AN EXAMINATION OF THE ROLES OF ORGANIZATION CAPITAL IN ACCOUNTING AND FINANCE

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ABSTRACT

In Essay 1, the impact of organization capital on managerial short-termism is examined. In the current literature, competing views exist on the relation between organization capital and managerial short-termism. In an attempt to resolve these competing views, I split corporate activities associated with managerial short-termism into two broad categories, internal and external dimensions, and then examine the impact of organization capital on each category. I predict that an investment in organization capital internally encourages long-term management in real operations, whereas such an investment induces short-term pressure on management in an external dimension. Consistent with my predictions, I find that firms with greater organization capital switch from real activities manipulation to accrual-based earnings management. My hypotheses are consistent even after controlling for corporate governance. The results are robust to using alternative measures of organization capital and employing a two-stage least squares (2SLS) test and change regressions for the endogeneity issues as well as the omitted variable problems. I then employ a difference-in-difference (DID) methodology that relies on the exogenous variation in organization capital generated by technology shock to demonstrate that my predictions continue to hold. I also document that the introduction of the Sarbanes-Oxley Act (SOX) could attenuate the problematic influence of organization capital on accruals. The impact of organization capital on real activities manipulation is more pronounced for firms with competitive industries. By providing a channel between organization capital and managerial mindsets, my paper attempts to facilitate future research on the impact of organization capital on various corporate outcomes.

To extend the internal and external mechanisms of Essay 1, Essay 2 aims to create a better understanding of how organization capital and corporate cash holdings are related. Organization capital is positively associated with growth opportunities. In addition, I find that organization capital has a positive impact on cash-cash flow sensitivity, implying that an increase in organization capital can lead firms to rely more on internal financing. Taken together, these suggest that firms with high organization capital tend to build more cash holdings. I also reveal the disciplining presence that the threat of hostile takeover in high organization capital firms has. The results, even after controlling for idiosyncratic risk, support my baseline findings. My empirical results are robust to using a two-stage least squares (2SLS) test, change regressions, and the difference-in-difference (DID) test addressing omitted variables and endogeneity concerns. The findings in my paper (i) highlight the precautionary motive behind corporate cash holdings and the underlying channels that show how organization capital and corporate cash holdings are related, and (ii) emphasize a growing importance of the disciplining role of corporate governance for high organization capital firms.

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"The best thing you can do for employees—a perk better than foosball or free sushi—is hire only 'A' players to work alongside them. Excellent colleagues trump everything else."

—Patty McCord, Netflix's former CEO, quoted in Harvard Business Review, January-February 2014 issue.

1 Introduction

Managerial short-termism or myopic management, one type of agency problem, is defined as a manager's tendency to pursue short-term corporate performance by sacrificing the long-term value of the firm (Stein 1989; Edmans 2009; Asker et al. 2015). Managerial short-termism is reflected in overproduction, reduction in marketing expenditure, cuts in research and development expenditure (Baber et al. 1991; Dechow & Sloan 1991; Bushee 1998; Graham et al. 2005; Roychowdhury 2006; Tong & Zhang 2014), and accrual management.[1] In this study, I attempt to provide a possible explanation for the impact of corporate investment decisions on managerial short-termism. I do this by focusing on organization capital.

[1] Overproduction, reduction in marketing expenditure and cuts in research and development expenses can be classified as real activities manipulation. Both real activities manipulation and accrual management are defined as earnings management. More details are provided in Section 2.2.

Prescott and Visscher (1980) define organization capital as the human capital of the employees as well as the accumulated know-how that allows a company to match employees to projects and teams with which they are suited. Google, for instance, uses high-quality resources for multi-staged processes when searching for new employees. In order to make sure the new employee's talents match with the need of the project team, Google's hiring processes include numerous interviews, feedbacks, and screenings by potential project members, hiring committee, and even Google CEO Larry Page (Bock 2015). These hiring processes, which involve an investment in organization capital, ensure that future employees will effectively contribute to the company's performance.[2] In general, organization capital enables firms to efficiently utilize human resources (Lev & Radhakrishnan 2005; Carlin et al. 2012). Much scholarly work has been done on the topics of organization capital and managerial short-termism, but no systematic attempt to connect the two has been undertaken. This study, therefore, attempts to investigate how organization capital affects the myopic management of a corporation.

Prior literature shows competing views of the relation between organization capital and managerial short-termism. One view advocates that organization capital alleviates managerial short-termism for the following reasons: (i) organization capital leads key employees to expect higher future compensation (Atkeson & Kehoe 2005; Eisfeldt & Papanikolaou 2013); (ii) the firms with greater organization capital achieve better managerial quality and higher employee satisfaction (Li et al. 2017); (iii) according to the issues discussed in (i) and (ii), employee turnover becomes lower for firms with greater organization capital (Carlin et al. 2012). These issues can also be applied to managers who are part of employees and are in the top positions in

[2] Another example of organization capital is Apple's supply chain management system which requires effective agglomeration of knowledge for product design, manufacturing outsourcing, warehousing, and retailing around the world. This system cannot be easily codified by its competitors.

corporate structures. Moreover, it is beneficial to have a long-term view of employees to achieve long-term projects or goals for management. As a result, organization capital mitigates managerial short-termism by encouraging corporate employees to have a long-term perspective.

On the other hand, greater organization capital can intensify short-term pressure on managers by firm outsiders. The results obtained by Stein (1989) and Edmans (2011) imply that because of the intangibility of organization capital, investments in organization capital are more difficult for firm outsiders to correctly evaluate. Due to information asymmetry between firm outsiders and managers, stock investors or analysts may regard an investment in organization capital as risky or even inefficient. Stock market participants may also require a higher risk premium for bearing the risk of a potential loss of key talents vested with greater organization capital (Eisfeldt & Papanikolaou 2013). This kind of downward pressure on a firm's current stock price could force managers to pursue short-term performance in order to satisfy the demand from stock market participants. Organization capital is therefore likely to intensify short-term pressure on managers.

In an attempt to resolve these competing views, I endeavor to create a deeper understanding of managerial short-termism, arguing that managerial short-termist activities are not homogeneous. Specifically, corporate activities associated with managerial short-termism can be split into two broad categories: (1) managerial short-termism in real operations, also known as myopic management in real operations, and (2) managerial short-termism through accruals, also known as myopic management through accruals. Managerial short-termism in real operations is defined as myopic management in real operations, such as overproduction, reduction in marketing expenditure, and cuts in research and development (R&D) expenditure. The other type of myopic management is managerial short-termism through accruals which aims

at manipulating current earnings by adjusting the level of accruals in a financial statement.

Based on prior studies, I would suggest that organization capital can internally enhance the prospects of real operations. Firms expect their key talents to generate operational innovation and quality enhancement. The majority of organization capital is invested in key talents (Prescott & Visscher 1980; Lustig et al. 2011; Eisfeldt & Papanikolaou 2013), and an investment in organization capital, such as job training, may develop key talents' abilities (Black & Lynch 2005). When organization capital is accumulated, and thus the increased abilities of key talents are more effectively utilized and better matched to projects and team members (Atkeson & Kehoe 2005; Eisfeldt & Papanikolaou 2013), the firm's real operations are going to have better prospects. In other words, as organization capital increases, the prospects of real operations are enhanced, so that it becomes costlier to managers to compromise real operations. In this sense, organization capital mitigates myopic management in real operations.

In addition to the benefits of organization capital for reducing myopic management in real operations, this paper uncovers the one potential dark side of organization capital: the danger that greater organization capital may induce myopic management through accruals in an external dimension. Compared to investments in physical capital, investments in organization capital are invisible. The implications of the work of Stein (1989) and Edmans (2011) suggest that investments in organization capital are more difficult for outsiders to correctly evaluate because of the intangibility of such investments. Managers with greater organization capital may therefore come under more severe short-term earnings pressure from stock investors. Moreover, as organization capital accumulates, myopic management in real operations becomes costly for the managers. Taken together, in order to deal with short-term pressure from stock investors and the higher cost of myopic management in real operations, managers rely more on myopic

management through accruals. Investment in organization capital therefore strengthens the long-term prospects of real operations, whereas such an investment pressures managers to engage in myopic management through accruals.

By employing earnings management as a proxy for managerial short-termism (Graham et al. 2005; Cohen & Zarowin 2010; Chen et al. 2015), I find empirical evidence consistent with my hypotheses: (i) that firms with greater organization capital conduct fewer subsequent real activities manipulation and (ii) that firms with greater organization capital use more subsequent accrual-based earnings management. In sum, these empirical results suggest that an investment in organization capital encourages firms to switch from real activities manipulation to accrual management.

I also document that the positive relation between organization capital and subsequent accrual-based earnings management is significantly reduced after the introduction of the Sarbanes-Oxley Act (SOX), which alleviates the problematic influence of organization capital on subsequent accrual-based earnings management. Another potential moderating factor is industry market structure. For instance, for firms in relatively less competitive industries (e.g. monopolists or oligopolists), the role of organization capital lessens due to high economic rent that is obtained from less competition. As firms belong to relatively less competitive industries, the negative impact of organization capital on real activities manipulation weakens. However, there is no significant relation between industry competitiveness and the positive impact of organization capital on accrual-based earnings management.

To address potential endogeneity issues such as reverse causality and omitted variable problems, I utilize several econometric methodologies. First, I conduct a two-stage least squares (2SLS) test using the initial value of SG&A expenditure as an instrumental variable (IV). I find

that the relation between organization capital and earnings management is robust to 2SLS estimation. Second, I also focus on the year-to-year changes in dependent and independent variables. The results from this Ordinary Least Squares (OLS) change regressions show that change in organization capital leads to a decrease in subsequent real activities manipulation and an increase in subsequent accrual-based earnings management, which is an additional support to my hypotheses. Third, I use technology shock during years between 1991 and 1995 as an exogenous shock to organization capital and show that firms with a larger improvement in organization capital due to the technology shock experience (i) a larger drop in overproduction and (ii) a greater increase in accrual management than those with a smaller increase in organization capital. These results confirm the causal effect of organization capital on managerial short-termism.

This paper contributes to the earnings management literature by finding that organization capital reduces real activities manipulation. Unlike accrual-based earnings management, real activities manipulation has a directly negative impact on corporate future cash flows, which implies that real activities manipulation is more likely to be detrimental to subsequent operating performance than is accrual-based earnings management (Cohen & Zarowin 2010). Nevertheless, real activities manipulation significantly increased whereas accrual-based earnings management declined after the passage of the Sarbanes-Oxley Act (SOX) in 2002 (Cohen et al. 2008). This evidence naturally raises an important question on how real activities manipulation can be mitigated especially during post-SOX period. Regarding a remedy for this important issue, my study sheds light on the potential role of investment in organization capital for discouraging real activities manipulation. As a symptom of organization capital, I also find that organization capital is positively associated with accrual-earnings management. However, such a

problematic impact of organization capital on accruals is significantly weaker after the introduction of the Sarbanes-Oxley Act (SOX), which is discussed in greater depth in Section 5.2.

My study is also related to the literature on organization capital. Greater organization capital leads to better employee abilities (Black & Lynch 2005), better managerial quality, higher employee satisfaction (Li et al. 2017), and lower employee turnover (Carlin et al. 2012). In addition, three recent papers have shown beneficial consequences from organization capital: Francis et al. (2015) find that organization capital can facilitate firm innovation; organization capital may generate synergies in Mergers and Acquisitions (Li & Zhang 2015; Li et al. 2017). The findings of this prior literature show that greater organization capital can motivate managers to take a long-term perspective. According to the arguments of Stein (1989) and Edmans (2011), however, organization capital, as one type of an intangible asset, can lead to short-term performance pressure on managers. To my knowledge, my study is the first step to try to resolve the existing competing views on the impact of organization capital on managerial short-termism.

I organize my paper as follows. The next section develops my hypotheses. Section 3 defines sample selection and variable measurements. Section 4 explains empirical models and results. Section 5 describes robustness tests. Section 6 provides concluding remarks.

2 Prior Literature and Hypothesis Development

2.1 Explanations of Organization Capital

Organization capital is human capital and know-how about how to hire, allocate, and train people in an organization. For example, when a movie company starts its project, the company must determine who will be hired as the main actor, actress, and director. Furthermore,

the company needs to allocate responsibilities for camera, lights, music, and computer graphics. Stuntmen, actors, and actresses also need to be trained for combat and action scenes. These are important issues because they can greatly affect the movie's quality. In this sense, the organization capital is an essential element for a company's success.

According to Prescott and Visscher (1980), there are three ways that firms invest in organization capital. They: (1) invest in information about matching employees to projects; (2) invest in information about matching employees to teams (e.g., team work); and (3) invest in the human capital of the employees. Acquiring organization capital requires time and money. One example would be Google's hiring processes. Google utilizes multi-staged interviews conducted by diverse groups within their organization to learn about applicants (Bock 2015). Google's complex and costly interview process efficiently allows the company to match their new employees to projects and team members. Investment in employee human capital can also involve professional development workshops and training processes. Overall, through a trial-error process, firms may gather know-how about how to better hire, allocate, and train their employees. This process will help the firm increase its organization capital.

Another example of organization capital is seen in an oil company. The company has multiple processes such as refinery R&D projects, productions, delivery systems and sales strategies. These processes require employees to have various skills and know-how about how to hire, allocate, and train new employees. Because these processes are not limited to a specific project, organization capital can be applied very comprehensively. By using organization capital comprehensively, the company can achieve synergies and greater efficiency in its overall

system.[3] Hence, organization capital enhances a firm's comparative advantage, so that the firm can consistently perform better than other firms.[4]

In today's knowledge-based economy, intangible assets such as organization capital are a crucial resource required for companies to succeed against their competitors (Zingales 2000; Edmans 2011). Considering that managerial short-termism has become one of the most critical problems in the modern firm, it is natural to wonder how organization capital affects myopic management within a corporation.[5]

2.2 Organization Capital, Managerial Short-termism, and Earnings Management

Managers may pursue short-term performance for a firm by sacrificing its long-term value, which is a type of agency problem. In this section, I focus on reaching a better understanding of two categories of managerial short-termism. I do this because corporate activities related to managerial short-termism are heterogeneous. Specifically, I divide corporate activities associated with managerial short-termism into two groups:

1) *Managerial short-termism in real operations*

   Myopic management in real operational activities (e.g., overproduction, reduction in mark eting expenditure, cuts in research and development expenditure): by compromising these

[3] Li et al. (2017) find that organization capital is a key factor in Mergers and Acquisitions (M&A) synergies. They also find that organization capital is positively associated with innovative efficiency.

[4] A McKinsey Global Institute (2002) study of companies between 1982 and 1999 finds that those that invest more in organization capital during market recessions had better average corporate performance.

[5] For instance, in order to meet a short-term earnings target, managers might sacrifice the firm's long-run growth opportunities by cutting research and development (R&D) expenditure (Baber et al. 1991; Dechow & Sloan 1991; Bushee 1998; Graham et al. 2005; Roychowdhury 2006; Tong & Zhang 2014).

real operations, managers can boost current earnings.

2) *Managerial short-termism through accruals*

Myopic management through accruals; by compromising earnings quality through adjusting the level of accruals in a financial statement, managers can boost current earnings.

In recent years, managerial short-termism has been studied by employing earnings management as a proxy for managerial short-termism (Graham *et al.* 2005; Cohen & Zarowin 2010; Chen *et al.* 2015). According to the prior literature (Cohen *et al.* 2008; Cohen & Zarowin 2010; Zang 2012), earnings management is conducted through two major channels: (1) real activities manipulation (RAM) and (2) accrual-based earnings management (AM). Real activities manipulation aims at boosting current earnings through myopic management of operations, such as cutting discretionary expenses, overproductions, or sales manipulations by unsustainable price discounts (Roychowdhury 2006). The other myopic way of boosting current earnings is accrual-based earnings management, which manipulates the level of accruals through managers' discretion and judgment on accounting methods (Dechow *et al.* 1995). Prior literature therefore employs both real activities manipulation and accrual-based earnings management as a proxy for managerial short-termism (Graham *et al.* 2005; Cohen & Zarowin 2010; Chen *et al.* 2015).

Accrual management does not directly affect the firm's cash flows whereas real activities manipulation is detrimental to the firm's future cash flows generated from real operations (Cohen & Zarowin 2010). After real activities manipulation is realized, the firm is likely to

decide the level of accruals (Zang 2012). In line with this logic, I investigate how real activities manipulation can be affected by organization capital; then, under this circumstance, I examine the impact of organization capital on accrual-based earnings management.

[Figure 1.1 about here]

In Figure 1.1, the impact of organization capital on managerial short-termism is illustrated during two time periods. A firm manages its real operations during a period, and issues its financial statement at the end of that time period. First, there is an increase in organization capital during Period 1. From that point, accumulated organization capital may develop the abilities of key talents (Black & Lynch 2005), which can then be effectively distributed to projects and team members (Atkeson & Kehoe 2005; Eisfeldt & Papanikolaou 2013).[6] Under this circumstance, during Period 1, the company can have better future prospects for its real operations.

During period 2, the firm can have better prospects for its real operations. As real operations are compromised by myopic management in real operations, the opportunity cost of myopic management in real operations becomes larger. As the prospects of real operations improve, the increased opportunity cost of myopic management in real operations can lead managers to engage less in myopic management in real operations. That is, greater organization capital reduces managerial short-termism in real operations. Considering that managers take responsibility for the management of real operations, I suggest that organization capital has a

[6] Work-force trainings, as one of essential part of organization capital, may nurture the abilities of employees (Black & Lynch 2005).

negative impact on real activities manipulation. I thus construct the following hypothesis describing the negative impact of organization capital on real activities manipulation.[7]

Hypothesis 1: There is a negative relation between organization capital and real activities manipulation.

As a result of an investment in organization capital during Period 1, increased short-term pressure from firm outsiders also occurs during Period 2. Due to the intangibility of such investment, firm outsiders may inaccurately evaluate the investment in organization capital (Stein 1989; Edmans 2011). Thus, managers with greater organization capital may suffer from increased short-term pressure from firm outsiders during Period 2.

At the end of Period 2, the firm reports earnings by choosing the level of accruals in its financial statement. Managers utilize real activities manipulation and accrual management as substitutes for each other: for instance, when real activities manipulation becomes costlier to managers, they engage in fewer real activities manipulation and more accrual management (Cohen *et al.* 2008; Zang 2012). Accordingly, as the prospects of real operations improve, the increased opportunity cost of real activities manipulation can induce managers to participate less in real activities manipulation; instead, they rely more on accrual-based earnings management.

[7] Since organization capital measure is heavily dependent on SG&A expenditure, there is a concern that real activities manipulation and organization capital are not mutually exclusive. To mitigate such concern, I employ the following procedures: (i) in my baseline model, SG&A expenditure is excluded from real activities manipulation measures; (ii) as a robustness test, In Table 1.11, I use organization capital using the investment portion of SG&A expenditure from Enache and Srivastava (2017) in order to more precisely extract and measure organization capital; (iii) in Tables 1.15 and 1.16, I use alternative measures of organization capital, which are not heavily dependent on SG&A expenditure, including managerial ability and employ satisfaction.

Because of the higher cost of managerial short-termism in real operations and increased short-term pressure from firm outsiders, managers rely more on myopic management through accruals. In line with this logic, greater organization capital can exacerbate managerial short-termism through accruals. This implies that managers are more likely to engage in accrual-based earnings management, which is consistent with Zang (2012)'s finding that after a lower level of real activities manipulation is realized, firms try to offset the effect by increasing the level of accrual-based earnings management. I therefore suggest:

Hypothesis 2: There is a positive relation between organization capital and accrual-based earnings management.

3 Data and Variable Measurement

3.1 Data

My empirical tests consist of firm-year data from two sources. Corporate financial statement information is obtained from the Compustat annual database and stock returns are obtained from the Center for Research in Security Prices monthly stock returns files. Consistent with the work of Cohen and Zarowin (2010), for inclusion into my analyses, I require at least eight observations for each 2-digit Standard Industrial Classification (SIC) industry-year grouping. I also require for my analyses that each firm-year observation has enough information necessary to calculate earnings management proxies, organization capital, and control variables. To reduce effects of outliers, all variables are winsorized at the 1st and 99th percentiles. The sample consists of 73,759 firm-year observations from January, 1987 through December, 2016.

3.2 Measure for Organization Capital

I follow the Eisfeldt and Papanikolaou (2013) model for measuring organization capital. For this model, the stock of organization capital is calculated by adding up the deflated flows from sales, general, and administrative (SG&A) expenditure. The reason SG&A expenditure is related to organization capital is that SG&A expenses include information technology expenses and components of labor costs such as employee wages, training, and payment to consultants (Lev & Radhakrishnan 2005). Any value generated from SG&A cost can be firm-specific, and key talents must be given some part of the value that can be considered as organization capital (Eisfeldt & Papanikolaou 2013).

To calculate organization capital using the perpetual inventory model of Eisfeldt and Papanikolaou (2013), the initial state of organization capital needs to be determined using the following Equation:

$$OC_0 = \frac{SGA_1}{g+\delta_0} \quad (1)$$

where OC_0 represents the initial state of organization capital at time 0, SGA_1 stands for SG&A expenditure at time 1, and g is the average real growth rate of firm-level SG&A expenditure. Additionally, δ0 represents a depreciation rate of organization capital at time 0. I put the value of zero into missing data in SG&A expenditure and choose g and δ0 as 10% and 15%, respectively.

Once the initial state of organization capital is determined, the following Equation considers depreciation and deflated SG&A expenditure to determine the estimated value of organization capital at each time period after its initial state:

$$OC_{i,t} = (1 - \delta_0)OC_{i,t-1} + \frac{SGA_{i,t}}{cpi_t} \quad (2)$$

I use consumer price index at time t (cpi_t) for calculating the deflated value of SG&A expenditure. At each time period, I scale a firm i's organization capital by its book value of total assets (OC_TA_RATIO). To address possible measurement error, I also use alternative measurements of organization capital as robustness tests in Section 5.

3.3 Measure for Real Activities Manipulation

Based on the model described in Dechow *et al.* (1998) and Roychowdhury (2006), I estimate normal levels of production costs and adjusted discretionary expenses.[8] To estimate normal production costs, I run the following industry-year regression:

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{i,t}}{A_{i,t-1}} + \alpha_3 \frac{\Delta S_{i,t}}{A_{i,t-1}} + \alpha_4 \frac{\Delta S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (3)$$

where *PROD* are the production costs defined as the sum of cost of goods sold and change in inventory. *A* denotes book value of total assets, while *S* indicates sales revenue. Abnormal production costs (*AB_PROD*) are defined as the difference between actual production

[8] Consistent with Zang (2012), I do not examine abnormal cash flows from operations. This is because the current level of cash flow from operations ambiguously reflects real activities manipulation, as pointed out by Roychowdhury (2006). Some examples of real activities manipulation, such as overproduction and price discount all reduce cash flows from operations; however, the other examples of real activities manipulation, such as cutting discretionary expenditure, increase cash flows from operations (Roychowdhury 2006; Zang 2012).

and normal production costs. *AB_PROD* demonstrates a higher value as production costs become greater.

Next, normal levels of adjusted discretionary expenses are estimated using the following industry-year regression:

$$\frac{ADJ\_DISEXP_{i,t}}{A_{i,t-1}} = \alpha_0 + \alpha_1 \frac{1}{A_{i,t-1}} + \alpha_2 \frac{S_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (4)$$

where for firm i and year t, *ADJ_DISEXP* is adjusted discretionary expenses defined as the sum of advertising and R&D expenditures, which is calculated by subtracting the SG&A expenditure from discretionary expenses. In this context, the potential threat of discretionary expenses being mechanically related to the organization capital measure is reduced. Any missing values in advertising and R&D expenditures are converted to zero value. The definitions of other variables are described in Equation (3). Abnormal adjusted discretionary expenses (*AB_ADX*) are defined as residuals from Equation (4). Since *AB_ADX* demonstrates a lower value, as adjusted discretionary expenditure cut becomes greater, I multiply *AB_ADX* by a value of negative one and denote it as *MINUS_AB_ADX*. Thus, a higher value of *MINUS_AB_ADX* indicates greater amount of adjusted discretionary expenditure cuts.

For each industry-year regression, for inclusion in my analyses I require at least eight observations. To aggregate measures of real activities manipulation, I referenced the work of Zang (2012) and construct a comprehensive index of real activities manipulation. My index of real activities manipulation (*RAM*) is calculated by abnormal production costs minus abnormal adjusted discretionary expenses. *RAM* acquires a higher value as firms engage in more real activities manipulation.

3.4 Measure for Accrual-based Earnings Management

Consistent with works from Dechow *et al.* (1995), Cohen *et al.* (2008), and Chen *et al.* (2015), my paper utilizes discretionary accruals to measure accrual-based earnings management. Specifically, I estimate the normal level of discretionary accruals using the following Jones (1991) regression model modified by Dechow *et al.* (1995) for each industry-year grouping:

$$\frac{ACCR_{i,t}}{A_{i,t-1}} = \theta_0 + \theta_1 \frac{1}{A_{i,t-1}} + \theta_2 \frac{(\Delta REV_{i,t} - \Delta AR_{i,t})}{A_{i,t-1}} + \theta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t} \quad (5)$$

where for firm i and year t, *ACCR* represents total accruals measured by earnings before extraordinary items and discontinued operations minus operating cash flows; *A* denotes total assets; *ΔREV* indicates change in revenues from the prior year; *ΔAR* is change in accounts receivable from the prior year; and *PPE* describes gross value of property, plant, and equipment. Each industry is classified by a two-digit SIC code. For each industry-year regression, for inclusion in my analyses I require at least eight observations. Discretionary accrual (*DA*) is defined as the difference between actual and normal accruals. Consistent with work in this field (Warfield *et al.* 1995; Klein 2002; Bergstresser & Philippon 2006; Yu 2008; Chen *et al.* 2015), my baseline models use the absolute value of discretional accruals (*ABS_DA*) to proxy for accrual-based earnings management.

3.5 Control Variables

In recent years, managerial short-termism has been studied by employing earnings management as a proxy for managerial short-termism (Graham *et al.* 2005; Cohen & Zarowin

2010; Chen *et al.* 2015). To understand managerial short-termism, it can be helpful to review a body of literature on factors for earnings management. In models of Dechow and Dichev (2002), Roychowdhury (2006), and Hribar and Nichols (2007), firm size, cash flows, volatility of cash flows, market-to-book ratio, leverage, and loss are associated with earnings management. Additionally, firm age, sales growth, volatility of sales growth, stock liquidity, Altman's Z-score, cumulative stock returns, and stock returns volatility can also be determinants of earnings management (Bergstresser & Philippon 2006; Demerjian *et al.* 2013; Chen *et al.* 2015). Taken together, a body of work demonstrates these variables factor into earnings management.

Based on data availability, first, I control for firm size (*SIZE*), cash flows (*CF*), volatility of cash flows (*SQ_CF*), market-to-book ratio (*MB_RATIO*), leverage ratio (*LEVERAGE*), and loss dummy (*LOSS*), which could be determinants of earnings management (Dechow & Dichev 2002; Roychowdhury 2006; Hribar & Nichols 2007). An additional control variable is firm age (*FIRM_AGE*), which likely affects the volatility of a corporate operating environment (Bergstresser & Philippon 2006). Consistent with Chen *et al.* (2015) and Demerjian *et al.* (2013), I include sales growth (*S_GROWTH*), volatility of sales growth (*SQ_S_GROWTH*), Altman's *Z*-score (*AZ_SCORE*), cumulative stock returns (*CUM_RET*), and stock returns volatility (*STD_RET*) into my analyses.

4 Organization Capital and Earnings Management: Empirical Results

4.1 Descriptive Statistics

Table 1.1 provides descriptive statistics for earnings management proxies, organization capital, and other firm characteristics used in my analyses. For earnings management proxies, a

median sample firm has 0.001 in *F1_AB_PROD*, *F1_MINUS_AB_DX* of 0.008, *F1_RAM* of 0.014 and *F1_ABS_DA* of 0.045. Median *OC_TA_RATIO* is 0.111.

[Table 1.1 About Here]

Table 1.2 shows correlations between sample variables. The table shows the correlation coefficient between organization capital (*OC_TA_RATIO*) and subsequent real activities manipulation is significantly negative (−0.1845, *F1_AB_PROD*, −0.2240, *F1_MINUS_AB_DX* and −0.2304, *F1_RAM*), whereas organization capital and subsequent absolute value of discretionary accrual is significantly positively correlated (0.1960). These correlation coefficients agree with my hypotheses.

[Table 1.2 About Here]

Table 1.3 reports mean values of organization capital and earnings management by industry. Industries are defined as the 10 Fama-French industry groups.[9] Then, organization capital is averaged across each Fama-French industry group. In Panels A and B, industries are sorted based upon their average values of organization capital. In Panel A, the top two groups are high-techs (*HiTec*; 0.4395) and pharmaceuticals (*Hlth*; 0.3886), which heavily depends on information and human capital. The bottom two groups are utilities (*Utils*; 0.0369) and energies (*Enrgy*; 0.0920), which are capital-intensive industries. Panel B shows that high organization capital industries tend to have lower real activities manipulations (RAM) and higher accrual management (AM), which is consistent with my hypotheses. For example, the average RAM of

[9] With respect to the industry definitions, please see Kenneth French's Website at Dartmouth (http://mba.tuck.dartmouth.edu/pages/faculty/ken.french/data_library.html).

HiTec (-0.0358) is lower than that of *Utils* (0.0165). Conversely, the mean AM of *HiTec* (0.0846) is higher than that of *Utils* (0.0432).

[Table 1.3 About Here]

4.2 Impact of Organization Capital on Earnings Management

To test whether organization capital varies with earnings management, I use the following regressions:

$$EM_{i,t+1} = \alpha + \beta\, OC\_TA\_RATIO_{i,t} + \lambda\, Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \qquad (6)$$

where, for firm i and year t, *EM* is either a real activities manipulation measure (*AB_PROD*, *MINUS_AB_DX* or *RAM*) or an accrual-based management measure (*ABS_DA*); *OC_TA_RATIO* denotes organization capital scaled by total book value of assets; *Controls* include firm size (*SIZE*), cash flows (*CF*), volatility of cash flows (*SQ_CF*), market-to-book ratio (*MB_RATIO*), leverage ratio (*LEVERAGE*), loss dummy (*LOSS*), firm age (*FIRM_AGE*), sales growth (*S_GROWTH*), volatility of sales growth (*SQ_S_GROWTH*), Altman's Z-score (*AZ_SCORE*), cumulative stock returns (*CUM_RET*), and stock returns volatility (*STD_RET*). The definitions of variables are described in Appendix A. To alleviate endogeneity problems due to simultaneity, all dependent variables are one year forward estimates. I also include year fixed effects (*Year*) and industry fixed effects (*Industry*) in my regressions. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

The empirical results of estimating Equation (6) are presented in Table 1.4. Columns (1), (2), and (3) of Table 1.4 show a significantly negative relationship between organization capital

and subsequent real activities manipulation, supporting Hypothesis 1 indicating that greater organization capital discourages managerial short-termism in real operations. The coefficient of organization capital on subsequent accrual-based earnings management is significantly positive in Column (4), supporting Hypothesis 2 indicating that greater organization capital intensifies the myopic management through accruals. Overall, my baseline results suggest greater organization capital leads firms to switch from real activities manipulation to accrual-based earnings management, which is consistent with my hypotheses.

[Table 1.4 About Here]

5 Robustness Tests

5.1 Alternative Measures of Organization Capital

The first concern is measurement error for organizational capital. SG&A expenditure does not capture all aspects of organizational capital because although SG&A expenditure includes organization capital related expenses such as employee training, it may not perfectly reflect some conceptual elements such as effectively matching employees to tasks. Additionally, parts of SG&A expenses do not directly contribute to organizational capital, including but not limited to managerial perks. To mitigate this measurement problem, I use the approach of Li *et al.* (2017) and annually assign each firm into decile groups based on their organizational capital level. This ranking system is used to replace the absolute value of organizational capital so that measurement error can be reduced.

Table 1.5 shows associations between annual decile rank of organization capital (*OC_DECILE*) and earnings management proxies. The empirical results show the coefficients of *OC_DECILE* on subsequent real activities manipulation remain negative and significant,

whereas the coefficient of *OC_DECILE* on subsequent accrual-based earnings management remains positive and significant. This suggests that my findings are robust to alternative measure of organization capital.

[Table 1.5 About Here]

Different industries have different accounting practices for calculating SG&A expenditure, which naturally causes measurement error in organization capital. To alleviate measurement error issue induced by heterogeneity in industries, I use industry-median adjusted organizational capital (*IND_ADJ_OC*). Table 1.6 shows empirical results using *IND_ADJ_OC* are consistent with the baseline findings suggesting organization capital drives firms to switch from real activities manipulation to accrual-based earnings management.

[Table 1.6 About Here]

5.2 Subsample Analysis

Accrual-based earnings management compromises information quality in a financial statement; thus inducing higher cost of capital (Francis *et al.* 2004; Aboody *et al.* 2005; Francis *et al.* 2008; Kim & Qi 2010). The positive association between organization capital and subsequent accrual-based earnings management is problematic since this implies firms with greater organization capital could suffer from higher cost of capital in a subsequent period.

In 2002, Sarbanes-Oxley Act (SOX) was introduced to promote the integrity of financial statements by strictly restraining accrual-based earnings management. To check if the positive association between organization capital and subsequent accrual-based earnings management is attenuated after the passage of SOX, I undertake subsample analyses for the pre-SOX (Year

1987 – 2001) and post-SOX (Year 2002 – 2016) periods. Panels A and B of Table 1.7 reports that the positive coefficient of organization capital on subsequent accrual-based earnings management is significant only during pre-SOX periods. Furthermore, Panel C shows that the coefficient of intersection between *OC_TA_RATIO* and *SOX* on accrual-based earnings management (*ABS_DA*) is significantly negative, implying that the introduction of SOX could reduce the positive relation between organization capital and accrual-based earnings management. This finding demonstrates evidence that the introduction of SOX could attenuate the problematic influence of organization capital on managerial short-termism through accruals.

[Table 1.7 About Here]

5.3 Endogeneity Concerns

My analyses so far leave questions on potential endogeneity possibilities: reverse causality, and omitted variable problems. The first concern is that managers who have less degree of short-termism could invest more in organization capital. Second, my results could be confounded by unobservable or omitted variable differences between high and low organization capital firms if the managerial short-termism is significantly affected by a change in these unobservable or omitted variables.

To alleviate the potential endogeneity concerns, I use a two-stage least squares (2SLS) test adopting the initial value of SG&A expenditure as an instrumental variable. Since the beginning value of organization capital of a firm is measured by converting its initial value of SG&A expenditure to an intangible asset (by perpetual inventory method), the initial value of SG&A expenditure can be sufficiently correlated with organization capital. This relevance condition is supported by the first-stage regression result reported in Column (1) of Table 1.8.

This column shows that initial SG&A expenditure is a significantly positive determinant of a firm's organization capital.

In my baseline model, I exclude SG&A expenditure from earnings management measures that are used as proxies for managerial short-termism. Furthermore, the initial value of SG&A expenditure is unlikely to be correlated with future random shocks to earnings management measures. In this context, using the initial value of SG&A as an instrumental variable can mitigate endogeneity concerns of reverse causality and omitted variable bias. The second-stage regression results reported in Columns (2), (3), (4), and (5) of Table 1.8 show that the instrumented value of *OC_TA_RATIO* is negatively and significantly associated with real activities manipulation measures, whereas the instrumented value of *OC_TA_RATIO* is positively and significantly associated with accrual-based earnings management measure, which is consistent with my predictions.

[Table 1.8 About Here]

I further conduct Ordinary Least Squares (OLS) change regressions to address endogeneity issues such as time-invariant omitted variable problems. OLS change regressions use the year-to-year changes in dependent and independent variables. This method results in a better explanation of the incremental effects of organization capital on earnings management after alleviating the effects of time-invariant omitted variables. To estimate OLS change regressions, I run the following model:

$$\Delta EM_{i,t+1} = \alpha + \beta\, \Delta OC\_TA\_RATIO_{i,t} + \lambda\, \Delta Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \qquad (7)$$

where, for firm i, *ΔEM* is either a change in real activities manipulation measure (*ΔAB_PROD*, *ΔMINUS_AB_DX* or *ΔRAM*) or a change in accrual-based management measure (*ΔABS_DA*) in year t+1 from the previous year; *ΔOC_TA_RATIO* denotes a change in organization capital scaled by total book value of assets in year t from previous year t-1; *ΔControls* include control variables which are described in Appendix A and all variables are first differences between year t and t-1. Year fixed effects (*Year*) and industry fixed effects (*Industry*) are included in my regressions. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Table 1.9 reports the results of the pooled OLS change regressions. In Columns (1), (2), and (3), I find that the coefficients of change in organization capital are negative and significant for subsequent changes in real activities manipulation. In column (4), the coefficient of change in organization capital on subsequent change in accrual-based earnings management is positive and significant. These results offer additional support to my arguments that organization capital encourages long-term management in real operations whereas it can intensify short-term pressure on managers by firm outsiders.

[Table 1.9 About Here]

5.4 Difference-in-Differences Approach

To address the endogeneity concerns which are mentioned in Section 5.2, I also utilize the difference-in-differences (DID) methodology to examine the impact of a change in organization capital on managerial short-termism. Following Eisfeldt and Papanikolaou (2013), I use a technology shock as an exogeneous shock to organization capital. Schilling (2016) suggests that technological collaborations can identify technology shocks. This is because pooling scarce

resources through technological alliances is regarded as one of quickest and most effective reactions to a technology shock (Kogut 1991; Eisenhardt & Schoonhoven 1996; Schilling & Steensma 2001). As demonstrated in Schilling (2016): *Technology Shocks, Technological Collaboration, and Innovation Outcomes*'s graph, Figure 1.2 visualizes a dramatic rise in technological collaborations during a period 1991 to 1995. Schilling (2016) attributes this rise to the major technology shock in information technology.[10] Taken together, technology shock during years between 1991 and 1995 directly affects organization capital. In addition, the technology shock is unlikely to be directly associated with overproduction or accrual management. Therefore, an analysis of the change in overproduction or accrual management following the change in organization capital due to the technology shock in the early to mid-1990s sets out a quasi-natural experiment to test the causal effect of organization capital on managerial short-termism.

[Figure 1.2 about here]

I first measure the change in organization capital from the pre-shock year (1990) to the post-shock year (1996). Based on the change in organization capital around this period, I sort firms with available data into three equal groups. The top group represents firms with greater increase in organization capital whereas the other two groups represent firms with lower improvement in organization capital or decrease in organization capital.

Next, I create the treatment dummy (*Treatment*) which is equal to one if an observation belongs to the top group and zero otherwise. I calculate propensity scores by conducting a probit

[10] For Example, Yahoo!, which is a representative web services provider in the early Internet era, was originally founded in January 1994.

regression of *Treatment* on all control variables from the baseline regression model in equation (6). Column (1) of Panel A in Table 1.10 shows that some control variables significantly affect the amount of variation in *Treatment*. To ensure that my results are not driven by the differences in these control variables, I match each firm in the top group (treatment firms) to a firm from the other two groups (control firms) with the closest propensity score. If any control firm is matched with multiple treatment firms, I keep one pair with the closest propensity score. As a result, 326 unique pairs are identified.

[Table 1.10 about here]

In Column (2) of Panel A in Table 1.10, all independent variables in a probit regression are statistically insignificant. Panel B of Table 1.10 also presents that the differences between the treatment and control firms' characteristics become largely reduced by the propensity score matching procedures. That is, through the propensity score matching procedures, the treatment and control groups have similar levels of firm characteristics. Overall, Panels A and B support the interpretation that the changes in overproduction and accrual management are mainly caused by the exogeneous change in organization capital due to the technology shock.

Panel C of Table 1.10 reports the DID test results. The drop in overproduction (*AB_PROD*) is larger for the treatment firms than for the control firms as the mean DID estimator of *AB_PROD* is significantly negative. Additionally, the treatment firms experience a significantly greater increase in accrual management (*ABS_DA*) relative to the control firms. Considering that the treatment firms experience a greater increase in organization capital due to the technology shock, the results in Table 1.10 suggest a causal effect from organization capital to managerial short-termism.

5.5 Using Investment Component of Main SG&A Expenditure

Enache and Srivastava (2017) define Main SG&A as the amount of SG&A expenditure exceeding the sum of advertising and R&D expenditures. They decompose Main SG&A into two components: a maintenance portion of Main SG&A and an investment portion of Main SG&A. Of particular importance is that the investment portion of Main SG&A is more strongly related to organization capital.

To attempt to increase the validity of my empirical results, in Equation (1), I first replace SG&A expenditure with the investment portion of Main SG&A.[11] Hence, the Equation (1) is modified as the following:

$$INV\_OC_0 = \frac{INV\_SGA_1}{g+\delta_0} \tag{8}$$

where INV_OC_0 is the initial state of organization capital using the investment portion of Main SG&A, INV_SGA_1 represents the investment portion of Main SG&A expenditure at time 1. The definitions of g and δ_0 are described in Equation (1).

After the initial state of organization capital using the investment portion of Main SG&A is determined, I estimate values of organization capital at later states following the same methodology used in Equation (2). Table 1.11 describes associations between organization capital using the investment portion of Main SG&A (*INV_OC*) and earnings management measures. Columns (1), (2), and (3) of Table 1.11 present significant and negative relations

[11] More details on the investment portion of Main SG&A is explained in Section 5.1 of Essay 2.

between *INV_OC* and proxies for subsequent real activities manipulation. Column (4) of Table 1.11 illustrates a significant and positive relation between *INV_OC* and subsequent accrual-based earnings management. These empirical results suggest that my hypotheses are robust to the organization capital using the investment portion of Main SG&A.

[Table 1.11 About Here]

5.6 Industry Concentration and Corporate Governance

Industry market structure is a potential factor that might affect the role of organization capital. Considering that organization capital can create synergies and improve efficiency of its overall system (Li *et al.* 2017), organization capital could enhance comparative advantage and economic rent. Firms in concentrated industries (e.g. monopolists or oligopolists), however, already enjoy high economic rent and thus the role of organization capital becomes less important. For example, Hou and Robinson (2006) argue that companies in concentered industries have less incentive to innovate, and thus they have lower average stock returns. Therefore, I expect that organization capital plays a less important role in concentrated industries. In contrast, the impact of organization capital would be amplified for firms with competitive industries.

Another possible explanation is that increased industry competitiveness can represent better external corporate governance, which leads managers to pursue the utilization of corporate resources in more efficient ways. In this view, organization capital plays a more important role in competitive industries.

I measure industry concentration by using Herfindahl Index (*HI*). A higher *HI* indicates a higher industry concentration. In Table 1.12, the key variable of interest is the intersection

between organization capital and Herfindahl Index (*OC_TA_RATIO* × *HI*), which captures the effect of industry concentration on the sensitivity of earnings management to organization capital. I find that the effect of *OC_TA_RATIO* × *HI* on subsequent accrual-based earnings management is negative but insignificant. *OC_TA_RATIO* × *HI*, however, has positive and significant coefficients when the dependent variables are proxies for subsequent real activities manipulation. Thus, the negative relation between organization capital and real activities manipulation is weaker as firms belong to concentrated industries. In other words, the negative impact of organization capital on real activities manipulation is stronger for firms with competitive industries. These findings are two sides of the same coin and consistent with my expectations.

[Table 1.12 About Here]

Corporate governance can significantly affect managerial short-termism. Specifically, investor horizon could be an important dimension which can drive the level of managerial short-termism. For instance, Cremers *et al.* (2017) show that firms with short-term investors, such as hedge funds, tend to spend lower R&D expenditures. On the other hand, long-term shareholders, such as pension and mutual funds, improve firms' innovation in quantity and quality (Harford *et al.* 2017) as well as long-term performance (Appel *et al.* 2016). In addition, higher institutional ownership, which may foster long-term management, is related to lower information asymmetry (Boone & White 2015).

According to Harford *et al.* (2017), a long-term investor horizon is associated with lower

GIM (Gompers, Ishii, and Metrick, 2003) governance index.[12] By following Harford *et al.* (2017)'s finding, I use *GIM* governance index to control investor horizon in my robustness test.

In Table 1.13, I add *GIM* to my baseline regression model as an additional control variable. After merging *GIM* data with my baseline data, I use observations with sufficient data to run my revised regression model. As a result of the discrepancy between the data sets, the total remaining number of observations is 4,094. Table 1.13 describes that there is a significant and positive relation between *GIM* and subsequent *RAM*, implying that firms with short-term investor horizon tend to engage in more real activities manipulations. Returning to my hypotheses, the results in Table 1.13 show that the coefficients of organization capital remain to be significantly negative, even after controlling investor horizon.

[Table 1.13 About Here]

5.7 Idiosyncratic Risk

The volatility of cash flows is likely to affect earnings management (Dechow & Dichev 2002; Roychowdhury 2006; Hribar & Nichols 2007). Considering that idiosyncratic risk mirrors the volatility of cash flows (Irvine & Pontiff 2009), it is a good alternative to the cash flow volatility. Table 1.14 reports the results by replacing cash flow volatility (*SQ_CF*) with idiosyncratic risk (*IVOL*) in my baseline model. Columns (1), (2), and (3) show that the greater the organization capital is, the significantly weaker the real activities manipulation is. In column (4), subsequent accrual-based earnings management is significantly stronger when organization

[12] *GIM* governance index data for years 1990-2006 is downloadable at Andrew Metrick's Website: http://faculty.som.yale.edu/andrewmetrick/data.html

capital becomes greater. These results provide additional support to my hypotheses by using idiosyncratic risk as an alternative measure of the volatility of cash flows.

[Table 1.14 About Here]

5.8 Managerial Ability and Employee Satisfaction

Demerjian *et al.* (2012) develop managerial ability score constructed by estimating firm efficiency attributing to the management team. The managerial ability score is positively associated with organization capital (Li *et al.* 2017). Hence, I use managerial ability score (*MA_SCORE*) as an independent variable in my baseline regressions.[13] Unlike organization capital measure, the managerial ability score from Demerjian *et al.* (2012) is not heavily dependent on SG&A expenditure, which can reduce the concern that dependent and independent variables are not mutually exclusive in my empirical investigations. In Columns (1), (2), and (3) of Table 1.15, the real activities manipulation proxies are significantly weaker for firms with better managerial ability. Column (4) shows the positive and significant associations between managerial ability and accrual-based earnings management. Summing up, my hypotheses are maintained using the managerial ability score, which reduces the concern that dependent and independent variables may not be mutually exclusive.

[Table 1.15 About Here]

To supplement the test in Table 1.15 addressing the concern that organization capital and real activities manipulation might not be mutually exclusive, I also replace organization capital

[13] Managerial ability score of Demerjian *et al.* (2012) is downloadable at the following link: http://faculty.washington.edu/pdemerj/data.html

with employee satisfaction in my empirical investigations.[14] Following Edmans (2011) and Li *et al.* (2017), I utilize Fortune magazine's "100 Best Companies to Work for in America" list to construct a measure of employee satisfaction. Specifically, for each year, I construct a firm's employee satisfaction variable (*BEST_FOR_WORK*), which is equal to 1 if a firm is included in the Fortune magazine's "100 Best Companies to Work for in America" list, 0 otherwise. Because the Fortune magazine's list is available in 1984, 1993, and 1998–2016, there is a serious discontinuity in the pre-SOX period (Years 1987–2001). Therefore, I conduct my empirical test using the post-SOX period (Years 2002–2016) only. Columns (1), (2), and (3) of Table 1.16 show that the coefficients of *BEST_FOR_WORK* are significantly negative when real activities manipulation proxies are dependent variables. In Column (4), there is no significant association between *BEST_FOR_WORK* and accrual-based earnings management. These results are consistent with my findings in Table 1.7.

[Table 1.16 About Here]

6 Conclusion

After the passage of the Sarbanes-Oxley Act (SOX) in 2002, on average, firms engage in more real activities manipulation whereas they engage in less accrual-based earnings management (Cohen *et al.* 2008). Considering that real activities manipulation has a directly negative impact on corporate future cash flows whereas accrual-based earnings management does not, real activities manipulation can be more detrimental to firm values than accrual-based earnings management can (Cohen & Zarowin 2010). This evidence naturally raises the important

[14] Firms with higher organization capital tend to have higher employee satisfaction (Li *et al.* 2017).

question of how myopic management of real operations can be mitigated, especially in the post-SOX period.

This paper contributes to a discussion on this problematic issue by examining how organization capital affects managerial short-termism. My study seeks to resolve prior literature's competing views on the relation between organization capital and managerial short-termism. Specifically, I split managerial short-termism into two broad categories: (1) managerial short-termism in real operations, and (2) managerial short-termism through accruals. I then focus on the impact of organization capital on each category of managerial short-termism.

By employing earnings management as a proxy for managerial short-termism (Graham *et al.* 2005; Cohen & Zarowin 2010; Chen *et al.* 2015), I find that an investment in organization capital leads firms to switch from real activities manipulation to accrual-based earnings management. These findings offer empirical evidence for the following arguments: (1) greater organization capital internally discourages the myopic management of real operations and (2) greater organization capital intensifies myopic management through accruals in an external dimension. My hypotheses remain supported even after controlling a proxy for corporate governance. These relations are robust to using alternative measures of organization capital and employing a two-stage least squares (2SLS) test and change regressions. I then employ a difference-in-difference (DID) methodology and exploiting the variation in organization capital generated by exogenous technology shock. I observe that my hypotheses continue to hold in the DID approach.

Furthermore, after the introduction of Sarbanes-Oxley Act (SOX), the positive association between organization capital and subsequent accrual-based earnings management becomes significantly reduced, supporting the possibility that SOX could attenuate the

problematic influence of organization capital on accruals. To investigate the effect of industry concentration, I find that the negative impact of organization capital on real activities manipulation is stronger for firms with competitive industries. By providing a managerial short-termism channel, my paper attempts to facilitate future research on the impact of organization capital on various corporate outcomes.

Table 1.1 Univariate Statistics for Sample Firms

Number of obs = 73,759

Variable	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Std. Dev*
F1_AB_PROD	-0.106	-0.003	0.000	0.100	0.202
F1_MINUS_AB_ADX	-0.013	0.002	0.008	0.042	0.077
F1_RAM	-0.112	0.000	0.013	0.129	0.235
F1_ABS_DA	0.020	0.070	0.045	0.089	0.079
OC_TA_RATIO	0.025	0.315	0.105	0.356	0.558
SIZE	4.003	5.527	5.502	7.027	2.213
CF	0.025	0.039	0.079	0.125	0.194
SQ_CF	0.012	0.059	0.027	0.062	0.098
MB_RATIO	0.798	1.618	1.152	1.846	1.473
LEVERAGE	0.027	0.211	0.178	0.328	0.199
LOSS	0.000	0.297	0.000	1.000	0.457
FIRM_AGE	8.000	18.548	14.000	26.000	13.425
S_GROWTH	-0.025	0.089	0.076	0.192	0.296
SQ_S_GROWTH	0.050	0.175	0.103	0.206	0.223
AZ_SCORE	0.859	1.321	1.835	2.673	2.838
CUM_RET	-0.225	0.171	0.059	0.384	0.661
STD_RET	0.090	0.146	0.127	0.179	0.082

Notes:
Table 1.1 reports summary statistics for variables in this study. All variables are winsorized at both the 1st and 99th percentiles. The sample consists of 73,759 firm-year observations from January of 1987 through December of 2016. The definitions of variables are described in Appendix A.

Table 1.2 Correlation Matrix

	F1_AB_PROD	*F1_MINUS_AB_ADX*	*F1_RAM*	*F1_ABS_DA*	*OC_TA_RATIO*	*SIZE*	*CF*	*SQ_CF*	*MB_RATIO*	*LEVERAGE*	*LOSS*	*FIRM_AGE*	*S_GROWTH*	*SQ_S_GROWTH*	*AZ_SCORE*	*CUM_RET*	*STD_RET*
F1_AB_PROD	1.0000																
F1_MINUS_AB_ADX	**0.2803**	1.0000															
F1_RAM	**0.9512**	**0.5520**	1.0000														
F1_ABS_DA	**0.0383**	**-0.1254**	-0.0053	1.0000													
OC_TA_RATIO	**-0.1782**	**-0.2236**	**-0.2243**	**0.1949**	1.0000												
SIZE	**0.0098**	**0.0656**	**0.0257**	**-0.2992**	**-0.3258**	1.0000											
CF	**-0.1281**	**0.1926**	**-0.0564**	**-0.2686**	**-0.3337**	**0.3666**	1.0000										
SQ_CF	**-0.0251**	**-0.1903**	**-0.0784**	**0.2509**	**0.3315**	**-0.3415**	**-0.3822**	1.0000									
MB_RATIO	**-0.2159**	**-0.2402**	**-0.2571**	**0.1314**	**0.0935**	**-0.1325**	**-0.0696**	**0.2033**	1.0000								
LEVERAGE	**0.1042**	**0.1203**	**0.1280**	**-0.0378**	**-0.0731**	**0.1626**	**-0.0680**	**-0.0476**	**-0.1584**	1.0000							
LOSS	**0.0722**	**-0.1148**	**0.0277**	**0.2065**	**0.2264**	**-0.3443**	**-0.6043**	**0.2949**	**-0.0215**	**0.1006**	1.0000						
FIRM_AGE	**0.0481**	**0.1092**	**0.0756**	**-0.1787**	**-0.2799**	**0.4160**	**0.1575**	**-0.1918**	**-0.1197**	**0.0328**	**-0.1877**	1.0000					
S_GROWTH	**-0.0377**	**-0.0266**	**-0.0415**	**0.0262**	**-0.0959**	**0.0340**	**0.1553**	**0.0178**	**0.1830**	-0.0001	**-0.1674**	**-0.1055**	1.0000				
SQ_S_GROWTH	**0.0744**	**-0.0767**	**0.0430**	**0.1856**	**0.1654**	**-0.3328**	**-0.3207**	**0.3832**	**0.1116**	-0.0007	**0.2721**	**-0.1925**	**0.1149**	1.0000			
AZ_SCORE	**-0.0275**	**0.2118**	**0.0362**	**-0.2547**	**-0.3330**	**0.3881**	**0.6967**	**-0.5120**	**-0.1870**	**-0.0766**	**-0.4687**	**0.1821**	**0.0753**	**-0.3790**	1.0000		
CUM_RET	**-0.0479**	**-0.0315**	**-0.0512**	**0.0140**	**-0.0245**	0.0002	**0.1659**	**0.0273**	**0.2886**	**-0.0637**	**-0.1673**	**-0.0225**	**0.1694**	0.0026	**0.0658**	1.0000	
STD_RET	**0.0113**	**-0.1146**	**-0.0246**	**0.2637**	**0.3049**	**-0.4396**	**-0.3512**	**0.4268**	**0.0902**	-0.0069	**0.3546**	**-0.3378**	0.0062	**0.3291**	**-0.3728**	**0.1455**	1.0000

Notes:
All correlations that are significant at the 0.01 level, two-tailed, are bolded. The definitions of variables are described in Appendix A.

Table 1.3 Organization Capital by Industry

Panel A: Organization Capital by Fama-French 10 industry Groups Number of obs = 73,759

FF	Industry Name	Description	Mean Organization Capital	Obs.
5	HiTec	Business Equipment (Computers, Software, and Electronic Equipment)	0.4395	18,196
8	Hlth	Healthcare, Medical Equipment, and Drugs	0.3886	7,951
7	Shops	Wholesale, Retail, and Some Services (Laundries, Repair Shops)	0.3756	8,983
1	NoDur	Consumer NonDurables (Food, Tobacco, Textiles, Apparel, Leather, Toys)	0.2932	5,178
6	Telcm	Telephone and Television Transmission	0.2828	2,101
2	Durbl	Consumer Durables (Cars, TV's, Furniture, Household Appliances)	0.2649	2,621
10	Other	Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment, Finance	0.2499	10,872
3	Manuf	Manufacturing (Machinery, Trucks, Planes, Chemicals, Off Furn, Paper, Com Printing)	0.2119	13,844
4	Enrgy	Oil, Gas, and Coal Extraction and Products	0.0920	3,802
9	Utils	Utilities	0.0369	211

Panel B: Earnings Management by Fama-French 10 industry Groups Number of obs = 73,759

FF	Industry Name	Description	Mean Real Activities Manipulation (RAM)	Mean Accrual Management (AM)
5	HiTec	Business Equipment (Computers, Software, and Electronic Equipment)	-0.0358	0.0846
8	Hlth	Healthcare, Medical Equipment, and Drugs	-0.0486	0.0848
7	Shops	Wholesale, Retail, and Some Services (Laundries, Repair Shops)	-0.0008	0.0609
1	NoDur	Consumer NonDurables (Food, Tobacco, Textiles, Apparel, Leather, Toys)	-0.0127	0.0566
6	Telcm	Telephone and Television Transmission	-0.0056	0.0698

2	Durbl	Consumer Durables (Cars, TV's, Furniture, Household Appliances)	0.0076	0.0642
10	Other	Mines, Constr, BldMt, Trans, Hotels, Bus Serv, Entertainment, Finance	0.0373	0.0694
3	Manuf	Manufacturing (Machinery, Trucks, Planes, Chemicals, Off Furn, Paper, Com Printing)	0.0493	0.0555
4	Enrgy	Oil, Gas, and Coal Extraction and Products	-0.0058	0.0702
9	Utils	Utilities	0.0165	0.0432

Notes:
Table 1.3 reports mean values of organization capital and earnings management by industry. Industries are defined as the 10 Fama-French industry groups. In Panels A and B, industries are sorted based upon their mean values of organization capital. The sample consists of 73,759 firm-year observations from January of 1987 through December of 2016. The definitions of variables are described in Appendix A.

Table 1.4 Organization Capital and Earnings Management

This table reports the results of the pooled OLS regressions of earnings management on organization capital. All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *OC_TA_RATIO* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_TA_RATIO	-0.0966	-0.0215	-0.1194	0.0040
	(-21.527)***	(-11.004)***	(-22.394)***	(3.930)***
SIZE	0.0012	-0.0051	-0.0039	-0.0048
	(0.996)	(-11.375)***	(-2.701)**	(-20.942)***
CF	-0.2551	0.0369	-0.2280	-0.0507
	(-18.773)***	(6.695)***	(-14.576)***	(-13.309)***
SQ_CF	-0.0061	-0.0497	-0.0550	0.0584
	(-0.350)	(-5.986)***	(-2.542)***	(9.837)***
MB_RATIO	-0.0321	-0.0115	-0.0429	0.0031
	(-21.675)***	(-16.642)***	(-24.478)***	(9.540)***
LEVERAGE	0.0546	0.0616	0.1151	-0.0008
	(5.774)***	(16.455)***	(10.414)***	(-0.383)
LOSS	-0.0142	-0.0071	-0.0231	0.0025
	(-4.746)***	(-5.783)***	(-6.685)***	(2.577)**
FIRM_AGE	0.0002	0.0004	0.0005	-0.0001
	(1.217)	(6.260)***	(2.846)***	(-3.301)***
S_GROWTH	-0.0091	-0.0076	-0.0171	0.0077
	(-2.624)***	(-5.618)***	(-4.379)***	(5.348)***
SQ_S_GROWTH	0.0812	0.0141	0.0956	0.0041
	(11.990)***	(4.811)***	(12.762)***	(1.888)*
AZ_SCORE	0.0020	0.0028	0.0044	-0.0003
	(1.596)	(5.445)***	(2.919)**	(-1.205)
CUM_RET	0.0132	0.0013	0.0145	0.0006
	(9.752)***	(2.414)**	(9.363)***	(1.032)
STD_RET	0.0589	-0.0238	0.0357	0.0926
	(2.808)***	(-2.886)**	(1.451)	(15.052)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.139	0.167	0.162	0.167

Table 1.5 Annual Decile Rank of Organization Capital

This table reports the robustness test results by using annual decile rank of organization capital. All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *OC_DECILE* defined as annual decile rank based on the level of *OC_TA_RATIO*. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_DECILE	-0.0187	-0.0046	-0.0236	0.0008
	(-23.066)***	(-14.439)***	(-25.661)***	(4.958)***
SIZE	-0.0013	-0.0057	-0.0071	-0.0047
	(-1.042)	(-12.806)***	(-4.990)***	(-20.323)***
CF	-0.2349	0.0412	-0.2033	-0.0515
	(-17.672)***	(7.627)***	(-13.401)***	(-13.609)***
SQ_CF	-0.0299	-0.0536	-0.0830	0.0594
	(-1.758)*	(-6.588)***	(-3.997)***	(10.013)***
MB_RATIO	-0.0332	-0.0118	-0.0443	0.0031
	(-22.212)***	(-17.104)***	(-25.115)***	(9.706)***
LEVERAGE	0.0562	0.0615	0.1165	-0.0009
	(5.886)***	(16.635)***	(10.503)***	(-0.421)
LOSS	-0.0062	-0.0052	-0.0131	0.0022
	(-2.074)**	(-4.299)***	(-3.822)***	(2.230)**
FIRM_AGE	-0.0005	0.0002	-0.0003	-0.0001
	(-2.718)***	(2.931)***	(-1.568)	(-2.136)**
S_GROWTH	-0.0098	-0.0082	-0.0185	0.0078
	(-2.895)***	(-6.046)***	(-4.822)***	(5.341)***
SQ_S_GROWTH	0.0731	0.0120	0.0852	0.0045
	(10.940)***	(4.127)***	(11.607)***	(2.048)**
AZ_SCORE	0.0055	0.0036	0.0087	-0.0005
	(4.587)***	(7.159)***	(6.063)***	(-1.756)*
CUM_RET	0.0141	0.0015	0.0156	0.0005
	(10.329)***	(2.792)***	(9.984)***	(0.965)
STD_RET	0.0403	-0.0266	0.0141	0.0934
	(1.916)*	(-3.188)***	(0.569)	(15.108)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.139	0.170	0.163	0.167

Table 1.6 Industry-Median Adjusted Organization Capital

This table reports the robustness test results by using industry-median adjusted organization capital. All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *IND_ADJ_OC* defined as organization capital minus industry-median organization capital in the Fama-French 10 industry classification scheme. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
IND_ADJ_OC	-0.0936	-0.0199	-0.1149	0.0039
	(-20.800)***	(-10.113)***	(-21.498)***	(3.746)***
SIZE	0.0011	-0.0051	-0.0040	-0.0048
	(0.913)	(-11.378)***	(-2.770)***	(-20.915)***
CF	-0.2541	0.0374	-0.2266	-0.0507
	(-18.694)***	(6.795)***	(-14.482)***	(-13.324)***
SQ_CF	-0.0097	-0.0512	-0.0600	0.0586
	(-0.555)	(-6.172)***	(-2.779)***	(9.870)***
MB_RATIO	-0.0322	-0.0116	-0.0430	0.0031
	(-21.699)***	(-16.671)***	(-24.489)***	(9.552)***
LEVERAGE	0.0563	0.0622	0.1173	-0.0009
	(5.941)***	(16.580)***	(10.589)***	(-0.422)
LOSS	-0.0142	-0.0071	-0.0231	0.0025
	(-4.739)***	(-5.767)***	(-6.665)***	(2.576)**
FIRM_AGE	0.0002	0.0004	0.0006	-0.0001
	(1.464)	(6.501)***	(3.129)***	(-3.380)***
S_GROWTH	-0.0085	-0.0073	-0.0163	0.0077
	(-2.448)**	(-5.402)***	(-4.147)***	(5.324)***
SQ_S_GROWTH	0.0815	0.0142	0.0961	0.0041
	(12.038)***	(4.862)***	(12.820)***	(1.880)*
AZ_SCORE	0.0021	0.0029	0.0046	-0.0003
	(1.703)*	(5.569)***	(3.049)***	(-1.233)
CUM_RET	0.0133	0.0013	0.0147	0.0006
	(9.866)***	(2.489)**	(9.484)***	(1.019)
STD_RET	0.0517	-0.0261	0.0263	0.0930
	(2.465)**	(-3.150)***	(1.065)	(15.104)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.137	0.165	0.158	0.167

Table 1.7 Pre- and Post- SOX periods

This table reports the robustness test results for the pre-SOX (Year 1987 – 2001) and post-SOX (Year 2002 – 2016) periods. All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *OC_TA_RATIO* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Panel A: Pre-SOX Periods

Variable	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Std. Dev*
F1_AB_PROD	-0.112	-0.004	0.001	0.108	0.212
F1_MINUS_AB_ADX	-0.013	0.003	0.009	0.042	0.078
F1_RAM	-0.118	-0.001	0.014	0.137	0.246
F1_ABS_DA	0.022	0.077	0.050	0.100	0.083
OC_TA_RATIO	0.068	0.402	0.198	0.492	0.581
SIZE	3.575	5.027	4.982	6.421	2.132
CF	0.027	0.042	0.081	0.128	0.191
SQ_CF	0.012	0.055	0.026	0.059	0.090
MB_RATIO	0.772	1.605	1.095	1.775	1.563
LEVERAGE	0.052	0.228	0.202	0.348	0.198
LOSS	0.000	0.292	0.000	1.000	0.455
FIRM_AGE	7.000	16.772	12.000	25.000	12.246
S_GROWTH	-0.021	0.101	0.082	0.207	0.310
SQ_S_GROWTH	0.050	0.176	0.102	0.204	0.230
AZ_SCORE	1.116	1.654	2.019	2.803	2.320
CUM_RET	-0.244	0.164	0.040	0.374	0.674
STD_RET	0.093	0.151	0.132	0.185	0.084

Dependent Variable	(1) *F1_AB_PROD*	(2) *F1_MINUS_AB_ADX*	(3) *F1_RAM*	(4) *F1_ABS_DA*
OC_TA_RATIO	-0.1117 (-19.938)***	-0.0251 (-11.254)***	-0.1378 (-20.793)***	0.0043 (3.311)***
Control Variables	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	38,271	38,271	38,271	38,271
adj. R-sq	0.145	0.158	0.167	0.171

Panel B: Post-SOX Periods

Variable	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Std. Dev*
F1_AB_PROD	-0.101	-0.003	0.000	0.091	0.190
F1_MINUS_AB_ADX	-0.014	0.002	0.006	0.042	0.076
F1_RAM	-0.105	0.000	0.011	0.121	0.223
F1_ABS_DA	0.018	0.063	0.040	0.077	0.074
OC_TA_RATIO	0.011	0.221	0.040	0.178	0.515
SIZE	4.577	6.067	6.102	7.547	2.171
CF	0.022	0.035	0.077	0.122	0.197
SQ_CF	0.012	0.063	0.027	0.066	0.106
MB_RATIO	0.832	1.632	1.216	1.917	1.370
LEVERAGE	0.006	0.192	0.152	0.303	0.198
LOSS	0.000	0.303	0.000	1.000	0.460
FIRM_AGE	10.000	20.462	16.000	27.000	14.346
S_GROWTH	-0.029	0.075	0.070	0.177	0.280
SQ_S_GROWTH	0.051	0.174	0.105	0.208	0.215
AZ_SCORE	0.616	0.962	1.621	2.494	3.269
CUM_RET	-0.205	0.179	0.077	0.393	0.646
STD_RET	0.086	0.141	0.121	0.172	0.081

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_TA_RATIO	-0.0780	-0.0173	-0.0972	0.0024
	(-19.938)***	(-5.699)***	(-12.388)***	(1.488)
Control Variables	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	35,488	35,488	35,488	35,488
adj. R-sq	0.140	0.188	0.165	0.160

Panel C: Interaction Term

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_TA_RATIO	-0.1054	-0.0218	-0.1280	0.0071
	(-20.053)***	(-10.500)***	(-20.607)***	(5.878)***
OC_TA_RATIO × SOX	0.0219	-0.0009	0.0214	-0.0076
	(3.247)***	(0.289)	(2.569)**	(-4.239)***
SIZE	0.0011	-0.0051	-0.0041	-0.0047
	(0.864)	(-11.380)***	(-2.811)***	(-20.710)***

CF	-0.2591	0.0368	-0.2319	-0.0493
	(-18.981)***	(6.659)***	(-14.772)***	(-12.927)***
SQ_CF	-0.0077	-0.0497	-0.0565	0.0590
	(-0.444)	(-5.998)***	(-2.625)***	(9.929)***
MB_RATIO	-0.0320	-0.0115	-0.0427	0.0030
	(-21.564)***	(-16.635)***	(-24.396)***	(9.361)***
LEVERAGE	0.0557	0.0617	0.1161	-0.0012
	(5.888)***	(16.403)***	(10.502)***	(-0.563)
LOSS	-0.0144	-0.0071	-0.0233	0.0026
	(-4.807)***	(-5.793)***	(-6.734)***	(2.641)***
FIRM_AGE	0.0002	0.0004	0.0006	-0.0001
	(1.405)	(6.280)***	(3.002)***	(-3.711)***
S_GROWTH	-0.0099	-0.0076	-0.0179	0.0080
	(-2.846)**	(-5.647)***	(-4.565)***	(5.538)***
SQ_S_GROWTH	0.0812	0.0141	0.0956	0.0041
	(12.013)***	(4.813)***	(12.781)***	(1.879)*
AZ_SCORE	0.0026	0.0028	0.0050	-0.0005
	(2.063)**	(5.357)***	(3.294)***	(-1.969)**
CUM_RET	0.0129	0.0013	0.0142	0.0007
	(9.560)***	(2.392)**	(9.198)***	(1.197)
STD_RET	0.0624	-0.0237	0.0392	0.0914
	(2.972)***	(-2.869)***	(1.588)	(14.822)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.140	0.167	0.163	0.167

Table 1.8 Two-Stage Least Squares Regression Analysis

This table reports the two-stage least squares (2SLS) regression results to address endogeneity concerns. All dependent variables are measured one year forward. The first stage regression result is reported in Column (1). In the first stage regressions, the instrumental variable of organization capital is the initial value of SG&A expenditures scaled by total book value of assets. In Columns (2) (3) and (4), real activities management proxies are dependent variables in the second stage regressions. In Column (5), accrual-based earnings management proxy is a dependent variable in the second stage regression. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	1st stage	2nd stage	2nd stage	2nd stage	2nd stage
	(1)	(2)	(3)	(4)	(5)
Dependent Variable	*OC_TA_RATIO*	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
IV: Initial SG&A	0.9181				
	(5.817)***				
Fitted OC_TA_RATIO		-0.1073	-0.0260	-0.1333	0.0062
		(-14.069)***	(-6.768)***	(-13.610)***	(3.183)***
SIZE	0.0134	0.0012	-0.0051	-0.0040	-0.0048
	(4.386)***	(0.966)	(-11.464)***	(-2.750)***	(-20.896)***
CF	-0.2507	-0.2583	0.0356	-0.2322	-0.0500
	(-6.439)***	(-18.887)***	(6.361)***	(-14.692)***	(-13.040)***
SQ_CF	0.5202	0.0026	-0.0460	-0.0437	0.0566
	(6.845)***	(0.142)	(-5.432)***	(-1.964)**	(9.429)***
MB_RATIO	0.0060	-0.0321	-0.0115	-0.0428	0.0030
	(2.235)**	(-21.686)***	(-16.575)***	(-24.470)***	(9.508)***
LEVERAGE	-0.1279	0.0522	0.0606	0.1120	-0.0003
	(-4.669)***	(5.513)***	(15.919)***	(10.103)***	(-0.146)
LOSS	-0.0011	-0.0145	-0.0072	-0.0235	0.0026
	(-0.160)	(-4.847)***	(-5.863)***	(-6.787)***	(2.647)**
FIRM_AGE	-0.0064	0.0001	0.0003	0.0005	-0.0001
	(-26.575)***	(0.833)	(5.467)***	(2.350)**	(-2.613)***
S_GROWTH	-0.0739	-0.0109	-0.0084	-0.0196	0.0081
	(-4.848)***	(-3.063)***	(-5.789)***	(-4.761)***	(5.577)***
SQ_S_GROWTH	0.0268	0.0805	0.0138	0.0947	0.0043
	(1.423)	(11.916)***	(4.711)***	(12.663)***	(1.947)*
AZ_SCORE	-0.0028	0.0016	0.0026	0.0038	-0.0002
	(-0.471)	(1.246)	(4.920)***	(2.496)**	(-0.889)
CUM_RET	-0.0121	0.0131	0.0013	0.0144	0.0006
	(-4.790)***	(9.694)***	(2.358)**	(9.304)***	(1.060)
STD_RET	0.5090	0.0668	-0.0204	0.0460	0.0910
	(7.401)***	(3.110)***	(-2.398)**	(1.818)*	(14.478)***
Industry fixed effects	Yes	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes	Yes

N	73,759	73,759	73,759	73,759	73,759
adj. R-sq	0.589	0.139	0.166	0.161	0.167

Table 1.9 Change Regression Analysis

This table reports the results of the pooled OLS change regressions between organization capital and earnings management. All dependent and independent variables are first differences. All dependent variables are measured one year forward. In Columns (1) (2) and (3), changes in real activities management proxies are dependent variables. In Column (4), a change in accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *ΔOC_TA_RATIO* defined as a change in organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*ΔF1_AB_PROD*	*ΔF1_MINUS_AB_ADX*	*ΔF1_RAM*	*ΔF1_ABS_DA*
ΔOC_TA_RATIO	-0.0487	-0.0251	-0.0741	0.0191
	(-7.858)***	(-8.903)***	(-10.034)***	(5.094)***
ΔSIZE	-0.0255	0.0004	-0.0234	-0.0054
	(-7.240)***	(0.398)	(-6.212)***	(-2.665)***
ΔCF	0.0309	-0.0030	0.0260	0.0883
	(3.951)***	(-1.043)	(3.096)***	(13.991)***
ΔSQ_CF	-0.0472	0.0039	-0.0455	-0.0375
	(-6.678)***	(1.317)	(-5.674)***	(-7.572)***
ΔMB_RATIO	-0.0051	-0.0062	-0.0104	0.0036
	(-4.770)***	(-13.664)***	(-8.630)***	(5.463)***
ΔLEVERAGE	-0.0517	0.0294	-0.0261	-0.0339
	(-5.683)***	(8.689)***	(-2.543)**	(-5.382)***
ΔLOSS	-0.0101	0.0031	-0.0076	0.0046
	(-6.612)***	(6.122)***	(-4.730)***	(3.820)***
ΔFIRM_AGE	0.0023	-0.0007	0.0015	0.0005
	(1.434)	(-1.542)	(0.889)	(0.713)
ΔS_GROWTH	-0.0102	0.0007	-0.0096	-0.0024
	(-3.961)***	(0.829)	(-3.400)***	(-1.201)
ΔSQ_S_GROWTH	0.0001	0.0009	0.0002	-0.0050
	(0.020)	(0.482)	(0.036)	(-1.386)
ΔAZ_SCORE	0.0017	0.0031	0.0030	-0.0072
	(1.108)	(5.123)***	(1.663)*	(-7.760)***
ΔCUM_RET	-0.0001	0.0013	0.0012	-0.0009
	(-0.112)	(4.567)***	(1.332)	(-1.459)
ΔSTD_RET	-0.0143	0.0093	-0.0062	-0.0273
	(-1.042)	(2.041)**	(-0.413)	(-2.670)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	64,873	64,873	64,873	64,873
adj. R-sq	0.019	0.055	0.025	0.025

Table 1.10 Difference-in-Differences Analysis

This table presents results of the Difference-in-Difference (DID) tests on how exogenous change in organization capital due to the technology shock affect overproduction and accrual management. I first measure the change in organization capital from the pre-shock year (1990) to the post-shock year (1996). Based on the change in organization capital around this period, I sort firms with available data into three equal groups. The top group represents firms with greater improvement in organization capital whereas the bottom group represents firms with lower improvement in organization capital. Next, I create the treatment dummy (*Treatment*) which is equal to one if an observation belongs to the top group and zero otherwise. The definitions of other variables are described in Appendix A. I require each observation to have sufficient data for the variables in the analysis. Panel A reports parameter estimates from the probit regressions for the pre-match and post-match groups. I calculate propensity scores by conducting a probit regression of *Treatment* on all control variables from the baseline regression model in equation (6). I match each firm in the top group (treatment firms) to a firm from other two groups (control firms) with the closest propensity score. If any control firm is matched with multiple treatment firms, I keep one pair with the closest propensity score. Panel B reports the univariate comparisons between the treatment and control firms' characteristics. Panel C reports the DID test results. *AB_PROD* is abnormal production costs. *ABS_DA* is accrual management. In Panels A and B, the t-statistics are reported in parentheses. In Panel C, standard errors reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles.

Panel A: Pre-match and Post-Match Probit Regressions

	(1)	(2)
	Pre-Match	Post-Match
Dependent Variable	*Treatment*	*Treatment*
SIZE	0.0836	-0.0516
	(-3.63)***	(-1.56)
CF	1.2582	0.8085
	(2.04)*	(1.33)
SQ_CF	-1.7407	-0.4762
	(-2.07)*	(-0.44)
MB_RATIO	-0.0874	0.0100
	(-1.83)	(0.20)
LEVERAGE	0.8430	-0.2930
	(4.29)***	(-1.02)
LOSS	-0.0413	-0.1213
	(-0.36)	(-0.74)
FIRM_AGE	-0.0045	0.0007
	(-1.24)	(0.14)
S_GROWTH	0.4723	0.2018
	(2.59)***	(0.92)
SQ_S_GROWTH	0.8939	0.1492
	(4.11)***	(0.57)
AZ_SCORE	-0.1818	-0.0631
	(-4.38)***	(-1.36)
CUM_RET	-0.0450	-0.1552
	(-0.48)	(-1.28)
STD_RET	-4.1218	-0.0175
	(-5.13)***	(-0.01)
Industry fixed effects	Yes	Yes

N	1,621	652
Pseudo R-sq	0.096	0.014

Panel B: Differences in Observables

	Pre-Match			Post-Match		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	Treatment	*Control*	*Differences*	*Treatment*	*Control*	*Differences*
SIZE	5.430	4.732	0.698***	4.944	5.323	-0.379*
CF	0.074	0.067	0.007	0.071	0.066	0.005
SQ_CF	0.035	0.043	-0.008**	0.040	0.037	0.003
MB_RATIO	1.165	1.323	-0.158***	1.306	1.259	0.047
LEVERAGE	0.286	0.217	0.069***	0.251	0.272	-0.021
LOSS	0.205	0.228	-0.023	0.207	0.222	-0.015
FIRM_AGE	18.796	16.968	1.828**	18.040	19.109	-1.069
S_GROWTH	0.132	0.071	0.061***	0.104	0.083	0.021
SQ_S_GROWTH	0.191	0.150	0.041***	0.193	0.169	0.024
AZ_SCORE	1.809	2.230	-0.421***	1.830	2.015	0.185
CUM_RET	-0.091	-0.041	-0.050*	-0.068	-0.051	-0.017
STD_RET	0.110	0.124	-0.014***	0.117	0.113	0.004

Panel C: Differences in Differences Test

	(1) *Mean Treatment Difference (After – Before)*	(2) *Mean Control Difference (After – Before)*	(3) *Mean DiD Estimator (Treatment – Control)*	(4) *T-statistics for DiD Estimator*
AB_PROD	-0.009 (0.010)	0.024 (0.009)	-0.033 (0.013)	-2.538
ABS_DA	0.011 (0.005)	-0.004 (0.004)	0.015 (0.007)	2.142

Table 1.11 Using Investment Component of Main SG&A

This table presents OLS regression results based on the same specification in Table 1.4, but replace the key independent variable (*OC_TA_RATIO*) with *INV_OC*. *INV_OC* is defined as the organization capital using the investment portion of Main SG&A expenditure from Enache and Srivastava (2017). All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_AB_ADX*	*F1_RAM*	*F1_ABS_DA*
INV_OC	-0.1593	-0.0121	-0.1719	0.0022
	(-5.569)***	(-3.672)***	(-5.421)***	(2.353)**
SIZE	-0.0021	-0.0055	-0.0076	-0.0046
	(-1.602)	(-11.259)***	(-4.929)***	(-19.246)***
CF	-0.2616	0.0343	-0.2326	-0.0521
	(-17.665)***	(5.865)***	(-13.565)***	(-12.808)***
SQ_CF	-0.0163	-0.0670	-0.0811	0.0629
	(-0.906)	(-8.017)***	(-3.624)***	(9.678)***
MB_RATIO	-0.0302	-0.0114	-0.0412	0.0031
	(-20.344)***	(-16.102)***	(-22.945)***	(8.880)***
LEVERAGE	0.0536	0.0657	0.1185	-0.0024
	(5.034)***	(16.939)***	(9.272)***	(-1.094)
LOSS	-0.0109	-0.0075	-0.0195	0.0024
	(-3.461)***	(-5.892)***	(-5.332)***	(2.335)**
FIRM_AGE	0.0004	0.0004	0.0008	-0.0001
	(2.135)**	(6.739)***	(3.669)***	(-3.665)***
S_GROWTH	0.0185	-0.0012	0.0168	0.0066
	(4.374)***	(-0.824)	(3.462)***	(4.195)***
SQ_S_GROWTH	0.0800	0.0154	0.0954	0.0060
	(10.138)***	(4.911)***	(10.465)***	(2.474)**
AZ_SCORE	0.0048	0.0031	0.0077	-0.0003
	(3.579)***	(5.544)***	(4.644)***	(-1.047)
CUM_RET	0.0116	0.0015	0.0130	0.0009
	(8.418)***	(2.803)***	(8.224)***	(1.486)
STD_RET	0.0454	-0.0429	0.0023	0.0972
	(1.741)*	(-4.703)***	(0.075)	(14.964)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	66,775	66,775	66,775	66,775
adj. R-sq	0.229	0.150	0.228	0.166

Table 1.12 Industry Concentration

This table presents the effect of industry concentration on the sensitivity of earnings management to organization capital. *HI* is Herfindahl Index based on sales for each three-digit SIC industry. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_TA_RATIO	-0.1042	-0.0303	-0.1356	0.0052
	(-19.403)***	(-12.251)***	(-21.308)***	(3.938)***
OC_TA_RATIO × HI	0.0156	0.0182	0.0334	-0.0023
	(2.515)**	(7.000)***	(4.442)***	(-1.441)
HI	0.0502	0.0152	0.0648	0.0030
	(5.158)***	(4.835)***	(5.875)***	(1.758)*
SIZE	0.0018	-0.0048	-0.0031	-0.0048
	(1.425)	(-10.781)***	(-2.166)**	(-20.912)***
CF	-0.2544	0.0366	-0.2277	-0.0505
	(-18.756)***	(6.653)***	(-14.583)***	(-13.275)***
SQ_CF	-0.0064	-0.0500	-0.0556	0.0585
	(-0.370)	(-6.087)***	(-2.592)***	(9.840)***
MB_RATIO	-0.0320	-0.0115	-0.0427	0.0031
	(-21.707)***	(-16.670)***	(-24.598)***	(9.542)***
LEVERAGE	0.0517	0.0600	0.1106	-0.0008
	(5.484)***	(16.109)***	(10.063)***	(-0.375)
LOSS	-0.0139	-0.0069	-0.0226	0.0025
	(-4.660)***	(-5.622)***	(-6.574)***	(2.571)***
FIRM_AGE	0.0001	0.0003	0.0004	-0.0001
	(0.623)	(5.555)***	(2.150)**	(-3.422)***
S_GROWTH	-0.0086	-0.0072	-0.0163	0.0077
	(-2.508)**	(-5.322)***	(-4.180)***	(5.313)***
SQ_S_GROWTH	0.0814	0.0143	0.0960	0.0041
	(12.012)***	(4.931)***	(12.852)***	(1.880)*
AZ_SCORE	0.0018	0.0027	0.0041	-0.0003
	(1.428)	(5.306)***	(2.722)***	(-1.229)
CUM_RET	0.0130	0.0012	0.0143	0.0006
	(9.684)***	(2.301)**	(9.303)***	(1.028)
STD_RET	0.0620	-0.0220	0.0406	0.0926
	(2.968)***	(-2.694)***	(1.661)*	(15.038)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.143	0.176	0.169	0.167

Table 1.13 Corporate Governance

This table presents the OLS regression results after including *GIM* as an additional control variable. *GIM* is corporate governance index following Gompers *et al.* (2003). All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *OC_TA_RATIO* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. After merging *GIM* data with my baseline data, I use observations with sufficient *GIM* data to run my revised regression model. As a result of the discrepancy between the data sets, the total remaining number of observations is 4,094. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
OC_TA_RATIO	-0.1616	-0.0510	-0.2093	0.0152
	(-8.035)***	(-4.949)***	(-8.279)***	(2.069)**
GIM	0.0014	0.0019	0.0033	-0.0001
	(0.973)	(2.894)***	(1.799)*	(-0.395)
SIZE	0.0135	-0.0024	0.0109	-0.0023
	(3.325)***	(-1.652)*	(2.324)**	(-2.799)***
CF	-0.2700	0.0285	-0.2378	-0.0999
	(-4.828)***	(1.398)	(-3.653)***	(-4.431)***
SQ_CF	-0.0302	-0.1256	-0.1446	0.0703
	(-0.377)	(-4.092)***	(-1.596)	(2.957)***
MB_RATIO	-0.0559	-0.0133	-0.0684	0.0038
	(-12.521)***	(-8.413)***	(-13.910)***	(3.329)***
LEVERAGE	0.0810	0.0427	0.1291	-0.0037
	(3.059)***	(4.669)***	(4.269)***	(-0.494)
LOSS	-0.0199	-0.0066	-0.0260	-0.0011
	(-2.042)**	(-1.736)*	(-2.277)**	(-0.305)
FIRM_AGE	-0.0002	-0.0001	-0.0003	-0.0001
	(-0.708)	(-0.166)	(-0.647)	(-0.051)
S_GROWTH	-0.0176	-0.0024	-0.0216	-0.0054
	(-0.914)	(-0.438)	(-1.029)	(-0.722)
SQ_S_GROWTH	0.1524	0.0078	0.1619	0.0218
	(5.552)***	(0.890)	(5.427)***	(1.903)*
AZ_SCORE	0.0136	-0.0007	0.0126	0.0010
	(2.132)**	(-0.368)	(1.868)*	(0.742)
CUM_RET	0.0315	0.0020	0.0336	0.0037
	(4.370)***	(0.775)	(4.122)***	(1.447)
STD_RET	0.0519	-0.1245	-0.0806	0.1001
	(0.641)	(-4.370)***	(-0.913)	(2.950)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	4,094	4,094	4,094	4,094
adj. R-sq	0.251	0.232	0.279	0.148

Table 1.14 Idiosyncratic Risk

This table illustrates the results by replacing cash flow volatility (*SQ_CF*) with idiosyncratic risk (*IVOL*). All dependent variables are measured one year forward. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. The independent variable of interest is *OC_TA_RATIO* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Dependent Variable	(1) *F1_AB_PROD*	(2) *F1_MINUS_ AB_ADX*	(3) *F1_RAM*	(4) *F1_ABS_DA*
OC_TA_RATIO	-0.0971	-0.0225	-0.1209	0.0052
	(-21.814)***	(-11.604)***	(-22.855)***	(4.946)***
SIZE	0.0018	-0.0052	-0.0035	-0.0045
	(1.398)	(-11.342)***	(-2.346)**	(-19.060)***
CF	-0.2565	0.0366	-0.2298	-0.0506
	(-18.932)***	(6.597)***	(-14.733)***	(-13.088)***
IVOL	0.0986	-0.0332	0.0657	0.0647
	(3.563)***	(-2.979)***	(2.058)**	(6.354)***
MB_RATIO	-0.0322	-0.0118	-0.0432	0.0034
	(-21.646)***	(-17.094)***	(-24.583)***	(10.445)***
LEVERAGE	0.0542	0.0625	0.1154	-0.0020
	(5.729)***	(16.637)***	(10.443)***	(-0.916)
LOSS	-0.0143	-0.0073	-0.0233	0.0027
	(-4.775)***	(-5.896)***	(-6.755)***	(2.728)***
FIRM_AGE	0.0002	0.0003	0.0005	-0.0001
	(1.311)	(5.970)***	(2.842)***	(-2.355)**
S_GROWTH	-0.0099	-0.0078	-0.0181	0.0077
	(-2.850)***	(-5.731)***	(-4.609)***	(5.336)***
SQ_S_GROWTH	0.0795	0.0110	0.0908	0.0074
	(11.885)***	(3.767)***	(12.202)***	(3.371)***
AZ_SCORE	0.0022	0.0033	0.0050	-0.0009
	(1.771)*	(6.547)***	(3.432)***	(-3.326)***
CUM_RET	0.0135	0.0013	0.0148	0.0006
	(9.961)***	(2.459)**	(9.557)***	(1.110)
STD_RET	-0.0143	-0.0120	-0.0257	0.0601
	(-0.704)	(-1.491)	(-1.097)	(6.627)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	73,759	73,759	73,759	73,759
adj. R-sq	0.140	0.165	0.162	0.164

Table 1.15 Managerial Ability

This table exhibits the robustness test results by employing the managerial ability score. The independent variable of interest is *MA_SCORE* defined as the managerial ability score of Demerjian *et al.* (2012). In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. All dependent variables are measured one year forward. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
MA_SCORE	-0.4782	-0.1215	-0.5994	0.0247
	(-26.454)***	(-16.998)***	(-27.003)***	(8.127)***
SIZE	0.0080	-0.0038	0.0042	-0.0052
	(6.209)***	(-7.879)***	(2.758)***	(-22.255)***
CF	-0.1825	0.0472	-0.1430	-0.0541
	(-13.411)***	(8.656)***	(-9.129)***	(-13.416)***
SQ_CF	-0.0630	-0.0617	-0.1249	0.0616
	(-3.840)***	(-7.987)***	(-6.327)***	(10.148)***
MB_RATIO	-0.0282	-0.0102	-0.0377	0.0028
	(-19.193)***	(-15.030)***	(-21.813)***	(8.012)***
LEVERAGE	0.0406	0.0586	0.0980	0.0007
	(4.544)***	(15.767)***	(9.138)***	(0.317)
LOSS	-0.0114	-0.0082	-0.0209	0.0028
	(-3.922)***	(-6.744)***	(-6.229)***	(2.725)***
FIRM_AGE	0.0007	0.0004	0.0011	-0.0001
	(4.066)***	(7.715)***	(5.828)***	(-4.137)***
S_GROWTH	0.0299	-0.0003	0.0298	0.0060
	(8.280)***	(-0.188)	(7.245)***	(3.914)***
SQ_S_GROWTH	0.0880	0.0140	0.1022	0.0048
	(12.954)***	(4.660)***	(13.539)***	(2.070)**
AZ_SCORE	0.0070	0.0037	0.0104	-0.0004
	(5.638)***	(7.263)***	(7.026)***	(-1.416)
CUM_RET	0.0110	0.0007	0.0117	0.0009
	(8.220)***	(1.413)	(7.732)***	(1.647)*
STD_RET	0.0187	-0.0364	-0.0168	0.0946
	(0.891)	(-4.258)***	(-0.682)	(14.998)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	70,306	70,306	70,306	70,306
adj. R-sq	0.164	0.176	0.194	0.164

Table 1.16 Employee Satisfaction

This table shows the robustness test results by using employee satisfaction proxy. The independent variable of interest is *BEST_FOR_WORK* which is equal to one if a firm is included in the Fortune magazine's "100 Best Companies to Work for in America" list, 0 otherwise. In Columns (1) (2) and (3), real activities management proxies are dependent variables. In Column (4), accrual-based earnings management proxy is a dependent variable. All dependent variables are measured one year forward. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 2002 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)	(4)
Dependent Variable	*F1_AB_PROD*	*F1_MINUS_ AB_ADX*	*F1_RAM*	*F1_ABS_DA*
BEST_FOR_WORK	-0.0696	-0.0116	-0.0810	-0.0004
	(-4.507)***	(-1.696)*	(-4.103)***	(-0.136)
SIZE	0.0020	-0.0035	-0.0016	-0.0054
	(1.317)	(-6.157)***	(-0.883)	(-17.490)***
CF	-0.2282	0.0481	-0.1888	-0.0473
	(-11.371)***	(6.055)***	(-8.094)***	(-9.259)***
SQ_CF	-0.0815	-0.0460	-0.1295	0.0449
	(-3.573)***	(-4.390)***	(-4.584)***	(6.321)***
MB_RATIO	-0.0374	-0.0140	-0.0505	0.0029
	(-14.846)***	(-13.213)***	(-17.172)***	(6.398)***
LEVERAGE	0.0562	0.0571	0.1133	0.0010
	(4.108)***	(10.410)***	(7.177)***	(0.343)
LOSS	-0.0185	-0.0077	-0.0281	-0.0009
	(-4.195)***	(-4.408)***	(-5.433)***	(-0.669)
FIRM_AGE	0.0006	0.0005	0.0011	-0.0001
	(3.502)***	(7.181)***	(5.272)***	(-1.211)
S_GROWTH	0.0054	-0.0076	-0.0027	0.0067
	(1.028)	(-3.592)***	(-0.445)	(3.254)***
SQ_S_GROWTH	0.0925	0.0150	0.1080	0.0016
	(9.097)***	(3.328)***	(9.517)***	(0.494)
AZ_SCORE	0.0057	0.0038	0.0093	-0.0012
	(3.806)***	(6.012)***	(5.009)***	(-3.768)***
CUM_RET	0.0129	0.0022	0.0149	-0.0005
	(6.502)***	(2.909)***	(6.585)***	(-0.641)
STD_RET	0.0072	-0.0432	-0.0305	0.0746
	(0.263)	(-3.674)***	(-0.936)	(8.988)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	35,488	35,488	35,488	35,488
adj. R-sq	0.111	0.180	0.133	0.160

Figure 1.1 Time Line: Managers with Greater Organization Capital

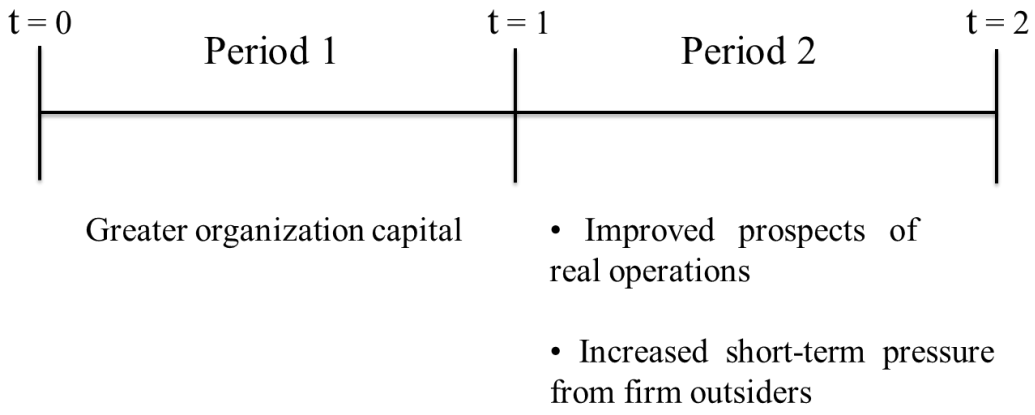
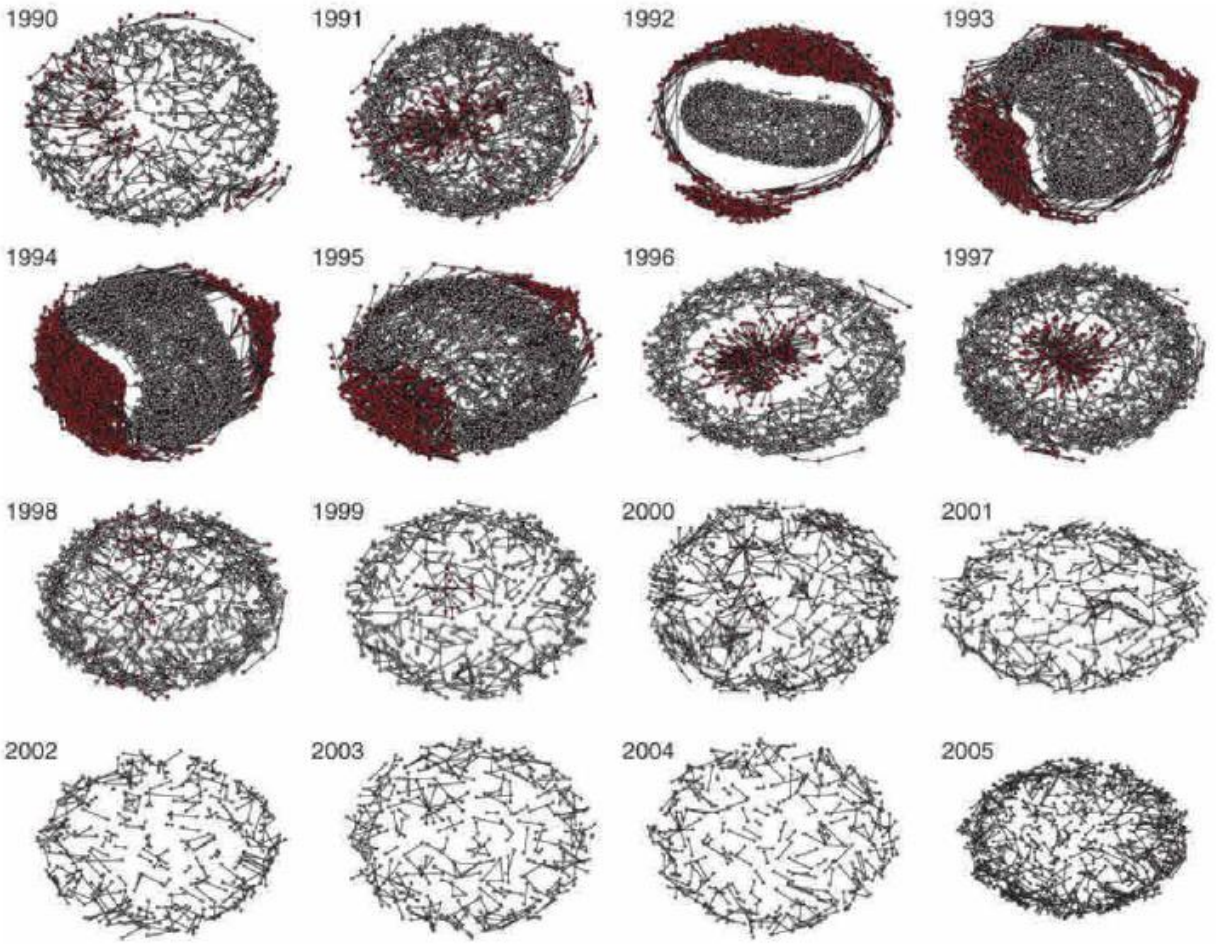


Figure 1.2 Technological Collaboration Network



Notes:
Figure 1.2 illustrates how the technology shock changes the structure of the technology alliances networks during years between 1990 and 2005. Source: Schilling (2016).

APPENDIX A

Variable Definitions

Variable	*Definitions*
F1_AB_PROD	Abnormal production costs, defined as the difference between actual production costs and normal production costs from Zang (2012) in year t+1.
F1_ MINUS_AB_ADX	Multiplication of negative one and abnormal adjusted discretionary expenses. Abnormal adjusted discretionary expenses are calculated as the difference between actual adjusted discretionary expenses and normal adjusted discretionary expenses in year t+1. The definition of adjusted discretionary expenses is the sum of advertising and R&D expenditures, which is calculated by subtracting the SG&A expenditure from discretionary expenses.
F1_RAM	Real activities manipulation index, calculated by abnormal production costs minus abnormal adjusted discretionary expenses from Zang (2012) in year t+1
F1_ABS_DA	Absolute value of discretionary accruals, estimated following the modified Jones model of Dechow *et al.* (1995) in year t+1.
OC_TA_RATIO	Organization capital divided by total book value of assets proposed by Eisfeldt and Papanikolaou (2013) in year t.
SIZE	Firm size, measured by the natural logarithm of total sales in year t.
CF	Cash flows, proxied as (incomes before extraordinary items + depreciation) / total book value of assets in year t.
SQ_CF	Cash flow volatility, using the standard deviation of cash flows in year t.
MB_RATIO	Market-to-book ratio, calculated by (closing stock price × number of shares outstanding + long-term debt + current debt) / total book value of assets in year t.
LEVERAGE	(Long-term debt + debt in current liabilities) / total book value of assets in year t.
LOSS	Equal to 0 if income before extraordinary items are greater or equal to zero, 1 otherwise in year t.
FIRM_AGE	Firm age, proxied by the number of years listed on Compustat in year t.

S_GROWTH	Sales growth, defined as the ratio of sales in year t to sales in year t-1.
SQ_S_GROWTH	Standard deviation of sales growth.
AZ_SCORE	Altman (1968)'s *Z*-score, defined as (3.3 × operation income after depreciation + sales + 1.4 × retained earnings +1.2 × (current assets minus current liability)) / total book value of assets in year t.
CUM_RET	Cumulative stock returns over year t.
STD_RET	Standard deviation of monthly stock returns over the previous two years in year t.
OC_DECILE	Annual decile rank based on the level of *OC_TA_RATIO.*
IND_ADJ_OC	Industry-median adjusted organization capital, measured as *OC_TA_RATIO* minus industry-median *OC_TA_RATIO* under the Fama-French 10 industry classification scheme.
INV_OC	Organization capital using the investment portion of Main SG&A from Enache and Srivastava (2017).
HI	Herfindahl Index, which is the sum of squared market shares in each three-digit SIC industry.
GIM	Governance Index from Gompers *et al.* (2003).
IVOL	Idiosyncratic risk, measured by the standard deviation of residuals from a regression of a firm's monthly stock returns on the monthly returns of market index over the previous 36 months (McLean 2010).
MA_SCORE	Managerial ability score of Demerjian *et al.* (2012)
BEST_FOR_WORK	Equal to 1 if a firm is included in the Fortune magazine's "100 Best Companies to Work for in America" list, 0 otherwise.

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ESSAY 2: ORGANIZATION CAPITAL AND CORPORATE CASH HOLDINGS

1 Introduction

In my previous essay, I discuss how managerial mindsets are associated with organization capital. Internally, organization capital encourages long-term management approaches in real operations. Externally, however, organization capital can intensify short-term pressure on managers by firm outsiders. Taken together, these internal and external mechanisms can affect cash holdings in firms. To extend this view, this essay aims to create a better understanding of how organization capital and corporate cash holdings are related. To that effect, I address three questions: (i) Do firms with high organization capital build more cash holdings? (ii) If yes, is this because organization capital increases growth opportunities as well as financial constraints of firms? (iii) Does the threat of hostile takeover play a disciplining role for firms with high organization capital?

Interestingly, there has been a surge in the U.S. average cash ratio. Specifically, the average cash ratio for U.S. corporations was 10.5% in 1980 and increased to 23.6% by 2006 (Bates *et al.* 2009). Although various firm-level motives are associated with an increase in corporate cash holdings, a precautionary motive has emerged as a significant force in the recent surge in corporate cash holdings. Prior literature on the precautionary motive has shown that (i) when firms have better growth opportunities, they are likely to hoard more cash (Opler *et al.* 1999; Ozkan & Ozkan 2004; Chen & Chuang 2009; Pinkowitz *et al.* 2013), and (ii) when firms are more financially constrained, they tend to build more cash holdings (Opler *et al.* 1999; Bates *et al.* 2009; Denis & Sibilkov 2010; Harford *et al.* 2014).

Regarding the growth opportunities, I examine organization capital because in today's knowledge economy, intangible assets such as information systems, and human capital play a crucial role in companies' growth (Zingales 2000). For instance, organization capital has a positive influence on operational and innovative efficiencies (Li *et al.* 2017), economic values (Martín-Oliver & Salas-Fumás 2012), and corporate performance (McKinsey Global Institute 2002). As expected, I find that organization capital is positively associated with growth opportunities. Considering that firms with better growth opportunities tend to have more cash reserves, I argue that firms with higher organization capital should build more cash reserves.

To better understand the positive relation between organization capital and corporate cash holdings, my study provides a framework for the impact of organization capital on financial constraints. Prior studies on information asymmetry offer a possible explanation for the positive impact organization capital has on financial constraints. Due to the information asymmetry between managers and firm outsiders, firm outsiders may respond less favorably to investments in intangible capital (Stein 1989; Edmans 2011). For example, firms with high asymmetric information have more difficulties in debt financing (Carpenter & Petersen 2002) as well as equity financing (Hughes *et al.* 2007). Unlike physical capital, organization capital is an invisible asset that can exacerbate the information asymmetry between managers and firm outsiders. As a result, information asymmetry may lead high organization capital firms to have more financial constraints when obtaining external financing, which implies that increasing organization capital results in firms relying more on internal financing.

This paper also examines the disciplining role of corporate governance affecting the organization capital-cash holdings relationship. Prior literature on the agency theory (e.g., Jensen (1986) and Myers and Rajan (1998)) argues that corporate cash holdings can be easily converted

for the private purposes of managers and thus could induce moral hazard problems. Given that firms with high organization capital tend to have a high volume of cash reserves, it follows that they are more likely to experience moral hazard problems. In this study, I propose corporate governance to solve the agency problems potentially associated with high organization capital firms. Under stronger corporate governance, managers are more disciplined and hold less cash reserves (Dittmar *et al.* 2003; Ivalina & Lins 2007; Harford *et al.* 2008; Yun 2009). With the aid of recent scholarly exploration of corporate governance, I suggest that stronger corporate governance would discipline managers and reduce the positive relationship between organization capital and cash reserves.

I empirically check the positive relation between organization capital and corporate cash holdings from 1987 through 2016. Consistent with my hypothesis, I find that firms with high organization capital build more cash holdings. The positive effect of organization capital on subsequent cash holdings is persistent over three years. These findings provide statistically significant evidence that organization capital can lead firms to build more cash reserves.

Regarding the growth opportunities channel, I find that organization capital is positively associated with Tobin's Q. I next examine whether organization capital increases financial constraints of firms. As firms face a higher degree of financial constraint, they tend to have higher sensitivity of cash holdings to internal cash flow (Almeida *et al.* 2004; Chen & Wang 2012; Erel *et al.* 2015). Following the prior literature, my empirical analyses show that firms with high organization capital do indeed have higher sensitivity of cash holdings to internal cash flow. That is, organization capital could encourage firms to save more cash holdings from internal cash flows. This confirms my hypothesis that firms tend to become more dependent on

internal financing since an increase in organization capital generates difficulties for firms to obtain external sources of finance.

Furthermore, I test the corporate governance channel by using the hostile takeover index provided by Cain *et al.* (2017). Under the threat of hostile takeover, managers are exposed to the risk of being replaced. For this reason, the threat of hostile takeover is one of the strongest corporate governance mechanism to discipline managers (Shleifer & Vishny 1997; Bertrand & Mullainathan 2003; Atanassov 2013). Consistent with the disciplining role of corporate governance, I find that a stronger threat of hostile takeover significantly weakens the positive association between organization capital and cash reserves.

My empirical results are robust to conducting a two-stage least squares (2SLS) test, change regressions, and the difference-in-difference (DID) test for the concern of omitted variables and endogeneity. By using alternative measures of organization capital such as annual decile rank of organization capital or industry-median adjusted organization capital, I provide additional support to the positive relationship between organization capital and cash reserves. When I measure organization capital by following Enache and Srivastava's (2017) investment portion of Main SG&A, the positive association between organization capital and financial constraints of firms, which is my main finding, is significant only when firms have positive internal cash flows.

My research contributes to several strands of the literature on the corporate cash holdings. A growing amount of literature analyzes the various determinants for corporate cash holdings. For example, Mulligan (1997) explains that firm size is negatively related to corporate cash ratios. Past literature also shows that investor protection (Pinkowitz *et al.* 2006; Dittmar & Mahrt-Smith 2007) and tax avoidance (Fritz Foley *et al.* 2007; Harford *et al.* 2017) significantly

affect the corporate cash reserves. Some authors suggest that the precautionary motive is a critical determinant for corporate cash holdings. Opler *et al.* (1999), Ozkan and Ozkan (2004), Chen and Chuang (2009), and Pinkowitz *et al.* (2013) show that firms with more growth opportunities have more cash holdings. Additionally, financial constraints are positively related to corporate cash holdings (Opler *et al.* 1999; Bates *et al.* 2009; Denis & Sibilkov 2010; Harford *et al.* 2014). My contribution to this body of literature is to identify (i) more growth opportunities and (ii) more financial constraints for corporations with high organization capital. In particular, my findings complement the cash holdings literature by emphasizing the precautionary motive for corporate cash holdings by understanding the positive association between organization capital and corporate cash holdings.

My paper also provides contributions to the literature on corporate governance and hostile takeover. The academic literature has already demonstrated that strong corporate governance can reduce corporate cash holdings (e.g., Dittmar *et al.* (2003), Ivalina and Lins (2007), Harford *et al.* (2008), and Yun (2009)). My research goes beyond the previous finding to find that corporate governance, by disciplining managers through the threat of hostile takeover, can significantly weaken the association between organization capital and corporate cash holdings.

The structure of the paper is organized as follows. Section 2 describes prior literature and hypothesis development. Then, the data and variable measurements are illustrated in Section 3. Section 4 presents empirical models and results. Section 5 provides robustness tests. Finally, Section 6 concludes.

2 Prior Literature and Hypothesis Development

2.1 Organization Capital and Corporate Cash Holdings

Interestingly, since the 1980s, there has been a surge in the average U.S. cash ratio. Specifically, the average cash ratio for firms in the U.S. was 10.5% in 1980 and rose to 23.6% by 2006 (Bates *et al.* 2009). Figure 2.1 shows the average cash ratio from my sample period, 1987 to 2016. The average cash ratio grew higher especially in the later years of my sample.

[Figure 2.1 About Here]

My paper aims to examine the impact of organization capital on corporate cash holdings. I do this by investigating three possible channels through which organization capital can affect cash holdings decisions: (i) the growth opportunities channel; (ii) the financial constraints channel; and (iii) the corporate governance channel. I hypothesize that organization capital has a positive impact on growth opportunities, an idea investigated further in Section 2.2. The growth opportunities channel suggests that firms may keep more cash in reserve to take advantage of better growth opportunities (Opler *et al.* 1999; Ozkan & Ozkan 2004; Chen & Chuang 2009; Pinkowitz *et al.* 2013). Considering that high organization capital firms can have better growth opportunities, I argue that these firms should hold more cash. In Section 2.3, the positive relation between organization capital and financial constraints is explained. The financial constraints channel argues that financial constraints can lead firms to rely heavily on internal financing, and thus build greater cash holdings (Opler *et al.* 1999; Bates *et al.* 2009; Denis & Sibilkov 2010; Harford *et al.* 2014). I therefore construct the following hypothesis describing the positive influence of organization capital on corporate cash holdings.

Hypothesis 1: There is a positive association between organization capital and corporate cash holdings.

The corporate governance channel insists that stronger corporate governance mechanisms discipline managers and thus firms are less motivated to hold cash balances (Dittmar *et al.* 2003; Ivalina & Lins 2007; Harford *et al.* 2008; Yun 2009). Accordingly, the positive association between organization capital and corporate cash holdings might be weaker under strong corporate governance. The disciplinary role of corporate governance for firms high in organization capital is described in Section 2.4.

2.2 Growth Opportunities Channel

Prior literature on corporate cash holdings suggests that firms might try to maintain higher levels of cash holdings to take advantage of growth opportunities (Opler *et al.* 1999; Ozkan & Ozkan 2004; Chen & Chuang 2009; Pinkowitz *et al.* 2013). In this section, I examine the impact of organization capital, which is an intangible asset that can positively contribute to the development of a corporation, on growth opportunities.[15] Organization capital is defined as the organizational knowledge for the utilization of employees (Prescott & Visscher 1980). Prior literature suggests that organization capital can generate fundamental impacts on the development of a corporation.[16] Typical examples of organization capital are organizational

[15] In today's knowledge economy, intangible assets, such as organization capital, have a crucial role for companies' growth (Zingales 2000).

[16] Organization capital can cultivate the abilities of key talents (Black & Lynch 2005). Li *et al.* (2017) report that firms with greater organization capital tend to have higher employee satisfaction and better managerial quality. Organization capital can result in better performance so that key employees can then expect higher future compensation (Atkeson & Kehoe 2005; Eisfeldt & Papanikolaou 2013). In my essay 1, I find that organization capital can reduce opportunistic

know-how about each employee's aptitude for a project, employee training programs, and allocations of human resources.

By better utilizing organization capital, a firm can achieve greater efficiency in its overall operations. For instance, Li *et al.* (2017) show that organization capital is positively associated with operational and innovative efficiency measures. Martín-Oliver and Salas-Fumás (2012) find the positive impact of organization capital on the economic value of Spanish banks. Corporations investing more in organization capital during market recessions had better firm performance on average between 1982 and 1999, as reported by McKinsey Global Institute (2002). These findings support my argument that high organization capital firms should have better growth opportunities. To summarize:

Hypothesis 2: There is a positive association between organization capital and growth opportunities of firms.

2.3 Financial Constraints Channel

Prior studies on corporate cash holdings find that the precautionary motive for cash holdings plays a crucial role in determining the demand for cash (e.g., Opler *et al.* (1999), Bates *et al.* (2009), Pinkowitz *et al.* (2013)).[17] With its incoming cash flows, a firm has options with

management such as overproduction, reduction in marketing expenditure, and cuts in research and development expenditure. These findings suggest that organization capital might improve corporate performance overall.

[17] In addition to the precautionary motive, there are other motives for firms to hold cash. The transaction motive (e.g., Mulligan (1997)) means that firms hold cash to avoid the transaction costs for converting a non-cash asset into cash. The tax motive means that the cash ratios of multinational firms kept high to avoid tax associated with repatriation of foreign earnings (Fritz Foley et al. 2007). The agency motive (e.g. Jensen (1986)) views the cash holdings as a result

respect to payments to capital providers. The precautionary motive suggests that firms should hold a portion of their cash flows as cash or cash equivalent in order to finance their future investment opportunities against future shocks.[18] Accordingly, corporate cash holdings are positively associated with financial constraints (Opler *et al.* 1999; Bates *et al.* 2009).

To better understand the relation between organization capital and corporate cash holdings, I attempt to confirm the positive influence of organization capital on financial constraints. Due to information asymmetry between managers and firm outsiders, firm outsiders may respond less favorably to intangible investments (Stein 1989; Edmans 2011). Specifically, firms with high asymmetric information (e.g., small high-tech firms) are less likely to have access to debt financing (Carpenter & Petersen 2002). Greater information asymmetry also yields the higher risk premiums required by investors in equity markets (Hughes *et al.* 2007). Therefore, information asymmetry can lead to firms to having greater difficulties obtaining external financing, and instead relying on internal financing. Considering that organization capital is an intangible asset that can exacerbate information asymmetry, I suggest that organization capital can generate difficulties for firms to obtain external sources of finance.[19] Hence, my third hypothesis is:

Hypothesis 3: There is a positive relation between organization capital and financial constraints.

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of the agency problem. In line with this logic, Dittmar et al. (2003) and Harford et al. (2008) find that firms with a greater agency problem tend to hold greater cash balances.

[18] Firms prefer internal financial slack rather than issuing debts or stocks when they finance new projects (Myers & Majluf 1984).

[19] In Essay 1, I show that firms with high organization capital are more likely to engage in accrual management to cope with the firm outsider's short-term earnings pressure.

2.4 Corporate Governance Channel

In Section 2.1, I hypothesize the positive relation between organization capital and corporate cash reserves. Consistent with my hypothesis, high organization capital firms tend to have high levels of cash holdings. This phenomenon might spur concerns about moral hazard problems. According to the agency theory of Jensen (1986), high corporate cash holdings can induce the moral hazard problems of free cash flow. Compared to other assets, cash reserves can easily be used for managers' private interests at the expense of shareholders (Myers & Rajan 1998). Considering the findings of all of these studies, I pose the following question: What might mitigate agency problems potentially embedded in firms with high organization capital?

With this in mind, in this section, I examine the corporate governance channel. Prior literature suggests that corporate governance can affect agency problems. In particular, under a weak corporate governance mechanism (e.g., managers who are not effectively monitored by shareholders), managers tend to reserve more cash holdings (Dittmar *et al*. 2003; Ivalina & Lins 2007; Harford *et al.* 2008; Yun 2009). Conversely, stronger corporate governance encourages firms to hold less cash holdings. This disciplinary role of corporate governance provides a framework for analyzing the relation between organization capital and corporate cash holdings. I suggest that stronger corporate governance can discipline managers and thus the positive association between organization capital and corporate cash holdings can be weaker. To summarize:

Hypothesis 4: The positive relation between organization capital and corporate cash holdings is weaker for firms with stronger corporate governance.

3 Data and Variable Measurement

3.1 Data

To analyze the relation between organization capital and corporate cash holdings, I obtain corporate financial statement information using the Compustat annual database. The definitions of cash holdings, organization capital, and control variables are presented in Appendix A. To mitigate impacts of outliers, all variables are winsorized at the 1st and 99th percentiles. After eliminating firm-year observations with insufficient data in the database to calculate variables in my empirical investigations, my final baseline sample consists of 70,317 firm-year observations from January 1987 through December 2016.

3.2 Measure of Cash Holdings and Organization Capital

Following Almeida *et al.* (2004), and Brown and Petersen (2011), the cash ratio (*CASH*) of each firm is measured as the cash and marketable securities divided by total book value of assets. To measure organization capital (*OC*), I use the model by Eisfeldt and Papanikolaou (2013). By taking the sum of the deflated flows from sales, general, and administrative (SG&A) expenditure, this model can measure the organization capital. The underlying reason for this is that, at market equilibrium, the sum of the present value of all expenditures for an asset should be equal to the present value of the asset. Considering that SG&A expenditure contains information expenditures and labor costs such as employee wages, training cost, and consulting fees (Lev & Radhakrishnan 2005), the deflated flows from SG&A expenditure can be used for measuring the value of organization capital.

Based on the model of Eisfeldt and Papanikolaou (2013), the value of organization capital at a specific year can be determined using the following equation:

$$V_{i,t} = (1 - \delta)V_{i,t-1} + \frac{SGA_{i,t}}{cpi_t} \quad (1)$$

In this equation, for each firm i and year t, *V* stands for the value of organization capital. δ is a constant depreciation rate of organization capital. SGA_t represents SG&A expenditure at time t. To calculate the deflated value of SG&A expenditure, I utilize the consumer price index at time t (cpi_t). Following the prior literature, I choose to use the value of 15% for δ. Any missing data in SG&A expenditure is converted to the value of zero.

To complete Equation (1), a firm i's initial value of organization capital must be determined. Based on the perpetual inventory model of Eisfeldt and Papanikolaou (2013), I estimate each firm i's initial value of organization capital by using the equation below:

$$V_{i,0} = \frac{SGA_1}{g + \delta} \quad (2)$$

g indicates the mean real growth rate of firm-level SG&A expenditure. Consistent with Eisfeldt and Papanikolaou (2013), I choose g as 10%. I divide the organization capital by its book value of total assets (*OC*) and use *OC* in my baseline regressions.

3.3 Control Variables

Following Almeida *et al.* (2004), and Brown and Petersen Consistent with Frésard and Salva (2010), I also control for firm size (*SIZE*), and dividends (*DIV*). Firm size might be negatively associated with the cash ratio. Thanks to the economies of scale, larger firms have lower transaction costs for converting a non-cash asset into cash, which can reduce the motive for cash holdings (Mulligan 1997; Bates *et al.* 2009). *DIV* is a dummy variable that is equal to 1 if a firm paid dividends in each year, and 0 otherwise. Paying dividends can reduce cash reserves of a firm. Next, I follow Opler *et al.* (1999), Almeida *et al.* (2004), and Brown and Petersen (2011) and include cash flows (*CF*), net working capital (*NWC*), Tobin's Q (*Q*) and capital expenditure (*CAPEX*). Considering that a certain portion of cash flows is retained as cash holdings, cash flows are associated with cash holdings. Net working capital substitutes cash holdings, implying a negative relation between net working capital and cash holdings. As firms have more investment opportunities proxied by Tobin's Q, they tend to hold more cash. Capital expenditure, as a payment for acquisitions, can reduce cash holdings. Additional control variables are net new long-term debt (*N_DEBT*), and acquisition (*ACQ*), which could be determinants of corporate cash holdings (Harford *et al.* 2008; Harford *et al.* 2014). The measurements of variables are described in Appendix A.

4 Empirical Results

4.1 Descriptive Statistics

Table 2.1 reports the 25th percentile, mean, median, 75th percentile, and standard deviation for cash holdings, organization capital, and other control variables used in my analyses. Median organization capital (*OC*) is 0.184. Mean sample firm has 0.198 in cash

holdings (*CASH*), which corresponds to $402.72 million given the mean value of the total asset is $2,033.942 million.

[Table 2.1 About Here]

Table 2.2 shows the correlation between the sample variables. I observe that the correlation coefficient between OC and Tobin's Q (*Q*) is significantly positive (0.2545). This result provides an indication that firms with high organization capital may have more investment opportunities. To capture the increased investment opportunities, these firms tend to hold more cash. Consistent with my Hypothesis 1, organization capital (*OC*) and cash holdings (*F1_CASH*) are positively correlated (0.2014) and significant.

[Table 2.2 About Here]

4.2 Impact of Organization Capital on Corporate Cash Holdings

In Table 2.3, I rank all observations into 10 groups based on the magnitude of organization capital in each year between 1987 and 2016. The results in Table 2.3 present that the level of median cash holdings is greater as organization capital increases. The median cash ratio of the group with the lowest organization capital is 0.0663 as opposed to 0.2899 for the group with the highest organization capital. Consistent with my Hypothesis 1, firms with high organization capital are more likely to build cash holdings.

[Table 2.3 About Here]

To check Hypothesis 1 empirically, I conduct the following regression:

$$CASH_{i,t+n} = \alpha + \beta\, OC_{i,t} + \lambda\, Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \quad (3)$$

where, for firm i and year t, *CASH* is corporate cash holdings; *OC* denotes organization capital scaled by total book value of assets; *Controls* include cash flows (*CF*), net working capital (*NWC*), Tobin's Q (*Q*), capital expenditure (*CAPEX*), firm size (*SIZE*), dividends (*DIV*), net new long-term debt (*N_DEBT*), and acquisition (*ACQ*). The definitions of variables are given in Appendix A. I also include year fixed effects (*Year*) and industry fixed effects (*Industry*) to account for time and industry trends. Standard errors are heteroscedasticity-robust in all the specifications and are clustered at the firm level.

Table 2.4 shows the empirical results of estimating Equation (3). Column 1 of Table 2.4 presents a significant and positive relationship between organization capital and one-year forward cash holdings, indicating that firms with greater organization capital tend to accumulate more cash holdings. In Columns (2) and (3), I replace one-year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The coefficient of organization capital remains positively significant in Columns (2) and (3), implying that the positive effect of organization capital on subsequent cash holdings is persistent over three years. Based on my empirical results together, I find that organization capital is associated with more corporate cash holdings in the following years, which advocates my Hypothesis 1.

[Table 2.4 About Here]

4.3 Organization Capital and Growth Opportunities

To test whether organization capital varies with growth opportunities, I estimate the following equation:

$$Q_{i,t+n} = \alpha + \beta\, OC_{i,t} + \lambda\, Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \quad (4)$$

where, for firm i and year t, *Q* is Tobin's Q measured as the market value of equity minus the book value of equity plus the book value of total assets; *OC* denotes organization capital scaled by total book value of assets; *Controls* include book value of total assets (*ASSETS*), firm age (*AGE*), profitability (*PROF*), tangibility (*TANG*), and cash flows (*CF*). The variables are defined in Appendix A. Year (*Year*) and industry (*Industry*) dummies are also included to capture yearly and industry fixed effects. Standard errors are estimated with clustered errors at the firm level and are robust to heteroscedasticity.

Table 2.5 reports the empirical relationship between organization capital and growth opportunities. The coefficients of organization capital on subsequent growth opportunities are significantly positive. This evidence lends support to Hypothesis 2, that organization capital is positively associated with growth opportunities.

[Table 2.5 About Here]

4.4 Organization Capital and Cash-Cash Flow Sensitivity

If firms face a higher degree of financial constraints, they tend to have a higher sensitivity of cash holdings to internal cash flow (Almeida *et al.* 2004; Chen & Wang 2012; Erel *et al.* 2015). That is, firms may hold a larger portion of their internal cash flows as cash or cash equivalent to finance their future investment opportunities because of the difficulty in accessing external finance.

In line with this logic, firms tend to become more dependent on internal financing as an increase in organization capital generates difficulties for firms to obtain external sources of finance. To test this prediction, I follow Almeida *et al.* (2004)'s regression model:

$$\Delta CASH_{it} = \beta_0 + \beta_1 CF_{i,t} + \beta_2 CF \times OC_{i,t} + \beta_3 Q_{i,t} + \beta_4 SIZE_{i,t} + \varepsilon_{i,t} \quad (5)$$

where, for firm i and year t, *ΔCASH* is the change in the ratio of holdings of cash and marketable securities to total book value of assets; *CF* denotes cash flows scaled by total book value of assets; *CF* × *OC* is the interaction term between *CF* and *OC*; *Q* stands for Tobin's Q; *SIZE* represents firm size. The definitions of variables are described in Appendix A. All variables are winsorized at both the 1st and 99th percentiles. In my regression, year fixed effects and industry fixed effects are included. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

The impact of organization capital on the sensitivity of cash reserves to cash flows is highlighted in the interaction term, *CF* × *OC*, which is my variable of interest. If my prediction is true, the interaction term will have a significantly positive coefficient. The empirical result of estimating Equation (5) is displayed in Table 2.6. The coefficient of *CF* × *OC* on *ΔCASH* is positively significant, supporting that firms save more cash holdings from internal cash flows as organization capital increases. This is consistent with Hypothesis 3, that an increase in organization capital can lead firms to rely more on internal financing.

[Table 2.6 About Here]

4.5 Organization Capital and the Threat of a Hostile Takeover

Under the threat of a hostile takeover, managers of the target firm could be replaced if shareholders accept a tender offer from a bidder, which would result in acquiring control of the target firm. The threat of being replaced can motivate managers to maximize shareholders' benefits. In this sense, the threat of a hostile takeover is considered one of the strongest corporate governance mechanisms (Shleifer & Vishny 1997; Bertrand & Mullainathan 2003; Atanassov 2013).

Hypothesis 4 suggests that stronger corporate governance disciplines managers and thus, it can weaken the positive relation between organization capital and corporate cash holdings. To empirically test my hypothesis, I run the following regression model:

$$CASH_{i,t+n} = \alpha + \beta_1 OC_{i,t} + \beta_2 OC_{i,t} \times HT_{i,t} + \lambda\, Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \quad (6)$$

where, for firm i and year t, *CASH* represents corporate cash holdings; *OC* is organization capital scaled by total book value of assets; *HT* denotes hostile takeover index from Cain *et al.* (2017); *Controls* include control variables that are described in Equation (3).[20] For *Year*, *Industry*, and standard errors, refer to Equation (3) in Section 4.2.

In Equation (6), the variable of interest is the intersection between organization capital and hostile takeover index (*OC* × *HT*), which captures the influence of a hostile takeover threat on the sensitivity of cash holdings to organization capital. Table 2.7 shows that the coefficients of *OC* × *HT* on subsequent cash holdings are significantly negative, implying that the positive relation between organization capital and cash holdings is weaker for firms with a stronger threat

[20] Hostile takeover index is downloadable at Stephen McKeon's webpage: http://pages.uoregon.edu/smckeon/

of hostile takeover. This is consistent with Hypothesis 4 and proves the disciplining role of the threat of hostile takeover for firms with high organization capital.

[Table 2.7 About Here]

5 Robustness Tests

5.1 Alternative Measures of Organization Capital

Measurement error is a concern in organization capital for the following reasons. SG&A expenditure, which is an essential variable to measure organization capital, cannot account for all parts of organization capital. SG&A expenditure includes some part of organization capital such as employee wages. However, it may not fully indicate certain conceptual elements such as team-work. Furthermore, not all SG&A expenditure contributes directly to organization capital, which we can observe as an example in managerial perks. Following the methodology of Li *et al.* (2017), each firm is annually sorted into decile groups on the basis of the firms' organization capital. This decile variable replaces the absolute value of organization capital in Equation (3). By doing so, the concern of measurement error can be reduced.

The relation between annual decile rank of organization capital (*OC_DECILE*) and corporate cash holdings is presented in Table 2.8. There are significantly positive associations of *OC_DECILE* and subsequent corporate cash holdings, which suggests that Hypothesis 1 is supported when the alternative measure of organization capital is used.

[Table 2.8 About Here]

As a robustness test, I use industry-median adjusted organization capital (*IND_ADJ_OC*) in the following way. In each year, I group all the firms into Fama–French 10 industries. Then,

within each industry, I estimate the industry-median value of organization capital and subtract it from each firm's organization capital. Table 2.9 illustrates a significantly positive relation between organization capital and subsequent growth opportunities, confirming that Hypothesis 2 continues to hold even when measurement error is reduced.

[Table 2.9 About Here]

To measure pure SG&A expenditure, Enache and Srivastava (2017) use Main SG&A calculated by the amount of SG&A expenditure exceeding the sum of advertising and R&D expenditures. Then, they divide Main SG&A into two portions: maintenance and investment. The maintenance portion entails current operations such as office rents. However, the investment portion of Main SG&A is more significantly related to future earnings and organization capital.

In identifying the maintenance portion of Main SG&A, it is necessary to consider that the maintenance portion of Main SG&A supports current revenues. For each firm i, the maintenance portion of Main SG&A is estimated using the following equation:

$$\widehat{Maintenance\_Main\_SGA}_{it} = \hat{\beta}_1 \times REV_{i,t} \quad (7)$$

where for firm i and year t, $\widehat{Maintenance\_Main\_SGA}$ indicates the estimated maintenance portion of Main SG&A; $\hat{\beta}_1$ is the estimated coefficient of β_1 based on the model in Equation (8); and REV denotes total revenues scaled by total book value of assets.

Employing Enache and Srivastava's (2017) model, I estimate firm i's coefficients by running the following industry-year regression:

$$Main\_SGA_{it} = \beta_0 + \beta_1 REV_{i,t} + \beta_2 REV\_DEC_{i,t} + \beta_3 LOSS_{i,t} + \varepsilon_{i,t} \quad (8)$$

where for firm i and year t, $Main\_SGA$ is Main SG&A expenditure calculated by the amount of SG&A expenditure exceeding the sum of advertising and R&D expenditures; REV is defined as total revenues scaled by total book value of assets; REV_DEC is a dummy variable that is equal to 1 if revenues decrease and 0 otherwise; and $LOSS$ denotes a dummy variable that is equal to 0 if income before extraordinary items are greater or equal to zero, 1 otherwise. Firms in the finance industry and the "almost nothing" category in Fama–French 48-industry classification (Fama & French 1997) are excluded.

By using the estimated maintenance portion of Main SG&A ($\widehat{Maintenance\_Main\_SGA}$) obtained in Equation (7), I measure the estimated investment portion of Main SG&A ($\widehat{INV\_Main\_SGA}$) in the equation set forth below:

$$\widehat{INV\_Main\_SGA}_{it} = Main\_SGA_{it} - \widehat{Maintenance\_Main\_SGA}_{it} \quad (9)$$

To apply Enache and Srivastava's (2017) variable, I replace SG&A expenditure in Equation (1) with the investment portion of Main SG&A. Therefore, the modified version of Equation (1) is the following:

$$INV\_OC_0 = \frac{\widehat{INV\_Main\_SGA_1}}{g+\delta_0} \quad (10)$$

where INV_OC_0 denotes the initial value of organization capital using the investment portion of Main SG&A. $INV\_\widehat{Main}\_SGA_1$ is the estimated investment portion of Main SG&A expenditure at time 1. The definitions of g and δ_0 are illustrated in Equation (1).

Based on Equation (10), I obtain the initial value of organization capital using the investment portion of Main SG&A. Then, projected values of organization capital are estimated by using the same methodology in Equation (2). Panel A of Table 2.10 describes the effect of organization capital using the investment portion of Main SG&A (*INV_OC*) on the sensitivity of cash reserves to cash flows. The variable of interest is *CF* × *INV_OC*. If Hypothesis 3 is true, the interaction term will have a significantly positive coefficient. Columns (1) and (2) of Panel A in Table 2.10 show that the coefficient of *CF* × *INV_OC* on $\Delta CASH$ is positive and significant for positive internal cash flow firms, but not for nonpositive internal cash flow firms. These results reveal that as organization capital increases, firms hold more cash reserves from internal cash flows, which is consistent with Hypothesis 3; however, Hypothesis 3 is only supported when firms have positive internal cash flows.

Panel B of Table 2.10 reports OLS regression results based on the same specification in Table 2.7 but replacing the organization capital (*OC*) with *INV_OC*. The key variable of interest is the interaction between organization capital using investment component of Main SG&A expenditure and hostile takeover (*INV_OC* × *HT*). The coefficients of *INV_OC* × *HT* on subsequent cash holdings are negative and significant. These robustness tests are supporting evidence for Hypothesis 4 that the positive association between organization capital and cash holdings is weaker for firms with a stronger threat of hostile takeover.

[Table 2.10 About Here]

5.2 Omitted Variable and Endogeneity Concerns

My results so far bring about concerns about omitted variable and endogeneity problems. These concerns arise from unobservable or omitted variable differences between changing the degree of a firm's organization capital. It can be assumed that the change in these unobservable or omitted variables might affect corporate cash holding decisions. A typical example of endogeneity is a reverse causality problem: managers who have more cash reserves may invest more in organization capital.

To account for the concern of omitted variable and endogeneity, I conduct a two-stage least squares (2SLS) test using the industry-median organization capital as an instrumental variable. This instrument is appealing because it is unlikely to be affected by firm-specific shocks. Hence, using the industry-median organization capital as an instrumental variable can alleviate unobservable or omitted variables bias driven by firm-specific shocks. Column (1) of Table 2.11 indicates that industry-median organization capital has a positive and significant association with a firm's organization capital. In Column (2) of Table 2.11, to alleviate reverse causality concerns due to simultaneity, the dependent variable is measured one year forward. The second-stage regression result shows that the instrumented value of *OC* has a positive and significant impact on subsequent corporate cash holding, implying that my empirical results are maintained using the 2SLS test.

[Table 2.11 About Here]

Using OLS change regressions, I further address the omitted variable and endogeneity problems. OLS change regressions implement yearly changes in the dependent and independent variables, which better explains the incremental influences of organization capital on corporate

cash holdings. By doing so, these influences are estimated after the bias coming from time-invariant omitted variables is removed. The following model is used to estimate OLS change regressions:

$$\Delta CASH_{i,t+1} = \alpha + \beta\, \Delta OC_{i,t} + \lambda\, \Delta Controls_{i,t} + Year + Industry + \varepsilon_{i,t} \qquad (11)$$

where, for firm i, *ΔCASH* denotes the first difference in corporate cash holdings between year t + 1 and the previous year t; *ΔOC* is a change organization capital scaled by total book value of assets in year t from previous year t – 1; *Controls* include control variables which are defined in Appendix A. All control variables are changes in year t from year t – 1. I also include year fixed effects (*Year*) and industry fixed effects (*Industry*). In my tests, standard errors are heteroscedasticity-robust and are clustered at the firm level. To mitigate reverse causality concerns, the dependent variable is measured one year forward.

The results of the change regressions are presented in Table 2.12. The coefficient of change in organization capital is significantly positive for subsequent changes in corporate cash holdings. This result suggests that my finding continues to hold even after mitigating the omitted variable and endogeneity problems.

[Table 2.12 About Here]

5.3 Difference-in-Difference Approach

In this section, I conduct the difference-in-difference (DID) test on how an exogenous shock to organization capital affects corporate cash holdings activities. I use the recent global financial crisis as an exogenous shock that affects financial constraints as well as organization

capital in a significant manner, which should affect a firm's subsequent cash holdings.[21] I first measure the change in organization capital from the pre-shock year (2006) to the post-shock year (2010). Based on the change in organization capital around this event period, I categorize firms into three groups containing the same number of observations. A group with the largest increase in organization capital is constructed as a sample of treatment firms. Two other groups are constructed as a control group of firms. Then, I create the treatment dummy (*Treatment*), which is equal to one if a firm belongs to a treatment group and zero otherwise. Propensity scores are obtained by conducting a probit regression of *Treatment* on all control variables presented in equation (3).

I then proceed to construct pairs through the propensity score matching procedures. Each observation in the treatment group is matched to the observation from the control group with the closest propensity score. I identify 385 unique pairs of treatment–control matches. The results from the probit regressions for the pre-match and post-match samples are shown in Panel A of Table 2.13. Column (2) of Panel A ensures that, after the propensity score matching procedures, no independent variables significantly drive the difference in corporate cash holdings. In Panel B, I compute the differences between the treatment and control firms according to their characteristics. After the propensity score matching procedures, my treatment and control firms have no statistically significant differences in their characteristics, which also ensures that the changes in corporate cash holdings are caused only by the exogenous change in organization capital.

[21] During the peak of the global financial crisis (fourth quarter of 2008), it was difficult for banks to roll over their short-term debt due to a bank run by short-term creditors. For example, new loans to large borrowers decreased by 47%, compared to the 2nd quarter of 2007 (Ivashina & Scharfstein 2010). After the failure of Lehman Brothers in September 2008, a high volume of employee layoffs followed, which can be related to a shock in organization capital.

Panel C of Table 2.13 reports the results from the DID test. The DID estimator is reported in Column (3). The average change in organization capital for treatment group is 0.011, and that for the control group is –0.013. The DID estimator for the subsequent corporate cash holdings is 0.024 and statistically significant at the 5% level. This suggests that an exogenous increase in organization capital could lead a firm to hold more cash reserves.

[Table 2.13 About Here]

5.4 Subsample Analysis

In 2003, the Jobs and Growth Tax Relief Reconciliation Act (JGTRRA) was enacted and applied to tax filings. According to JGTRRA, the tax rates on dividends were reduced and thus dividends were preferred by shareholders, which affected corporate cash holding decisions in 2003. To ensure that my results are not induced by JGTRRA, I exclude observations in the year 2003 and investigate the relation between organization capital and cash holdings. In Columns (1) and (2) of Table 2.14, the positive coefficients of organization capital on subsequent cash reserves are significant, confirming Hypothesis 1.

Furthermore, I also check whether the positive association between organization capital and subsequent cash reserves merely reflects the results from the U.S. financial crisis. Columns (3) and (4) of Table 2.14 present the relation between organization capital and subsequent cash reserves, which remains significantly positive even after excluding observations between 2007 and 2009. Overall, Table 2.14 shows that JGTRRA or financial crisis does not induce my empirical findings.

[Table 2.14 About Here]

5.5 Idiosyncratic Risk

Irvine and Pontiff (2009) find that idiosyncratic risk reflects the volatility of cash flows. In this context, firms with higher idiosyncratic risk are exposed to larger negative cash flow shocks, which increases their precautionary demand for corporate cash holdings.[22] Consistent with this argument, Bates *et al.* (2009) find that a firm's cash reserves tend to be greater when higher idiosyncratic risk is present. In this sense, idiosyncratic risk can be an important determinant of the precautionary motive for cash reserves.

Hence, I include idiosyncratic risk (*IVOL*) as an additional control variable in my baseline regression model.[23] Table 2.15 exhibits that there is a significant and positive relation between *IVOL* and subsequent cash reserves, consistent with the prior literature's argument that firms with higher idiosyncratic risk tend to accumulate more cash holdings. Confirming my main findings, the coefficients of organization capital remain positive and significant, even after accounting for idiosyncratic risk.

[Table 2.15 About Here]

6 Conclusion

In this study, I examine the impact of organization capital on corporate cash holdings from 1987 through 2016. I find that firms with greater organization capital have more cash holdings. My research establishes three channels underlying the positive relationship between organization capital and corporate cash reserves. First, I find a positive influence of organization

[22] Han and Qiu (2007) show that a positive relation between cash flow volatility and cash reserves exists when firms are financially constrained.

[23] Following McLean (2010), I measure idiosyncratic risk by the standard deviation of residuals from a regression of a firm's monthly stock returns on the monthly returns of market index over the previous 36 months.

capital on the growth opportunities of a corporation, which can encourage firms to hold more cash reserves to take advantage of better growth opportunities. Second, I also find that organization capital increases cash-cash flow sensitivity, implying that an increase in organization capital can lead firms to rely more on internal financing. Consequently, greater organization capital requires firms to have more cash holdings. Third, regarding the corporate governance channel, the positive relation between organization capital and corporate cash holdings becomes weaker as the threat of hostile takeover becomes stronger. Taken together, my paper contributes to the literature on the corporate cash holdings by identifying (i) more growth opportunities as well as (ii) more financial constraints for firms with high organization capital and (iii) disciplining role of corporate governance for high organization capital firms.

My findings are consistent when using a two-stage least squares (2SLS) test, change regressions, and the difference-in-difference (DID) test for omitted variables and endogeneity concerns. I continue to find supporting evidence using alternative measures of organization capital such as annual decile rank of organization capital or industry-median adjusted organization capital. When the investment portion of Main SG&A from Enache and Srivastava (2017) is used, the positive relation between organization capital and financial constraints of firms is only significant for firms with positive internal cash flows. Firms with negative internal cash flows show an insignificant association between organization capital and financial constraints of firms.

Based on my finding on the positive effect that organization capital has on corporate cash holdings, my study could provide an insight into why companies in the late 2000s held so much more cash than in earlier years: the high demand for organization capital in today's knowledge-based economy could require companies to have more cash holdings. Regarding potential

agency problems associated with this high level of cash holdings of such firms, I find that the threat of hostile takeover plays a significant disciplining role for such firms. The findings in my paper (i) highlight the precautionary motive for corporate cash holdings and the underlying channels that explain how organization capital and corporate cash holdings are related, and (ii) emphasize a growing importance of the disciplining role of corporate governance for high organization capital firms.

Table 2.1 Univariate Statistics for Sample Firms

Number of obs = 70,317

Variable	*25th Percentile*	*Mean*	*Median*	*75th Percentile*	*Std. Dev*
CASH	0.032	0.198	0.114	0.293	0.217
Q	1.066	2.122	1.474	2.329	1.943
OC	0.033	0.561	0.184	0.702	0.876
SIZE	3.523	5.137	4.986	6.630	2.211
DIV	0.000	0.373	0.000	1.000	0.484
CF	0.001	0.011	0.074	0.124	0.245
NWC	-0.035	0.078	0.062	0.202	0.202
CAPEX	0.018	0.062	0.039	0.078	0.070
N_DEBT	-0.016	0.025	0.000	0.021	0.159
ACQ	0.000	0.020	0.000	0.004	0.056
ASSETS	33.883	2033.942	146.402	757.475	7985.696
AGE	6.000	15.445	11.000	21.000	13.008
PROF	0.030	0.062	0.111	0.173	0.233
TANG	0.085	0.278	0.203	0.408	0.241

Notes:
Table 2.1 indicates summary statistics for variables in this essay. All variables are winsorized at both the 1st and 99th percentiles. The Sample consists of 70,317 firm-year observations from January of 1987 through December of 2016. The variables are defined in Appendix A.

Table 2.2 Correlation Matrix

	F1_ CASH	*Q*	*OC*	*SIZE*	*DIV*	*CF*	*NWC*	*CAPEX*	*N_DEBT*	*ACQ*	*ASSETS*	*AGE*	*PROF*	*TANG*
CASH	1.0000													
Q	**0.3639**	1.0000												
OC	**0.2014**	**0.2545**	1.0000											
SIZE	**-0.2299**	**-0.1849**	**-0.4191**	1.0000										
DIV	**-0.2051**	**-0.0710**	**-0.1724**	**0.3660**	1.0000									
CF	**-0.2737**	**-0.2577**	**-0.3605**	**0.3315**	**0.1859**	1.0000								
NWC	**-0.2456**	**-0.2156**	**-0.0608**	**-0.0743**	**0.0214**	**0.2923**	1.0000							
CAPEX	**-0.2004**	0.0072	**-0.0290**	**0.0226**	**0.0233**	**0.0750**	**-0.1370**	1.0000						
N_DEBT	**-0.0719**	**-0.0141**	**-0.0529**	**0.0662**	**0.0151**	**-0.0100**	0.0003	**0.1495**	1.0000					
ACQ	**-0.1113**	**-0.0407**	**-0.0704**	**0.1369**	**0.0249**	**0.0529**	**-0.0246**	**-0.0820**	**0.3585**	1.0000				
ASSETS	**-0.1004**	**-0.0580**	**-0.1300**	**0.5192**	**0.2238**	**0.0895**	**-0.0995**	-0.0004	**0.0108**	**0.0132**	1.0000			
AGE	**-0.1951**	**-0.1480**	**-0.3478**	**0.3795**	**0.3501**	**0.1636**	**0.1036**	**-0.1018**	**-0.0464**	0.0048	**0.2558**	1.0000		
PROF	**-0.3204**	**-0.2537**	**-0.3578**	**0.3683**	**0.2022**	**0.9059**	**0.2737**	**0.0694**	**-0.0178**	**0.0774**	**0.0942**	**0.1668**	1.0000	
TANG	**-0.4011**	**-0.1828**	**-0.2136**	**0.1796**	**0.1810**	**0.1379**	**-0.1996**	**0.5969**	**0.0683**	**-0.0703**	**0.0696**	**0.0566**	**0.1325**	1.0000

Notes:
All correlations that are significant at the 0.01 level, two-tailed, are bolded. The definitions of variables are described in Appendix A.

Table 2.3 Median Cash Holdings for Organization Capital Deciles

Organization Capital Ranking	Median Organization Capital	Median Cash Holding	Obs.
Lowest	0.0040	0.0663	7,044
2	0.0181	0.0808	7,029
3	0.0359	0.0844	7,035
4	0.0665	0.0910	7,029
5	0.1135	0.0987	7,030
6	0.1918	0.1030	7,035
7	0.3428	0.1220	7,033
8	0.6280	0.1455	7,031
9	1.0938	0.1970	7,033
Highest	2.3919	0.2899	7,018

Notes:
Table 2.3 illustrates the median ratio of cash holdings to total assets for organization capital deciles. The Sample consists of 70,317 firm-year observations from January of 1987 through December of 2016. Observations are annually ranked into 10 groups based on the magnitude of organization capital. The variables are defined in Appendix A.

Table 2.4 Organization Capital and Corporate Cash Holdings

This table shows the results of the pooled OLS regressions of corporate cash holdings on organization capital. In Column (1), one year forward (t+1) cash holdings is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is *OC* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)
Dependent Variable	*CASH*	*CASH*	*CASH*
	(t + 1)	*(t + 2)*	*(t + 3)*
OC	0.0109	0.0083	0.0061
	(4.991)***	(3.601)***	(2.465)**
SIZE	-0.0151	-0.0145	-0.0143
	(-15.034)***	(-13.721)***	(-12.759)***
DIV	-0.0300	-0.0311	-0.0316
	(-9.616)***	(-9.355)***	(-8.923)***
CF	-0.0090	-0.0292	-0.0361
	(-1.135)	(-3.317)***	(-3.810)***
NWC	-0.2167	-0.2100	-0.1992
	(-21.056)***	(-19.071)***	(-16.744)***
Q	0.0235	0.0211	0.0194
	(25.496)***	(21.347)***	(18.052)***
CAPEX	-0.4971	-0.4482	-0.4105
	(-25.209)***	(-21.286)***	(-18.272)***
N_DEBT	0.0296	0.0227	0.0185
	(5.876)***	(4.094)***	(3.232)***
ACQ	-0.4292	-0.3901	-0.3600
	(-30.390)***	(-25.766)***	(-22.360)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	70,317	62,032	54,871
adj. R-sq	0.350	0.340	0.329

Table 2.5 Organization Capital and Growth Opportunities

This table reports the relation between organization capital and growth opportunities. Dependent variable is Tobin's Q (*Q*), which is measured as the market value of equity minus the book value of equity plus the book value of total assets. In Column (1), one year forward (t+1) *Q* is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) *Q* by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is *OC* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Dependent Variable	(1) *Q* *(t + 1)*	(2) *Q* *(t + 2)*	(3) *Q* *(t + 3)*
OC	0.2966 (13.455)***	0.2514 (10.884)***	0.2190 (8.880)***
ASSETS	-0.0001 (-2.572)**	-0.0001 (-2.572)***	-0.0001 (-12.759)***
AGE	-0.0035 (-3.151)***	-0.0024 (-2.072)**	-0.0021 (-1.706)*
PROF	-0.3267 (-1.872)*	-0.3700 (-1.923)*	-0.3310 (-1.632)
TANG	-0.7209 (-7.285)***	-0.6471 (-5.948)***	-0.6506 (-5.499)***
CF	-0.9715 (-8.232)***	-1.0677 (-7.837)***	-1.1018 (-7.538)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	69,534	60,919	53,591
adj. R-sq	0.183	0.184	0.181

Table 2.6 Organization Capital and Cash-Cash Flow Sensitivity

This table illustrates the results for OLS regression estimates of the Equation (5). Dependent variable is *ΔCASH*, which is the change in the ratio of holdings of cash and marketable securities to total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Dependent Variable	*ΔCASH*
CF	-0.0095
	(-0.144)
CF × *OC*	0.2517
	(2.476)**
Q	0.0125
	(8.172)***
SIZE	0.0032
	(2.480)**
Industry fixed effects	Yes
Year fixed effects	Yes
N	53,413
adj. R-sq	0.025

Table 2.7 Threat of a Hostile Takeover

This table presents the effect of a hostile takeover on the relation between organization capital and corporate cash holdings. In Column (1), one year forward (t+1) cash holdings is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is the intersection between organization capital and hostile takeover (*OC* × *HT*). The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)
Dependent Variable	*CASH*	*CASH*	*CASH*
	(t + 1)	*(t + 2)*	*(t + 3)*
OC	0.0116	0.0081	0.0066
	(4.299)***	(2.879)***	(2.161)**
OC × HT	-0.0646	-0.0443	-0.0415
	(-2.918)***	(-2.010)**	(-1.806)*
HT	-0.1151	-0.0895	-0.0792
	(-5.080)***	(-3.830)***	(-3.242)***
SIZE	-0.0132	-0.0130	-0.0127
	(-10.991)***	(-10.311)***	(-9.566)***
DIV	-0.0263	-0.0292	-0.0302
	(-7.562)***	(-7.966)***	(-7.746)***
CF	-0.0142	-0.0335	-0.0434
	(-1.665)*	(-3.581)***	(-4.337)***
NWC	-0.2274	-0.2175	-0.2043
	(-19.849)***	(-17.963)***	(-15.864)***
Q	0.0229	0.0202	0.0184
	(23.394)***	(19.405)***	(16.377)***
CAPEX	-0.5372	-0.4825	-0.4423
	(-23.498)***	(-19.806)***	(-17.059)***
N_DEBT	0.0273	0.0218	0.0186
	(4.787)***	(3.543)***	(2.949)***
ACQ	-0.4429	-0.4011	-0.3760
	(-28.926)***	(-24.202)***	(-21.162)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	56,205	50,487	44,878
adj. R-sq	0.355	0.342	0.330

Table 2.8 Annual Decile Rank of Organization Capital

This table presents the robustness test results by using annual decile rank of organization capital. In Column (1), one year forward (t+1) cash holdings is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is *OC_DECILE* defined as annual decile rank based on the level of *OC*. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)
Dependent Variable	*CASH*	*CASH*	*CASH*
	(t + 1)	*(t + 2)*	*(t + 3)*
OC_DECILE	0.0046	0.0037	0.0032
	(6.497)***	(5.020)***	(4.099)***
SIZE	-0.0141	-0.0137	-0.0135
	(-13.497)***	(-12.461)***	(-11.641)***
DIV	-0.0280	-0.0295	-0.0302
	(-8.948)***	(-8.839)***	(-8.499)***
CF	-0.0133	-0.0320	-0.0375
	(-1.708)*	(-3.656)***	(-3.950)***
NWC	-0.2174	-0.2107	-0.1998
	(-21.110)***	(-19.131)***	(-16.807)***
Q	0.0238	0.0213	0.0195
	(25.978)***	(21.679)***	(18.283)***
CAPEX	-0.4968	-0.4480	-0.4108
	(-25.139)***	(-21.235)***	(-18.239)***
N_DEBT	0.0300	0.0235	0.0194
	(5.968)***	(4.235)***	(3.390)***
ACQ	-0.4271	-0.3885	-0.3588
	(-30.241)***	(-25.640)***	(-22.245)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	70,317	62,032	54,871
adj. R-sq	0.351	0.341	0.330

Table 2.9 Industry-Median Adjusted Organization Capital

This table reports the robustness test results by using industry-median adjusted organization capital. Dependent variable is Tobin's Q (*Q*), which is measured as the market value of equity minus the book value of equity plus the book value of total assets. In Column (1), one year forward (t+1) *Q* is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) Q by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is *IND_ADJ_OC* defined as organization capital minus industry-median organization capital in the Fama-French 10 industry classification scheme. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)
Dependent Variable	*Q*	*Q*	*Q*
	(t + 1)	*(t + 2)*	*(t + 3)*
IND_ADJ_OC	0.2792	0.2329	0.1952
	(12.496)***	(9.901)***	(7.748)***
ASSETS	-0.0001	-0.0001	-0.0001
	(-2.348)**	(-2.620)***	(-2.720)***
AGE	-0.0041	-0.0030	-0.0026
	(-3.658)***	(-2.532)**	(-2.185)**
PROF	-0.3443	-0.3860	-0.3479
	(-1.975)**	(-2.009)**	(-1.717)*
TANG	-0.7332	-0.6593	-0.6647
	(-7.409)***	(-6.062)***	(-5.622)***
CF	-0.9829	-1.0792	-1.1170
	(-8.325)***	(-7.923)***	(-7.642)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	69,534	60,919	53,591
adj. R-sq	0.181	0.182	0.179

Table 2.10 Using Investment Component of Main SG&A Expenditure

This table shows OLS regression results based on the same specification in Tables 2.6 and 2.7, but replace the organization capital (*OC*) with *INV_OC*. *INV_OC* is defined as the organization capital using the investment portion of Main SG&A expenditure from Enache and Srivastava (2017). In Panel A, dependent variable is *ΔCASH*, which is the change in the ratio of holdings of cash and marketable securities to total book value of assets. All dependent variables are measured one year forward. In Column (1) of Panel B, one year forward (t+1) cash holdings is a dependent variable. In Columns (2) and (3) of Panel B, I replace one year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is the intersection between organization capital using investment component of Main SG&A expenditure and hostile takeover (*INV_OC* × *HT*). The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Panel A: Cash-Cash Flow Sensitivity

	(1)	(2)
	Positive Internal Cash Flow Firms	Non-positive Internal Cash Flow Firms
Dependent Variable	*ΔCASH*	*ΔCASH*
CF	0.1293	0.4595
	(8.872)***	(2.049)**
CF × *INV_OC*	0.0539	0.1516
	(3.351)***	(0.577)
Q	0.0046	0.0258
	(6.688)***	(3.038)***
SIZE	-0.0006	0.0348
	(-2.265)**	(2.824)***
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	26,651	8,930
adj. R-sq	0.034	0.015

Panel B: Threat of Hostile Takeover

	(1)	(2)	(3)
Dependent Variable	*CASH (t + 1)*	*CASH (t + 2)*	*CASH (t + 3)*
INV_OC	0.0153	0.0136	0.0117
	(3.802)***	(3.369)***	(2.743)***
INV_OC × *HT*	-0.0103	-0.0094	-0.0085
	(-4.906)***	(-4.404)***	(-3.798)***
HT	-0.1290	-0.0956	-0.0828
	(-5.278)***	(-3.934)***	(-3.299)***
SIZE	-0.0161	-0.0157	-0.0157

	(-10.830)***	(-10.269)***	(-9.774)***
DIV	-0.0237	-0.0258	-0.0265
	(-5.475)***	(-5.761)***	(-5.588)***
CF	-0.0340	-0.0509	-0.0580
	(-3.391)***	(-4.825)***	(-5.008)***
NWC	-0.2244	-0.2097	-0.1966
	(-17.212)***	(-15.645)***	(-13.905)***
Q	0.0228	0.0196	0.0179
	(20.974)***	(17.443)***	(14.748)***
CAPEX	-0.5264	-0.4754	-0.4372
	(-21.251)***	(-18.574)***	(-15.999)***
N_DEBT	0.0283	0.0248	0.0177
	(4.249)***	(3.565)***	(2.533)**
ACQ	-0.4676	-0.4218	-0.3887
	(-24.520)***	(-20.810)***	(-17.840)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	36,400	33,354	29,798
adj. R-sq	0.378	0.364	0.351

Table 2.11 Two-Stage Least Squares Regression Analysis

This table exhibits the results of two-stage least squares (2SLS) regression analysis. All dependent variables are measured one year forward. The first stage regression result is presented in Column (1). In the first stage regression, the instrumental variable of organization capital is the industry-median organization capital. In Column (2), corporate cash holding is a dependent variable in the second stage regression. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	1st stage	2nd stage
	(1)	(2)
Dependent Variable	*OC*	*CASH (t + 1)*
IV: Industry Median Organization Capital	0.8086	
	(19.221)***	
Fitted OC		0.1596
		(10.472)***
SIZE	-0.0836	-0.0028
	(-24.303)***	(-1.663)*
DIV	-0.0302	-0.0234
	(-2.808)***	(-6.339)***
CF	-0.8617	0.1226
	(-21.382)***	(7.245)***
NWC	-0.1379	-0.2000
	(-3.434)***	(-16.246))***
Q	0.0623	0.0136
	(14.468)***	(8.552)***
CAPEX	0.1942	-0.5413
	(2.750)***	(-22.830)***
N_DEBT	-0.2177	0.0610
	(-10.435)***	(8.916)***
ACQ	0.0238	-0.4261
	(0.444)	(-26.138)***
Industry fixed effects	Yes	Yes
Year fixed effects	Yes	Yes
N	70,317	70,317
adj. R-sq	0.370	0.118

Table 2.12 Change Regression Analysis

This table provides the results of the pooled OLS change regressions for organization capital and corporate cash holdings. All dependent and independent variables are first differences. The independent variable of interest is *ΔOC* defined as a yearly change in organization capital divided by total book value of assets. A yearly change in cash reserves is a dependent variable which is measured one year forward. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

Dependent Variable	*ΔCASH (t + 1)*
ΔOC	0.0078 (2.693)***
ΔSIZE	-0.0264 (-9.255)***
ΔDIV	0.0033 (1.583)
ΔCF	-0.0001 (-0.026)
ΔNWC	0.0511 (6.510)***
ΔQ	0.0025 (3.825)***
ΔCAPEX	-0.0513 (-4.473)***
ΔN_DEBT	-0.0037 (-1.119)
ΔACQ	0.0382 (5.494)***
Industry fixed effects	Yes
Year fixed effects	Yes
N	55,833
adj. R-sq	0.018

Table 2.13 Difference-in-Difference Analysis

This table indicates results of the difference-in-difference (DID) tests on how exogenous shock in organization capital affect corporate cash holdings. I first measure the change in organization capital from the pre-shock year (2006) to the post-shock year (2010). Based on the change in organization capital around this period, I categorize observations into three groups containing the same amount of observations. Observations with larger increase in organization capital are presented in the top group whereas observations with smaller increase in organization capital are presented in the bottom group. Next, I create the treatment dummy (*Treatment*) which is equal to one if an observation is placed in the top group and zero otherwise. Panel A shows parameter estimates from the probit regressions for the pre-match and post-match groups. Propensity scores are obtained by conducting a probit regression of *Treatment* on all control variables from the baseline regression model in equation (3). I match each observation in the top group (treatment observations) to an observation from other two groups (control observations) with the closest propensity score. If any control observation is matched with multiple treatment observations, I maintain only one pair with the closest propensity score. Panel B describes the univariate comparisons between the treatment and control firms' characteristics. Panel C presents the results of DID test. *CASH(t+1)* is one year forward (t+1) cash holdings. In Panels A and B, the t-statistics are reported in parentheses. In Panel C, standard errors reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles.

Panel A: Pre-match and Post-Match Probit Regressions

	(1) Pre-Match	(2) Post-Match
Dependent Variable	*Treatment*	*Treatment*
SIZE	0.1122 (5.93)***	0.0067 (0.26)
DIV	0.1856 (2.69)***	-0.0648 (-0.65)
CF	-0.7083 (-4.18)***	-0.3074 (-1.20)
NWC	0.1110 (0.52)	0.2822 (0.94)
Q	0.0709 (3.35)***	-0.0034 (-0.12)
CAPEX	0.5546 (1.14)	-0.1151 (-0.17)
N_DEBT	0.2700 (1.30)	0.1547 (0.48)
ACQ	0.1572 (0.31)	-0.0697 (-0.09)
Industry fixed effects	Yes	Yes
N	1,822	770
Pseudo R-sq	0.047	0.003

Panel B: Differences in Observables

	Pre-Match			Post-Match		
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
	Treatment	*Control*	*Differences*	*Treatment*	*Control*	*Differences*

SIZE	6.485	5.642	0.843***	6.205	6.283	-0.078
DIV	0.484	0.353	0.131***	0.438	0.470	-0.032
CF	0.040	0.039	0.001	0.042	0.061	-0.019
NWC	0.054	0.053	0.001	0.068	0.061	0.007
Q	2.720	2.179	0.541***	2.275	2.272	0.003
CAPEX	0.062	0.056	0.006	0.057	0.060	-0.003
N_DEBT	0.050	0.026	0.024***	0.044	0.037	0.007
ACQ	0.034	0.027	0.007*	0.035	0.034	0.001

Panel C: Differences in Differences Test

	(1) *Mean Treatment Difference (After – Before)*	(2) *Mean Control Difference (After – Before)*	(3) *Mean DiD Estimator (Treatment – Control)*	(4) *T-statistics for DiD Estimator*
CASH (t+1)	0.011 (0.008)	-0.013 (0.007)	0.024 (0.011)	2.181

Table 2.14 Subsample Analysis

This table reports the results of additional tests to ensure the robustness of the regression model specified in Equation (3). The independent variable of interest is *OC* defined as organization capital divided by total book value of assets. In Columns (1) and (2), year 2003 is excluded to be free of any effect of Jobs and Growth Tax Relief Reconciliation Act (JGTRRA). In Columns (3) and (4), all observations between 2007 and 2009 are removed to exclude the effect of the U.S. financial crisis. In Columns (1) and (3), one year forward (t+1) cash holdings is a dependent variable. In Column (2) and (4), I replace one year forward (t+1) cash holdings by two-year (t+2) forward. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

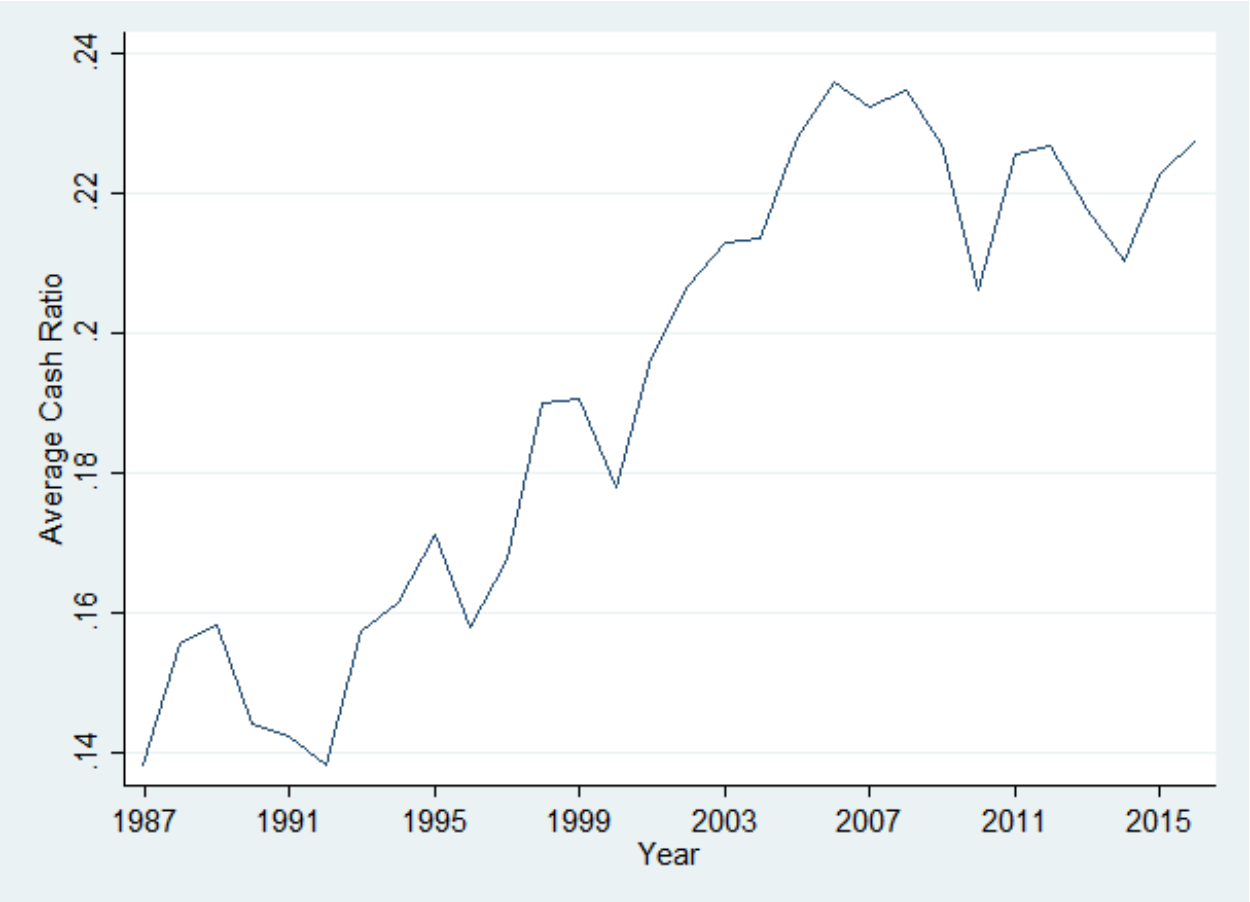
	(1) Excluding Year 2003	(2) Excluding Year 2003	(3) Excluding Years 2007-2009	(4) Excluding Years 2007-2009
Dependent Variable	*CASH* *(t + 1)*	*CASH* *(t + 2)*	*CASH* *(t + 1)*	*CASH* *(t + 2)*
OC	0.0104 (4.809)***	0.0077 (3.386)***	0.0102 (4.642)***	0.0075 (3.236)***
SIZE	-0.0152 (-15.258)***	-0.0146 (-13.834)***	-0.0143 (-14.193)***	-0.0136 (-12.798)***
DIV	-0.0293 (-9.409)***	-0.0302 (-9.123)***	-0.0283 (-8.955)***	-0.0296 (-8.744)***
CF	-0.0088 (-1.116)	-0.0298 (-3.414)***	-0.0110 (-1.352)	-0.0316 (-3.443)***
NWC	-0.2157 (-21.021)***	-0.2085 (-18.985)***	-0.2109 (-20.321)***	-0.2034 (-18.322)***
Q	0.0234 (25.173)***	0.0211 (21.162)***	0.0238 (25.897)***	0.0211 (21.423)***
CAPEX	-0.4897 (-24.920)***	-0.4391 (-20.843)***	-0.4896 (-24.588)***	-0.4460 (-20.954)***
N_DEBT	0.0272 (5.329)***	0.0206 (3.680)***	0.0289 (5.597)***	0.0231 (4.086)***
ACQ	-0.4263 (-30.004)***	-0.3859 (-25.329)***	-0.4273 (-28.882)***	-0.3887 (-24.506)***
Industry fixed effects	Yes	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes	Yes
N	67,807	59,713	62,197	54,477
adj. R-sq	0.348	0.338	0.347	0.335

Table 2.15 Idiosyncratic Risk

This table indicates the OLS regression results after including *IVOL* as an additional control variable. *IVOL* is idiosyncratic risk following McLean (2010), measured by the standard deviation of residuals from a regression of a firm's monthly stock returns on the monthly returns of market index over the previous 36 months. In Column (1), one year forward (t+1) cash holdings is a dependent variable. In Column (2) and (3), I replace one year forward (t+1) cash holdings by two-year (t+2) and three-year (t+3) forward, respectively. The independent variable of interest is *OC* defined as organization capital divided by total book value of assets. The definitions of other variables are described in Appendix A. The sample firm-year observations are from January of 1987 through December of 2016. The t-statistics are reported in parentheses. *, **, and *** denote significance at the 10%, 5%, and 1% (two-sided) level, respectively. All variables are winsorized at both the 1st and 99th percentiles. Standard errors are robust to both clustering at the firm level and heteroscedasticity.

	(1)	(2)	(3)
Dependent Variable	*CASH*	*CASH*	*CASH*
	(t + 1)	*(t + 2)*	*(t + 3)*
OC	0.0098	0.0092	0.0066
	(3.760)***	(3.302)***	(2.225)**
IVOL	0.0069	0.0231	0.0379
	(0.346)	(1.098)	(1.660)*
SIZE	-0.0157	-0.0151	-0.0148
	(-14.350)***	(-12.987)***	(-12.000)***
DIV	-0.0306	-0.0317	-0.0323
	(-9.242)***	(-8.933)***	(-8.508)***
CF	-0.0177	-0.0340	-0.0399
	(-2.111)**	(-3.668)***	(-3.965)***
NWC	-0.2224	-0.2164	-0.2040
	(-20.431)***	(-18.439)***	(-16.032)***
Q	0.0248	0.0222	0.0208
	(24.194)***	(20.206)***	(17.410)***
CAPEX	-0.4925	-0.4403	-0.4039
	(-22.621)***	(-18.934)***	(-16.259)***
N_DEBT	0.0372	0.0242	0.0259
	(6.976)***	(4.038)***	(4.098)***
ACQ	-0.4277	-0.3855	-0.3591
	(-28.265)***	(-23.460)***	(-20.341)***
Industry fixed effects	Yes	Yes	Yes
Year fixed effects	Yes	Yes	Yes
N	61,699	54,453	48,171
adj. R-sq	0.356	0.347	0.336

Figure 2.1 Average Cash Ratio from 1987 through 2016



APPENDIX A

Variable Definitions

Variable	*Definitions*
CASH	Cash ratio, measured as cash and marketable securities divided by book value of total assets.
ΔCASH	The change in the ratio of holdings of cash and marketable securities to book value of total assets over a year.
Q	Tobin's Q, measured as the market value of equity minus the book value of equity plus the book value of total assets.
OC	Organization capital divided by book value of total assets proposed by Eisfeldt and Papanikolaou (2013).
SIZE	Firm size, measured by the natural logarithm of total assets.
DIV	Equal to 1 if a firm paid dividends, 0 otherwise.
CF	Cash flows, proxied as (incomes before extraordinary items + depreciation) / book value of total assets.
NWC	Net working capital, calculated by (current asset − current liabilities − cash and marketable securities) / book value of total assets.
CAPEX	Capital expenditures scaled by book value of total assets.
N_DEBT	Net new long-term debt, estimated by net debt issuance divided by book value of total assets.
ACQ	Acquisition expenses scaled by book value of total assets.
ASSETS	Book value of total assets.
AGE	Firm age, proxied by the number of years listed on Compustat.
PROF	Profitability, calculated by earnings before interest, depreciation, taxes, and amortization divided by book value of total assets.
TANG	Tangibility, estimated by net property, plant, and equipment divided by book value of total assets.
HT	Hostile Takeover Index from Cain *et al.* (2017)
OC_DECILE	Annual decile rank based on the level of *OC*.

IND_ADJ_OC	Industry-median adjusted organization capital, measured as *OC* minus industry-median *OC* under the Fama-French 10 industry classification scheme.
INV_OC	Organization capital using the investment portion of Main SG&A from Enache and Srivastava (2017).
IVOL	Idiosyncratic risk, measured by the standard deviation of residuals from a regression of a firm's monthly stock returns on the monthly returns of market index over the previous 36 months (McLean 2010).

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