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# Does organization capital matter? An analysis of the performance implications of CEO power

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ABSTRACT

Chief executive officer (CEO) power reflects the ability of the CEO to influence the firm's decision-making. Whether the CEO of the firm could manage the firm's investment assets to support maximizing the efficiency of resource allocation is an important issue. As previous studies found, organization capital is a key intangible asset that improves the firm's production efficiency and affects long-term performance. This study explores how CEO power affects organization capital investments and how it further affects the efficiency of firm resource allocation. We use the following three variables to measure CEO power: CEO founder, CEO-only insider and CEO duality. Our results indicate that the level of CEO power can influence a firm's value by controlling the organization capital. When the firm's CEO is also the founder, the CEO will attempt to increase investments in organization capital to create growth opportunities for the firm, which will therefore increase the firm's value. Specifically, when the company is in financial distress, the powerful CEO's increasing in organizational capital investment will expose the company to greater risk of loss of intangible assets. This result may further increase the company's price volatility.

## 1. Introduction

Many researchers have investigated the effect of CEO power on firm performance. They have focused on agency theory, stewardship theory, organization theory and different circumstances to explain the relationship between CEO power and firm performance. Pfeffer (1997) defines CEO power as the ability of the chief executive officer to influence the company's decision-making and to sustain that influence when opposed by other high-level managers. CEO power results from structural power, ownership power, professional strength, and reputation (Finkelstein, 1992). Structural power, in particular, is the most representative power, and it represents the distribution of high-level managerial positions in an organization (Brass, 1984; Hambrick, 1981; Perrow, 1970; Tushman and Romanelli, 1983). If an executive has more than one position in the firm, structural power represents the strength of the power held by that executive that enables him/her to control more of the firm's important resource allocation processes.

Based on agency theory, Jensen and Meckling (1976) emphasize the differences between shareholders' and managers' interests. To reduce agency problems, investments must reduce the agency cost. Agency cost refers to shareholders' trust that managers will be prevented from harming their interests. Therefore, it is necessary to design a strict system with contracts to constrain managers.

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When the power held by managers is overly concentrated, for example, when the CEO is also the chairman of the board and plays the role of both the executor and the supervisor of firm decision-making, the firm can easily deviate from shareholder interests. As the chairman of the board can control the board of directors' discussion of proposals, access the firm's internal information for shareholder reports, control the process of selecting directors, and select directors he/she trusts, the dual role would weaken the supervisory function of the board of directors. Therefore, from the perspective of agency theory, the influence of CEO power on the value of the firm is negative.

However, in terms of organization theory or stewardship theory, many studies support CEO duality. CEO duality reflects a clear division of internal company power and responsibilities, which makes the firm's decision-making more efficient. In contrast, non-duality may increase role conflict among high-level managers. To date, there has been no definitive conclusion about the influence of CEO power on the value of the company.

Related studies have shown that the influence of CEO power on company value depends on the firm's business context. Elsayed (2007) argues that CEO duality should be regarded as representative of CEO power. His results show that there is no significant impact of duality on firm value; however, when industry factors are taken into consideration, CEO duality can have a positive and significant impact on firm value. Moreover, the author also found that CEO power has a significantly positive impact on firm value when the firm has poor operating performance.

Adams et al. (2005) pointed out that among firms with powerful CEOs, on average, performance does not always worsen. Instead, these powerful CEOs may further enhance firm value, especially when the firm is facing financial distress. A chief executive with higher power has more responsibility for maintaining the firm's operations. Therefore, CEOs with higher power have the ability to make strong decisions to lead the firm out of a crisis and increase firm value.

Finkelstein and D'aveni, (1994) note that when executives have more power, they are more likely to boycott board supervision, but they are also more efficient in decision-making. Dowell et al. (2011) show that CEO power can bring a firm more benefits than costs when the firm is in crisis. Therefore, according to the above studies, the effect of CEO power on the value of the firm depends on the current context of the company.

A series of recent studies have focused on how organization capital affects corporate operating efficiency. There is a large body of accounting and finance literature that focuses on analyzing the effects of organization capital on firm performance and company policies. Organization capital is an intangible asset and is typically a special structure, organization design, or business process that helps the firm maintain a continuous competitive advantage. The prior research has shown that organization capital is positively related to firm value and stock returns (Banker, Huang, and Natarajan, 2011; Hirshleifer et al., 2013; Eisfeldt and Papanikolaou, 2013; Chan et al., 2001; Lev and Sougiannis, 1996; Lev and Radhakrishnan, 2005; Lev et al., 2009). Lev et al. (2009) found that there is a positive relationship between organization capital, the growth rate of the company's revenue and operating profit, and the return on the share price over the next five years. This result shows that organization capital is a key efficiency factor affecting the long-term performance of a company. Li et al. (2018) investigated whether firms with more organization capital are good acquirers in the market and found that an acquirer's organization capital is an important factor for creating value in M&As.

Anderson et al. (2007) explored the characteristics of the sales, general and administrative expenses (SG&A expenses hereafter) of a firm. They indicate that when companies are faced with declining revenue, the following three factors will lead the executives to adjust their SG&A expenses: the cost of stability within the firm; the efficiency of management, as executives might have poor management and control of company costs; and how executives adjust their decisions around investing in company resources when experiencing a market decline.

The previous literature measures organization capital using the accounting for SG&A (Lev and Radhakrishnan, 2005; Lev et al., 2009; Eisfeldt and Papanikolaou, 2013). SG&A expenses include a part of the firm's resource input to organization capital, such as information systems, staff training, consultant fees, or brand promotion. Therefore, organization capital could be represented by the company's intangible assets and reflect the characteristics of the company's key talent.

Organization capital is an intangible asset that can generate sustainable competitive advantages. According to previous studies, organization capital is a key factor in improving the company's production efficiency and affecting its long-term performance (Lev et al., 2009; Atkeson and Kehoe, 2005; Wernerfelt, 1984; Evenson and Westphal, 1995). Moreover, the CEO has high-level control rights to invest the company's organization capital. Therefore, this study takes organization capital into consideration as a proxy variable to explain the effect of powerful CEOs on the value of the company.

Our empirical results indicate that a powerful CEO (CEO-only insider and CEO H-power) might attempt to maintain his/her position in the firm by increasing investment in organization capital. However, a powerful CEO who invests excessive organization capital for exploiting private interests will reduce the company's performance. Specifically, when a company is under financial distress, companies with valuable organization capital confront a high risk of brain drain, which will increase the company's price volatility.

The contributions of this paper supplements the research gap on the impact of powerful CEO on the relationship between organization capital and operational efficiency. In addition, this paper also has supplemented the literature regarding how a powerful CEO affect intangible asset investment efficiency, when the company faces a different economic environment.

The remainder of this article proceeds as follows. Section 2 provides a literature review and develops the hypotheses. Section 3 presents the sample and the research design. Section 4 contains the results and our empirical analysis. Section 5 concludes with a brief summary.

## 2. Literature review and hypothesis development

The literature has noted that the CEO plays an important role in the firm's operational performance. Francis et al. (2008) indicate that a well-reputed CEO will bring good earnings quality. Weng and Chen (2017) found that choosing a good CEO is more influential than trying to build a firm's reputation when attempting to improve firm performance.

In addition, a series of studies have discussed how CEO power affects a firm's key decisions. Pfeffer (1997) explains CEO power as the degree of influence and sustainability of the CEO's influence on firm decision-making when opposed by other executives. Sah and Stiglitz (1986), Sah and Stiglitz (1991) focus on CEO power by comparing the results of poor decisions made by decision groups under different structures. If a firm's business decision is made by a group, the final decision-making result will represent a compromise reflecting the different opinions in the group. Espinosa et al. (2018) discuss how family ownership affects corporate strategy and firm performance; their results indicate a positive relationship between firm performance and diversification when firms are family owned.

Finkelstein et al. (1996) explain that executives should take more responsibility for making complex decisions, which usually involve many uncertainties. Executives will be subject to their management bias and personal experience when influencing the company's final decision. Mischel (1977) shows that firm executives usually make strategic decisions when the firm is under financial distress. Therefore, managers' decisions will reflect a greater degree of change and will be more difficult to predict.

Finkelstein (1992) researched the power of high-level managers. They propose the following four sources of high-level managerial power: structural power, ownership power, professional power, and reputation. Structural power represents the distribution of high-level managerial positions in an organization and is the most representative source of power (Brass, 1984; Hambrick, 1981; Perrow, 1970; Tushman and Romanelli, 1983). If the CEO has another formal position in the organization, he/she will have greater structural power than other managers of the company. This structural power allows the CEO to better control the uncertain behavior of other managers.

According to Adams et al. (2005), CEO power is measured mainly to identify whether other high-level managers and CEOs are involved in decision-making. The authors assert that CEO power comes mainly from the influence of other high-level managers' power over decision-making. The presence of more powerful executives will dilute the degree of CEO power. The result indicates that not all sources of CEO power affect firm performance.

### *2.1. CEO power and firm performance*

Many studies have discussed the issues of CEO power and its link to firm performance from different perspectives. The influence of high-level managers' decision-making in a company is an important factor affecting firm performance. Finkelstein et al. (1996) examine whether executives influence the firm decisions that would affect firm performance. Hannan and Freeman (1977) indicate that organizational or environmental constraints reduce executives' influence on company decisions. Some studies find that executive leadership is an important factor that will influence the relationship between executive decision-making and performance (Hambrick and Mason, 1984; Tushman et al., 1985; Espinosa et al., 2018). The literature on managers' discretionary power indicates that the influence that high-level managers have on company decision-making depends on how much discretionary power they have. The above studies have shown that high-level managers greatly influence company decisions.

On the business side, when the company is under financial distress, high-level managers make use of their power to make relevant decisions, and these decisions can have long-term positive impacts on the company. Adams et al. (2005) mainly discuss how different levels of CEO power affect firm performance when the company is under financial distress. Their results show that when the CEO has more power in decision-making, there will be a greater degree of change in company performance.

Dowell et al. (2011) discuss the relationship between corporate governance mechanisms and corporate viability, which is mainly influenced by the characteristics of the company and its environment. They examine the impact of corporate governance mechanisms, such as the independence of the board of directors, the scale, and CEO power on the company's viability when it is under financial distress. Their results show that when a company is under financial distress, if the board is more independent and smaller and the CEO has more power, it will be more likely to overcome its difficulties. However, under normal conditions, the above factors will not have a significant effect. These results emphasize that the relative benefits, costs, and efficiency of corporate governance mechanisms are different for companies in different situations. Regarding CEO power, Dowell et al. (2011) point out that if the CEO is a director, the company's decision-making direction will be more consistent, and there will be stronger motivation to maintain the company's operations.

### *2.2. Organization capital and firm performance*

Intangible or intellectual assets are the main factors driving the economic growth of enterprises and countries. These assets hold important relevance in the modern economy. Intangible assets have recently been recognized as an important factor for company output, and in many cases, these intangible assets are reflected in the company's key talent. Because the characteristics of organization capital are unique to each company and are reflected in its key talent, Eisfeldt and Papanikolaou (2013) classify this type of intangible asset as organization capital. Organization capital is the accumulation and use of key resources and skills that can improve company productivity (Prescott and Visscher, 1980). Organization capital represents the company's operational, investment, and innovation capabilities. Lev et al. (2009) indicate that organization capital enables the company to produce output and maintain exceptionally high performance, as reflected in its operational processes and design.

Most of the research utilizes accounting for SG&A expenses to measure organization capital (Lev and Radhakrishnan, 2005; Lev

et al., 2009; Eisfeldt and Papanikolaou, 2013; Tronconi and Marzetti, 2011). The generally accepted accounting principles define SG&A expenses as all business expenses required to maintain operating profits during the company's operations, meaning that they are not directly related to the production of the product. A large portion of SG&A expenses include the cost to the company to build organization capital, such as information systems, staff training, consultant fees, and the promotion of brands. SG&A expenses should be in line with the characteristics of the company's capital and the unique characteristics of its key talent.

Eisfeldt and Papanikolaou (2013) find that companies with high organization capital have a 4.6% higher average stock price return than those with low organization capital. These excess returns are mainly used to compensate shareholders for the risk of organization capital loss. This risk exists because most organization capital is held by employees, and if they leave the company, they will take that important organization capital with them. Their results reveal that the loss of key talent is an important risk factor for the company.

Larkin (2013) shows that a firm's intangible assets play an important role in affecting corporate financial policies. The study uses brand goodwill as a research object, and the results show that strong customer trust increases the stability of the company's cash flow. As a result, firm risk is reduced, which in turn, allows it to increase its financing limits and reduce financial frictions.

Lev et al. (2009) show that organization capital is a key efficiency factor that influences a company's long-term performance. Organization capital can be represented by the company's ability to efficiently convert input into output. The previous studies quantified organization capital in terms of SG&A expenses because these expenses include the investment required for building organization capital (Lev and Radhakrishnan, 2005; Lev et al., 2009; Eisfeldt and Papanikolaou, 2013). For example, they include information systems, staff training, consultant fees, and brand promotion.

For a firm in a general business context, if the revenue declines, the CEO will consider whether to maintain the original distribution level of resources. He/she may consider the additional costs required to reduce resource investment, for example, whether the cost of layoffs is greater than the idle cost of maintaining the resource input at the original level. Those CEOs holding a positive view of their firm's future operating conditions will continue to maintain a high level of organization capital investment. However, CEOs who anticipate that the future profit of the firm may decline will keep their position in the firm to maintain their authority and will maintain a higher investment in organization capital. In other words, the CEO controls the firm's investment decisions through his/her power to gain private benefits.

CEOs control their companies' investments in organization capital through the power they have at their disposal, thereby affecting the value of the firm. Since organization capital is a key factor affecting a firm's effective output, it can improve firm value. However, excessive investment in organization capital may increase the proportion of idle resources, which may have a negative impact on the value of the firm.

**Hypothesis 1.1:**. *A CEO with high power in a firm will maintain a higher level of organization capital allocation to improve firm performance.*

**Hypothesis 1.2:**. *A CEO with high power in a firm will maintain a higher level of organization capital allocation to protect their position, and this could reduce firm performance.*

Eisfeldt and Papanikolaou (2013) point out that because organization capital is an intangible asset, if a firm invests in more organization capital and this organization capital is lost, then it will have a greater impact on firm value. Since SG&A expenses mainly lie in the cultivation of talent, if key talent leaves the company and is hired by the competition, the impact on the company will be enormous. In other words, greater organization capital investments will increase the firm's risk level.

**Table 1**
Definitions of variables.

| Variable name | Definitions |
|---|---|
| *CEO characteristics* | |
| CEO tenure | Number of years since the executive was appointed as the CEO. |
| CEO ownership | The CEO's stock ownership, excluding options (SHROWN in ExecuComp), scaled by the number of shares outstanding (SHRSOUT in ExecuComp). |
| *Firm performance* | |
| Tobin's *Q* | The sum of the firm's market capitalization and the book value of debt, divided by the book value of total assets. |
| *Firm characteristics* | |
| Leverage | The ratio of long-term debt to total assets. |
| *Log* (Firm size) | The natural log of the firm's total assets. |
| Firm age | Firm age as the number of years (plus one) elapsed since the year of the company's IPO. We approximate a firm's year of birth with the earliest year it appears in the CRSP and Compustat databases. |
| *R&D intensity* | The ratio of R&D expenditures to total sales. |
| *Organizational slack* | Organizational slack is measured by the debt to equity ratio. |
| *CEO power measurements* | |
| *CEO founder* | If the CEO is also the founder of the firm, then it takes the value of 1, and 0 otherwise. |
| *CEO-only insider* | If the CEO is the only insider on the board, then it takes the value of 1, and 0 otherwise. |
| *CEO duality* | If the CEO is also the chairman of the board of directors, then it takes the value of 1, and 0 otherwise. |
| *CEO H-power* | CEO H-power represents the strength of the CEO's influence in the firm. If the CEO holds all the three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* then it takes the value of 1, and 0 otherwise. |
| *Organization capital* | |
| OC | The variable of organization capital is measured with the same technique used by Lev Radhakrishnan (2005). |

However, Larkin (2013) believes that not all intangible assets have this characteristic, such as brand goodwill. Goodwill mainly increases the stability of cash flow to the company through stronger customer trust, thereby reducing the company's overall risk. Organization capital is an important intangible asset that enhances a company's production efficiency. It can reduce operating costs, increase profitability, and further increase the stability of the firm's cash flow, thus reducing its risk. According to previous studies, powerful CEOs greatly influence firm value and risk. The CEO makes important firm decisions, and the quality of these decisions will have a great impact on the long-term development of the firm. The positive or negative motivations of CEOs to invest in organizational capital will further affect the future cash flow volatility. Based on the above arguments, we have established the following hypotheses.

**Hypothesis 2.1:**. *More organization capital could potentially induce higher cash flow volatility for the firm when it has a powerful CEO.*

**Hypothesis 2.2:**. *More organization capital could potentially reduce the firm's business risk by increasing the stability of its cash flow when the firm has a powerful CEO.*

## 3. Sample and research design

### 3.1. Sample and data source

Our sample consists of firms in the USA that were listed on the NYSE, AMEX and NASDAQ stock exchanges from 1992 to 2014. Consistent with other financial studies, because of the idiosyncratic industry-related characteristics of firms in the financial industry, we have excluded those firms from our sample data. The financial data are collected from the Compustat database. The CRSP database is used to confirm whether the company has issued common stock or not. We obtain the raw data on CEO information from Execu-Comp. The final sample consists of 14,049 firm-year observations.

Table 1 provides the definitions for all of the variables used in this study, including the CEO characteristics, firm performance, firm characteristics, CEO power measurements, and organization capital.

### 3.2. CEO power

CEO power represents the distribution of high-level managerial positions in an organization and is the most representative source of power. Following Adams et al. (2005), three variables are used here to measure CEO power, which are as follows: CEO founder, CEO-only insider and CEO duality. CEO founder is a dummy variable that equals 1 if the CEO is also the firm's founder. The CEO-only insider variable is a dummy variable that equals 1 if the CEO is the only company insider on the board. CEO duality is a dummy variable that equals 1 if the CEO is also the chairman of the board of directors. In this paper, we consider whether the different dimensions of CEO power have different influences on organizational capital and firm value. In addition, we further examine the effects of relatively more powerful CEOs on firm value. If a CEO has multiple power identities, then that CEO has a greater influence on the firm. Therefore, we construct a CEO power dummy variable, i.e., CEO H-power. A CEO with all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* has greater power than a CEO that only has one powerful position in a firm. CEO H-power takes a value of 1 if the CEO has all three identities, and this indicates that the CEO has a stronger influence on the firm; otherwise the value of this variable is 0.

### 3.3. Organizational capital

This study primarily adopts the method from Lev and Radhakrishnan (2005) to measure organization capital (OC). We utilize SG&A expenses to measure the firm's investment in organization capital. In addition, Eisfeldt and Papanikolaou (2013) take the consumer price index into consideration to adjust SG&A expenses to construct an organization capital variable, as shown in Eq. (1).

$$OC_{it} = (1-\delta_O)^{*}OC_{it-1} + \frac{SG\&A_{i,t}}{CPI_t} \tag{1}$$

$CPI_t$ is the consumer price index for year t in Eq. (1). $SG\&A_{i,t}$ is the selling, general & administrative expenses for firm i at time t. $\delta_O$ is the depreciation rate for organization capital. Following the related literature, the depreciation rate is 15% in this study, which was estimated in 2006 by the U.S. Bureau of Economic Analysis as a firm's average R&D capital depreciation rate.

Eq. (2) shows the measurement of organization capital for t equal to 0. In Eq. (2), g is the average real growth rate of SG&A expenses.

$$OC_0 = \frac{SG\&A_1}{g+\delta_O} \tag{2}$$

Considering the impact of firm size and industry variation, we follow Eisfeldt and Papanikolaou (2013) to scale organization capital by the total assets of the firm.

### 3.4. Empirical model

The previous literature indicates that under the general conditions of the firm, a powerful CEO will expect to invest more in organization capital. However, organization capital is a risky firm asset. Therefore, whether the CEO is motivated to protect his/her position or to invest in the long-term development needs of the firm will have different effects on the firm value.

The greater the CEO's power, the more extreme the results will be; therefore, we expect that the relationship between CEO power and firm value will be uncertain. In addition, organization capital is a key factor affecting firm value, and the CEO usually has higher control rights over its input. To examine whether organization capital affects the relationship between CEO power and firm performance, we take organization capital into consideration. We construct the following regression model, i.e., Eq. (3), to examine this effect. In this study, we controls for the firm characteristic variables following Adams et al. (2005), Lev et al. (2009) and Sariol and Abebe (2017), and we also control for CEO characteristics. All variables are defined in Table 1.

$$\begin{aligned}\text{Tobin's } Q_{i,t} &= \propto_{i,t} + \beta_1 CEO\ power_{i,t} + \beta_2 OC_{i,t} + \beta_3 CEO\ power_{i,t} {}^{*} OC_{i,t} + \beta_4 CEO\ ownership_{i,t} + \beta_5 CEO\ tenure_{i,t} \\ &+ \beta_6 Leverage_{i,t} + \beta_7 Log\ (Firm\ Size)_{i,t} + \beta_8 Firm\ age_{i,t} + \beta_9 R\&D\ Intensity_{i,t} \\ &+ \beta_{10} Organization\ Slack_{i,t} + \sum\nolimits_t^n Year\ Dummy + \sum\nolimits_i^n Industry\ Dummy + \varepsilon_{i,t}\end{aligned} \tag{3}$$

In addition, to support Hypothesis 2, we follow Larkin (2013) and utilize forward-looking cash flow volatility (Cash Flow Vol) to measure cash flow stability. The dependent variable is the forward-looking absolute cash flow volatility at time t. We measure this variable by calculating the standard deviation of a firm's annual profitability (EBITDA) over the period (t + 1) through (t + 5), scaled by total assets. We construct the following regression model, i.e., Eq. (4), to examine the effect.

$$\begin{aligned}\text{Cash Flow Vol}_{i,t} &= \propto_{i,t} + \beta_1 CEO\ power_{i,t} + \beta_2 OC_{i,t} + \beta_3 CEO\ power_{i,t} {}^{*} OC_{i,t} + \beta_4 CEO\ ownership_{i,t} + \beta_5 CEO\ tenure_{i,t} \\ &+ \beta_6 Leverage_{i,t} + \beta_7 Log\ (Firm\ Size)_{i,t} + \beta_8 Firm\ age_{i,t} + \beta_9 R\&D\ Intensity_{i,t} \\ &+ \beta_{10} Organization\ Slack_{i,t} + \sum\nolimits_t^n Year\ Dummy + \sum\nolimits_i^n Industry\ Dummy + \varepsilon_{i,t}\end{aligned} \tag{4}$$

## 4. Results and empirical analysis

### 4.1. Descriptive statistics

Table 2 reports the descriptive statistics of the study variables. The mean of CEO duality is 0.57, which indicates that most of the firms are led by dual CEOs. The means of CEO founder and CEO H-power are 0.23 and 0.07, respectively. In addition, the mean of Tobin's Q is 2.05. The correlation matrix is reported in Table 3. The results show that CEO H-power and CEO founder are significantly positively related to firm value. By contrast, CEO-only insider and CEO duality are not significantly associated with firm value.

### 4.2. Empirical results

In this paper, we first examine the relationship between CEO power, organization capital and firm value. Models 1 to 4 in Table 4 show that organization capital has a significantly positive relationship with firm value. In Table 4, we use the following three variables to measure CEO power: CEO-only insider, CEO duality, and CEO founder. The results show that the interaction term of CEO power and organization capital has different results in each model. In Model 3 in Table 4, the coefficient of the interaction term is 0.195 and is significant at the 1% level. This indicates that when the firm's CEO is also the founder, increasing investment in organization capital will improve firm value. This result is consistent with Hypothesis 1.1. In Model 1 in Table 4, the coefficient of the interaction term is −0.173 and is significant at the 1% level. This indicates that when the firm's CEO is the only insider on the board, he/she tends to

**Table 2**
Descriptive statistics.

| Variables | N | Mean | STD. | Min. | Max. |
|---|---|---|---|---|---|
| *Firm value measure* | | | | | |
| Tobin's Q | 15,312 | 2.05 | 1.38 | 0.41 | 19.78 |
| *Forward-looking cash flow volatility* | | | | | |
| Cash Flow Vol | 11,587 | 0.07 | 0.11 | 0.00 | 5.22 |
| *Firm characteristics* | | | | | |
| Leverage | 15,312 | 0.20 | 0.19 | 0.00 | 3.68 |
| Log (Firm size) | 15,312 | 7.38 | 1.62 | 2.3 | 12.76 |
| Firm age | 15,312 | 29.09 | 20.37 | 6.00 | 90.00 |
| R&D Intensity | 15,312 | 0.07 | 1.95 | 0.00 | 237.86 |
| Organization Slack | 15,312 | 2.30 | 47.93 | −1,733.11 | 4,592.52 |
| *CEO characteristics* | | | | | |
| CEO tenure | 14,594 | 7.18 | 7.16 | 0.00 | 54.00 |
| CEO ownership | 14,732 | 0.02 | 0.06 | 0.00 | 1.17 |
| *CEO power measurements* | | | | | |
| CEO founder | 15,312 | 0.23 | 0.42 | 0.00 | 1.00 |
| CEO-only insider | 15,312 | 0.48 | 0.5 | 0.00 | 1.00 |
| CEO duality | 15,312 | 0.57 | 0.49 | 0.00 | 1.00 |
| CEO H-power | 15,312 | 0.07 | 0.26 | 0.00 | 1.00 |
| Organization capital | | | | | |
| OC | 15,312 | 0.27 | 0.49 | 0.00 | 17.99 |

**Table 3**
Pearson's correlation.

| | 1 | | 2 | | 3 | | 4 | | 5 | | 6 | | 7 | | 8 | | 9 | | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1. Tobin's Q | 1.000 | | | | | | | | | | | | | | | | | | | |
| 2. CEO H-power | 0.051 | *** | 1.000 | | | | | | | | | | | | | | | | | |
| 3. CEO-only insider | 0.012 | | 0.285 | *** | 1.000 | | | | | | | | | | | | | | | |
| 4. CEO duality | −0.007 | | 0.239 | *** | −0.011 | | 1.000 | | | | | | | | | | | | | |
| 5. CEO founder | 0.092 | *** | 0.498 | *** | −0.046 | *** | 0.130 | *** | 1.000 | | | | | | | | | | | |
| 6. CEO tenure | 0.036 | *** | 0.272 | *** | −0.073 | *** | 0.272 | *** | 0.536 | *** | 1.000 | | | | | | | | | |
| 7. Leverage | −0.135 | *** | −0.063 | *** | −0.018 | ** | 0.014 | * | −0.058 | *** | −0.049 | *** | 1.000 | | | | | | | |
| 8. Log (Firm size) | −0.148 | *** | −0.138 | *** | −0.060 | *** | 0.206 | *** | −0.257 | *** | −0.109 | *** | 0.258 | *** | 1.000 | | | | | |
| 9. Firm age | −0.115 | *** | −0.218 | *** | −0.026 | *** | 0.221 | *** | −0.420 | *** | −0.090 | *** | 0.044 | *** | 0.491 | *** | 1.000 | | | |
| 10. R&D Intensity | 0.056 | *** | 0.001 | | 0.010 | | −0.001 | | −0.001 | | −0.008 | | −0.020 | ** | −0.032 | *** | −0.018 | ** | 1.000 | |
| 11. Organization Slack | −0.015 | * | −0.005 | | −0.017 | ** | −0.002 | | −0.006 | | −0.012 | | 0.057 | *** | 0.012 | | 0.009 | | −0.001 | 1.000 |

Note: ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively.

**Table 4**
CEO power, organization capital and firm value. This table uses OLS regression models to examine the relationships between CEO power, organization capital and firm value. The sample period is from 1992 to 2014. The following three variables are used to measure CEO power: CEO-only insider, CEO duality, and CEO founder. CEO H-power measures the strength of the CEO's influence in the firm. If the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* then it takes the value of 1, and 0 otherwise. The dependent variable is Tobin's $Q_t$. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Tobin's $Q_t$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| OC | 0.471 | *** | 0.394 | *** | 0.277 | *** | 0.396 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| CEO-only insider | 0.040 | | | | | | | |
| | (0.113) | | | | | | | |
| CEO-only insider*OC | −0.173 | *** | | | | | | |
| | (0.000) | | | | | | | |
| CEO duality | | | 0.082 | *** | | | | |
| | | | (0.002) | | | | | |
| CEO duality*OC | | | −0.073 | | | | | |
| | | | (0.108) | | | | | |
| CEO founder | | | | | 0.015 | | | |
| | | | | | (0.704) | | | |
| CEO founder*OC | | | | | 0.195 | *** | | |
| | | | | | (0.000) | | | |
| CEO H-power | | | | | | | 0.122 | ** |
| | | | | | | | (0.022) | |
| CEO H-power*OC | | | | | | | −0.235 | *** |
| | | | | | | | (0.001) | |
| CEO ownership | 0.591 | *** | 0.573 | *** | 0.472 | ** | 0.667 | *** |
| | (0.003) | | (0.004) | | (0.017) | | (0.001) | |
| CEO tenure | 0.003 | ** | 0.002 | | 0.002 | | 0.003 | |
| | (0.041) | | (0.282) | | (0.419) | | (0.134) | |
| Leverage | −0.531 | *** | −0.533 | *** | −0.537 | *** | −0.535 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Log (Firm size) | −0.031 | *** | −0.036 | *** | −0.033 | *** | −0.031 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Firm age | −0.001 | | −0.001 | | −0.000 | | −0.001 | |
| | (0.284) | | (0.172) | | (0.894) | | (0.426) | |
| R&D intensity | 0.542 | *** | 0.542 | *** | 0.544 | *** | 0.539 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | −0.000 | | −0.000 | | −0.000 | | 0.000 | |
| | (0.360) | | (0.340) | | (0.338) | | (0.345) | |
| Intercept | 2.128 | *** | 2.238 | *** | 2.287 | *** | 2.178 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | |
| Obs. | 14,049 | | 14,049 | | 14,049 | | 14,049 | |
| Adjusted_$R^2$ | 0.127 | | 0.127 | | 0.128 | | 0.127 | |

invest more in organization capital to consolidate his/her position. Based on the motivation to protect the CEO position, increasing the level of organization capital will reduce firm value. This result is consistent with Hypothesis 1.2. In addition, to examine the effect of a more powerful CEO, we construct the CEO power dummy variable, CEO H-power. A CEO with all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* has greater power than a CEO with only one powerful position in a firm. In Model 4 in Table 4, the coefficient of the interaction term is −0.235 and is significant at the 1% level. The result shows that highly powerful CEOs have more power to determine the investment in organization capital, and he/she might make excessive investments to protect the his/her position, which will result in damaging the firm value. This result strongly supports Hypothesis 1.2.

In addition, we examine the effect of CEO power and organization capital on forward-looking cash flow volatility. The results are shown in Table 5. For Models 1 to 4, organization capital is significantly positive for forward-looking cash flow volatility. This indicates that when the firm increases its investment in organization capital, higher cash flow volatility is a result. Furthermore, the result for the interaction term shows that when the firm has CEO duality and CEO H-power, the firm's investment in organization capital will reduce the cash flow volatility. This means that the cash flow stability could be increased. When the firm has a powerful CEO, greater investment in organization capital could reduce the firm's business risk by stabilizing its cash inflow. Powerful CEOs make investment decisions for their firms, such as investment in organization capital, and pursue cash flow stability. This type of CEO will choose to invest certain organization capital to stabilize the firm's future cash flow fluctuations, thereby protecting their own position. These results support Hypothesis 2.2.

In Model 3 in Table 5, for the CEO founder variable, the coefficient of the interaction term is 0.019, which is significant at the 1% level. This indicates that if the CEO is the founder of the firm, investing in organization capital will increase the firm's cash flow risk.

**Table 5**
The effect of CEO power and organization capital on forward-looking cash flow volatility. This table uses OLS regression models to examine the relationships between CEO power, organization capital and forward-looking cash flow volatility. The sample period is from 1992 to 2014. The following three variables are used to measure CEO power: CEO-only insider, CEO duality, and CEO founder. CEO H-power measures the strength of the CEO's influence in the firm. CEO H-power takes a value of 1 if the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* and 0 otherwise. The dependent variable is forward-looking cash flow (Cash Flow Vol). ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Cash Flow Vol | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | |
| OC | 0.011 | *** | 0.021 | *** | 0.001 | | 0.014 | *** |
| | (0.002) | | (0.000) | | (0.728) | | (0.000) | |
| CEO-only insider | −0.003 | | | | | | | |
| | (0.158) | | | | | | | |
| CEO-only insider*OC | −0.001 | | | | | | | |
| | (0.859) | | | | | | | |
| CEO duality | | | 0.000 | | | | | |
| | | | (0.855) | | | | | |
| CEO duality*OC | | | −0.016 | *** | | | | |
| | | | (0.001) | | | | | |
| CEO founder | | | | | −0.004 | | | |
| | | | | | (0.228) | | | |
| CEO founder*OC | | | | | 0.019 | *** | | |
| | | | | | (0.000) | | | |
| CEO H-power | | | | | | | −0.006 | |
| | | | | | | | (0.188) | |
| CEO H-power*OC | | | | | | | −0.014 | ** |
| | | | | | | | (0.035) | |
| CEO ownership | −0.020 | | −0.012 | | −0.025 | | −0.011 | |
| | (0.257) | | (0.500) | | (0.160) | | (0.527) | |
| CEO tenure | −0.000 | ** | −0.000 | * | −0.000 | * | −0.000 | |
| | (0.022) | | (0.079) | | (0.066) | | (0.104) | |
| Leverage | −0.010 | * | −0.011 | ** | −0.011 | ** | −0.011 | ** |
| | (0.055) | | (0.040) | | (0.039) | | (0.048) | |
| Log (Firm size) | −0.012 | *** | −0.012 | *** | −0.012 | *** | −0.012 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Firm age | −0.000 | *** | −0.000 | *** | −0.000 | *** | −0.000 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| R&D intensity | 0.038 | *** | 0.036 | *** | 0.039 | *** | 0.038 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | −0.000 | | −0.000 | | −0.000 | | −0.000 | |
| | (0.554) | | (0.580) | | (0.567) | | (0.579) | |
| Intercept | 0.164 | *** | 0.163 | *** | 0.172 | *** | 0.159 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | |
| Obs. | 10,591 | | 10,591 | | 10,591 | | 10,591 | |
| Adjusted_$R^2$ | 0.107 | | 0.108 | | 0.108 | | 0.108 | |

These results support Hypothesis 2.1 and indicate that a founder CEO is more willing to take risks to create future growth opportunities for the firm; consequently, increasing the investment in capital will increase the firm's cash flow volatility.

### *4.3. Self-selection problem*

Han et al. (2016) indicate that firms operated by powerful CEOs have different characteristics than firms led by nonpowerful CEOs. Firms with powerful CEOs have the following characteristics: smaller market capitalization, fewer employees, less leverage, smaller cash holdings, greater spending on capital expenditures, smaller gross profit margins, and higher stock price volatility. These features suggest the potential for self-selection bias when studying the efficiency of powerful CEOs. Therefore, in this study, following Han et al. (2016), we use propensity scoring to adjust for selection bias when assessing the effectiveness of CEO power. First, we run the first-stage regression model given by Eq. (5) to estimate the propensity scores. The propensity scores generated by the regression model are used to create the matched sample. The matched firms do not have powerful CEOs, but their propensity scores are similar to those of firms with powerful CEOs.

$$CEOpower_{i,t}=\alpha+\beta_1 Leverage_{i,t}+\beta_2 Log(Mktcap)_{i,t}+\beta_3 Sales_{i,t}+\beta_4 Assets_{i,t}+\beta_5 Cash_{i,t}+\beta_6 Capex/Sales_{i,t}+\beta_7 Log\,(Employees)_{i,t}+\varepsilon_{i,t} \quad (5)$$

In this paper, we use the following variables to measure CEO power: CEO-only insider, CEO duality, CEO founder and CEO H-power. CEO H-power measures the strength of the CEO's influence within the firm. CEO H-power takes a value of 1 if the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* and 0 otherwise. *Leverage* is the ratio of long-term debt to total

**Table 6**

Matched sample regressions. This table presents regression results for the matched sample created based on the propensity scores. The propensity scores are estimated from the following first-stage regression model. The following four variables are used to measure CEO power: CEO-only insider, CEO duality, CEO founder and CEO H-power. CEO H-power measures the strength of the CEO's influence in the firm. CEO H-power takes a value of 1 if the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* and 0 otherwise. $CEO\ Power_{i,t} = \alpha + \beta_1\ Leverage_{i,t} + \beta_2\ Log\ (Mktcap)_{i,t} + \beta_3\ Sales_{i,t} + \beta_4\ Assets_{i,t} + \beta_5\ Cash_{i,t} + \beta_6\ Capex/Sales_{i,t} + \beta_7\ Log\ (Employees)_{i,t} + \varepsilon_{i,t}$ Then, we run the matched sample firms that have no powerful CEO during our sample period. The dependent variable in Model 1 to Model 4 is Tobin's $Q_t$. The dependent variable in Model 5 to Model 8 is Cash Flow Vol. See Table 1 for the variable descriptions. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Tobin's $Q_t$ | | | | | | | | Dependent variable = Cash Flow Vol | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | | Model 8 | |
| OC | 0.624 | *** | 0.683 | *** | 0.207 | *** | 0.600 | *** | 0.013 | *** | 0.018 | *** | -0.002 | | 0.002 | |
| | (0.000) | | (0.000) | | (0.007) | | (0.000) | | (0.001) | | (0.000) | | (0.790) | | (0.8324) | |
| CEO-only insider | 0.064 | ** | | | | | | | -0.003 | | | | | | | |
| | (0.047) | | | | | | | | (0.191) | | | | | | | |
| CEO-only insider*OC | -0.252 | *** | | | | | | | -0.003 | | | | | | | |
| | (0.000) | | | | | | | | (0.451) | | | | | | | |
| CEO duality | | | 0.179 | *** | | | | | | | -0.000 | | | | | |
| | | | (0.000) | | | | | | | | (0.872) | | | | | |
| CEO duality*OC | | | -0.420 | *** | | | | | | | -0.010 | * | | | | |
| | | | (0.000) | | | | | | | | (0.068) | | | | | |
| CEO founder | | | | | -0.284 | *** | | | | | | | -0.010 | | | |
| | | | | | (0.000) | | | | | | | | (0.102) | | | |
| CEO founder*OC | | | | | 0.277 | *** | | | | | | | 0.018 | ** | | |
| | | | | | (0.002) | | | | | | | | (0.021) | | | |
| CEO H-power | | | | | | | -0.230 | * | | | | | | | -0.011 | * |
| | | | | | | | (0.064) | | | | | | | | (0.060) | |
| CEO H-power*OC | | | | | | | -0.521 | *** | | | | | | | -0.001 | |
| | | | | | | | (0.002) | | | | | | | | (0.856) | |
| CEO ownership | 0.360 | | 0.765 | *** | 0.805 | ** | 1.691 | *** | -0.028 | | -0.000 | | -0.023 | | 0.009 | |
| | (0.143) | | (0.002) | | (0.010) | | (0.005) | | (0.101) | | (0.988) | | (0.390) | | (0.761) | |
| CEO tenure | 0.004 | * | 0.001 | | 0.002 | | 0.014 | ** | -0.000 | | -0.000 | | -0.000 | | -0.000 | |
| | (0.057) | | (0.590) | | (0.472) | | (0.023) | | (0.268) | | (0.328) | | (0.333) | | (0.739) | |
| Leverage | -0.574 | *** | -0.453 | *** | -0.524 | *** | -0.241 | | -0.019 | *** | -0.006 | | -0.003 | | 0.019 | * |
| | (0.000) | | (0.000) | | (0.000) | | (0.256) | | (0.000) | | (0.347) | | (0.790) | | (0.067) | |
| Log (Firm size) | -0.060 | *** | -0.048 | *** | -0.046 | ** | -0.080 | ** | -0.012 | *** | -0.011 | *** | -0.017 | *** | -0.017 | *** |
| | (0.000) | | (0.000) | | (0.018) | | (0.046) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Firm age | -0.001 | | -0.002 | ** | -0.008 | *** | -0.005 | | -0.000 | *** | -0.000 | *** | -0.001 | *** | -0.000 | |
| | (0.169) | | (0.022) | | (0.000) | | (0.142) | | (0.000) | | (0.000) | | (0.000) | | (0.373) | |
| R&D intensity | 0.337 | *** | 1.297 | *** | 0.262 | *** | -0.000 | | 0.026 | *** | 0.106 | *** | 0.028 | *** | 0.061 | *** |
| | (0.000) | | (0.000) | | (0.003) | | (0.999) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | -0.000 | | -0.000 | | -0.009 | *** | -0.014 | * | 0.000 | | -0.000 | | -0.000 | | -0.000 | |
| | (0.368) | | (0.291) | | (0.001) | | (0.090) | | (0.552) | | (0.605) | | (0.301) | | (0.569) | |
| Intercept | 2.157 | *** | 2.171 | *** | 2.793 | *** | 1.852 | * | 0.152 | *** | 0.142 | *** | 0.221 | *** | 0.196 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.055) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Obs. | 8,306 | | 8,192 | | 4,741 | | 1,443 | | 8,306 | | 8,192 | | 4,741 | | 1,443 | |
| Adjusted_$R^2$ | 0.137 | | 0.143 | | 0.132 | | 0.147 | | 0.137 | | 0.110 | | 0.095 | | 0.183 | |

**Table 7**

CEO power, organization capital and future firm value. This table uses OLS regression models to examine the relationships between CEO power, organization capital and future firm value. The sample period is from 1992 to 2014. The following three variables are used to measure CEO power: CEO-only insider, CEO duality, and CEO founder. CEO H-power measures the strength of the CEO's influence in the firm. If the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* then it takes the value of 1, and 0 otherwise. The dependent variables are Tobin's $Q_{t+1}$ and Tobin's $Q_{t+2}$. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Tobin's $Q_{t+1}$ | | | | | | | | Dependent variable = Tobin's $Q_{t+2}$ | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | | Model 8 | |
| OC | 0.541 | *** | 0.451 | *** | 0.370 | *** | 0.453 | *** | 0.561 | *** | 0.566 | *** | 0.488 | *** | 0.529 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| CEO-only insider | 0.021 | | | | | | | | 0.010 | | | | | | | |
| | (0.402) | | | | | | | | (0.686) | | | | | | | |
| CEO-only insider*OC | −0.251 | *** | | | | | | | −0.227 | *** | | | | | | |
| | (0.000) | | | | | | | | (0.000) | | | | | | | |
| CEO duality | | | 0.076 | *** | | | | | | | 0.094 | *** | | | | |
| | | | (0.004) | | | | | | | | (0.000) | | | | | |
| CEO duality*OC | | | −0.123 | *** | | | | | | | −0.224 | *** | | | | |
| | | | (0.006) | | | | | | | | (0.000) | | | | | |
| CEO founder | | | | | −0.015 | | | | | | | | −0.019 | | | |
| | | | | | (0.705) | | | | | | | | (0.625) | | | |
| CEO founder*OC | | | | | 0.055 | | | | | | | | −0.075 | | | |
| | | | | | (0.249) | | | | | | | | (0.135) | | | |
| CEO H-power | | | | | | | 0.146 | *** | | | | | | | 0.173 | *** |
| | | | | | | | (0.005) | | | | | | | | (0.001) | |
| CEO H-power*OC | | | | | | | −0.387 | *** | | | | | | | −0.476 | *** |
| | | | | | | | (0.000) | | | | | | | | (0.000) | |
| CEO ownership | 0.553 | *** | 0.572 | *** | 0.531 | *** | 0.702 | *** | 0.358 | * | 0.394 | ** | 0.388 | ** | 0.525 | *** |
| | (0.004) | | (0.003) | | (0.006) | | (0.000) | | (0.059) | | (0.037) | | (0.041) | | (0.006) | |
| CEO tenure | 0.003 | | 0.002 | | 0.003 | | 0.002 | | 0.003 | * | 0.002 | | 0.004 | ** | 0.002 | |
| | (0.100) | | (0.336) | | (0.142) | | (0.225) | | (0.073) | | (0.219) | | (0.028) | | (0.161) | |
| Leverage | −0.302 | *** | −0.308 | *** | −0.309 | *** | −0.310 | *** | −0.133 | ** | −0.140 | ** | −0.137 | ** | −0.139 | ** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.021) | | (0.016) | | (0.018) | | (0.016) | |
| Log (Firm size) | −0.033 | *** | −0.035 | *** | −0.032 | *** | −0.031 | *** | −0.031 | *** | −0.032 | *** | −0.029 | *** | −0.029 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.001) | |
| Firm age | 0.001 | | 0.001 | | 0.001 | | 0.001 | * | 0.002 | *** | 0.002 | *** | 0.002 | *** | 0.002 | *** |
| | (0.101) | | (0.160) | | (0.120) | | (0.062) | | (0.001) | | (0.001) | | (0.007) | | (0.000) | |
| R&D intensity | 0.636 | *** | 0.629 | *** | 0.636 | *** | 0.628 | *** | 0.638 | *** | 0.618 | *** | 0.634 | *** | 0.624 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | −0.000 | | −0.000 | | −0.000 | | −0.000 | | −0.000 | | 0.000 | | −0.000 | | −0.000 | |
| | (0.459) | | (0.450) | | (0.453) | | (0.454) | | (0.394) | | (0.397) | | (0.401) | | (0.399) | |
| Intercept | 1.950 | *** | 2.075 | *** | 2.071 | *** | 1.978 | *** | 1.625 | *** | 1.708 | *** | 1.647 | *** | 1.582 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Obs. | 13,505 | | 13,505 | | 13,505 | | 13,505 | | 12,892 | | 12,892 | | 12,892 | | 12,892 | |
| Adjusted_$R^2$ | 0.121 | | 0.119 | | 0.119 | | 0.121 | | 0.117 | | 0.117 | | 0.115 | | 0.118 | |

**Table 8**

The subsample effect of CEO power, organization capital and firm performance when firms are under financial distress. This table uses OLS regression models to examine the subsample effect when firms are under financial distress. The sample period is from 1992 to 2014. The following three variables are used to measure CEO power: CEO-only insider, CEO duality, and CEO founder. CEO H-power measures the strength of the CEO's influence in the firm. If the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* then it takes the value of 1, and 0 otherwise. The dependent variable is Tobin's $Q_{t+1}$. ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Tobin's $Q_{t+1}$ | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | High Distress Subsample | | | | | | | | Low Distress Subsample | | | | | | | |
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | | Model 8 | |
| OC | 0.583 | *** | 0.417 | *** | 0.418 | *** | 0.482 | *** | 0.437 | *** | 0.477 | *** | 0.284 | *** | 0.403 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| CEO-only insider | 0.066 | ** | | | | | | | −0.022 | | | | | | | |
| | (0.014) | | | | | | | | (0.582) | | | | | | | |
| CEO-only insider*OC | −0.254 | *** | | | | | | | −0.170 | ** | | | | | | |
| | (0.000) | | | | | | | | (0.030) | | | | | | | |
| CEO duality | | | 0.075 | ** | | | | | | | 0.154 | *** | | | | |
| | | | (0.011) | | | | | | | | (0.000) | | | | | |
| CEO duality*OC | | | 0.025 | | | | | | | | −0.272 | *** | | | | |
| | | | (0.594) | | | | | | | | (0.000) | | | | | |
| CEO founder | | | | | 0.117 | *** | | | | | | | −0.101 | | | |
| | | | | | (0.008) | | | | | | | | (0.101) | | | |
| CEO founder*OC | | | | | 0.004 | | | | | | | | 0.120 | | | |
| | | | | | (0.930) | | | | | | | | (0.146) | | | |
| CEO H-power | | | | | | | 0.217 | *** | | | | | | | 0.110 | |
| | | | | | | | (0.001) | | | | | | | | (0.150) | |
| CEO H-power*OC | | | | | | | −0.461 | *** | | | | | | | −0.294 | *** |
| | | | | | | | (0.000) | | | | | | | | (0.004) | |
| CEO ownership | −0.564 | ** | −0.703 | *** | −0.708 | *** | −0.339 | | 0.942 | *** | 1.012 | *** | 1.000 | *** | 1.047 | *** |
| | (0.020) | | (0.004) | | (0.004) | | (0.172) | | (0.001) | | (0.000) | | (0.000) | | (0.000) | |
| CEO tenure | −0.003 | | −0.004 | ** | −0.006 | ** | −0.004 | ** | 0.003 | | 0.001 | | 0.005 | * | 0.029 | |
| | (0.182) | | (0.043) | | (0.011) | | (0.038) | | (0.164) | | (0.603) | | (0.057) | | (0.225) | |
| Leverage | 0.820 | *** | 0.837 | *** | 0.828 | *** | 0.820 | *** | −2.430 | *** | −2.436 | *** | −2.450 | *** | −2.435 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Log (Firm size) | −0.056 | *** | −0.063 | *** | −0.058 | *** | −0.056 | *** | 0.071 | *** | 0.070 | *** | 0.075 | *** | 0.074 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Firm age | 0.005 | *** | 0.005 | *** | 0.006 | *** | 0.005 | *** | −0.002 | | −0.002 | | −0.002 | * | −0.001 | |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.163) | | (0.116) | | (0.068) | | (0.224) | |
| R&D intensity | 0.626 | *** | 0.634 | *** | 0.631 | *** | 0.620 | *** | 1.772 | *** | 1.760 | *** | 1.756 | *** | 1.767 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | −0.000 | | 0.000 | | 0.000 | | −0.000 | | 0.063 | * | 0.058 | * | 0.062 | * | 0.059 | * |
| | (0.178) | | (0.149) | | (0.151) | | (0.155) | | (0.070) | | (0.097) | | (0.077) | | (0.091) | |
| Intercept | 1.480 | *** | 1.590 | *** | 1.583 | *** | 1.523 | *** | 1.807 | *** | 1.913 | *** | 1.936 | *** | 1.781 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Obs. | 6,753 | | 6,753 | | 6,753 | | 6,753 | | 6,752 | | 6,752 | | 6,752 | | 6,752 | |
| Adjusted_$R^2$ | 0.162 | | 0.159 | | 0.159 | | 0.163 | | 0.137 | | 0.138 | | 0.137 | | 0.137 | |

**Table 9**

Impacts of industry shocks. This table uses OLS regression models to examine the subsample effect when firms encounter industry shocks. The sample period is from 1992 to 2014. Following Han et al. (2016) and Mitchell and Mulherin (1996), we use industry sales to define industry shocks. The shock subsample contains the firms in industries that encounter a 5% or greater decrease in aggregate industry sales for the year. The nonshock subsample contains the firms in industries that do not encounter a 5% or greater decrease in aggregate industry sales for the year. The following three variables are used to measure CEO power: CEO-only insider, CEO duality, and CEO founder. CEO H-power measures the strength of the CEO's influence in the firm and takes a value of 1 if the CEO includes all three identities, i.e., *CEO founder, CEO-only insider,* and *CEO duality,* and 0 otherwise. The dependent variable is Tobin's $Q_{t+1.}$ ***, **, and * indicate significance at the 1%, 5%, and 10% levels, respectively. Adjusted_$R^2$ is the power of explanation. The numbers in parentheses are the p-values.

| | Dependent variable = Tobin's $Q_{t+1}$ Shock Subsample | | | | | | | | Non-shock Subsample | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Variable | Model 1 | | Model 2 | | Model 3 | | Model 4 | | Model 5 | | Model 6 | | Model 7 | | Model 8 | |
| OC | 0.566 | *** | 0.120 | ** | 0.124 | ** | 0.183 | *** | 0.548 | *** | 0.586 | *** | 0.462 | *** | 0.528 | *** |
| | (0.000) | | (0.017) | | (0.016) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| CEO-only insider | 0.004 | | | | | | | | 0.009 | | | | | | | |
| | (0.950) | | | | | | | | (0.111) | | | | | | | |
| CEO-only insider*OC | −0.483 | *** | | | | | | | −0.164 | *** | | | | | | |
| | (0.000) | | | | | | | | (0.001) | | | | | | | |
| CEO duality | | | 0.113 | * | | | | | | | 0.089 | *** | | | | |
| | | | (0.072) | | | | | | | | (0.002) | | | | | |
| CEO duality*OC | | | 0.132 | | | | | | | | −0.226 | *** | | | | |
| | | | (0.179) | | | | | | | | (0.000) | | | | | |
| CEO founder | | | | | 0.050 | | | | | | | | −0.027 | | | |
| | | | | | (0.599) | | | | | | | | (0.515) | | | |
| CEO founder*OC | | | | | 0.105 | | | | | | | | 0.013 | | | |
| | | | | | (0.286) | | | | | | | | (0.814) | | | |
| CEO H-power | | | | | | | −0.062 | | | | | | | | 0.159 | *** |
| | | | | | | | (0.624) | | | | | | | | (0.001) | |
| CEO H-power*OC | | | | | | | −0.187 | | | | | | | | −0.413 | *** |
| | | | | | | | (0.143) | | | | | | | | (0.000) | |
| CEO ownership | −0.486 | | −0.848 | * | −0.734 | | −0.204 | | 0.694 | *** | 0.734 | *** | 0.712 | *** | 0.790 | *** |
| | (0.286) | | (0.082) | | (0.128) | | (0.689) | | (0.001) | | (0.000) | | (0.001) | | (0.000) | |
| CEO tenure | 0.004 | | 0.002 | | 0.003 | | 0.005 | | 0.002 | * | 0.001 | | 0.003 | | 0.002 | |
| | (0.274) | | (0.567) | | (0.516) | | (0.245) | | (0.227) | | (0.452) | | (0.155) | | (0.356) | |
| Leverage | 0.089 | | 0.052 | | −0.040 | | 0.044 | | −0.340 | *** | −0.346 | *** | −0.343 | *** | −0.346 | *** |
| | (0.566) | | (0.737) | | (0.795) | | (0.776) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Log (Firm size) | −0.067 | *** | −0.076 | *** | −0.067 | *** | −0.063 | *** | −0.027 | *** | −0.027 | *** | −0.026 | *** | −0.026 | *** |
| | (0.002) | | (0.001) | | (0.002) | | (0.003) | | (0.003) | | (0.003) | | (0.004) | | (0.004) | |
| Firm age | 0.001 | | −0.000 | | 0.001 | | −0.000 | | 0.001 | * | 0.001 | | 0.001 | | 0.001 | *** |
| | (0.716) | | (0.816) | | (0.780) | | (0.858) | | (0.089) | | (0.103) | | (0.165) | | (0.049) | |
| R&D intensity | 1.004 | *** | 1.030 | *** | 1.028 | *** | 1.058 | *** | 0.599 | *** | 0.578 | *** | 0.596 | *** | 0.586 | *** |
| | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Organizational slack | −0.000 | | −0.001 | | −0.001 | | −0.001 | | −0.000 | | −0.000 | | −0.000 | | −0.000 | |
| | (0.827) | | (0.812) | | (0.815) | | (0.790) | | (0.482) | | (0.484) | | (0.484) | | (0.486) | |
| Intercept | 1.641 | *** | 1.873 | *** | 1.944 | *** | 1.878 | *** | 1.901 | *** | 1.968 | *** | 1.948 | *** | 1.874 | *** |
| | (0.000) | | (0.000) | | (0.001) | | (0.002) | | (0.000) | | (0.000) | | (0.000) | | (0.000) | |
| Year dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Industry dummy | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | | Yes | |
| Obs. | 1,428 | | 1,428 | | 1,428 | | 1,428 | | 12,037 | | 12,037 | | 12,037 | | 12,037 | |
| Adjusted_$R^2$ | 0.136 | | 0.127 | | 0.123 | | 0.124 | | 0.123 | | 0.123 | | 0.122 | | 0.124 | |

assets. *Log (Mktcap)* is the natural log of the firm's market capitalization. *Sales* is the firm's total sales. *Assets* is the firm's total assets. *Cash* is the ratio of cash and short-term investments to total assets. *Capex/Sales* is the ratio of capital expenditure to total sales. *Log (Employees)* is the natural log of the number of employees.

Then, we run the matched sample of firms without a powerful CEO during our sample period. The matched regression results are reported in Table 6. The dependent variable in Models 1 to 4 is firm performance (Tobin's $Q_t$). The dependent variable in Models 5 to 8 is forward-looking cash flow volatility (Cash Flow Vol). The results are consistent with those reported in Table 4 and Table 5.

### 4.4. Robustness tests

#### 4.4.1. Impacts on long-term firm value

In this section, we study the impact of CEO power and organization capital on long-term firm value. The results are shown in Table 7. For Models 1 to 4 in Table 7, we use the future one-year firm value as the dependent variable (Tobin's $Q_{t+1}$). For Models 5 to 8, we use the future two-year firm value as the dependent variable (Tobin's $Q_{t+2}$). The results indicate that if the CEO is the only insider on the board (Model 1 and Model 5) and is a dual CEO (Model 2 and Model 6), investing in organization capital will decrease the firm's future firm value. Model 4 and Model 8 in Table 7 indicate that when firms have more powerful CEOs (CEO H-power), increasing organization capital will reduce the future firm value; this effect is larger than those of the other measurements of CEO power. The results support Hypothesis 1.2. Powerful CEOs attempt to protect their positions by maintaining excessive investment in organization capital, which negatively affects the future firm value.

#### 4.4.2. The effects of firm financial distress

In the above empirical results, we discuss the relationships among organization capital, CEO power and firm value when the firm is in a general situation. Han et al. (2016) investigate the performance of firms with powerful CEOs when firms/industries deteriorate. We attempt to further determine whether powerful CEOs have greater power to influence the decision regarding whether to invest in organization capital when the firm encounters financial distress, thereby affecting the firm value. We follow Ohlson's (1980) bankruptcy prediction model to measure the financial distress score of the firm. The model uses the firm's financial statement information to estimate the possibility of its bankruptcy in the next year and in the coming years.

In Table 8, we examine the subsample effect of CEO power, organization capital and firm performance when firms are under financial distress. We utilize Tobin's $Q_{t+1}$ as the dependent variable. We first measure the firm's distress score and split the full sample into the following two subsamples: a high distress subsample and a low distress subsample. If the firm's distress score is above the median, then it equals one; otherwise, it equals 0. For the high distress subsample, i.e., Model 4 in Table 8, the coefficient of the interaction term is −0.461 and is significant at the 1% level. For the low distress subsample, i.e., Model 8 in Table 8, the coefficient of the interaction term is −0.294 and is significant at the 1% level. Comparing the results of Model 4 and Model 8 in Table 8 indicates that when firms are under financial distress, higher levels of organization capital will reduce firm value. The result shows that powerful CEOs maintain higher organization capital allocation levels to protect their positions, but this could reduce firm performance. The negative result is even larger when the firm is under financial distress.

#### 4.4.3. Impacts of industry shocks

Whether a powerful CEO is beneficial or harmful to a firm's value is still an open question. Wasserman, Anand, and Nohria (2010) indicate that during periods of industry downturn, a CEO's investment decisions become more important than during periods of industry growth. That is, when the market is in a period of severe industrial development and there are fewer investment opportunities, the quality of CEO investment decision-making has a key influence on firm performance. Han et al. (2016) focus on industry downturns to examine the relationship between CEO power and firm performance and find that powerful CEOs perform significantly worse than other CEOs.

In this section, we perform an additional test to examine whether organization capital affects the relationship between CEO power and firm value when industry conditions deteriorate. Table 9 examines the subsample effect when firms encounter industry shocks. Following Han et al. (2016) and Mitchell and Mulherin (1996), we use industry sales to define industry shocks. The shock subsample contains the firms in industries that encounter a 5% or greater decrease in aggregate industry sales for the year. The nonshock subsample contains firms in industries that do not encounter a 5% or greater decrease in aggregate industry sales for the year. We utilize Tobin's $Q_{t+1}$ as the dependent variable. The results are reported in Table 9.

In Model 1 in Table 9, for the CEO-only insider, the coefficient of the interaction term is −0.483, which is significant at the 1% level. For the nonshock subsample, in Model 5 in Table 9, the coefficient of the interaction term is −0.164, which is significant at the 1% level. The negative effect is larger for firms under industry shocks. A CEO who is also the only executive on the board has greater power to determine investment decisions, such as those regarding organization capital. In addition, the CEO-only insider may attempt to invest excessive organization capital to entrench his/her position. However, under industry shock situations, CEOs should be more cautious in making investment decisions, as appropriate investment decisions create opportunities for firm growth. For the shock subsample, the interaction terms in Models 2 to 4 (powerful CEO: CEO duality, CEO founder, and CEO H-power) are not significant. For the general situation (nonshock subsample), the results are consistent with those we report in Table 4.

When a company is in a downturn situation, the more influential the CEO is, the more responsibility he/she has in the company. Therefore, the CEO will invest more effort into operating the company and maintaining the firm's position in the market. The CEO will increase the company's investment in organization capital to increase the efficiency of resource use, cultivate talent, and consolidate corporate morale. This response will increase the company's chances of surviving the crisis, which means that the company's risk will

decline. Larkin (2013) also supports this view. When a company is in crisis, although intangible assets, such as brand reputation, also suffer, the performance of the company is still better than that of a company with a lower brand reputation. However, some studies indicate that when the company is under financial distress or during a major economic recession, the value of these intangible assets will decline rapidly, and therefore, the risk for the company will be greater.

## 5. Conclusion

Organization capital is an intangible asset that can maintain a company's long-term competitive advantage through its special structure, organization design, and business processes. The results of this study indicate that organization capital is a key variable affecting the relationship between CEO power and firm performance. The CEO can influence company value by controlling organization capital. Three variables are used to measure CEO power, i.e., CEO founder, CEO-only insider and CEO duality. We also construct a CEO power dummy variable, i.e., CEO H-power, to represent the CEO type that has higher power than the other types of CEOs. The results of this study indicate that a CEO (CEO-only insider and CEO H-power) might attempt to maintain his/her position in the firm by increasing investment in organization capital. This decision could result in excessive investment that increases the idle cost of resources, which will reduce firm performance. However, when the firm's CEO is also the founder, the CEO will attempt to increase investment in organization capital to create growth opportunities for the firm, which will increase firm value.

When the firm's future profitability appears likely to be low, the proportion of organization capital investment will be lower; that is, the key efficiency factors that affect the company's long-term performance will be lower, and the firm performance will decline. In contrast, when the CEO expects the company's future operating conditions to improve, he/she will maintain a certain level of investment in organization capital to support future increases in demand, and the impact on the value of the company will be positive.

In terms of how CEO power affects the value of the company, our results indicate that CEO duality might lead to control over the inputs to organization capital. Organizations aim to promote production efficiency, and organization capital can increase production efficiency, lower operating costs, improve profitability, and increase the stability of cash flow to the company, thus reducing the company's price volatility. However, when a company is under financial distress, companies with valuable organization capital confront a high risk of brain drain; i.e., the value of corporate intangible assets could easily decrease, which will increase the company's price volatility.

In conclusion, although organization capital is an important factor affecting a company's competitive advantage, its impact on corporate value is not always positive. This impact also depends on the CEO's motivation for using organization capital, for example, managers' expectations regarding the firm's future operating conditions, management efficiency, and organizational capital cost stickiness. In addition, the effect of organization capital on firm performance is also influenced by whether the firm is under financial distress.

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