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Cash holding and firm value in the presence of managerial optimism

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Abstract: Cash holding is important for Chinese manufacturing firms coping with the increasing cost of financing and stiff market conditions. This study examines the impact of cash holding on the firm value of Chinese manufacturing firms. We find evidence that a non-linear relationship exists between cash holding and firm value in manufacturing firms of China. The study reveals that financially constrained firms having a higher level of cash holding negatively affects the firm value, while the unconstrained firms having a lower level of cash holding positively influences the firm value. Finally, this research is enriched by adopting the novel measure of managerial optimism and reveals the interactive role of cash holding and optimism on firm value. The study concludes that managerial optimism influences the firm's cash holding decisions and this is more costly for unconstrained firms.

Keywords: Cash holding; firm value; managerial optimism; financial constrained

1. Introduction

The increasing trend of corporate cash reserves attracted the attention of researchers and policy-holders in the recent past. Dittmar, Mahrt-Smith, and Servaes (2003a) identified the US $1.5 trillion cash reserves in the world's largest organizations at the end of 1998. Similarly, Bates, Kahle, and Stulz (2009) recognized the US $2 .80 trillion cash reserves in the world's top-1000 non-financial corporations. Likewise, Opler et al. (1999) documented US$1.5 trillion cash reserves in Standard & Poor 500 companies. Additionally, Bates, Kahle, and Stulz (2009) identified the cash holding reserves increased by 46% per annum from 1980 to 2006 in US firms. China is also a major player of liquidity provider in the global market. Since 1996, the M2 of China increased by 75% of the M2 provided by the U.S, Europe, and Japan. In 2009 China's M2 measured in the US dollar has surpassed then that in the US for the first time (Caldentey 2017).

Cash holding is indeed important for Chinese firms, the fast-growing economy but it is also an important underdeveloped financial system where firms face obstacles to raise funds externally. In contrast to the developed countries, the Chinese financial system is less-developed and inherited pronounced agency problems and asymmetric information (Heyman, Deloof, and Ooghe 2003; Morck, Wolfenzon, and Yeung 2005; Vijayakumaran 2017). Cash retention by Chinese firms acquired the significant consideration of academia and business directories. Like Su et al. (2020) noted that Chinese listed companies retain large cash reserves from 1998 to 2001. Similarly, Pinkowitz, Stulz, and Williamson (2004) documented that Chinese companies' cash to assets ratio was 18.9% during 2000-2003. While at the same time, US and UK companies' cash to assets ratio was 8.1% and 9.90% respectively (Ozkan and Ozkan 2004)

The self-financing growth of Chinese firms was 17.8% from 1994 to 2006 and in 2006 it touched 665.6 billion which is almost double the local bank financing (Allen, Qian, and Qian 2007). Likewise, Jigao and Zhengfei (2009) reported that the average cash holding in China was 24% from 1998 to 2007 which was higher than the US Companies in that period. Moreover, the Chinese firms manage the informal credit granted by their vendors to finance growth opportunities (Liu, Wang, and Shou 2020). Further, Ding, Guariglia, and Knight (2013) revealed that Chinese firms retain the funds from operation, use bank financing and trade credit to finance their business operations (Hu, Lian, and Su 2016). Furthermore, Fang, Nofsinger, and Quan (2015) explored that Chinese firms retain more cash to finance business operations due to the imperfect long-term capital market. The lower cost of internal financing enhances the ability of Chinese firms to invest more.

In theory, firms maintain cash for productivity purposes or increase returns to shareholders in the future. Internal cash holding also provides a low-cost financing option for firms (Subramaniam et al. 2011). Keynes and Waeger (1936) argue that internal cash holding reduces the transaction cost of cash holding to readily available funds for business operations. The firms also maintain cash to meet unexpected situations in the future or to finance new investment projects. Likewise, Harford (1999) states that firms having substantial growth opportunities and high uncertainty of future cash flows retain more cash.

On the other hand, the excess cash balance increases the opportunity cost of cash holding such as a lower rate of return on liquidity investment and double taxation which negatively affect the firms' value (Jugurnath, Stewart, and Brooks 2008). Additionally, Faulkender and Wang (2006) explain that additional benefits of cash holding decrease with increasing levels of cash holding. Likewise, Humphery-Jenner and Powell (2011) suggest that cash-rich companies are performing lower than the average industry if they consistently hold cash instead of distributing among shareholders. The firms emphasize to maintain the optimal cash holding level where the cost of cash holding is compensated by the cash holding benefits (Nguyen Thanh 2019). Further, Martínez-Sola, García-Teruel, and Martínez-Solano (2013) explain that manager's essence to set the optimal cash holding level to increase the firm value and deviation from optimal level is negatively affect the firm value. Moreover, Martínez-Sola, García-Teruel, and Martínez-Solano (2013) identify the optimal cash holding level by investigating the nonlinear relationship between cash holding and firm value.

The trade-off theory sets the optimal cash holding level by balancing the marginal benefits and cost of holding (Kraus and Litzenberger 1973). However, the ordering hypothesis suggests that marginal benefits can be maximized by using internal financing (Myers and Majluf 1984). The internal cash flows reduce the agency cost between the capital providers and managers (Hill and Jones 1992). In contrast, the internal cash flows reduce the pressure of external capital providers on managers and management seek their self-interest rather than shareholders (Jensen 1986). Therefore, the firms' marginal benefits of cash holding decrease with higher internal cash holding, and managers choose the projects that set their self-interest than the funds providers. It raises our first research question that does the higher cash holding negatively affect the firm value, while does the lower cash holding positively influence the firm value?

But, what about firms that do not have a sufficient amount of internal cash flows but have an opportunity to raise funds externally at a reasonable cost. Such firms have lower leverage and can adopt external debt financing at a lower cost to invest in positive NPV projects. According to Myers and Majluf (1984), such firms choose debt financing to procure the investment opportunity. But the additional debt financing reduces the marginal benefits of cash holding and promotes the pressure of external capital providers on firm investment decisions. Thus, the reducing level of marginal benefits of cash holding and pressure of external capital providers forces the managers to only invest in the positive NPV projects.

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It raises our second research question that does the lower level of cash holding and opportunity to raise finance externally at a reasonable cost positively influence the firm value?

The recent studies on corporate finance also highlighted the influence of managers' optimism in decisions making process of cash holding. Optimism is a behavioral bias that is widely discussed in the context of managers' psychological beliefs. Nofsinger and Wang (2011) empirically narrate the managerial behavioral biases with corporate finance and explain that managers' behavioral biases influence the firm's decision-making process. Optimist managers are always forecasting positive outcomes and expect better future performance. Optimist managers are confident and presume that assignments under their direction are accomplished well in time and generate a superior return than the actual return (Tran, Tu, and Hoang 2020). Optimists are convinced to overestimate the return of well-performed firms and assume that the market undervalues their securities. They believe that issuance of new equity is costly and the firm prefers debt financing, once internally generated funds have been availed (Huang-Meier, Lambertides, and Steeley 2016; Stephens et al. 2007). In a real situation, this generates agency and asymmetric problems.

Mohamed, Fairchild, and Bouri (2014) explain that a firm's cash flow volatility increases in the existence of optimistic managers. Similarly, Mohamed, Garoui, and Naoui (2020) explain that optimist managers are motivated to invest more with internal financing. Because optimists are confident that external financing is costly than internal cash flows. Further, Mohamed and Shehata (2020), explain that optimists are even unwilling to invest in profit projects with lower internal cash balances. Conversely, the optimist managers are willing to invest more with plenty of internal cash flows and forecast higher future returns. Hence, the optimist invests in overestimated projects (Negative NPV) that unable to generate the appropriate cash flow to offset the financing cost. It raises our third research question that does managerial optimism in financially unconstrained firms enhance the negative effect of cash holding on firm value and cash-constrained firms affect positively?

When the firms do not have adequate internal cash holding and yet in a position to generate finance externally, then optimist managers may likely avail the opportunity of debt financing. But the optimistic overestimates the future return and may invest in negative NPV projects. So, it raises our fourth research question, does a firm has an optimist manager and a lower level of cash holding but the opportunity to raise finance externally create a negative effect on firm value? Therefore, the purpose of this study is to examine the effect of cash holdings on firm value in financially constrained and unconstrained firms. The study also investigates the influence of cash holding on firm value in the existence of managerial optimism in financially constrained and unconstrained firms**.**

2. Literature Review

2.1 Cash Holding and Financial Constraints

Corporate cash holding has increased around the world in recent decades which attracts the attention of investors and researchers. Several research studies examined the sensitivity and consequences of large cash inside the firms (Lins, Servaes, and Tufano 2010; Bates, Kahle, and Stulz 2009; Han and Qiu 2007). Opler et al. (1999) argued that firms are maintaining cash for transaction motives and precautionary motives to fulfill unforeseen needs particularly when external financing is costly. Further, Orr and Miller (1966) stated that any factors that negatively affect the consistency of cash flows from business operations may stimulate the firms to maintain a target level of cash as insurance against the risk of uncertainty for future cash flows.

The plethora of research recognized that firms retain cash to run routine business operations and for investment purposes (Adrian et al. 2012; Baum et al. 2008; Dae Mello,

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Krishnaswami, and Larkin 2008; Dittmar, Mahrt-Smith, and Servaes 2003b). Almeida, Landsberg, and Sands (2004) empirically investigated that financially constrained firms hold more cash than unconstrained firms to take the profitable opportunity. Similarly, Khatami, Marchica, and Mura (2015) revealed that cash holding in constrained firms is used to overcome the underinvestment problem. Additionally, Denis and Sibilkov (2010) outlined that internal cash holding and capacity to finance externally are important measures of firm financial constraints. The firm internal cash holding is a major source of financing and liquidity for constrained firms. Moreover, Edwards, Schwab, and Shevlin (2016) documented that tax saving policy is implementing in constrained firms by retaining the cash to finance valuable projects.

Kim, Kim, and Woods (2011) analyzed cash holding levels in US firms. The study investigated that financially constrained firms retain excess cash to reduce the cost of external financing and higher uncertainty of future cash flows. Similarly, Opler et al. (1999) revealed that firms have growth opportunity and fluctuating cash flows are preferred to hold excess cash. Likewise, Bigelli and Sánchez-Vidal (2012) studied the cash holding pattern of Italian public and private firms. The study found that cash holding is higher in the public firm to strive the uncertainty of future cash flows and lower effect of the tax rate. Further, Gao, Harford, and Li (2013) pointed out the higher agency cost of capital, and Asker, Farre-Mensa, and Ljungqvist (2015) targeted the asymmetry problem influence the firm to hold more cash.

On the other hand, Harford (1999) explained that cash holding convinces managers to invest in lower value of mergers and acquisitions. Likewise, Faulkender and Wang (2006) investigated that higher cash holding firms receive lower value with increasing level of debt, because value generates by cash may use to pay debt holders rather than shareholders. Additionally, Dittmar, Mahrt-Smith, and Servaes (2003a) found that managers use internal cash holding as a privilege and invest in a project that best suits their self-interest rather than shareholders. Moreover, Opler et al. (1999) investigated that managers may use internal cash holding for increasing control on firms rather than pay a dividend to shareholders. Isshaq, Bokpin, and Onumah (2009) revealed that higher cash holding and rarer investment opportunities may reduce the value of firms because excess cash holding forces managers to overinvest. The firms reduce the agency cost of capital and overinvestment problem by distributing the excess cash among the shareholders (Easterbrook 1984; Jensen 1986; Dittmar, Mahrt-Smith, and Servaes 2003a). Furthermore, Faulkender and Wang (2006) shown that the additional benefits of cash decrease with the increasing amount of cash holding.

Therefore, the financially constrained firms hold cash to reduce the risk of liquidity shortage and expensive external financing. The firms also retain cash to avail the profitable opportunity without approaching costly external financing. But higher cash holding increases the financing and opportunity cost of capital. It also promotes the agency cost of capital which is negatively influenced the firm value. On the other hand, financially unconstrained firms do not need to hold higher cash holding because of generating the cash flows from business operations efficiently. The unconstrained firms have stable cash flows and an ability to finance externally at a reasonable cost. The lower cash holding in unconstrained firms reduces the financing and opportunity cost of capital. It also reduces the firm agency and asymmetric cost of capital. Therefore, we propose our hypothesizes

1- The firm's internal cash holding develops the nonlinear relationship with firm value.

2-The higher cash holding in financially constrained firms may negatively influence the firm value.

3-The lower cash holding in financially unconstrained firms may positively influence the firm value.

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2.2 Managerial Optimism and Cash Holding

Corporate managers are considered rational to take the firm capital budgeting decisions and the decision of cash holding is also assumed unaffected by the personal traits of managers. On contrary, the behavioral finance studies find that managers' traits also affect the financing decisions of an organization. Heaton (2002) predicted that managerial optimism influences the financial and investment policies of the firms. Optimist managers overestimate the project under their supervision and underestimate the uncertainty of outcomes. Further, Campello and Hackbarth (2008); Mohamed, Fairchild, and Bouri (2014); Agarwal, Ben-David, and Yao (2015), and Campello and Graham (2013) explained that managerial optimism performs an essential role in determining the long term financing and investment policies of the firms.

Mohamed, Fairchild, and Bouri (2014) explained that optimist managers invest more with an adequate amount of internal funds and reluctant to finance externally. Also, Huang-Meier, Lambertides, and Steeley (2016) and Deshmukh, Goel, and Howe (2021) argued that optimistic managers prefer to retain cash for investment by paying a lower dividend to shareholders. Such managers forecasted the higher return from the projects and desire to hoard cash for investment opportunities. Similarly, Puri and Robinson (2007) found that optimistic managers may overinvest by overvaluing the cash flows of projects, and underinvest arises with a lower level of internal cash holding. Further, Chen and Lin (2012) theoretically explained that optimists consider that the stock market undervalues their security prices resulting in expensive external financing. In such conditions, optimists use internal cash holding for investment and reduce external financing. Whereas, Wang et al. (2020) proposed two opposite aspects of managerial optimism and firm cash holding. Firstly, in constrained firms optimists retain more cash than rational managers for growth opportunities and avoid external financing. Secondly, in unconstrained firms, optimist managers invest more and their cash usage is higher than the rational managers

Chen & Lin, 2012 found optimist managers in financially constrained firms ignore positive NPV projects because of lower internal cash holding and costly external financing. Likewise, Malmendier and Tate (2015) also revealed that optimist managers in financially constrained firms are more sensitive regarding cash holding and defer the current investment with external financing. Likewise, Huang-Meier, Lambertides, and Steeley (2016) found that optimist managers use internal funding to acquire the growth opportunity and reduce the pressure of external financing. Further, Pikulina, Renneboog, and Tobler (2017) investigated that optimism in financially constrained firms induces the managers to only invest in value-enhancing projects and this optimism positively contributes to the firm value.

On the other hand, Güner, Malmendier, and Tate (2008) investigated that optimistic managers in unconstrained firms have higher capital expenditure, excessive investment in mergers and acquisitions which leads to the overinvestment problem. Under the overinvestment hypothesis, optimism enhances the negative effect of cash holding on firm value because higher cash holding intensifies the overinvestment by investing in value-decreasing projects. Further, Tran, Tu, and Hoang (2020) revealed that optimist managers seek external financing is costly and expect it can reduce shortly by value-generating projects. Consistent with these arguments, Malmendier, Tate, and Yan (2007) noted that optimists overestimate the project cash flows and excite to invest more with the availability of adequate cash holding and opportunity to finance externally.

In brief, managerial optimism influences the financing and investment policy of a firm. Optimistic managers are more cautious about internal cash holding and reluctant to finance externally. In financially constrained firms, optimistic managers may only invest in higher positive NPV projects which may promote the underinvestment problem. This

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underinvestment problem reduces over the period by generating the cash from a positive NPV project and reinvest in some value-enhancing project. While, the financially unconstrained firms, managerial optimism promotes an overinvestment problem by investing in value decreasing projects, which may negatively influence the firm value. It guides that managerial optimism increases the effect of cash holding on firm value.

4- Managerial optimism may increase the effect of cash holding on firm value.

5- In financially constrained firms, managerial optimism may increase the positive effect of cash holding on firm value.

6- In financially unconstrained firms, managerial optimism may increase the negative effect of cash holding on firm value.

3. Data and Methodology

3.1 Data Explanation

The Chinese Stock Market and Accounting Research (CSMAR) data center is used to extract the financial data of listed firms of the Shehzian Stock Exchange (SSE). CSMAR data-house is a more reliable data center in China that provides the data for financial research and analysis. CSMAR datacenter maintains the financial data of 3156 manufacturing firms listed in SSE from 2009-2019. The study organizes the firms which have the complete record of executive earning forecast, corporate governance, and financial characteristics of firms from 2009 to 2019. Finally, we obtain a sample of 1745 firms out of 3156 having the complete dataset of all variables under study from 2009 to 2019. The data is normalized by removing 1% outliers in the whole dataset. Further, Cronbach Alpha statistics is applied to test the data reliability. The Alpha value (0.79) presents that data is normally distributed and reliable for research analysis.

3.2 Variables Explanation

This study aims to analyze the influence of cash holding on firm value in the existence of managerial optimism. The dependent variable Tobin Q is used as a measure of firm value. Tobin Q is a more comprehensive proxy of firm value which reflects stock market value divided by total assets. The Q model is an investment model that can also be used to analyze the investment cash flows sensitivity (Han and Qiu 2007; Mohamed, Fairchild, and Bouri 2014; Lin, Hu, and Chen 2005). The independent variable Cash Holding (CH) is the proxy of firm cash and cash equivalent divided by total assets. The control variables Leverage (LEV), Firm Size (FS) and Sales Growth (SGW) expect to affect the firm value and influence the firm cash holding decisions.

3.3 Corporate Governance Variable

Prior studies explain that the internal structure of corporate governance also significantly influences the firms' cash holding decisions. Malmendier and Tate (2005) explain that an independent board helps to minimize the cash flows sensitivity concerning investment decisions. Similarly, Donnelly and Mulcahy (2008) predict that a balance board has an explanatory to set the efficient level of cash holding concerning investment decisions. Mohamed, Fairchild, and Bouri (2014) use corporate governance variables like board structure, the board size, board tenure, and board education to detect the influence of cash flow sensitivity on corporate investment decisions. This study also employs corporate governance variables like CEO ownership, independent directors, director tenure, and directors' gender to examine the firm cash holding decisions.

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Table: 1 Variables Description and their Acronym

Variables	Acronym	Estimation	Multicollinearity	
			Tolr	VIF
Firm Value	Tobin Q	Market value of equity +market value of preferred stock+ market value of debt/ divided by book value of assets		
Managerial optimism	M.Opt	actual earnings are less than the forecast earnings	0.89	1.19
Cass Holding	CH	Cash and cash equivalent/total assets	0.87	1.23
Leverage	LEV	Long term debt/ total assets	0.75	1.34
Firm Size	FS	Long term assets/ total assets		
Sales Growth	SGW	Percentage change in annual sales		
CEO Ownership	CEO Own	Total worth of shares held by CEO in a year/ total shares outstanding		
Independent Director	Indept	Dummy variable 1 for independent director in a board and 0 otherwise		
Directors Tenure	Tenure	Directors total time serve in a board		
Gender	M/F	Dummy variable 1 for male and 0 for female		

3.4 Division of Constrained and Unconstrained Firms

The existing studies used numerous statistical techniques and financial measures to enlist the financially constrained and unconstrained firms. For instance, Fazzari, Hubbard, and Petersen (1988), Allayannis and Mozumdar (2004) use cash flow sensitivity to classify financially constrained firms. Further, Whited and Wu (2006) develop a likelihood ratio of six firms and relative industry-specific futures to identify the financially constrained firms. Likewise, Whited (1992) and Almeida and Campello (2007) use the Standard and Poor (S&P) corporate bond rating and Lu and Jhuang (2014) leverage ratio to distinguish the financially constrained from non-constrained firms. This study extends the classification scheme of Ferrando and Ruggieri (2018) to measure the financial constraints for a firm. We develop a more rigorous classification scheme in Table 2 of firm financial characteristics to specific the financial constraints for a firm.

In Table 2, the 244-firms meet the criteria of absolute constrained firms. Absolute constrained, means the firms have negative WCR, positive CHR, above-average DFR, negative change in OCFR, above-average RER, and negative change in DPR. Firms that meet the absolute constrained firms face strict financial conditions to generate finance externally at a higher cost. On the other hand, the 553-firms have fulfilled the criteria of relative constrained firms. The relative constrained firms have a better financial position (positive WCR and below-average DFR) as compared to the absolute constrained firms. The relative constrained firms also face difficulty to raise finance externally at a reasonable cost as it meets the minimum criteria of (negative CHR, above-average RER, and negative change in DPR) of constrained firms. Relative constrained firms have lower cash holding but have an opportunity to raise finance externally to finance the positive NPV projects. In contrast, the 948-unconstrained firms do not face any financial constrained to raise finance externally at a lower cost. The unconstrained firms hold positive WCR, and negative CHR, below average DFR, positive change in annual OCFR, below average RER, and positive change in DPR.

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Table 2 Classification of Constrained and Unconstrained Firms

Total Firms	WCR	CHR	DFR	OCFR	RER	DPR
Absolute Constrained firms						
	≤0	≥0	≥Avg	≤0	≥Avg	≤0
	244	244	244	244	244	244
Relative Constrained firms	≥0	≤0	≤ Avg	≤0	≥Avg	≤0
	553	553	553	553	553	553
Unconstrained firms						
	≥0	≤0	≤ Avg	≥0	≤Avg	≥0
	948	948	948	948	948	948

Working Capital Rate (WCR)= (current assets-current liabilities/sales), Cash Holding Rate (CHR) = (cash and cash equivalent -current debt/ sales), Debt Financing Rate (DFR) = (long term debt/ total assets), Operating Cash Flow Rate (OCFR)= (operating cash flows$_{(t)}$ - operating cash flow$_{(t-1)}$/sales$_{(t)}$) Retain Earning Rate (RER)= (Retain earning/sales) and Dividend Payout Ratio (DPR)= (annual dividend$_{(t)}$-annual dividend$_{(t-1)}$/net income$_{(t)}$)

3.5 Internal forecast and managerial optimism

The study uses managerial optimism as a moderator to examine the influence of cash holding on firm value. The traditional studies DeAngelo, DeAngelo, and Wruck (2002) Wei, Min, and Jiaxing (2011), and Purhanudin and Zakaria (2015) use the executive holding and exercise of stock options to measure the managerial behavioral biases. This study develops a novel technique of earnings forecast errors of each quarter to measure managerial optimism. Firstly, we develop the frequency of firms actual earning and forecasting earning of each quarter from 2009 to 2019. The earning surplus is the result of the actual earning more than the forecast earnings in a quarter, while the earning deficit is the actual earning less than the forecast earnings in a quarter. Managers are considered the optimist if the frequency of earning deficit is repeated three times in a year. The dummy variable creates 1 for earning deficit and 0 for earning surplus in each year. Table 3 shows the actual earning and earning forecast of constrained, relative constrained, and unconstrained firms.

Table 3 Measurement of managerial optimism

Year	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Constrained firms											
Total forecasts	976	976	976	976	976	976	976	976	976	976	976
Deficit forecasts	693	722	745	690	678	736	655	697	733	788	630
Surplus	283	254	231	286	298	240	321	279	243	188	346
Relative Constrained											
Total forecasts	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212	2212
Deficit forecasts	1467	1523	1698	1590	1478	1510	1540	1440	1378	1390	1540
Surplus	745	689	514	622	734	702	672	772	834	822	672
Unconstrained firms											
Total forecasts	3792	3792	3792	3792	3792	3792	3792	3792	3792	3792	3792
Deficit forecasts	2376	2460	2430	2390	2580	2510	2460	2375	2444	2532	2454
Surplus	1416	1332	1362	1402	1212	1282	1332	1417	1348	1260	1338

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3.6 Research Methodology

This research employed econometric techniques to analyze the influence of cash holding on firm value. Firstly, the panel least square regression model in Equation (1) is used to test hypothesizes. Further, the Fixed Effect (FE) is used to control the correlation errors in equation (2). The Hausman test Chi. Sq.Statistics (7.9842) is significant and refers to use Fixed Effect (FE) instead of the Random Effect (RE) method. Moreover, the Generalized Method of Movement (GMM) employs to control the endogeneity problem and robustness of results in equation (3). The endogeneity problem is the result of one or more omitted variables in the equation or measurement errors. The instrument variables of lag regression and lag difference of explanatory variables can be used in GMM to remove the endogeneity problem. Finally, we develop the following econometrics models to test the influence of cash holding on firm value.

1-Panel Least Square Regression Statistics (OLS)

$$\text{Tobin. Q} = \beta_0 + \beta_1(\text{CH}) + \beta_2(\text{CH})^2 + \beta_3(\text{M. Opt}) + \beta_4(\text{CH} \times \text{M. Opt}) + \beta_5(\text{LEV}) + \beta_6(\text{FS}) + \beta_7(\text{GRW}) + \beta_8(\text{X}) + \mu \quad (1)$$

2-Panel Fixed Effect (FE)

$$\text{Tobin. Q}_{i,t} = \beta_0 + \beta_1(\text{CH}_{i,t}) + \beta_2(\text{CH}_{i,t}^2) + \beta_3(\text{M. Opt}_{i,t}) + \beta_4(\text{CH}_{i,t} \times \text{M. Opt}_{i,t}) + \beta_5(\text{LEV}_{i,t}) + \beta_6(\text{FS}_{i,t}) + \beta_7(\text{GRW}_{i,t}) + \beta_8(\text{X}_{i,t}) + \alpha_i + \mu_{i,t} \quad (2)$$

3-Panel Generalized Method of Movement (GMM)

$$\text{Tobin. Q}_{i,t} = \beta_0 + \beta_1(\text{Tobin. Q}_{i,t-1}) + \beta_2(\text{CH}_{i,t}) + \beta_3(\text{CH}_{i,t}^2) + \beta_4(\text{M. Opt}_{i,t}) + \beta_5(\text{CH}_{i,t} \times \text{M. Opt}_{i,t}) + \beta_6(\text{LEV}_{i,t}) + \beta_7(\text{FS}_{i,t}) + \beta_8(\text{GRW}_{i,t}) + \beta_9(\text{X}_{i,t}) \quad (3)$$

where $\text{Tobin. Q}_{i,t-1}$ is an instrument used to remove Endogeneity

Standard: $\text{CH}_{i,t}$, $\text{M. Opt}_{i,t}$, $\text{LEV}_{i,t}$, $\text{FS}_{i,t}$, $\text{GRW}_{i,t}$, $\text{X}_{i,t}$

The vector X in equation (1) and $\text{X}_{i,t}$, in equations (2 and 3) represent all the corporate governance variables.

4. Results and Discussion

4.1 Descriptive Statistics

The descriptive statistics show in Table 4 of the entire sample use in this study to estimates the equation (1)-(3). The mean value of Tobin Q (1.24) and lower standard deviation (0.41) indicate that only a small number of Tobin Q observations deviate from its mean. Similarly, the mean value of CH (0.17) and standard deviation (0.06) indicate that CH values are revolving near their mean value. The mean value of CH (0.17) and median (1.03) indicate that a large number of firms earn a positive rate of returns. The mean values of control variables are LEV (0.54), FS (0.73), and GRW (0.28), while the standard deviation LEV (0.20), FS (0.29), and GRW (0.11) respectively show that control variables maintain positive mean values and lower standard deviation. The mean value of CEO Own (0.003) and maximum value (0.14) indicate that the CEO holds a significant portion of stock option in every year. Likewise, the mean value (3) of independent directors shows that average (3) and maximum (6) independent directors are employed in a company respectively. Similarly, the mean value of Tenure (3.49) guides that on average three and half years a director serves on the company board. While the mean value of Gender (3) shows that on average 3-male directors and 1-female director are working on a company board.

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Table 4 Descriptive Statistics of the whole sample

Variables	Observation	Mean	Median	Maximum	Minimum	Std,Dev
Firm Data						
Tobin.Q	19195	1.24	1.03	3.46	0.05	0.41
CH	19195	0.17	0.09	0.55	-0.22	0.06
M.Opt	19195	7.78	4.00	1.00	0.00	3.24
LEV	19195	0.54	0.41	0.98	0.19	0.20
FS	19195	0.73	0.55	0.94	0.53	0.29
GRW	19195	0.28	0.16	0.58	-0.04	0.11
Corporate Governance data						
CEO Own	12450	0.003	0.00	0.14	0.00	0.01
Indept	6235	3.00	1.00	6.00	0.00	0.27
Tenure	19195	3.49	2.07	11.0	0.02	0.35
Gender	19195	3.00	1.87	5.00	2.00	0.41

Table 5 represents the result of descriptive statistics of absolute constrained, relative constrained and unconstrained firms. In absolute constrained firms, the mean value of Tobin Q (1.07) is significantly different from the mean values of Tobin Q (1.16) in relative constrained and Tobin Q (1.23) in unconstrained firms respectively. Similarly, the median values of Tobin Q (1.01) in absolute constrained firms, (1.04) in relative constrained and (1.10) unconstrained firms are also significantly different from each other. Likewise, the maximum values of Tobin Q (2.45) in absolute constrained is significantly different from the mean values of Tobin Q (3.15) in constrained and (3.46) in unconstrained firms. The higher values of Tobin Q in unconstrained firms guide that stocks of unconstrained firms are traded at a higher price in the market as compared to constrained firms. It indicates that unconstrained firms can issue new stock in the market to raise finance externally at a reasonable cost.

In constrained firms, the mean (0.24) and median values (0.13) of CH are significantly higher than the mean (0.18) and median values (0.08) of CH in relative constrained, the mean (0.15) and median values (0.09) in unconstrained constrained firms respectively. The higher mean value of CH in constrained firms explains that constrained firms maintain higher cash holding to run business operations. The mean values of M.Opt (6.52) in absolute constrained and M.Opt (7.13) in relative firms are not quite different from each other's but the mean value of M.Opt (8.33) in unconstrained firms is slightly higher. It indicates that managers are more optimists in unconstrained firms than the absolute constrained and relatively constrained firms. In an absolute constrained firm, the mean values of control variables (LEV; 0.79, FS; 0.81 and GRW; 0.18) are not quite different from the mean values of (LEV; 0.69, FS; 0.71 and GRW; 0.22) relative constrained firms. However, the mean values of control variables (LEV; 0.48, FS; 0.73 and GRW; 0.33) in unconstrained firms are significantly different from absolute constrained and relatively constrained firms. It indicates that unconstrained firms have lower leverage, large in size, and higher growth than absolute constrained and relative constrained firms.

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Table 5- Descriptive Statistics of Absolute Constrained and Unconstrained Firms

Variables	T.Q	CH	M.Opt	LEV	FS	GRW	CEO Own	Indept	Tenure	Gender
Absolute Constrained										
Observations	2684	2684	2684	2684	2684	2684	1680	1070	2684	2684
Mean	1.07	0.24	6.52	0.79	0.81	0.18	0.002	2.53	3.03	4.00
Median	1.01	0.13	4.45	0.65	0.56	0.05	0.001	1.78	2.43	2.00
Maximum	2.45	0.23	1.00	0.98	0.94	0.19	0.050	4.00	7.00	5.00
Minimum	0.06	-0.22	0.00	0.55	0.53	-0.04	0.00	0.00	0.50	2.00
Relative Constrained										
Observations	6083	6083	6083	6083	6083	6083	3458	1940	6083	6083
Mean	1.16	0.18	7.13	0.69	0.79	0.22	0.003	3.50	4.45	3.00
Median	1.04	0.08	4.67	0.54	0.58	0.06	0.001	2.00	3.09	2.00
Maximum	3.15	0.32	1.00	0.86	0.87	0.32	0.000	6.00	7.00	4.00
Minimum	0.08	-0.15	0.00	0.51	0.57	0.02	0.060	0.01	1.30	1.00
Unconstrained	10428	10428	10428	10428	10428	10428				
Observations							7332	3225	10428	10428
Mean	1.23	0.15	8.33	0.48	0.73	0.33	0.005	3.69	3.76	3.45
Median	1.10	0.09	5.81	0.39	0.61	0.21	0.003	2.78	3.00	2.98
Maximum	3.46	0.55	1.00	0.65	0.81	0.58	0.14	6.00	11.0	5.00
Minimum	0.05	0.03	0.00	0.20	0.58	0.10	0.00	1.00	1.00	0.03

The corporate governance variables, the mean values of (CEO Own; 0.002, Indept; 2.53; Tenure; 3.03 and Gender; 4) in absolute constrained firms and the mean of (CEO Own; 0.003, Indept; 3.50; Tenure; 4.45 and Gender; 3) in relatively constrained firms are not significantly different to each other. But the mean values of (CEO Own; 0.005, Indept; 3.69; Tenure; 4.76 and Gender; 3.45) are significantly different to the remaining two groups. The median, maximum, and minimum values of all variables also clearly report in Table 5 to understand the description of the entire dataset of all variables. The results are consistent with the studies of Deshmukh, Goel, and Howe (2021), Ding, Guariglia, and Knight (2013) Bigelli and Sánchez-Vidal (2012), and Denis and Sibilkov (2010) respectively.

4.2 Pearson Correlation Matrix

In Table 6, the upper part represents the correlation among the variables in absolute constrained firms while the lower part presents the correlation among the variables in relatively constrained firms. In contrast, Table 7 represents the correlation among the variables in financially unconstrained firms. A significant negative correlation finds between Tobin Q and CH (-0.41) in absolute constrained and relatively constrained (-0.33) firms respectively. In contrast, in Table 7 a significant positive correlation develops between Tobin Q and CH (0.45) in unconstrained firms. It suggests that an inverse relationship develops between firm value and cash flows. The results are similar to the studies of Almeida and Campello (2007), Denis and Sibilkov (2010), and Faulkender and Wang (2006).

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Table 6 Correlation matrix of financially absolute constrained and relative constrained firms

Variables	Tobin.Q	CH	M.Opt	LEV	FS	GRW	CEO Own	Indept	Tenure	Gender
Tobin.Q	1	-0.41[a]	0.24[a]	-0.25[a]	0.31[a]	0.27[a]	0.16[a]	0.12[a]	0.14[a]	0.17[a]
CH	-0.33[a]	1	0.27[a]	0.17[a]	0.14[a]	0.11[a]	0.14[a]	0.07[a]	0.06	0.08[c]
M.Opt	0.19[a]	0.23[a]	1	0.15[b]	0.10[a]	0.04[b]	0.12[a]	0.16[a]	0.10[a]	0.12[a]
LEV	0.24[a]	0.15[a]	0.13[a]	1	0.20[a]	-0.19[a]	0.17[a]	0.12[a]	0.09[c]	0.07[b]
FS	0.28[a]	0.22[a]	0.17[a]	0.23[a]	1	0.22[a]	0.11[a]	0.14[c]	0.09[a]	0.11[b]
GRW	0.25[a]	0.15[a]	0.09[b]	-0.15[a]	0.18[a]	1	0.12[b]	0.14[b]	0.07[b]	0.10[b]
CEO Own	0.13[a]	0.19[b]	0.14[a]	0.11[a]	0.10[a]	0.17[b]	1	-0.09[c]	0.11[b]	0.07[b]
Indept	0.17[a]	0.13[a]	0.03[a]	0.14[b]	0.09[c]	0.17[c]	0.07[b]	1	-0.06[b]	0.04[b]
Tenure	0.21[b]	0.17[b]	0.11[c]	0.18[b]	0.15[b]	0.14[b]	0.11[b]	0.10[b]	1	0.06[c]
Gender	0.11[a]	0.09[a]	0.06[c]	0.08[c]	0.10[c]	0.07[c]	0.12[c]	0.09[c]	0.11[c]	1

a = significant at 0.01; b = significant at 0.05; c = significant at 0.10

Similarly, the positive correlation finds between Tobin Q and M.Opt (0.24), CH, and M.Opt (0.27) in absolute constrained firms. Likewise, a positive correlation exists between Tobin Q and M.Opt (0.19), CH, and M.Opt (0.23) in relatively constrained firms. In contrast, the Tobin Q and M.Opt (-0.18), CH, and M.Opt (-0.21) are significantly negatively correlated in unconstrained firms respectively. It guides that optimist managers of constrained firms prefer to hold cash and invest in some value-enhancing projects. Whereas in unconstrained firms adequate amount of funds are available for investment, optimist managers overinvest in some value decreasing projects which may negatively influence the firm value. The findings are similar to the study of Faulkender and Wang (2006), Ferrando and Ruggieri (2018), and Huang-Meier, Lambertides, and Steeley (2016).

In absolute constrained firms, control variables are firm FS (0.31) and GRW (0.27) develop the significant positive correlation with Tobin Q. Similarly, in relative constrained firms FS (0.28) and GRW (0.25) are positively associated with Tobin Q. While, in absolute constrained the control variable LEV (-0.25) and Tobin Q are negatively correlated with each other. The negative correlation between leverage and the firm value indicates that constrained firms pay the higher cost of financing to finance the growth opportunity. While in relative constrained firms control variables LEV (0.24) is significantly positively correlated with Tobin Q. It indicates that relative constrained firms still have an opportunity to finance externally for investment in positive NPV projects. The results are consistent with studies of Ferrando and Ruggieri (2018), Khatami, Marchica, and Mura (2015) and Martínez-Sola, García-Teruel, and Martínez-Solano (2013).

In Table 7 the control variables (LEV; 0.33 FS; 0.26 and GRW; 0.29) develop the positive correlation with Tobin Q in unconstrained firms. The positive correlation between LEV and the Tobin Q indicates that unconstrained firms may raise the finance at a reasonable cost to finance the investment opportunity. The corporate governance variables CEO own, Indept, Tenure, and Gender are significantly positively correlated with Tobin Q in constrained, relative constrained and unconstrained firms respectively. The corporate governance variables CEO own, Indept, Tenure, and Gender also develop the significant correlations with the firm cash holding. It indicates that firm internal management also influences the firm cash holding decisions and investment policy.

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Table 7 Correlation matrix of financially unconstrained firms

Variables	Tobin.Q	CH	M.Opt	LEV	FS	GRW	CEO Own	Indept	Tenure	Gender
Tobin.Q	1									
CH	0.45[a]	1								
M.Opt	-0.18[a]	-0.21[a]	1							
LEV	0.33[a]	0.15[a]	0.13[a]	1						
FS	0.26[a]	0.22[a]	0.17[a]	0.23[a]	1					
GRW	0.29[a]	0.15[a]	0.09[b]	0.15[a]	0.18[a]	1				
CEO Own	0.14[a]	0.16[b]	0.14[a]	0.14[a]	0.11[a]	0.14[b]	1			
Indept	0.16[a]	0.14[a]	0.04[a]	0.13[b]	0.11[c]	0.15[c]	0.09[b]	1		
Tenure	0.22[b]	0.15[b]	0.12[c]	0.16[b]	0.14[b]	0.13[b]	0.09[b]	0.11[b]	1	
Gender	0.12[a]	0.10[a]	0.07[c]	0.05[c]	0.09[c]	0.08[c]	0.11[c]	0.08[c]	0.12[c]	1

a = significant at 0.01; b = significant at 0.05; c = significant at 0.10

4.3 Regression Analysis

The regression analysis of OLS, FE, and GMM present in Table 8 to reveal the influence of cash holding on firm value in financially constrained and unconstrained firms by using the equation (1)-(3). The CH^2 square term of CH has been developed to find out the nonlinear relationship between firm value and cash flows. The CH^2 develops a significant negative relationship with Tobin Q in absolute constrained, relative constrained and unconstrained firms in OLS, FE, and GMM respectively. The negative effect of CH^2 on Tobin Q guides that cash flows develop the nonlinear relationship with the firm value which supports our hypothesis 1. The explanatory variable CH (-0.041 in OLS), (-0.040 in FE), and (-0.033 in GMM) significantly negatively influences firm value in absolute constrained firms as proposed in hypothesis 2. The absolute constrained firms higher cash holding and costly external financing. The higher cash holding increases the opportunity and financing cost of cash holding which is negatively influenced firm value.

In unconstrained firms, CH (0.043 in OLS), (0.034 in FE), and (0.031 in GMM) significantly positively influence the firm value as proposed in hypothesis (3). The unconstrained firms can finance externally at a lower cost and do not accumulate large cash for investment opportunities. The lower cash holding reduces the opportunity and asymmetric cost of capital, which positively influences the firm value. Further, in relative constrained firms, CH (0.034 in OLS), (0.030 in FE), and (0.028 in GMM) develop a significant positive impact on firm value. Relative constrained firms maintain lower cash holding and the opportunity to finance externally at a reasonable cost. The lower cash holding reduces the financing and opportunity cost of capital which positively influences firm value as point-out in our second research question. The CH has strong explanatory power to explain the firm value. The results suggest that a robust and significant relationship exists between internal funds availability and firm value. The results are consistent with the study of Gao, Harford, and Li (2013), Kim, Kim, and Woods (2011), Denis and Sibilkov (2010), Almeida and Campello (2007), and Faulkender and Wang (2006).

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Table 8 Relationship between Cash Holding and Value of Firms

Dep Variable	Absolute Constrained			Relative Constrained			Unconstrained		
Tobin.Q	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
CH	-0.041[a]	-0.040[a]	-0.033[a]	0.034[a]	0.030[a]	0.028[a]	0.043[a]	0.034[a]	0.031[a]
CH^2	-0.041[a]	-0.032[a]	-0.031[a]	-0.043[a]	-0.041[a]	-0.039[a]	-0.038[a]	-0.037[a]	-0.029[a]
LEV	-0.023[a]	-0.018[a]	-0.017[a]	0.021[a]	0.020[a]	0.020[a]	0.041[a]	0.038[a]	0.031[a]
FS	0.031[a]	0.028[a]	0.022[a]	0.027[a]	0.023[a]	0.018[b]	0.034[a]	0.029[a]	0.021[b]
GRW	0.067[a]	0.065[a]	0.051[a]	0.071[a]	0.067[a]	0.051[a]	0.066[a]	0.061[a]	0.051[a]
CEO Own	0.003[a]	0.003[a]	0.001[a]	0.005[a]	0.003[b]	0.002[b]	0.004[a]	0.003[b]	0.001[c]
Indept	0.006[b]	0.005[b]	0.003[b]	0.004[b]	0.004[b]	0.002[c]	0.005[a]	0.003[c]	0.002[c]
Tenure	0.004[a]	0.004[b]	0.001[c]	0.003[a]	0.002[b]	0.002[c]	0.005[a]	0.004[a]	0.001[b]
Gender	0.003[a]	0.002[a]	0.001[b]	0.004[a]	0.003[b]	0.003[b]	0.002[a]	0.002[b]	0.001[c]
R-Square	0.32	0.27		0.29	0.23		0.33	0.28	
Arelano									
Band			-2.291[a]			-2.224[a]			-2.238[a]
1st Order			-0.636[a]			-0.987[a]			0.658[a]
2nd Order									

a = significant at 0.01; b = significant at 0.05; c = significant at 0.10

The study also analyzes the cash holding in the existence of managerial optimism on firm value in Table 9. Managerial optimism M.Opt (0.041 in OLS), (0.032 in FE), and (0.031 in GMM) significantly positively influences the firm value in absolute constrained firms. Similarly, in relative constrained firms, managerial optimism M.Opt (0.040 in OLS), (0.039 in FE), and (0.034 in GMM) develops a significant positive effect on firm value. While, the firm value is significantly negatively influenced by the managerial optimism M.Opt (-0.031 in OLS), (-0.030 in FE), and (-0.029 in GMM) in unconstrained firms. It indicates that managerial optimism also significantly influence the firm value as proposed in hypothesis 4.

To check whether managerial optimism plays a moderating role, we use the interaction term of (M.Opt × CH) to examine the influence of cash holding on firm value. The interaction term of (M.Opt ×CH; 0.072 in OLS, 0.069 in FE, and 0.065 in GMM) positively influences the firm value in absolute constrained firms as proposed in hypothesis (5). Similarly, in relative constrained firms interaction terms (M.Opt ×CH; 0.064 in OLS, 0.054 in FE, and 0.052 in GMM) enhances the significant positive effect on firm value. While in unconstrained firms, the interaction term of (M.Opt×CH; -0.043 in OLS, -0.041 in FE, and -0.036 in GMM) enhances the significant negative effect on firm value as proposed in hypothesis (6). The results are consistent with the studies of (Malmendier and Tate 2005; Lin, Hu, and Chen 2005; Huang-Meier, Lambertides, and Steeley 2016; Campello and Graham 2013).

Optimistic managers are more cautious about the internal cash holding of a firm and reluctant to finance externally. In cash-rich firms, managerial optimism promotes an over-investment problem by investing in value decreasing projects, which may negatively influence the firm value. While in cash-constrained and relative constrained firms, optimism managers may only invest in higher positive NPV projects which may promote the underinvestment problem. This underinvestment problem reduces over the period by generating the cash from a positive NPV project and reinvest in other value-enhancing projects. We also add some corporate governance variables and examine that firm governance structure also significantly affects the firm cash holding policy. The corporate governance variables CEO Own, Indept, Tenure, and Gender in absolute constrained and relative constrained firms develop the significant positive association with Tobin Q. Likewise, in

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unconstrained firms, the corporate governance variables Indept, Tenure, and Gender develop the significant positive association with Tobin Q. While, in unconstrained firms, CEO own (CEO Own; -0.004 in OLS, -0.002 in FE and -0.001 in GM) develops the significant negative association with Tobin Q. It guides that in unconstrained firms, optimist managers may invest more in options to earn a higher return which may negatively influence the firm value. Further, the control variables also significantly influence the firm value which indicates that our model is correctly specified for estimation.

Table 9 Managerial Optimism, Cash Holding and Firm Performance

Dep Variable	Absolute Constrained			Relative Constrained			Unconstraine		
Tobin.Q	OLS	FE	GMM	OLS	FE	GMM	OLS	FE	GMM
CH	0.058[a]	0.050[a]	0.047[a]	0.051[a]	0.049[a]	0.043[a]	-0.039[a]	-0.037[a]	-0.034[a]
M.Opt	0.041[a]	0.032[a]	0.031[a]	0.040[a]	0.039[a]	0.034[a]	-0.031[a]	-0.030[a]	-0.029[a]
CH*M.Opt	0.072[a]	0.069[a]	0.065[a]	0.064[a]	0.054[a]	0.052[a]	-0.043[a]	-0.041[a]	-0.036[a]
LEV	0.024[a]	0.022[a]	0.019[a]	0.052[a]	0.046[a]	0.037[a]	-0.040[a]	-0.037[a]	-0.033[a]
FS	0.032[a]	0.028[a]	0.023[a]	0.028 [a]	0.024 [a]	0.022[a]	0.033 [a]	0.031[a]	0.027[a]
GRW	0.059[a]	0.055[a]	0.052[a]	0.069[a]	0.063[a]	0.054[a]	0.063[a]	0.060[a]	0.056[a]
CEO Own	0.002[a]	0.001[a]	0.001[a]	0.004[a]	0.003[b]	0.003[b]	-0.004[a]	-0.002[b]	-0.001[c]
Indept	0.006[b]	0.005[b]	0.003[b]	0.003[b]	0.002[b]	0.002[c]	0.005[a]	0.003[c]	0.002[c]
Tenure	0.004[a]	0.004[b]	0.001[c]	0.003[a]	0.002[b]	0.002[c]	0.005[a]	0.004[a]	0.001[b]
Gender	0.003[a]	0.002[a]	0.001[b]	0.004[a]	0.003[b]	0.003[b]	0.002[a]	0.002[b]	0.001[c]
R-Square	0.29	0.025		0.31	0.28		0.33	0.27	
Arelano									
Band			-0.231[a]			-0.253[a]			-0.987[a]
1st Order						0.584[a]			0.786[a]
2nd Order			0.595[a]						

a = significant at 0.01; b = significant at 0.05; c = significant at 0.10

The serial correlation tests under the GMM model in Tables 8 and 9 confirmed that instruments used to estimate the model are valid and correctly specified since we do not reject the null hypothesis of no serial correlation exist in 2nd order in our models. Hence, the instrument variables used to remove the serial correlation are not correlated with the errors in the GMM model and give the most robust results about the endogeneity problem, which is difficult to remove by using the OLS and FE. Therefore, the results estimated under the GMM model are more reliable and robust than the OLS and FE.

6. Conclusions

This study examines the influence of cash holdings on firm value in financially constrained and unconstrained firms. The study finds that cash holding develops a significant nonlinear relationship with firm value (Hypothesis 1). In financially constrained and relative constrained firms, positive cash holding significant negative influences the firm value (Hypothesis 2). While financially unconstrained firms, negative cash holding significantly positively influence the firm value (hypothesis 3). The results guide that financially constrained firms hold higher cash holding which negatively influences the firm value. While financially unconstrained firms maintain lower cash holding which is positively influences the firm value. Further, the study also finds the significant effect of managerial optimism on firm value (Hypothesis 4). In absolute constrained and relative constrained firms, the interaction term of (CH×M.Opt) significantly positively affects the firm value (Hypothesis 5). While interaction term of (CH×M.Opt) in financially unconstrained

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firms significantly negatively influences the firm value (Hypothesis 6). It indicates that firm cash holding decisions are also influenced by managerial optimism biases.

Our results make a unique contribution in generalizing the cash holding in the existence of managerial optimism on firm value. We also explain that how managerial ownership and personal traits of managers influence the firm cash holding decisions. The study can be enriched by using a unique measure of managerial optimism and reveals the interactive role of cash holding and optimism on firm value. This study is original in that it considered the financial and managerial aspects of cash holding separately to understand the role of firm cash level. Further, this research applies the unique structure to segregate the firms in absolute constrained, relative constrained, and unconstrained firms and develops a novel way of measuring managerial optimism to investigate the role of cash flows since the traditional cash level measures do not reflect these futures.

7. Managerial Implications

This study provides important theoretical and managerial implications for manufacturing firms. Theoretical, this study gives evidence that a non-linear relationship exists between cash holding and firm value in manufacturing firms of China. The results indicate that manufacturing firms' cash level can be used as a proxy for internal cash-generating capability. One important finding that role of financial constrained are influenced the long-term cash holding and investment policy of a firm. The study finds that unconstrained firms hold the lower level of cash level which positively influences the firm value. While the financially constrained firms hold the higher cash holding which negatively affects the firm value. One possible explanation that excess cash balance increases the alternative cost of cash holding such as lower rate of return on liquidity investment and double taxation which negatively affect the firms' value. Likewise, the marginal benefits of cash holding decrease with the increasing level of cash holding. The higher cash level increases the discretionary power of managers over the firm investment decisions and managers invest in projects that best suit their self-interest rather than the capital providers.

Practically, this study suggests that constrained firms do not accumulate cash beyond their limit. The company adopts a rational policy about holding cash and proportion of earning distribution among the shareholders. The constrained firms use cash as a financial tool to overcome the financial constrained and invest in the value-enhancing project either to hard cash only for uncertain situations. Further, either base on the traditional explanation of a firm's investment decision, this study also incorporates the behavior corporate finance approach to explain the firm investment policy. Managerial optimism has significant explanatory power. Firstly, equity holders' must be aware of the behavioral biases of CEO and their influence on investment policies. The firm corporate structure should efficiently be design to overcome the behavioral biases of the CEO on firm investment policies. The problem can be minimized to strengthen the board by increasing the independent directors. The stakeholders should encourage the CEO ownership in their firms. This mechanism can help to discipline the firm governance structure for aligning the interest of all stakeholders and minimize managerial irrationality. Finally, now we stop the allegation that investment distortions are only due to firms' internal financial characteristics or market imperfection, or corporate governance mechanisms. Now time to pay attention to managerial behavioral bias and personality characteristics that can also the cause of the under and overinvestment problem.

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