findings regarding performance implications of CEO experience variety are mixed. Howard (2001) opines that outside-industry CEOs can bring new insight, technology, strategies and market outside the current firm's industry boundary. Jalal & Prezas (2012) examine outside CEO succession for 528

firms during the period 1993–2009. In line with the findings of previous literature, they find that on average, firms hiring CEOs from within the same industry had higher overall returns than those with non-industry outsiders, at least during the first few months. By the third- or fourth-year following succession, firms hiring CEO from different industry showed better stock returns, on average, than those hiring from the same industry. The companies that hired CEOs from a different industry also paid more dividends to shareholders, engaged in higher capital spending, and demonstrated better operating performance.

In contrary, Li & Patel (2018) find a negative relationship between more generalist CEO experience, i.e. experience across different industries and firm performance. However, this negative association is lessened with longer CEO tenure. Mueller et al. (2017) state that the relationship between CEO experience variety and firm performance is like inverted U-shaped which means that gaining experience from different firms and industries leads to higher firm performance but, after a threshold, CEOs with extensive levels of CEO experience variety might lack experience depth and specialization, a shortcoming resulting in declining firm performance. Results also show that firm's level of internal and external complexity affects this relationship.

Outside-industry CEOs are unfamiliar with the industry, but they are selected because they have demonstrated superior leadership and managerial skills. CEOs without prior industry experience can bring fresh eyes to the company and are more likely to work as change agents. However, a team of technical experts with industry know-how can fill in the gaps by providing industry information. The degree of change required by the new organization influences the entire process. Outside-industry CEOs are not deeply rooted in the industry and may lack a good understanding of its major opportunities and threats, product lines, manufacturing process etc. As a result, compared to intra-industry CEOs, CEOs with multiple industry experience are less likely

to initiate and implement strategic changes that can boost up long-term firm performance. These reasonings lead to the following hypothesis:

Hypothesis 2: *CEO cross-industry experience is likely to result in lower firm performance.*

2.2 CEO Industry Experience and Firm Risk-Taking Behavior

Risk-taking can be described as the extent to which top managers are motivated to take business-related risks in an uncertain environment (Covin and Slevin, 1988). Risk taking has statistically and economically significant effects on firm's value, corporate growth and corporate earnings (Xu, 2015). R&D expenditure decisions affect the implied risk profile of a firm. Several empirical studies have investigated the effects of firm industry, diversification strategy, ownership structure, and board characteristics on R&D spending (e.g. Sujit and Mukherjee, 2005).

There are a handful of empirical studies that have examined the R&D spending decision from the perspective of agency and corporate governance theories (Mezghanni, 2010). However, these studies did not consider the influence of top executives' attributes in strategic decision making. A firm's investment decisions can be highly influenced by top managers' preferences and attitudes. CEO characteristics significantly influence firm R&D practices. Top executives exercise managerial discretion over the level of R&D spending. Barker & Mueller (2002) find that CEO age positively affects the level of R&D while career experience, advanced science-related degrees and tenure negatively affects R&D spending. Hence, understanding the nature of relationship between CEO characteristics and firm's risk taking will contribute to making better strategic decision making with regard to R&D spending. This study contributes to the existing literature by shedding light on this less-explored issue by examining the relationship between CEO industry experience and R&D spending that points to risk-taking behavior of firms.

Whereas a riskier investment policy indicates to higher R&D and lower capital expenditures, less risky policy choices refer to lower R&D and higher capital expenditures (Coles, 2006). R&D and capital expenditure are subject to considerable managerial discretion. On that ground, relationship between CEO characteristics and corporate risk-taking behavior has been tested in prior literature. Our study has considered R&D investment as a proxy for risk-taking behavior.

Impact of CEO attributes on risk taking has been well-explored from different perspectives. Our study complements findings of previous literature on firms' risk-taking behavior. Malmendier & Tate (2005) examined the impact of overconfidence and other personal characteristics of CEO on investment decisions. The study finds that though investment of overconfident CEOs is significantly more responsive to cash flow, this relationship is strongly affected by other personal characteristics such as education, employment background etc. of CEO. On the contrary, Boyson (2003) examines how the risk-taking behavior of hedge fund managers and finds that managerial career concern persuades more experienced managers to take on less risk. This finding implies that risk taking behavior of managers change as they age and gain more experience. In a similar study, Menkhoff et al. (2006) finds that if overconfidence is interpreted as overestimated precision of knowledge, degree of overconfidence decreases with experience of fund managers. Hence, fund managers' risk-taking decreases as they gain more experience. During the earlier period of their career, CEOs are more willing to take risky projects in an attempt to catch market attention and signal about own capability (Gibbons and Murphy, 1992). As managers' age, they become more risk-averse and tend to adopt less risky decisions in order to safe their career (Eaton and Rosen, 1983). Particularly, as CEOs approach retirement age, they become more risk-averse and reduce R&D spending (Dechow and Sloan, 1991). One explanation is that risky R&D projects may not

yield personal benefits in the form of short-term salary and bonuses for CEOs approaching retirement age. The existence of non-monotonic inverted U-shaped relationship between experience and risk-taking is supported by several studies (e.g. Ryan & Wiggins, 2002; Mezghanni, 2010)

Studies have explored how CEO career origin influences firm's risk taking. Chahyadi & Wineka (2012) find that outsider CEOs make more risky investment decisions in the form of more investment in R&D, less in capital expenditure and use of more leverage. Faccio et al. (2016) investigate the relation between CEO gender, corporate risk-taking choices, and the efficiency of capital allocation. They find that female CEOs make less risky corporate choices than male CEOs. Besides gender, age of CEO also matters in risk-taking decisions. Younger CEOs (Kovalchik et al., 2005) and wealthier CEOs (Calvet and Sodini, 2014) demonstrate more risk-taking behavior.

The benefits realization from current investment in capital expenditures and R&D take many years following the investment. However, unlike R&D, capital expenditures are not immediately expensed. So, capital expenditure decreases accounting earnings by only the first-year depreciation amount. Therefore, departing CEOs may have incentive to reduce R&D expenditures more than capital expenditures in order to boost earnings-based compensation.

Industry expertise provides a better comprehension of the risk and reward situations of the industry. Avery and Chevalier (1999) finds that more experienced mutual fund managers have lower reputational concerns that ultimately result in more risk-taking compared to less experienced fellow managers. Faleye et al. (2018) state that firms with industry expert directors invest more on R&D and receive more patents for the same level of R&D. Yung and Chen (2017) demonstrate that high ability managers are more receptive to risk-taking and tend to spend more on R&Ds and

less on capital expenditures. Gaining experience over time gives them more knowledge and confidence in their ability. These arguments lead to our next hypothesis:

Hypothesis 3: *CEO specific-industry experience is more likely to result in higher R&D spending.*

Zhang & Rajagopalan (2003) state that more and more firms in recent years have recruited CEOs from outside their firm from within the hiring firms' industries and from outside their industries. Firms may hire CEOs from outside industry with the expectation that these CEOs will bring new eyes to the previously unseen opportunities and import new perspective to the current firm. Custódio et al. (2017) opine that generalist CEOs acquire knowledge beyond the firm's current technological domain and hence, can spur innovation. They also find that firms with CEOs with general managerial skills produce more patents. Outside industry CEOs are mostly hired during bad times of the firms. But Castanias & Helfat (2001) opine that new CEOs recruited from other firms in the same industry possess greater tacit industry-specific knowledge of opportunities, threats, competitive forces, technological changes etc. than those from different industries.

But experience from variety of industries may not be transferable to the new setting because of the idiosyncratic differences among industries. Prior research suggests that moving across different sectors constrain the extent to which executives can apply managerial skills across different sectors (Bailey & Helfat, 2003). Though CEOs who worked in different industries are expected to have developed general managerial skills, because of lack of depth in experience in the new industry, CEOs engaged in job hopping across industries may feel less confident in making large amount of investment in R&D. They may not have complete picture of the industry. Hence, they may lack enough knowledge in anticipating trends and movements in the industry.

R&D activities are long-term investment and payoffs are not only very uncertain but also often take many years. Industry expert CEOs who spend long periods in an industry are more likely to benefit from these long-term project payoffs (Zajac & Stearns, 1997). Recognizing risks and rewards of potential investments gets easier for CEOs with industry knowledge (Drobetz et al., 2018). It can be argued that if CEOs lack an in-depth understanding of the industry-fundamentals, such as the effect of microeconomic and macroeconomic factors, they will also lack the knowledge necessary for effective longer-term strategies such as R&D spending. These arguments lead to our next hypothesis as follows:

Hypothesis 4: *CEO cross-industry experience is more likely to result in lower R&D expenditure.*

2.3 CEO Industry Experience and Compensation

Like other CEO characteristics, industry experience has significant implications for CEO compensation. Although there has been extensive research examining the impact of different CEO characteristics on CEO compensation, literature explaining CEO compensation by looking at the type of experience, i.e. specific vs. general has not been the subject of large-scale empirical analyses. This paper adds to existing literature by investigating how specific-industry and general managerial experience across industries influence CEO compensation.

Prior literature has tested CEO compensation in light of CEO characteristics such as age, gender, tenure, origin etc. along with other firm-level determinants. Ryan & Wiggins (2002) consider investment opportunity, firm size, CEO tenure and age, monitoring mechanisms, cash flow uncertainty, capital structure etc. as factors influencing CEO compensation. Fee and Hadlock (2003) note that CEOs in firms with above average performance are more likely to receive higher pay when hired by the new firms. Frydman & Jenter (2010) state that CEO compensation is

affected by both managerial power and competitive market forces. Falato et al. (2011) find that CEO talent is a vital factor influencing compensation. Using a sample of 654 US CEO succession events that took place between 2001 and 2004, Bragaw & Misangyi (2017) explored the impact of CEO experience on firm's performance and CEO compensation. Interestingly, the study finds that prior CEO experience does not benefit shareholders in the form of higher market-based performance though it tends to benefit CEO in the form of higher compensation.

Since industry-specific skills may not be transferable, CEOs who spent their career in a single industry are more likely to have little bargaining power in the outside labor market. As a result, firms are less likely to rise pay for these CEOs. Hence, we hypothesize that:

Hypothesis 5: *CEO specific-industry experience leads to lower CEO compensation.*

Breadth of CEO industry experience, i.e. experience in executive roles across industries might help them advance ahead of their peers. Hiring organizations normally provide higher compensation to outsider CEOs than to insiders (Murphy & Zábojnik, 2004). The literature suggest that this increase in compensation can be somewhat attributed to the recent increase in the demand for generalist skills. Murphy & Zabochnik (2004) documents that CEOs hired from outside earn approximately 15.3 percent more than CEOs who were promoted internally. Jalal & Prezas (2012) opines that the compensation package offered to CEOs hired from outside the industry tends to be higher and more tightly linked to the long-term performance of the firm. Custódio et al. (2013) shed light on why generalist CEOs earn pay premium and opine that firms hire generalist CEOs and pay significant pay premium to these CEOs when these firms or the industry the firms belong to go through merger and acquisition, financial distress, restructuring or other changing business situations. Another explanation is that generalist CEOs are more high profile, move from job to job and draw more attention from boards (Malmendier & Tate, 2009). Brockman et al.

(2016) finds that outsider CEOs with high generalist skills are the highest paid executives. While generalist premium can be attributed to the need for generalist skills, outsider premium can be attributed to the enhanced bargaining power of those CEOs.

Hypothesis 6: *CEO cross-industry general managerial experience leads to higher CEO compensation.*

3. DATA AND METHODOLOGY

3.1 Sample and Data

The sample consists of CEO data collected from the Standard & Poor's Execucomp database between 1992 and 2017. An executive is classified as CEO if the Execucomp's "titleann" contains phrases such as "CEO" or "Chief Executive Officer" or "Principal Executive Officer" for that executive in the Execucomp database. From the sample, we have excluded utility companies (SIC 4900-4999) because they are subject to certain regulation and financial services firms (SIC 6000-6999) because they have distinct financial structure. We collect accounting data from Compustat database over the same time period (1992-2017) and stock return data from the Center for Research in Security Prices (CRSP) database. The final sample consists of 4,816 CEO firm-year observations.

3.2 Variables

3.2.1 Dependent variables

We test the impact of CEO industry experience on three dependent variables: firm performance, risk-taking behavior and CEO compensation. To focus on operational performance instead of market-based performance, we use Return on Asset (ROA) as a measure of performance.

We measure risk-taking behavior by the ratio of capital expenditure to total assets and R&D expenditure to sales. CEO total compensation is the proxy for compensation.

3.2.2 Test Variables

Cross Industry Experience: The variable “Multi-Ind” refers to the presence or absence of general managerial experience. CEOs are classified as CEOs with general managerial experience if they have experience in any of the following roles: CEO, CFO, President, Executive Vice President, Senior Vice President, Corporate Vice President, Managing Director, General Manager, Executive Director, Chairman, Vice Chairman with administration duties, or any C-Suite executive in and other than S&P 500 companies. We measure “Multi_ind” variable as the number of different industry the CEO has served in the above mentioned positions.

Specific-Industry Experience: The variable “Specific_ind” refers to the presence or absence of specific-industry experience. We measure “Specific_ind” as the length of experience in the same industry (same in first three digits of SIC code). To capture the non-linear effect of CEO specific industry experience, we include the squared specific_ind variable in the research model.

3.2.3 Firm Control variables

Our research model includes several firm-specific control variables that may influence performance and other variables of interest. These control variables include firm size, leverage, growth opportunity, research and development (R&D), dividends, capital expenditure, return volatility etc. Firm size is measured as the natural logarithm of total assets. Leverage is measured as the ratio of long-term debt to total assets. Market to book ratio (MTB) is computed as the ratio of market value of equity to book value of equity. R&D is computed as the ratio of R&D

expenditure to sales. Dividends is measured as the sum of dividends from preferred and common stock scaled by total assets. Capex represents the ratio of capital expenditure to total assets, indicating to the degree to which the firm invests in fixed assets. To measure risk, we have taken stock return volatility (daily return data) as a measure of risk. Volatility is defined as the sum of the squared residual from the Fama-French's (1993) three-factor model. Net working capital is used to measure the cash and operating liquidity position of the firm.

3.2.4 CEO Control Variables

To control for CEO characteristics, we collect their biographical information such as gender, tenure, and educational background. Educational background is used to proxy general ability, a predictor of firm performance, risk taking and CEO compensation. To measure the educational profile, we create two dummy variables. One dummy variable is MBA which takes a value of 1 if the CEO has an MBA, and 0 otherwise. Another dummy variable is Masters_PhD which takes a value of 1 if the CEO has either master's or PhD, and 0 otherwise. CEO Tenure indicates the length of time CEOs served in the current position. To control for gender, we take Female dummy variable which is equal to 1 if the CEO is female and 0 otherwise. The biographical information is collected from multiple sources such as Execucomp, Bloomberg.com, NNDB.com, Referenceforbusiness.com, Prabook.com, MarketScreener.com and other publicly available sources. Table 5 provides definition or measurement of the variables used in this paper.

3.3 Research Methods

Using OLS, this paper examines the impact of CEO industry experience on dependent variables. Moreover, to control for any unobserved effects, we include industry fixed effect and year fixed effect using industry dummies and year dummies. To examine the impact of CEO's

industry experience on firm outcomes in different business environments, we also categorize the sample into high-growth and low-growth firms based on the sample-median market-to-book ratio (MTB) in each year. P values are calculated using White's heteroskedasticity-corrected standard errors. To limit the influence of outliers and misrecorded data, variables are winsorized at the 1% at both tails. To check the robustness of our empirical result, we include CEO's age in the model and all the results are maintained.

4. EMPIRICAL RESULTS AND ANALYSIS

4.1 Descriptive Statistics

Table 1 summarizes the descriptive statistics for key variables in the study. Out of 1,127 CEOs in the sample, 35% (393 CEOs) have MBA degree and 19% (219 CEOs) have either master's or PhD degree. 25% (287 CEOs) have experience in more than one industry while the average length of specific-industry experience is 18.02 years. Female CEOs constitute only 12% (130) of our sample. The average CEO has tenure in executive position for 6.3 years. The longest serving CEO has been in executive position for 49 years. Average market to book ratio is 2.42. Average ROA is 11.86%. Dividend, fixed asset, capital expenditure and debt are 1.99%, 28.50%, 5.56% and 22.92% of total asset respectively, on average. The average R&D to total sales ratio is 6.24.

Insert Table 1 here

4.2 Result on CEO Industry Experience and Firm Performance

In this section, we test hypothesis 1 and 2 regarding the association between CEO industry experiences and firm performance. We employ model 1 to capture the impact of specific-industry experience on firm performance. The model control for selected CEO characteristics and firm-

level accounting variables. We also include the squared specific-industry variable to look at whether there exists any non-linear relationship:

$$\text{Firm_Perf}_{i,t} = B_0 + B_1 \text{Specific_ind}_{i,t} + B_2 \text{Specific_ind_sq}_{i,t} + B_{3-6} (\text{CEO controls})_{i,t} + B_7 \text{MTB}_{i,t} + B_8 \text{Volatility}_{i,t} + B_9 \text{Capex}_{i,t} + B_{10} \text{R\&D}_{i,t} + B_{11} \text{Firm size}_{i,t} + B_{12} \text{Leverage}_{i,t} + B_{13} \text{Dividends}_{i,t} + B_{14} \text{NWC}_{i,t} + B_{15} \text{Fixed Assets}_{i,t} + e_{i,t} \quad (1)$$

Model 2 analyzes the impact of multiple-industry experience on firm performance controlling for other CEO characteristics and firm-level accounting variables:

$$\text{Firm_Perf}_{i,t} = B_0 + B_1 \text{Multi-ind}_{i,t} + B_{2-5} (\text{CEO controls})_{i,t} + B_6 \text{MTB}_{i,t} + B_7 \text{Volatility}_{i,t} + B_8 \text{Capex}_{i,t} + B_9 \text{R\&D}_{i,t} + B_{10} \text{Firm size}_{i,t} + B_{11} \text{Leverage}_{i,t} + B_{12} \text{Dividends}_{i,t} + B_{13} \text{NWC}_{i,t} + B_{14} \text{Fixed Assets}_{i,t} + e_{i,t} \quad (2)$$

Insert Table 2 here

Column 2 of table 2 reports the OLS results explaining the impact of CEO specific-industry experience on firm performance considering full sample data set. The length of specific-industry experience is found to positively affect firm performance. This may be because industry knowledge is an important quality that can help CEOs understand factors that can have economic impact on operations, earnings, expenses and other business parameters. In addition, previous industry connections can provide valuable information that improves firm performance. However, this finding is contrary to the result of Hamori & Koyuncu (2015) who, focusing on the CEOs of the S&P 500 corporations as of 2005, find that CEOs with prior CEO experience in the same industry are associated with significantly lower post-succession firm performance than those with experience in a different industry. Next, we test the models for high-growth and low-growth firms and present the result in column 3 and 4 of table 2. We find that the same is true for both high-

growth and low-growth firms. This finding supports the view that experience in the same industry helps CEOs contribute to better performance of firms. This effect is statistically very significant in all three cases (full sample, high-growth and low-growth firms). Interestingly, the magnitude is the same for full sample and high-growth sample though a bit smaller for low-growth firms. This difference in coefficient between high-growth and low-growth firms might be driven by the fact that high-growth firms get higher sales turnover and revenue from new products in the market, leading to better firm performance measured by ROA.

Though gaining experience in the same industry has several positive expected effects, remaining in the same industry might have some negative effects as well. As indicated by the negative coefficient of the squared specific industry variable, after a threshold level of 18.83 years, experience in the same industry leads to adversely affect firm performance. One explanation is that as CEOs gain more experience in the same industry, it sometimes becomes difficult to think out of the box and deviate from industry norm in order to improve firm performance. Over time, they may have developed fixed assumptions about how decisions should be made or works should be done. They are more likely to repeat the similar course of actions in different situations, a phenomenon called negative transfer of learning (Hamori & Koyuncu, 2015) that refers to misapplication of previously acquired knowledge and skill in changed context. Jobs in the same industry share surface similarities but can often have structural differences (Dokko et al., 2009). This limits the beneficial effects of specific-industry experience and knowledge. In another word, related work experience for a long time could have a negative effect on firm performance since prior industry experience of CEOs may also bring inflexibilities that act as baggage and push down their ability to respond in the new situation (Dokko et al., 2009). Overall, our finding supports hypothesis 1.

Table 2 also describes the OLS results explaining the impact of CEO multiple-industry experience on firm performance considering full sample, high-growth and low-growth sample in column 5, 6 and 7 respectively. For the full sample, the negative coefficient of Multi-ind variable indicates that hiring CEOs with cross-industry experience is not likely to help improve firm performance, rather adversely affects firm performance. This evidence supports the hypothesis 2 which predicts that CEOs with cross-industry experience will negatively influence firm performance. Then, when we run regressions separately for the two sub-samples, we find that cross-industry experience of CEOs affects firm performance negatively for both high-growth and low-growth firms and the effects are statistically significant. Hence, the hypothesis predicting the negative association between CEO cross-industry experience and firm performance is supported empirically. This effect is mostly driven by the fact that CEO with multiple industry experience might lack critical industry-specific knowledge in which he/she is currently employed as CEO. It is also challenging for hiring firms to establish good fit between the human capital of CEOs with multiple industry experience and the culture of the hiring firms.

4.3 Result on CEO Industry Experience and Risk-taking Behavior

Gan (2019) opines that top managers' differing views affect their decisions, beliefs, and risk preferences. We take R&D expenditure as a proxy for risk-taking behavior and use as the dependent variable. Model 3 reports the OLS regression model used to assess the association between CEO specific-industry experience and R&D.

$$\begin{aligned}
 R\&D_{i,t} = B_0 + B_1 \text{Specific-ind}_{i,t} + B_2 \text{Specific-ind}_{i,t} + B_{3-6} (\text{CEO controls})_{i,t} + B_7 \text{MTB}_{i,t} + B_8 \\
 \text{Volatility}_{i,t} + B_9 \text{Firm_Perf}_{i,t} + B_{10} \text{Capex}_{i,t} + B_{11} \text{Firm size}_{i,t} + B_{12} \text{Leverage}_{i,t} + B_{13} \text{Dividends}_{i,t} + \\
 B_{14} \text{NWC}_{i,t} + B_{15} \text{Fixed Assets}_{i,t} + e_{i,t}
 \end{aligned}
 \tag{3}$$

Controlling for the selected CEO characteristics and accounting variables, model 4 looks at how multiple-industry experience may affect R&D:

$$\begin{aligned}
 R\&D_{i,t} = & B_0 + B_1 \text{Multi-ind}_{i,t} + B_{2-5} \text{ (CEO controls)}_{i,t} + B_6 \text{MTB}_{i,t} + B_7 \text{Volatility}_{i,t} + B_8 \text{Firm_Perf}_{i,t} \\
 & + B_9 \text{Capex}_{i,t} + B_{10} \text{Firm size}_{i,t} + B_{11} \text{Leverage}_{i,t} + B_{12} \text{Dividends}_{i,t} + B_{13} \text{NWC}_{i,t} + B_{14} \text{Fixed Assets}_{i,t} \\
 & + e_{i,t}
 \end{aligned}
 \tag{4}$$

Insert Table 3 here

Table 3 presents the results on the association between R&D and CEO industry experience. Column 2, 3 and 4 show the impact of specific-industry experience on R&D controlling for other CEO characteristics and firm-level variables. Length of CEO experience in the same industry is found to positively affect R&D expenditure of firms considering full sample, high-growth and low-growth firms. This finding supports our hypothesis 3 predicting positive association between CEO specific-industry experience and R&D expenditure. One possible explanation is that CEOs serving for long in an industry know better about that industry, a knowledge that makes them confident to invest more in R&D. However, as indicated by the negative coefficient of the squared specific_ind variable, after a vertex point of 24.13 years of experience in the same industry, more experienced CEOs start investing less in R&D activities. This finding gives the impression that CEOs with more specific-industry experience become conservative during the later years of executive career and are likely to under-invest in risky R&D activities though they are more willing to take risky projects such as R&D activities during their earlier years of executive roles in the same industry. This finding is in line with the finding of Ryan & Wiggins (2002) and Mezghanni (2010) who argue that experience and risk-taking behavior are not linearly related. Rather, there is a non-monotonic inverted U-shaped relationship between these two variables. Magnitude of coefficient is higher for high-growth firms compared to that of low-growth firms though the impact

on low-growth firms' R&D is not statistically significant. This might be because CEOs in high-growth firms recognize the importance of maintaining high investment in R&D to continue growth and have the incentive to invest more on R&D to develop investment opportunities. This result reinstates the idea that high-growth firms have greater R&D intensity.

Table 3 also demonstrates the effect of CEO multiple-industry experience on R&D. For the full sample, the statistically significant negative coefficient of Multi-ind variable indicates that hiring CEOs with multi-industry experience is not likely to increase R&D investment, rather reduces this spending. This result might be driven by the inalienability of variety of industry knowledge due to distinctive nature of industries the CEOs worked. Since firm structure, industry growth, and ownership have significant moderating role in influencing managerial risk taking (Hoskisson, 2017), we look at how the scenario changes if we consider next high-growth and low-growth firms separately. Running the regressions separately for both high-growth and low-growth firms reinforces the negative and significant association between CEO cross-industry experience and R&D expenditure though the negative impact is higher for low-growth firms. Overall, this evidence supports hypothesis 4 which predicts that CEOs with cross-industry experience will invest less on R&D expenditure.

4.4 Result on CEO Industry Experience and Compensation

Special reports every year on CEO compensation by business publications and research organizations point to the interesting fact that CEO compensation is a matter of public attention and interest (Yanadori & Milkovich, 2002) and has long become a subject of academic research. CEO industry tenure reflects CEOs' skills and knowledge. With this theoretical motivation as backdrop, in this section, we test whether industry experience is a significant determinant of CEO

compensation. To explore the influence of CEO specific-industry experience on CEO compensation, we employ model 5.

$$\begin{aligned} \text{Compensation}_{i,t} = & B_0 + B_1 \text{Specific-ind}_{i,t} + B_2 \text{Specific-ind}_{i,t} + B_{3-6} (\text{CEO controls})_{i,t} + B_7 \text{MTB}_{i,t} + \\ & B_8 \text{Volatility}_{i,t} + B_9 \text{Firm_Perf}_{i,t} + B_{10} \text{Capex}_{i,t} + B_{11} \text{R\&D}_{i,t} + B_{12} \text{Firm size}_{i,t} + B_{13} \text{Leverage}_{i,t} + B_{14} \\ & \text{Dividends}_{i,t} + B_{15} \text{NWC}_{i,t} + B_{16} \text{Fixed Assets}_{i,t} + e_{i,t} \end{aligned} \quad (5)$$

Model 6 reports the impact of multiple-industry experience on compensation:

$$\begin{aligned} \text{Compensation}_{i,t} = & B_0 + B_1 \text{Multi-ind}_{i,t} + B_{2-5} (\text{CEO controls})_{i,t} + B_6 \text{MTB}_{i,t} + B_7 \text{Volatility}_{i,t} + B_8 \\ & \text{Firm_Perf}_{i,t} + B_9 \text{Capex}_{i,t} + B_{10} \text{R\&D}_{i,t} + B_{11} \text{Firm size}_{i,t} + B_{12} \text{Leverage}_{i,t} + B_{13} \text{Dividends}_{i,t} + B_{14} \\ & \text{NWC}_{i,t} + B_{15} \text{Fixed Assets}_{i,t} + e_{i,t} \end{aligned} \quad (6)$$

Insert Table 4 here

Table 4 describes the results on how CEO specific-industry experience affects CEO compensation. Specific_ind variable denoting the length of CEO experience in the same industry is found to have statistically significant negative impact on CEO compensation considering full sample. This outcome may be because of non-transferability of specific-industry knowledge and the resulting limited bargaining power of industry-specialist CEOs who spent their career in a singly industry in the outside labor market. Since firm-specific characteristics can play role in designing the compensation structure, we next run the model for high-growth and low-growth firms. For high-growth firms, we find that CEOs with specific-industry experience receive less compensation as they keep working in the same industry. However, having specific-industry experience has positive and insignificant influence on CEO compensation for low-growth firms. This result proposes that the effect of CEO industry experience on compensation can be different based on firm's operating environment and growth prospect.

Table 4 also presents the impact of CEO multiple-industry experience on CEO compensation. First we run the test for the full sample. The statistically significant positive coefficient of Multi-ind variable indicates that hiring CEOs having multi-industry experience are likely to get higher compensation. This evidence supports the hypothesis 3 which predicts that CEOs with cross-industry experience will receive pay premium. This finding is interesting because CEOs with multiple-industry experience are paid more though hiring CEOs with cross-industry experience leads to negative impact on firm performance. This outcome is consistent with the observation of Custódio et al. (2013) who found that generalist CEOs who have accumulated more general managerial skills during their career earned 19% more, on average, during the past two decades than their specialized counterparts, i.e. CEOs who specialized in one industry or company. Existing literature often stated that CEO compensation and firm performance are weakly or insignificantly related (Barkema & Gomez-Mejia, 1998). This weak relationship between firm performance and CEO pay has been making researchers upset since researchers expected that CEO compensation will be aligned with firm performance to spur the endeavors CEOs take to improve firm performance.

To see whether this relationship gets influenced by the growth level of firms, we run the regression analysis separately for high-growth and low-growth firms. Interestingly, the magnitude of coefficient of multiple-industry variable for low-growth industry is very close to that for the full-sample. Though the coefficient is positive for high-growth firms, it is statistically insignificant. The pay premium is higher for CEOs (with multiple industry experience) hired by low-growth firms compared to that for high-growth firms. This outcome is not in line with the finding of Gaver and Gaver (1995) who posit that CEOs of high growth firms are more likely to receive larger total

compensation than CEOs of lower growth companies as a result of higher incentive compensation to reduce manager-shareholder agency costs.

Therefore, the hypothesis predicting the positive association between CEO cross-industry experience and pay premium is partly empirically reinforced.

5. CONCLUSION

The selection of CEO has been commonly thought to be an important decision since CEOs can influence firms' future direction and strategy. This paper investigates the effect of CEO industry experience on firm performance, risk-taking behavior and CEO compensation using hand-collected data for a large cross-section of CEOs over 1992-2017. To see whether the effect of CEO industry experience differs based on growth opportunities of firms, we decompose industry experience into specific-industry experience and multiple-industry experience. Besides the variables of interest, CEO control and firm control variables have been included in the analysis.

First, considering full sample, high-growth and low-growth firms, we find that the length of specific-industry experience positively affects firm performance but the impact becomes negative after a certain threshold level. We highlight that firms need to consider this in selection decisions. This research finding suggests that it is important to understand that hiring CEOs who worked in the same industry for long time period is not beneficial in perpetuity for improving firm performance. This result implies that to mitigate the negative transfer of learning after a certain number of years of experience in the same industry, CEOs need to adapt to the changed situations. Moreover, it is found that for the full sample and two sub-samples, hiring CEOs with cross-industry experience is not likely to help improve firm performance, rather adversely affects firm

performance. Hence, the hypothesis predicting the negative association between CEO cross-industry experience and firm performance is supported empirically.

Second, length of CEO experience in the same industry is found to positively affect R&D expenditure. One possible explanation is that CEOs serving for long in an industry know better about that industry-specific competitive conditions, industry players, resources, strategies and technologies, a knowledge that makes them confident to invest more in R&D. Hence, the hypothesis predicting the positive association between CEO specific-industry experience and risk-taking behavior is reinforced empirically. However, the effect becomes negative after certain threshold number of years. On the other hand, contrary to Custódio et al. (2017), our study documents that hiring CEOs with multi-industry experience is can result in reduced R&D expenditure, regardless of the growth opportunity of firms. This evidence supports the hypothesis which predicts that CEOs with cross-industry experience will invest less on R&D expenditure.

Third, a notable finding of our analysis is that length of CEO experience in the same industry is found to have statistically significant negative impact on CEO compensation for full sample and high-growth firms but positive and insignificant influence for low-growth firms. Due to probable non-transferability of industry-specific skills leading to less bargaining power in the outside labor market, CEOs earning industry-specific skills are more likely to receive discounted pay. In addition, CEOs having multi-industry experience are likely to get higher compensation. This evidence supports the hypothesis which predicts that CEOs with cross-industry experience will receive pay premium. However, CEOs (with cross-industry experience) hired by low-growth firms are likely to receive pay premium compared to similar kind of CEOs hired by high-growth firms. Therefore, the hypothesis predicting the positive association between CEO cross-industry experience and pay premium is mostly empirically reinforced.

One important implication is that to enhance firm performance and R&D spending, firms should hire CEOs with specific-industry experience not beyond the threshold levels of years of same-industry experience. We contribute to the literature that examines the impact of C-suite executive characteristics on firm outcomes (e.g., Bragaw & Misangyi, 2017). This paper contributes to the literature that examines the impact of CEO characteristics on firm performance with special focus on CEO industry experience. This study also complements prior findings related to CEO compensation (e.g. Jalal & Prezas, 2012, Murphy & Zabochnik, 2004) and firm risk-taking behavior (e.g. Faccio et al., 2016, Kovalchik et al., 2005) by documenting the effect of cross-industry and specific-industry experience on CEO compensation. Thus, our paper adds to the basic age-old debate about whether CEO characteristics matter in important firm outcomes. The findings have considerable implication not only for board of directors who make executive hiring decisions but also for strategists in predicting the future strategic moves of competitors' by analyzing CEO characteristics, particularly industry experience, of market competitors. Future research initiatives can be taken to investigate the variation in how CEO industry experience affects firm outcomes and CEO compensation across industries.

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Appendix

Table 1: Descriptive Statistics

Variable	Mean	Median	Maximum	Minimum	Std Dev
Multi-ind	N/A	N/A	1.00	0.00	N/A
Specific_ind	18.02	17	55	1	9.14
Female	N/A	N/A	1.00	0.00	N/A
Tenure	6.3	5	49	0	7.1
MBA	N/A	N/A	1.00	0.00	N/A
PhD_Masters	N/A	N/A	1.00	0.00	N/A
MTB	2.42	1.89	43.85	0.55	1.92
Volatility	9.05	7.63	82.57	1.74	5.57
Firm_perf	11.86	11.65	48.19	-240.38	9.56
Capex	5.56	4.01	46.83	0.00	5.13
R&D	6.24	0.54	2315.29	0.00	39.57
Firm size	16848.08	7168.80	220217.00	51.04	25001.78
Leverage	22.92	21.06	170.48	0.00	17.06
Dividend	1.99	1.21	64.45	0.00	3.03
NWC	-138.31	70.90	2016	-8240	1183.95
Fixed Asset	28.50	21.21	93.39	0.17	22.51

Table 2: Impact of CEO Industry Experience on Firm Performance

Independent variables	All firms	High-growth firms	Low-growth firms	All firms	High-growth firms	Low-growth firms
	Specific-industry Experience			Cross-industry Experience		
Multi-ind	-	-	-	-1.005*	-0.86**	-0.68***
				(0.00)	(0.04)	(0.08)
Specific_ind	.29*	.29*	0.01*	-	-	-
	(0.00)	(0.00)	(0.01)			
Specific_ind_sq	-0.008*	-0.008*	-.004*	-	-	-
	(0.00)	(0.00)	(.002)			
Female	-0.001	-0.64	.25	-0.084	-1.02	1.13
	(0.99)	(0.59)	(0.85)	(0.92)	(0.37)	(0.36)
Tenure	0.084*	0.07*	0.07*	0.070*	0.065*	0.04
	(0.00)	(0.00)	(0.00)	(.00)	(0.00)	(0.14)
MBA	-0.82*	-1.04*	-0.27	-0.75*	-1.046*	-0.74**
	(0.00)	(0.00)	(0.41)	(0.00)	(0.00)	(0.02)
PhD_Masters	-0.21	-0.16	-.32	-0.174	0.037	-1.22*
	(0.47)	(0.71)	(0.44)	(0.55)	(0.92)	(0.00)
MTB	1.21*	0.93*	6.05*	1.22*	0.84*	4.72*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Volatility	-0.35*	-0.44*	-0.14*	-0.36*	-0.39*	-0.21*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Capex	0.08**	0.15*	0.08***	0.066***	0.055	0.04
	(0.03)	(0.00)	(0.05)	(0.06)	(0.27)	(0.38)
R&D	-0.04*	-0.04*	-0.18*	-0.044*	-0.047*	-0.04*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Firm size	-0.02	0.39**	0.11	-0.057	0.004	0.88*
	(0.85)	(0.02)	(.54)	(0.63)	(0.98)	(.00)
Leverage	-0.10*	-0.10*	-0.1*	-0.10*	-0.11*	-0.06*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Dividend	0.77*	0.65*	0.2	0.770*	0.60*	0.66*
	(.00)	(.00)	(.11)	(.00)	(.00)	(.00)
NWC	0.0001	0.00***	0.00	0.0001	0.0001	0.0002**
	(0.19)	(0.09)	(0.81)	(0.20)	(0.30)	(0.02)
Fixed asset	-0.007	-0.01	-0.01	-0.005	-0.002	-0.009
	(0.64)	(0.57)	(0.52)	(0.70)	(0.94)	(0.64)
Intercept	9.66***	7.02*	.43	12.96**	14.34**	-6.16***
	(0.06)	(0.22)	(.92)	(0.01)	(0.02)	(0.10)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	.4376	.4495	.2272	0.433	.4467	.2246
N	4,816	2,525	2,291	4,816	2,525	2,291

*, ** & *** indicate significance at 1%, 5% and 10% level respectively. Numbers in parentheses are p values.

Table 3: Impact of CEO Industry Experience on R&D

Independent variables	All firms	High-growth firms	Low-growth firms	All firms	High-growth firms	Low-growth firms
	Specific-industry Experience			Cross-industry Experience		
Multi-ind	-	-	-	-5.389*	-9.18*	-.95*
				(0.00)	(0.004)	(0.01)
Specific_ind	0.88*	1.77*	0.017	-	-	-
	(0.00)	(0.00)	(0.76)			
Specific_ind_sq	-.02*	-.04**	-0.00	-	-	-
	(.00)	(.01)	(.54)			
Female	1.48	6.01	-1.29	0.229	1.728	-0.877
	(0.77)	(0.49)	(0.30)	(0.96)	(0.79)	(0.93)
Tenure	0.09	-0.09	0.05***	0.143	-0.021	0.254
	(0.44)	(0.65)	(0.08)	(0.16)	(0.87)	(0.18)
MBA	-2.62*	-5.87**	0.14	-2.552***	-3.186***	0.109
	(0.00)	(0.03)	(0.64)	(0.07)	(0.10)	(0.97)
PhD_Masters	9.57*	14.26*	1.58*	9.593*	6.067*	21.229*
	(.00)	(0.00)	(.00)	(.00)	(0.00)	(.00)
MTB	2.64***	2.52*	0.59*	2.584*	1.744*	10.447*
	(.07)	(0.00)	(0.30)	(.00)	(0.00)	(0.00)
Volatility	-0.06	-0.12	0.12*	-0.074	-0.021	0.677*
	(0.69)	(0.69)	(0.00)	(0.62)	(0.92)	(0.01)
Firm_Perf	-1.52*	-2.3*	-1.16*	-1.513*	-1.245*	-1.543*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Capex	-0.02	0.082	-0.04	-0.033	0.399	0.525
	(0.91)	(0.84)	(0.37)	(0.87)	(0.15)	(0.16)
Firm size	-4.6*	-3.92*	-1.21*	-4.60*	-2.85*	-7.182*
	(.00)	(0.00)	(.00)	(.00)	(0.00)	(.00)
Leverage	0.63*	1.04*	-0.03*	0.626*	0.692*	0.759*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Dividend	0.32	0.22	-0.27**	0.316	-0.652***	-1.354***
	(0.31)	(0.65)	(.03)	(0.31)	(0.07)	(0.09)
NWC	-0.002**	-0.00	-0.00*	-0.002*	-0.002***	-0.002*
	(0.01)	(0.52)	(0.00)	(0.01)	(0.10)	(0.01)
Fixed asset	-0.22*	-0.54*	-0.03	-0.222*	-0.196***	-0.341**
	(0.01)	(0.00)	(0.13)	(0.01)	(0.08)	(0.02)
Intercept	40.51	31.38	35.79*	50.587***	30.78	26.900
	(0.19)	(0.45)	(0.00)	(0.10)	(0.33)	(0.35)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	.1999	.2496	.4161	0.1999	.2172	.4125
N	4,816	2,525	2291	4,816	2,524	2,290

*, ** & *** indicate significance at 1%, 5% and 10% level. Numbers in parentheses are p values.

Table 4: Impact of CEO industry experience on Compensation

Independent variables	All firms	High-growth firms	Low-growth firms	All firms	High-growth firms	Low-growth firms
	Specific-industry Experience			Cross-industry Experience		
Multi-ind	-	-	-	0.146*	0.06	.144*
				(0.00)	(0.49)	(0.00)
Specific_ind	-0.00	-0.014	0.002	-	-	-
	(.77)	(.38)	(0.82)			
Specific_ind_sq	-0.00	-0.00**	-0.00	-	-	-
	(.16)	(.04)	(.63)			
Female	0.25	0.16	.006	0.314**	0.253	-0.153
	(0.10)	(0.49)	(.97)	(0.04)	(0.22)	(0.42)
Tenure	0.01*	0.014*	0.005	0.006***	0.006	0.007***
	(0.00)	(0.01)	(0.12)	(0.09)	(0.19)	(0.08)
MBA	-0.13*	-0.13	-0.087*	-0.122*	-0.07	-0.184*
	(0.00)	(0.08)	(0.03)	(0.00)	(0.27)	(0.00)
PhD_Masters	-0.13*	-0.21**	-0.05	-0.127**	-0.191*	0.032
	(0.01)	(0.01)	(0.30)	(0.02)	(0.01)	(0.64)
MTB	0.05*	0.065*	0.27*	0.051*	0.066*	0.273*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Volatility	-0.01	-0.016**	0.003	-0.005	-0.012***	0.006
	(0.19)	(0.04)	(0.43)	(0.23)	(0.07)	(0.23)
Firm_Perf	-0.001	-0.004	0.008*	-0.000	-0.002	0.009**
	(0.69)	(0.28)	(0.002)	(0.98)	(0.66)	(0.02)
Capex	-0.007	-0.02	-0.000	-0.009	-0.012	-0.01
	(0.22)	(0.06)	(0.95)	(0.16)	(0.17)	(0.19)
R&D	0.000	-0.00	0.005***	0.000	-0.001	0.001***
	(0.97)	(0.33)	(0.10)	(0.92)	(0.67)	(0.07)
Firm size	0.28*	0.175*	0.46*	0.274*	0.168*	0.492*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Leverage	0.00	0.00	-0.003***	0.001	0.001	-0.003***
	(0.92)	(0.23)	(0.08)	(0.75)	(0.64)	(0.09)
Dividend	0.04*	0.042*	0.013	0.037*	0.047*	-0.010
	(.00)	(.00)	(0.40)	(.00)	(.00)	(0.55)
NWC	0.000**	0.000**	0.000*	0.000**	0.000**	0.000*
	(0.02)	(0.01)	(0.01)	(0.02)	(0.02)	(0.01)
Fixed asset	-0.004***	-0.001	-0.008**	-0.01***	-0.006***	-0.004***
	(0.08)	(0.83)	(0.00)	(0.08)	(0.09)	(0.10)
Intercept	6.2*	7.38*	4.16*	6.144*	7.385*	3.802*
	(.00)	(.00)	(.00)	(.00)	(.00)	(.00)
Year fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Adj. R ²	.22	.16	.4638	0.217	.149	.4651
N	4,796	2,514	2,282	4,796	2,514	2,282

*, ** & *** indicate significance at 1%, 5% and 10% level. Numbers in parentheses are p values.

Table 5: Definition of Variables

Variable	Description
Multi-ind	equals 1 if the CEO has more than one industry experience, 0 otherwise
Specific_ind	No. of years in the same industry (based on three-digit SIC code)
Specific_ind_sq	Square of Specific_ind variable
<i>CEO Control Variables</i>	
Female	1 if female, 0 otherwise
Tenure	length of time CEOs served in the current position
MBA	1 if the CEO has an MBA, and 0 otherwise
PhD_Masters	1 if the CEO has either master's or PhD, and 0 otherwise
<i>Firm Control Variables</i>	
MTB	Market-to-book ratio
Volatility	Sum of the squared residual from the Fama-French's (1993) three-factor model
Firm_Perf	Return on Asset
Capex	Capital expenditure/TA
R&D	R&D/Total sales
Firm size	Natural logarithm of total asset
Leverage	Debt/ total assets
Dividend	Sum of dividends from preferred and common stock/ total assets
NWC	Net working capital
Fixed asset	Fixed asset/TA
Compensation	Total compensation