Cash holdings and firm performance relationship: Do firm-specific factors matter?

Jiang Yun, Hassan Ahmad, Khalil Jebran & Sher Muhammad

Published online: 15 Oct 2020.

Submit your article to this journal

Article views: 7029

View related articles

View Crossmark data

Citing articles: 6 View citing articles

Routledge
Taylor & Francis Group

Cash holdings and firm performance relationship: Do firm-specific factors matter?

Jiang Yun, Hassan Ahmad 🆔, Khalil Jebran 🆔 and Sher Muhammad

School of Business Administration, Dongbei University of Finance and Economics, Dalian, China

ABSTRACT

This study shows how the relationship between cash holdings and firm performance is moderated by several firm-specific factors such as state-ownership, corporate governance attributes, family ownership, and ownership concentration. By considering a sample of Chinese firms, this study provides strong evidence that the cash holdings and performance association is significantly moderated by firm-specific attributes. Specifically, this study documented that cash holdings improve the performance of firms having strong corporate governance. Further, family ownership and ownership concentration negatively affect the relationship between cash and performance, while state-ownership positively moderates this relationship. Overall, the findings elaborate that firm-specific attributes are important factors influencing the association between cash holdings and firm performance.

1. Introduction

In recent years, firms around the world have held large amounts of cash to avoid uncertainty and seize growth opportunities (La Rocca & Cambrea, 2019; Megginson et al., 2014). Holding greater liquid assets increases the financial flexibility of firms and helps them to respond to market changes affecting investment and business growth. In order to be more competitive in the dynamic business environment, managers in developed countries prioritise financial flexibility over tax benefits and hence hold more cash (Brounen et al., 2004). However, studies suggest that holding liquid assets, especially cash, may negatively affect the performance of a firm (Huang et al., 2013; Oler & Waegelein, 2011).

The literature addressing the relationship between cash holding and firm performance is still inconclusive. While one stream suggests a positive relationship between cash holding and firm performance (Frésard & Salva, 2010; Kalcheva & Lins, 2007), the other indicates a negative relationship (Huang et al., 2013; Oler & Waegelein, 2011). Although, the relationship between cash holdings and firm performance has

been extensively studied, one cannot ignore the fact that this association can be influenced by several firm-specific factors, such as corporate governance, state ownership, family ownership, and controlling shareholders. This study is an attempt to fill this gap by investigating whether firm-specific factors can influence the cash holdings and performance association.

We examine our core hypotheses using a sample of listed Chinese firms. China's enormous economic growth has been considered a miracle among all other developing economies. In China, state owned enterprises (S.O.E.s) play a vital role in promoting economic growth. S.O.E.'s operations differ in many ways from those of privately-owned firms. For example, the main objective of private firms is to maximise the wealth of shareholders, whereas S.O.E.s not only work for shareholders but also balance the interests of all stakeholders. One more significant difference is the provision of subsidies by the government to S.O.E.s during times of financial distress (Grout & Stevens, 2003). S.O.E.s will be bailed out by the government during times of crisis, but private firms have less options and face liquidation if they underperform (Peng et al., 2016). Private firms have autonomy in every aspect of their decision making, whereas S.O.E.s cannot make decisions without government input, including matters regarding financing, hiring, compensation, business expansion, and contraction are decided by the government (Aharoni, 1981). According to Li et al. (2014), S.O.E.s have advantages over private firms because of soft budget constraints, low cost debt, and economical material prices. Therefore, it is important to study S.O.E.s while studying the microeconomic environment in the Chinese context. This study is an attempt to explore the moderating role of firm-specific factors on the relationship of cash holdings and firm performance in the Chinese context.

This study contributes to the literature on cash holding and corporate governance in several ways. First, our study contributes to literature by indicating that there are several factors that can moderate the association between cash holding and performance. Specifically, our findings explore how state ownership, corporate governance, family ownership, and concentrated ownership are important, yet unexplored factors moderating the effect of cash holding on performance. Therefore, our study contributes to the literature (Frésard & Salva, 2010) by highlighting that the cash holdings and performance nexus is contingent on several factors. Second, we focus on the largest emerging economy. The Chinese economy is still suffering from weak institutional structures, weak investor protection, and high ownership concentration, which makes it an ideal context to study the cash holdings and firm performance nexus while testing the effect of moderating factors related to this unique context, such as family ownership and high ownership concentration. Our study will extend the literature related to emerging economies by investigating the impact of cash holding policies on firm performance and how this relationship is contingent to other factors.

2. Literature review and hypothesis development

Cash holdings became a topic of interest among academics after the introduction of the liquidity preference theory in economics. The literature has discussed several theories on the cash holdings and performance nexus, which include trade-off theory,

pecking order theory, and agency theory of free cash flows. According to trade-off theory, firms consider the trade-off between the costs and benefits of holding cash in order to maximise shareholder wealth (Dittmar et al., 2003). Benefits of holding substantial cash reserves stem from the Liquidity preference theory of Keynes (1936), which suggests three main reasons to hold liquid assets: first, to save future transaction costs and time in liquidating assets; second, to seize future growth opportunities and to save firms from unexpected shocks like financial crisis, and this argument is further supported by studies (Bates, Kahle, & Stulz, 2009; Ozkan & Ozkan, 2004) that suggest firms should invest in liquid assets to avoid future external finance costs; and finally, the speculative reason that suggests that firms increased cash to seize opportunities arising from future macro- or microeconomic policies such as increases in interest rates or decreases in raw material prices. This theory also suggests that firms tend to hold optimal cash by balancing the associated marginal costs and benefits.

The pecking order theory (Myers, 1984; Myers & Majluf, 1984) suggests that asymmetric information between managers and investors makes external financing costly. Therefore, firms should prioritise financing investments through retained earnings, then with safe debt and risky debt, and finally with equity to minimise costs. According to this theory, firms do not have target cash levels, but rather cash is used as a buffer between retained earnings and investment needs.

The free cash flow theory postulated by Jensen (1986) illustrates that managers always try to increase resources (especially liquid assets like cash) under their control to influence financing and investment decisions. Managers are supposed to act as agents of the owners and enhance their wealth, but according to Eisenhardt (1989), managers might pursue personal goals at the expense of shareholders instead of enhancing their wealth. Many studies (Huang et al., 2013; Oler & Waegelein, 2011) argue that holding excess cash can impede performance because cash, as a liquid asset, is easy for entrenched managers to hoard in pursuit of their personal goals (Dittmar & Mahrt-Smith, 2007).

These conflicting arguments make it difficult to determine the nature of the relationship between cash holding and firm performance. Some studies argue that greater financial flexibility and liquidity leads to higher firm performance (Frésard & Salva, 2010). Conversely, other studies explore the downside of holding liquid assets – raising agency costs and inefficient resource management which consequently leads to decreased firm performance (La Rocca & Cambrea, 2019).

The literature further indicates a non-linear relationship between cash holdings and firm performance (Harford et al., 2008), while only discussing the negative and positive impacts of liquidity on firm performance without empirical evidence regarding the moderating role of firm specific and contextual factors. For example, weak corporate governance may give rise to agency problems; thus, managers may use liquid assets, especially cash, for personal gain thereby reducing firm performance. Therefore, after an in-depth analysis of the extant literature, this study proposes the moderating role state ownership, corporate governance attributes, ownership concentration, and family ownership in the relationship between cash holdings and performance.

2.1. Moderating effect of state ownership

Cash holdings in S.O.E.s has attracted considerable research interest. According to Megginson et al. (2014), the Chinese government holds an average of 21.4% of shares in firms, and these firms hold approximately 24.3% of their assets in cash. Boardman and Vining (1989) stated that firms with larger government stakes experience lower productivity and efficiencies compared to their private counterparts. Li et al. (2014), investigating the performance of Chinese S.O.E.s and private firms, indicate that S.O.E.s under perform in terms of return on assets (R.O.A.), return on equity (R.O.E.), and return on sales, and have inefficient labour productivity, while suggesting the cause of poor performance and inefficiency is the policy burden imposed on S.O.E.s by the Chinese government. Goldeng, Grünfeld, and Benito (2008) also reported the poor performance of Norwegian S.O.E.s as compare to private firms. However, some studies, like Heracleous (2001) and Ang and Ding (2006) reported positive results whereby firms owned by the government performed better in terms of R.O.A., R.O.E., and governance. Unlike private firms, S.O.E.s in China have unique features and enjoy special benefits. For example, S.O.E.s are supported by government in equity funding and debt financing, enjoy tax rebates, lower fees (Adhikari et al., 2006), and business expansion which helps to improve their performance (Liu et al., 2018). Hence, we hypothesise that:

> H1. State ownership strengthens the relationship between cash holding and firm performance.

2.2. Moderating effect of corporate governance

Studies have suggested several ways of monitoring management to protect the interests of shareholders (Huang et al., 2013). Especially, liquid assets like cash and cash equivalents need to be protected from entrenched managers and weak monitoring, especially when a firm holds more liquid assets, encourages management entrenchment and raises agency problems (Jensen, 1986). Large cash holdings give managers greater control over the assets of the firm which dissuades them from distributing it to shareholders (Opler et al., 1999). The drawback of holding more cash by reducing dividend pay-outs and opting for expensive external finance is increased agency costs and reduced firm performance (Harford et al., 2008). Therefore, to reduce agency problems and control entrenched managers, shareholders must opt for strong monitoring mechanisms.

In developed systems, standard external governance mechanisms vigorously protect shareholders rights and can force managers to distribute additional cash as dividends. This reduces agency costs and protects firm performance, as managers have limited resources at their disposal to use for personal gain (La Porta et al., 2000). Harford et al. (2008) argue that in developed countries, and especially in the U.S., where shareholders have strong external legal protections, poorly governed firms have underutilised resources. Consequently, weak corporate governance increases agency problems even in an economy where shareholders rights are strongly protected through external governance mechanisms.

Countries with weak external governance mechanisms are expected to have more agency problems due to the entrenchment behaviour of managers. Country-level governance alone cannot reduce agency problems even in developed countries; it is firm-level governance that is most effective in controlling agency problems in developed and underdeveloped countries (Klapper & Love, 2004).

Kalcheva and Lins (2007) highlight that firms with high managerial control over their liquid assets, especially cash, increase agency problems and encourage managers to invest excess cash in negative N.P.V. project, which consequently reduce firms' performance. According to Lee and Lee (2009), firms with strong firm-level governance have lower agency problems and hoard less cash. They further show that firms with strong internal governance utilise excess cash resources efficiently by investing in profitable projects, resulting in higher firm performance. The results indicated that strong corporate governance influences entrenched managers to act in the best interests of shareholders even within weak external governance environments. Thus, we hypothesise that:

H2. Quality of corporate governance strengthens the relationship between cash holding and firm performance.

2.3. Moderating effect of family ownership

Empirical literature on the role of family firms in operating efficiency is still ambiguous and contentious. For instance, Villalonga and Amit (2006) stated that family-owned firms perform better than their counterparts because of fewer agency problems and better alignment between managerial and owners' interests. Conversely, Lemmon and Lins (2003) reported that conflicts of interest between owners and managers leads to poor performance. Several studies provide evidence of the expropriation of minority shareholders in family-owned enterprises due to highly concentrated ownership (Gedajlovic et al., 2012).

Family ownership plays an influential role between cash holding and firm performance. As stated by Ferreira and Matos (2008) firms that have low concentrated family ownership tend to accumulate less cash whereas family-controlled firms, or those having high levels of family ownership, accumulate large amounts of cash (Ozkan & Ozkan, 2004). The controlling shareholders in family firms tend to accumulate more cash for personal benefits, which leads to minority shareholders' expropriation. These conflicting arguments regarding the family role and performance nexus may because of external factors such as the protection of minority shareholder rights or the country's legal and financial systems (Gedajlovic et al., 2012). Weak protections of the rights of minority shareholders encourages controlling shareholders to accumulate large, accessible cash reserves to pursue personal goals. We thus assume that because of dominant family ownership, firms are more likely to hoard large cash holdings for personal gain, which could lead to adverse performance, as reflected in our hypothesis:

H3. Family ownership weakens the relationship between cash holding and firm performance.

2.4. Moderating effect of ownership concentration

Firm growth and wealth maximisation are a function of the efficient allocation of resources. Liquid assets – primarily cash – can be used for quicker personal gain as compared to other assets (Myers & Rajan, 1998). Agency theory offers two core opinions about the role of management in maximising shareholder wealth: First, the alignment hypothesis claims that high insider ownership, combined with effective corporate governance, can maximise shareholder wealth, firm growth, and value (Jensen & Murphy, 1990). Contrary to this view, the entrenchment hypothesis states that high insider ownership negatively affects firm performance. Ozkan and Ozkan (2004) argue that concentrated ownership gives managers control over resources and increases their power to avoid external monitoring mechanisms.

In the Chinese context, the largest shareholder hold 37% of the total shares, and the top 10 shareholders hold 53% of total shares (Wu, 2019). The stock market in China is criticised for extensive insider trading and speculation by controlling shareholders. Several corporate scandals have arisen from principal–principal conflicts, for example the Yin Guang Xia, Lantian, and Zhengzhou Baiwen scandals, where the controlling shareholders expropriated minority shareholder rights through related party transactions and fraudulent financial statements (Hu et al., 2010).

Principal–principal conflicts are characterised by high ownership concentration (La Porta et al., 2000). Chinese firms are also characterised by high ownership concentration, which provide controlling shareholders excessive control rights and offer them the opportunity to hold additional cash (Jebran et al., 2019). Hu et al. (2010) indicates that ownership concentration negatively impacts firm performance, because controlling shareholders interferes in the selection of board directors and supervisors. Therefore, we contend:

> H4. Ownership concentration weakens the relationship between cash holding and firm performance.

3. Data and methodology

We collect firm-level data from the Chinese Stock Market and Accounting Research Database (C.S.M.A.R.). Following prior studies (Jebran et al., 2019; Sun et al., 2017), we exclude firms in the financial and insurance sectors because of their unique capital structures and other firm-level differences. Our final sample consists of 2,575 firms for the period 2003 to 2016. We began our sample from 2003 as the time when S.O.E.s and Non-S.O.E.s were specifically defined in the C.S.M.A.R. database.

3.1. Measurement of dependent variables

Performance measurements refer to the process of measuring the efficiency and effectiveness of the crucial strategic actions of firms (Neely et al., 1995) in managing their resources (Al-Matari et al., 2014). It is impossible to improve a process without measuring its performance as this determines the level of required resources. There are two types of performance measures; one is accounting-based and other is market-

based. Accounting-based measures are considered as efficient when compared with the risk adjusted weighted average cost of capital (Al-Matari et al., 2014) and they measure the performance of a firm over a short time period, unlike market-based measures that are effective over longer periods of time. R.O.A. is an accounting-based measure, gauges the performance of the firm's operating and financial activities (Klapper & Love, 2004). A high R.O.A. indicates the effective and efficient use of the firm's resources to achieve their economic objective to increase the wealth of shareholders (Ibrahim & Samad, 2011). Therefore, this study employs both measures of firm performance (accounting- as well as market-based) to validate our findings, from a short- and long-term time perspective.

The core dependent variable used to measure firm performance is *ROA* – measured as the operating profit divided by total assets.

As a robustness check, we used *ROE* – measured as the net profit divided by shareholders' equity – in combination with two market-based performance measures, Tobin's Q and the Market to Book Ratio (M.T.B.) that reflect the expected future firm performance based on past or current period performance (Shan & McIver, 2011). Tobin's Q is calculated by dividing the market value of assets by the asset replacement cost; a theoretical measure of economic return (Tobin, 1969). As the measurement of replacement cost is difficult, it is replaced by the most similar proxy, which is the book value of assets (Richard et al., 2009; Varaiya et al., 1987). Given this limitation, and following common practice, we have used M.T.B. as the proxy of Tobin's Q to validate our findings (Deb et al., 2017; Richard et al., 2009). M.T.B., as a measure of market-based firm performance, has been used in the literature from both a market value and risk perspective (Ceccagnoli, 2009; Griffin & Lemmon, 2002). M.T.B. includes both accounting- and market-based indicators of performance, thus providing a strong theoretical justification for its use as a performance measure (Bharadwaj et al., 1999; Ceccagnoli, 2009).

3.2. Measurement of independent variables

Following the literature (Harford et al., 2008; Kuan et al., 2012), cash holding is measured as the ratio of cash and cash equivalents divided by total assets. Based on Itzkowitz (2013), we have used another proxy of cash holding for testing robustness. It is measured as the natural logarithm of $1 +$ cash and cash equivalents divided by total assets.

3.3. Measurement of moderating variables

This study used several moderating variables including the corporate governance index. Many individual governance features (including ownership structure, board characteristics, quality of auditors, and supervisory boards) have been used to investigate the individual effects of these factors in a Chinese context (Shan, 2013; Shan & McIver, 2011). These individual factors are unable to capture the overall quality of corporate governance as investors prefer to rank the firm based on a more comprehensive governance index (Brown et al., 2011; Rezaee, 2008).

Table 1. Measurement of corporate governance score.

FGSCORE $= \sum$ Corporate Governance Mechanism

Variable	Description	Literature Support
State Ownership	STATE $_{it}$ — proportion of shares held by the state	Set to 1 if state ownership in firm i in year t is less than the median value of the sample in fiscal year t, otherwise 0 (Gao & Kling, 2008; Kim et al., 2005; Shan, 2013).
Foreign Ownership	FOREIGN $_{it}$ — proportion of shares held by foreign investors	Set to 1 if foreign ownership in firm i in fiscal year t is greater than the median value of the sample in fiscal year t, otherwise 0 (Chen et al., 2006; Shan, 2013; Shan and Xu, 2012)
Board size	BOARDSIZE $_{it}$ — number of directors on the board of directors	Set to 1 if board size in firm i in fiscal year t is greater than the median value of the sample in fiscal year t, otherwise 0 (Pearce & Zahra, 1992; Berghe & Levrau, 2004).
Independent Director	INDP $_{it}$ — number of independent directors on the board	Set to 1 if independent directors ratio in firm i in fiscal year t is greater than the median value of the sample in fiscal year t, otherwise 0 (Shan, 2013; Shan & McIver, 2011; Shan & Xu, 2012).
Supervisory Board	SBSIZE $_{it}$ — number of supervisors on the supervisory board	Set to 1 if supervisor board number in firm i in fiscal year t is greater than the median value of the sample in fiscal year t, otherwise 0 (Ding et al., 2010; Firth et al., 2007).
Big 4 Auditor	BIG4 $_{it}$ — availability of hiring Big Four auditor	Set to 1 if firm i in fiscal year t hires a Big 4 auditor, otherwise 0 (Gao & Kling, 2008; Peng et al., 2016).

Source: Authors formation.

There are many corporate governance indexes described in the literature. For example, G-index, developed by Gompers et al. (2003), is based on 24 shareholder protection factors across five major physiognomies (like state laws, voting limit, delays and limits to takeovers, and management protection). Another governance index developed by Brown and Caylor (2006) consists of seven main governance features and 51 related governance practices, and exposes both internal and external governance practices. Authors assign equal weightings to each factor, indicating that all governance factors are equally important. These concise corporate governance indices are more effective than the measures used by big database services like the Institutional Shareholder Services and Investor Responsibility Research Center.

China's institutional background differs from other economies, hence Shan (2015) has developed a corporate governance index specifically for Chinese firms, consisting of seven key corporate governance variables (as detailed in Table 1). This corporate governance index – *FGSCORE*– was utilised by our study.

The ownership concentration (*OWNCON*) was measured as the percentage of shares held by the controlling shareholders; state ownership (*SOE*) was measured using dummy variables that equal 1 if a firm is state controlled and 0 otherwise; and family ownership (*FAMILY*) was measured likewise based on their classification as a family firm (1 or 0).

3.4. Measurement of control variables

The extant literature (Deb et al., 2017; La Rocca & Cambrea, 2019; Pouraghajan et al., 2012; Sardo & Serrasqueiro, 2018; Wu, 2019), suggests several control variables that can affect firm performance. We included: Leverage (*LEV*) as the total debt divided by total assets; Firm size (*SIZE*) as the natural logarithm of total assets;

Tangibility (*TANG*); and Growth (*GRWT*) as the percentage change in total sales. Lastly, we control for year fixed effects, being unobserved heterogeneity over time, and for industry, being industrial differences, in our sample. The detailed descriptions of all variables have been provided in Appendix 1.

3.5. Model

First, to estimate the model, a static panel data regression is applied. This methodology controls for unobserved firm effects and individual heterogeneity. The estimates of ordinary least squares (O.L.S.) can be misleading, thus a fixed effect model is applied to control unobserved factors. Furthermore, we have applied generalised method of moments (G.M.M.) to avoid the endogeneity problem, as theory states that reverse causality may exist between cash holding and firm performance – high performing firms may hold more cash.

$$FIRM\_PERFORMANCE_{it} = \beta_0 + \beta_1 \ CASH_{it} + \beta_2 \ TANG_{it} + \beta_3 \ LEV_{it}$$
$$+ \beta_4 \ GRWT_{it} + \beta_5 \ SIZE_{it} + \varepsilon_{it}, \qquad (1).$$

The relationship between cash and firm performance cannot be considered as direct and straightforward as depicted by equation (1) as other firm-specific variables play a moderating role. Therefore, we have applied equation (2) which includes all those variables and their mutual interaction of moderating effects.

$$FIRM\_PERFORMANCE_{it} = \beta_0 + \beta_1 \ CASH_{it} + \beta_2 \ SOE_{it} + \beta_3 \ FGSCORE_{it}$$
$$+ \beta_4 \ FAMILY_{it} + \beta_5 \ OWNCON_{it} + \beta_6 \ CASH_{it}$$
$$\times OWNCON_{it} + \beta_7 \ CASH_{it} \times SOE_{it} + \beta_8 \ CASH_{it}$$
$$\times FAMILY_{it} + \beta_9 \ CASH_{it} \times FGSCORE_{it} + \Sigma Control_{it} + \varepsilon_{it}$$
$$(2).$$

4. Results and discussion

4.1. Descriptive statistics

Table 2 reports the descriptive statistics of the variables used in this study. The average R.O.A. in sample firms is 5.28%; mean value of R.O.E. is 5.73%; and average cash holding in Chinese firms is approximately 16.44%, concurring with the extant literature (Jebran et al., 2019; Lian et al., 2011). The mean value of cash holdings suggests that Chinese firms hold a large proportion of assets as cash. S.O.E.s are common among Chinese firms (almost 52% of firms are state controlled). The Chinese business context is also strongly affected by family firms as depicted by the mean value that family-owned firms (approximately 38%). Ownership concentration is also higher in Chinese firms and approximately 38.79% of shares are held by the controlling shareholders. The mean value of asset tangibility suggest that firms hold an average

Table 2. Descriptive statistics.

Variable	N	Mean	SD	P25	Median	P75
ROA	20,605	0.05288	0.06531	0.02801	0.05089	0.08150
ROE	20,365	0.05735	0.14249	0.02717	0.06757	0.11435
MTB	20,605	2.55961	1.94517	1.36621	1.92733	2.98119
CASH	20,605	0.16443	0.13131	0.07229	0.12724	0.21635
SOE	20,406	0.51990	0.49962	0.00000	1.00000	1.00000
FAMLIY	20,605	0.38661	0.48698	0.00000	0.00000	1.00000
FGSCORE	20,605	1.99733	1.38569	1.00000	2.00000	3.00000
OWNCON	20,440	0.38797	0.16095	0.26080	0.37330	0.50510
TANG	20,605	.253923	.1826583	.113661	.220020	.3647033
LEV	20,605	0.46727	0.22192	0.30149	0.46849	0.62390
GRWT	20,587	0.21958	0.59520	−0.02140	0.12328	0.30040
SIZE	20,605	21.8023	1.25651	20.9202	21.6507	22.5161
TOBINSQ	19,417	2.15702	2.01904	.874362	1.546944	2.67812

Note. See Appendix for variable definitions.
Source: Authors formation.

of 25.39% of total assets as tangible assets. The average corporate governance score is 1.99733, and the total score is 6, suggesting that corporate governance quality is low in China based on the attributes included in the governance quality index. The average leverage value is 46.72%. Chinese firm's average sale growth rate is 21.95%. The mean value of Tobin's Q ratio is 2.15, indicating a higher market value of the firm.

4.2. Correlation matrix

Table 3 reports the results of the correlation. The results show that cash holding is positively associated with firm performance. According to the correlation coefficient, state ownership is negatively correlated, while family ownership and ownership concentration is positively related to firm performance. This indicates that firms with high family ownership and higher concentrated ownership present a higher R.O.A. The correlation coefficients indicate positive associations of growth and firm size with firm performance. Conversely, asset tangibility and leverage are negatively associated with firm performance.

4.3. Cash holding and firm performance

Table 4 reports the results of the baseline model (excluding moderating variables using the O.L.S. model). Since the O.L.S. model does not control for individual heterogeneity and firm-specific effects, a fixed-effect model has been applied to mitigate unobserved attributes as a robustness check. Furthermore, the extant literature suggests a reverse causality between cash holdings and performance (suggesting that past performance can affect the cash holdings of the current year), which may result in dynamic endogeneity between cash holdings and firm performance. To mitigate any endogeneity issues, we have used the G.M.M. model, as an additional test.

In Table 4, columns (1), (2), and (3) show the results of the O.L.S., fixed-effect, and G.M.M. models, respectively. Our primary variables show consistent results across all the estimators with no difference in direction and significance level, which suggests there is no problem of endogeneity and our results are robust.

Table 3. Correlation matrix.

Variables	ROA	ROE	CASH	SOE	FGSCORE	FAMILY	OWNCON	TANG	LEV	GRWT	SIZE
ROA	1										
ROE	0.838***	1									
CASH	0.200***	0.169***	1								
SOE	−0.0795***	−0.0533***	−0.146***	1							
FGSCORE	−0.0313***	−0.0266***	−0.122***	0.574***	1						
FAMILY	0.0585***	0.0454***	0.113***	−0.830***	−0.498***	1					
OWNCON	0.123***	0.117***	0.0383***	0.101***	0.0682***	−0.0801***	1				
TANG	−0.0121*	0.0231***	0.0923***	0.0963***	0.0603***	−0.0921***	0.0828***	1			
LEV	−0.264***	−0.179***	−0.449***	0.272***	0.207***	−0.221***	−0.0263***	0.101***	1		
GRWT	0.180***	0.191***	0.00696	−0.0425***	−0.0185**	0.0441***	0.0452***	−0.0591***	0.0617***	1	
SIZE	0.0849***	0.141***	−0.208***	0.281***	0.272***	−0.238***	0.187***	0.0237***	0.399***	0.0253***	1

Note. See Appendix for variable definitions.
***, **, & * denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

Table 4. Effect of cash holding on firm performance.

Variables	(1) ROA OLS	(2) ROA FE	(3) ROA GMM
CASH	0.0467***	0.0346***	0.0204***
	(12.8032)	(7.7330)	(2.8875)
TANG	0.0324***	0.0344***	0.0523***
	(5.4859)	(4.5774)	(3.9324)
LEV	−0.1086***	−0.1428***	−0.1625***
	(−48.4533)	(−44.6856)	(−28.2178)
GRWT	0.0209***	0.0208***	0.0228***
	(30.9249)	(33.3184)	(28.4122)
SIZE	0.0133***	0.0100***	0.0058***
	(34.7897)	(12.3947)	(3.2536)
L.ROA			0.2188***
			(17.3055)
Year	Yes	Yes	Yes
Industry	Yes	No	Yes
Constant	−0.2549***	−0.1469***	3.4652***
	(−24.5866)	(−7.8136)	(5.7280)
R-squared	0.2485	0.1999	
Observations	20,587	20,587	12,760

Note. See Appendix for variable definitions. *T*-statistics in parenthesis.
***, **, & *denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

The results of control variables are in line with prior studies and according to our expectations. Leverage has a negative impact on firm performance. The debt financing is not a suitable option for external financing as the Chinese bond market is poorly developed as compared to other developed countries like the U.S. and U.K. In China, debt financing is easy for S.O.E.s compared to private enterprises because banks are the main source of external financing for S.O.E.s. Growth and assets tangibility have a positive relationship with firm performance. Thus, in China, firms tend to accumulate more cash to avoid the opportunity costs of debt financing. Firm size also has a positive impact on firm performance.

4.4. Empirical results of the moderating effect of firm-specific attributes

Although the net effect of cash holdings on firm performance is positive, there are some firm-specific factors inherent in the internal environment which can influence the direction and intensity of the cash–performance nexus. We report the findings of the moderating variables in Table 5, including corporate governance, family ownership, and ownership concentration.

4.4.1. Moderating effect of state ownership

Column (1) of Table 5 reports the findings regarding the moderating role of S.O.E.s. The coefficient of the interaction term (*CASH**SOE) is positive and statistically significant, depicting that state ownership strengthens the relationship between cash holding and performance. We provide three possible explanation for this relationship. First, this association could be that S.O.E.s are operating in key sectors like construction, power generation, and other important large sectors. Since S.O.E.s are supported

Table 5. Effect of moderating variables.

Variables	(1) ROA FE	(2) ROA FE	(3) ROA FE	(4) ROA FE	(5) ROA FE
CASH	0.0346***	0.0043	−0.0099	0.0678***	0.0484***
	(7.7330)	(0.7716)	(−1.5385)	(11.6417)	(4.8160)
SOE		−0.0257***			
		(−10.7011)			
CASH*SOE		0.0718***			
		(8.7859)			
FGSCORE			−0.0064***		
			(−9.5634)		
CASH*FGSCORE			0.0258***		
			(9.4831)		
FAMILY				0.0222***	
				(10.0146)	
CASH*FAMILY				−0.0691***	
				(−8.8605)	
OWNCON					0.0482***
					(8.1699)
CASH*OWNCON					−0.0382*
					(−1.6463)
TANG	0.0344***	0.0419***	0.0371***	0.0398***	0.0269***
	(4.5774)	(5.5523)	(4.9483)	(5.3032)	(3.5605)
LEV	−0.1428***	−0.1433***	−0.1421***	−0.1430***	−0.1404***
	(−44.685)	(−44.8398)	(−44.5659)	(−44.8708)	(−43.7204)
GRWT	0.0208***	0.0205***	0.0206***	0.0206***	0.0205***
	(33.3184)	(32.8613)	(33.0762)	(32.9886)	(32.7154)
SIZE	0.0100***	0.0107***	0.0103***	0.0104***	0.0088***
	(12.3947)	(13.2487)	(12.8213)	(12.9366)	(10.7048)
Constant	−0.1469***	−0.1552***	−0.1418***	−0.1683***	−0.1365***
	(−7.8136)	(−8.2461)	(−7.5595)	(−8.9304)	(−7.2178)
R-squared	0.1999	0.2070	0.2047	0.2052	0.2047
Observations	20,587	20,388	20,587	20,587	20,422

Note. See Appendix for variable definitions. *T*-statistics in parenthesis.
***, **, & * denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

by government and can secure profitable project biddings in all these sectors ahead of private firms. Second, managers in S.O.E.s are appointed by the government and their promotion depends upon firm performance; therefore, they work in the best interests of the firm and strive to improve performance by using the firm's resources efficiently. Finally, Chinese government introduced split-share reforms to legally facilitate trade in non-tradeable shares, thus improving performance and reducing the negative effects of non-tradeable shares and mitigating agency problems (Tseng, 2012). These reforms, initiated in 2005, were successful and increased the profitability of S.O.E.s. Yu (2013) argues that firms with higher state ownership gain more respect in the market and outperform their counterparts because investor protection in China is low in comparison to other countries, therefore firms with high levels of state ownership enjoy benefits of timely financing and other resourcing support.

4.4.2. Moderating effect of corporate governance
Column (2) of Table 5 presents the moderating role of corporate governance quality. Consistent with the view that strong corporate governance mechanisms reduce agency

problems and increase firm performance, we find that corporate governance significantly moderates the association between cash and performance. The coefficient of the interaction variable (CASH*FGSCORE) is statistically significant and positive illustrating that the role of cash holdings in determining firm performance is expected to vary among firms having different quality levels of governance. According to Lee and Lee (2009), firms with strong firm-level governance have lower agency problems and thus hoard less cash, while utilising their excess cash resources efficiently by investing in profitable projects leading to increased firm performance. The results indicate that strong corporate governance influenced entrenched managers to act in the best interests of shareholders even in weak external governance environments.

4.4.3. Moderating effect of family ownership

Column (3) of Table 5 presents the results of the moderating effect of family ownership. The coefficient of the interaction term (CASH*FAMILY) is negative and statistically significant. This negative result suggests that family ownership attenuates the relationship between cash holding and firm performance. These results concur with previous studies (Kusnadi, 2011) which suggested that controlling shareholders in family firms endeavour to hold more cash in order to expropriate minority shareholders. Those countries where minority shareholders' rights are not protected, as in China, encourage family owners, as controlling shareholders, to hoard excess cash for devious purposes at the expense of minority shareholders which destroys firm performance. As stated by Ferreira and Matos (2008), firms that have low concentrated family ownership tends to accumulate less cash compared to firms with highly concentrated ownership. Firms controlled by family, or those having high family ownership, accumulate large amounts of cash. Overall, we assume that family owners, as controlling shareholders, tend to accumulate cash to increase resources under their control for their own gain, which expropriates minority shareholders.

4.4.4. Moderating effect of ownership concentration

The results of the moderating role of ownership concentration are reported in column (6) of Table 5. The coefficient of the interaction term (CASH*OWNCON) is negative and statistically significant, suggesting that higher ownership concentration results in a weaker performance from cash holdings. Firms with high ownership concentration and cash reserves will experience reduced firm performance due to agency problems related to the entrenchment behaviour of controlling shareholders. High cash reserves in the hands of controlling shareholders can be used for personal gain leading to minority shareholders expropriation.

Additionally, the results for control variables are consistent with our main findings. Specifically, we document the positive effects of tangibility, growth, and size on firm performance. In contrast, we find a negative impact of leverage on firm performance.

4.5. Robustness test using alternative measures of firm performance

For testing the robustness of the results, we used three alternative measures of firm performance: R.O.E., Tobin's Q, and M.T.B. ratio. The results of the three additional

Table 6. Alternative proxy of firm performance.

Variables	(1) ROE FE	(2) ROE FE	(3) ROE FE	(4) ROE FE	(5) ROE FE	(6) TOBINSQ FE	(7) TOBINSQ FE	(8) TOBINSQ FE	(9) TOBINSQ FE	(10) TOBINSQ FE	(11) MTB FE	(12) MTB FE	(13) MTB FE	(14) MTB FE	(15) MTB FE
CASH	0.0545*** (4.8505)	−0.0126 (−0.9068)	−0.0288* (−1.7763)	0.1262*** (8.6398)	0.1394*** (5.5034)	0.6505*** (6.1008)	0.0562 (0.4293)	0.1704 (1.1217)	1.1252*** (8.0377)	1.6675*** (6.9691)	0.6653*** (6.5004)	0.1163 (0.9164)	0.2140 (1.4437)	1.0345*** (7.7539)	1.6304*** (7.0775)
SOE		−0.0498*** (−8.1046)					−0.5907*** (−9.9250)					−0.5656*** (−10.2874)			
CASH*SOE		0.1677*** (8.1875)					1.3057*** (6.6457)					1.1732*** (6.2627)			
FGSCORE			−0.0114*** (−6.7912)					−0.0425*** (−2.6218)					−0.0406*** (−2.6365)		
CASH*FGSCORE			0.0482*** (7.0748)					0.2915*** (4.4417)					0.2629*** (4.2106)		
FAMILY				0.0420*** (7.4349)					0.5476*** (10.0981)					0.4578*** (9.0162)	
CASH*FAMILY				−0.1499*** (−7.6718)					−0.9673*** (−5.2053)					−0.7679*** (−4.2978)	
OWNCON					0.1615*** (10.8833)					0.7695*** (5.3669)					0.7341*** (5.4248)
CASH*OWNCON					−0.2168*** (−3.7268)					−2.8099*** (−5.0856)					−2.6376*** (−4.9580)
TANG	0.0853*** (4.5198)	0.1032*** (5.4207)	0.0907*** (4.8064)	0.0972*** (5.1471)	0.0641*** (3.3762)	−1.6251*** (−9.0208)	−1.4779*** (−8.1484)	−1.5851*** (−8.7912)	−1.5412*** (−8.5605)	−1.6965*** (−9.3489)	−1.5861*** (−9.2258)	−1.4417*** (−8.3294)	−1.5504*** (−9.0087)	−1.5106*** (−8.7840)	−1.6610*** (−9.5893)
LEV	−0.3213*** (−35.3362)	−0.3219*** (−35.3838)	−0.3227*** (−35.3248)	−0.3227*** (−35.5506)	−0.3135*** (−34.4762)	−0.6128*** (−7.8504)	−0.6224*** (−7.9636)	−0.6106*** (−7.8238)	−0.6089*** (−7.8231)	−0.5913*** (−7.5291)	0.4702*** (6.4282)	0.4483*** (6.1208)	0.4741*** (6.4813)	0.4718*** (6.4635)	0.4819*** (6.5458)
GRWT	0.0469*** (29.9002)	0.0460*** (29.2893)	0.0466*** (29.7310)	0.0465*** (29.6394)	0.0457*** (29.0549)	0.1745*** (11.8164)	0.1679*** (11.3652)	0.1734*** (11.7427)	0.1694*** (11.4970)	0.1714*** (11.5551)	0.1832*** (12.8041)	0.1752*** (12.2341)	0.1819*** (12.7098)	0.1787*** (12.5104)	0.1790*** (12.4541)
SIZE	0.0379*** (18.0387)	0.0392*** (18.5179)	0.0385*** (18.2961)	0.0388*** (18.4570)	0.0342*** (16.0392)	−1.2202*** (−62.1209)	−1.1974*** (−60.6309)	−1.2199*** (−61.9652)	−1.2087*** (−61.6074)	−1.2275*** (−61.3815)	−1.1867*** (−64.3157)	−1.1621*** (−62.6106)	−1.1862*** (−64.1232)	−1.1768*** (−63.8030)	−1.1940*** (−63.3962)
Constant	−0.7177*** (−14.8186)	−0.7356*** (−15.1359)	−0.7092*** (−14.6616)	−0.7614*** (−15.6600)	−0.6933*** (−14.2572)	28.9027*** (63.1610)	28.6291*** (62.4508)	28.9276*** (63.2174)	28.4160*** (61.9303)	28.8186*** (62.5920)	28.1391*** (65.3945)	27.8263*** (64.5236)	28.1670*** (65.4556)	27.7227*** (64.2080)	28.0724*** (64.7571)
R-squared	0.1450	0.1498	0.1479	0.1487	0.1518	0.3878	0.3907	0.3885	0.3915	0.3886	0.3900	0.3925	0.3906	0.3927	0.3909
Observations	20,350	20,157	20,350	20,350	20,191	19,401	19,204	19,401	19,401	19,237	20,587	20,388	20,587	20,587	20,422

Note. See Appendix for variable definitions. *T*-statistics in parenthesis.
***, **, & * denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

Table 7. Alternative proxy of cash holdings.

Variables	(1) ROA FE	(2) ROA FE	(3) ROA FE	(4) ROA FE	(5) ROA FE
ALTCASH	0.0477***	0.0123*	−0.0032	0.0888***	0.0767***
	(8.5194)	(1.7664)	(−0.4010)	(12.4035)	(6.4785)
SOE		−0.0250***			
		(−10.3922)			
ALTCASH*SOE		0.0670***			
		(8.1594)			
FGSCORE			−0.0061***		
			(−9.0271)		
ALTCASH*FGSCORE			0.0236***		
			(8.6588)		
FAMILY				0.0223***	
				(10.1154)	
ALTCASH*FAMILY				−0.0703***	
				(−9.1728)	
OWNCON					0.0519***
					(9.0064)
ALTCASH*OWNCON					−0.0629***
					(−2.8787)
TANG	0.0336***	0.0404***	0.0355***	0.0399***	0.0265***
	(4.4862)	(5.3619)	(4.7465)	(5.3206)	(3.5102)
LEV	−0.1418***	−0.1424***	−0.1413***	−0.1419***	−0.1391***
	(−44.2224)	(−44.4163)	(−44.1945)	(−44.4015)	(−43.1826)
GRWT	0.0208***	0.0205***	0.0206***	0.0205***	0.0204***
	(33.2386)	(32.8569)	(33.0837)	(32.8446)	(32.5816)
SIZE	0.0100***	0.0107***	0.0103***	0.0104***	0.0087***
	(12.3584)	(13.2261)	(12.8151)	(12.8686)	(10.6168)
Constant	−0.1473***	−0.1548***	−0.1417***	−0.1695***	−0.1382***
	(−7.8392)	(−8.2303)	(−7.5565)	(−8.9979)	(−7.3120)
R-squared	0.2004	0.2071	0.2046	0.2060	0.2055
Observations	20,587	20,388	20,587	20,587	20,422

Note. See Appendix 1 for variable definitions. *T*-statistics in parentheses.
***, **, & * denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

measures are reported in Table 6 and show that the signs of the coefficients and significance level validated our main findings.

4.6. Robustness test using alternative proxy of cash holding

For testing robustness, we have used an alternative proxy of cash holding (measured as the natural logarithm of 1 + cash and cash equivalents divided by total assets). The results are reported in Table 7. The coefficients signs are according to expectations and statistically significant, validating the main findings, while illustrating that our results are insensitive to the alternative proxy of cash holding.

4.7. Robustness check using excess cash holding

In our main analysis, we use normal cash holdings for estimations. It is possible that certain firms hold excess cash, which may have unfavourable outcomes on financial performance due to managers pursuing their private interests which can be

Table 8. Robustness check using excess cash holdings.

Variables	(1) ROA	(2) ROA	(3) ROA	(4) ROA	(5) ROA
EXCESS_CASH	0.0141**	−0.0143	−0.1471**	0.0595*	0.0766***
	(2.2235)	(−1.2230)	(−2.1667)	(1.8083)	(2.6550)
FGSCORE		−0.0160***			
		(−2.8161)			
EXCESS_CASH*FGSCORE		0.0077**			
		(2.0435)			
SOE			−0.1897**		
			(−2.2388)		
EXCESS_CASH*SOE			0.1503**		
			(2.2197)		
FAMILY				0.1319***	
				(2.9020)	
EXCESS_CASH*FAMILY				−0.0770**	
				(−2.2394)	
OWNCON					0.1750**
					(2.0911)
EXCESS_CASH*OWNCON					−0.1437**
					(−2.0630)
TANG	0.2048**	0.1578	−0.0029	0.4844***	0.2138***
	(2.3353)	(1.5578)	(−0.1576)	(3.0184)	(4.0842)
LEV	−0.1249***	−0.0481	0.0404	−0.3315***	−0.0702**
	(−4.8067)	(−1.0423)	(0.8923)	(−3.3830)	(−2.1670)
GRWT	0.0543***	0.0391***	0.0273***	0.0177*	0.0364***
	(7.2825)	(5.0091)	(9.9453)	(1.9556)	(10.3624)
SIZE	0.0141**	0.0096***	−0.0013	0.0323***	0.0046
	(2.2404)	(2.6233)	(−0.1448)	(4.8645)	(1.5501)
L.ROA	0.2539**	0.2535**	0.3818***	−0.4419***	0.4109***
	(2.1974)	(2.2700)	(3.4123)	(−2.6320)	(5.9805)
Constant	4.4211**	3.7787**	2.3050	9.7200***	3.1495**
	(2.2595)	(2.5136)	(1.2616)	(2.8686)	(2.4223)
Wald_Chi^2	1071.66***	274.82***	314.08***	108.47***	649.66***
Observations	16,388	16,388	16,215	16,388	16,241

Notes. See Appendix for variable definitions. *T*-statistics in parentheses.
***, **, & * denote 1%, 5%, 10%, significance levels.
Source: Authors formation.

detrimental to firm value (Harford, 1999; Luo & Hachiya, 2005). However, further studies (Kalcheva & Lins, 2007; Thenmozhi et al., 2019) support an alternative view that excess cash have a positive effect on performance because it can be used to reduce bankruptcy costs, invest in value enhancing projects, and reduce transaction costs. To further validate our core findings, we estimate excess cash and examine its effect on performance to identify whether this association is moderated by firm-specific attributes. Following Dittmar and Mahrt-Smith (2007), we compute excess cash holdings using the following regression equation:

$$Ln\left(\frac{CASH_{it}}{NA_{it}}\right) = \beta_o + \beta_1 Ln(NA_{it}) + \beta_2 \frac{FCF_{it}}{NA_{it}} + \beta_3 \frac{NWC_{it}}{NA_{it}} + \beta_4 (industrysigma)_{it}$$
$$+ \beta_5\left(\frac{MV_{it}}{NA_{it}}\right) + \beta_6 \frac{R\&D_{it}}{NA_{it}} + YearDummy + FixedEffects + \varepsilon_{it} \quad (3)$$

where $CASH_{it}$ is cash and cash equivalent; NA_{it} denotes net assets; FCF_{it} denotes free cash flow; NWC_{it} denotes net working capital; $Industrysigma_{it}$ is the industry average

of the past 10 years' standard deviation of *FCF/NA*; and $R\&D_{it}$ illustrates research and development expenditure (set to zero if missing).

The results estimated from the G.M.M. model are reported in Table 8. Consistent with expectations, the results in column (1) indicate a positive effect of excess cash on firm performance. The positive association can be supported from several perspectives. First, managers are using excess cash in value enhancing projects which results in high performance. Second, firms tend to hoard excess cash to deal with unexpected contingencies and minimise transaction costs. Finally, firms try to minimise their dependence on external financers by holding excess cash to mitigate the costs of higher interest rate. These findings are consistent with Thenmozhi et al. (2019), who find that excess cash holdings in Chinese firms have a positive impact on firm performance. Finally, our results remain consistent regarding the moderating effect of firm-specific factors.

5. Conclusion

The policy of cash holdings has been studied extensively in recent decades, and continues to be the focus of many studies. Cash holding levels in firms are increasing globally. Our study is a small contribution towards the growing literature in this field in our attempt to investigate the moderating roles of firm-specific factors on the relationship between cash holdings and firm performance by using a sample of Chinese non-financial firms over the period 2003 to 2016.

Our findings highlight the role of several factors moderating the relationship between a firm's cash holdings and performance. State ownership positively moderates the relationship between cash holding and firm performance. Corporate governance mechanisms also strengthen the relationship between cash holdings and firm performance by reducing agency problems related to cash holdings. According to Lee and Lee (2009), firms with strong firm-level governance have less agency problems and hoard less cash. Their study, based on developing countries having weak shareholder protection as compared to developed nations, indicated that firms with strong internal governance utilise excess cash resources efficiently by investing in profitable projects resulting in increased firm performance. The results indicate that strong corporate governance constrained the entrenched managers to act in the best interests of shareholders even in weak external governance environments.

Interaction of family ownership and cash presented a negative impact on the cash–performance relationship. This result suggests that a high level of family ownership distorts the firm's performance because family shareholders tend to accumulate excess cash to increase resources under their control. In other words, controlling shareholders hoard more extensive cash stocks to use for personal gain in expropriating minority shareholders – especially in emerging countries like China, where the minority shareholder protection is weak. Ownership concentration also weakens the relationship between cash and firm performance. If cash is accumulated in firms having a high ownership concentration, it will weaken firm performance due to agency problems related to the entrenchment behaviour of controlling shareholders. Excess

cash in the hands of controlling shareholders can be used for personal gain or to expropriate minority shareholders through decisions like mergers and acquisitions.

Future research should also include external institutional quality as moderating variables, using more market-based performance measures such as share price appreciation. This study only used data from China for $2003-2016$ which may limit its generalisability, therefore we suggest investigating the same phenomenon in an international, multi-country setting. Having used only firm-specific moderating factors, we suggest that future studies could examine the moderating effects of factors beyond the firm's control that exist in the external environment such as macro-economic variables.

Disclosure statement

No potential conflict of interest was reported by the authors.

ORCID

Hassan Ahmad 🄳 http://orcid.org/0000-0003-3925-3956
Khalil Jebran 🄳 http://orcid.org/0000-0003-0594-4775

References

Adhikari, A., Derashid, C., & Zhang, H. (2006). Public policy, political connections, and effective tax rates: Longitudinal evidence from Malaysia. *Journal of Accounting and Public Policy*, *25*(5), 574–595. https://doi.org/10.1016/j.jaccpubpol.2006.07.001

Aharoni, Y. (1981). Note—performance evaluation of state-owned enterprises: A process perspective. *Management Science*, *27*(11), 1340–1347. https://doi.org/10.1287/mnsc.27.11.1340

Al-Matari, E. M., Al-Swidi, A. K., & Fadzil, F. H. B. (2014). The measurements of firm performance's dimensions. *Asian Journal of Finance & Accounting*, *6*(1), 24–24.

Ang, J. S., & Ding, D. K. (2006). Government ownership and the performance of government-linked companies: The case of Singapore. *Journal of Multinational Financial Management*, *16*(1), 64–88. https://doi.org/10.1016/j.mulfin.2005.04.010

Berghe, L. A. A., & Levrau, A. (2004). Evaluating boards of directors: what constitutes a good corporate board? *Corporate Governance: An International Review*, *12*(4), 461–478.

Bharadwaj, A. S., Bharadwaj, S. G., & Konsynski, B. R. (1999). Information technology effects on firm performance as measured by Tobin's Q. *Management Science*, *45*(7), 1008–1024. https://doi.org/10.1287/mnsc.45.7.1008

Boardman, A. E., & Vining, A. R. (1989). Ownership and performance in competitive environments: A comparison of the performance of private, mixed, and state-owned enterprises. *The Journal of Law and Economics*, *32*(1), 1–33. https://doi.org/10.1086/467167

Brounen, D., de Jong, A., & Koedijk, K. (2004). Corporate finance in Europe: Confronting theory with practice. *Financial Management*, *33*(4), 71–101.

Brown, P., Beekes, W., & Verhoeven, P. (2011). Corporate governance, accounting and finance: A review. *Accounting & Finance*, *51*(1), 96–172. https://doi.org/10.1111/j.1467-629X.2010.00385.x

Brown, L. D., & Caylor, M. L. (2006). Corporate governance and firm valuation. *Journal of Accounting and Public Policy*, *25*(4), 409–434. https://doi.org/10.1016/j.jaccpubpol.2006.05.005

Ceccagnoli, M. (2009). Appropriability, preemption, and firm performance. *Strategic Management Journal*, *30*(1), 81–98. https://doi.org/10.1002/smj.723

Chen, G., Firth, M., & Rui, O. M. (2006). Have China's enterprise reforms led to improved efficiency and profitability? *Emerging Markets Review*, *7*(1), 82–109.

Deb, P., David, P., & O'Brien, J. (2017). When is cash good or bad for firm performance? *Strategic Management Journal*, *38*(2), 436–454. https://doi.org/10.1002/smj.2486

Ding, S., Wu, Z., Li, Y., & Jia, C. (2010). Executive compensation, supervisory board, and China's governance reform: a legal approach perspective. *Review of Quantitative Finance and Accounting*, *35*(4), 445–471.

Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics*, *83*(3), 599–634. https://doi.org/10.1016/j.jfineco.2005.12.006

Dittmar, A., Mahrt-Smith, J., & Servaes, H. (2003). International corporate governance and corporate cash holdings. The Journal of Financial and Quantitative Analysis, *38*(1), 111–133. https://doi.org/10.2307/4126766

Eisenhardt, K. M. (1989). Agency theory: An assessment and review. *Academy of Management Review*, *14*(1), 57–74. https://doi.org/10.5465/amr.1989.4279003

Ferreira, M. A., & Matos, P. (2008). The colors of investors' money: The role of institutional investors around the world. *Journal of Financial Economics*, *88*(3), 499–533. https://doi.org/10.1016/j.jfineco.2007.07.003

Firth, M., Fung, P. M. Y., & Rui, O. M. (2007). Ownership, two-tier board structure, and the informativeness of earnings: evidence from China. *Journal of Accounting and Public Policy*, *26*(4), 463–496.

Frésard, L., & Salva, C. (2010). The value of excess cash and corporate governance: Evidence from US cross-listings. *Journal of Financial Economics*, *98*(2), 359–384. https://doi.org/10.1016/j.jfineco.2010.04.004

Gao, L., & Kling, G. (2008). Corporate governance and tunneling: Empirical evidence from China. *Pacific-Basin Finance Journal*, *16*(5), 591–605.

Gedajlovic, E., Carney, M., Chrisman, J. J., & Kellermanns, F. W. (2012). The adolescence of family firm research: Taking stock and planning for the future. *Journal of Management*, *38*(4), 1010–1037. https://doi.org/10.1177/0149206311429990

Goldeng, E., Grünfeld, L. A., & Benito, G. R. G. (2008). The performance differential between private and state owned enterprises: The roles of ownership, management and market structure. *Journal of Management Studies*, *45*(7), 1244–1273.

Gompers, P., Ishii, J., & Metrick, A. (2003). Corporate governance and equity prices. *The Quarterly Journal of Economics*, *118*(1), 107–156. https://doi.org/10.1162/00335530360535162

Griffin, J. M., & Lemmon, M. L. (2002). Book-to-market equity, distress risk, and stock returns. *The Journal of Finance*, *57*(5), 2317–2336. https://doi.org/10.1111/1540-6261.00497

Grout, P. A., & Stevens, M. (2003). The assessment: Financing and managing public services. *Oxford Review of Economic Policy*, *19*(2), 215–234. https://doi.org/10.1093/oxrep/19.2.215

Harford, J. (1999). Corporate cash reserves and acquisitions. *The Journal of Finance*, *54*(6), 1969–1997. https://doi.org/10.1111/0022-1082.00179

Harford, J., Mansi, S. A., & Maxwell, W. F. (2008). Corporate governance and firm cash holdings in the US. *Journal of Financial Economics*, *87*(3), 535–555. https://doi.org/10.1016/j.jfineco.2007.04.002

Heracleous, L. (2001). What is the impact of corporate governance on organisational performance? *Corporate Governance: An International Review*, *9*(3), 165–173.

Hu, H. W., Tam, O. K., & Tan, M. G.-S. (2010). Internal governance mechanisms and firm performance in China. *Asia Pacific Journal of Management*, *27*(4), 727–749. https://doi.org/10.1007/s10490-009-9135-6

Huang, Y., Elkinawy, S., & Jain, P. K. (2013). Investor protection and cash holdings: Evidence from US cross-listing. *Journal of Banking & Finance*, *37*(3), 937–951.

Ibrahim, H., & Samad, F. A. (2011). Corporate governance mechanisms and performance of public-listed family-ownership in Malaysia. *International Journal of Economics and Finance*, *3*(1), 105–115. https://doi.org/10.5539/ijef.v3n1p105

Itzkowitz, J. (2013). Customers and cash: How relationships affect suppliers' cash holdings. *Journal of Corporate Finance*, *19*, 159–180. https://doi.org/10.1016/j.jcorpfin.2012.10.005

Jebran, K., Chen, S., & Tauni, M. Z. (2019). Principal-principal conflicts and corporate cash holdings: Evidence from China. *Research in International Business and Finance*, 49, 55–70. https://doi.org/10.1016/j.ribaf.2019.02.010

Jensen, M. C. (1986). Agency costs of free cash flow, corporate finance, and takeovers. *The American Economic Review*, 76(2), 323–329.

Jensen, M. C., & Murphy, K. J. (1990). Performance pay and top-management incentives. *Journal of Political Economy*, 98(2), 225–264. https://doi.org/10.1086/261677

Kalcheva, I., & Lins, K. V. (2007). International evidence on cash holdings and expected managerial agency problems. *Review of Financial Studies*, 20(4), 1087–1112. https://doi.org/10.1093/rfs/hhm023

Keynes, J. M. (1936). The General Theory of Employment, Interest and Money (London, 1936). Palgrave Macmillan.

Kim, B., Jung, K., & Kim, I. (2005). Internal funds allocation and the ownership structure: evidence from Korean business groups. *Review of Quantitative Finance and Accounting*, 25(1), 33–53.

Klapper, L. F., & Love, I. (2004). Corporate governance, investor protection, and performance in emerging markets. *Journal of Corporate Finance*, 10(5), 703–728. https://doi.org/10.1016/S0929-1199(03)00046-4

Kuan, T.-H., Li, C.-S., & Liu, C.-C. (2012). Corporate governance and cash holdings: A quantile regression approach. *International Review of Economics & Finance*, 24, 303–314.

Kusnadi, Y. (2011). Do corporate governance mechanisms matter for cash holdings and firm value? *Pacific-Basin Finance Journal*, 19(5), 554–570. https://doi.org/10.1016/j.pacfin.2011.04.002

La Porta, R., Lopez-de-Silanes, F., Shleifer, A., & Vishny, R. (2000). Investor protection and corporate governance. *Journal of Financial Economics*, 58(1–2), 3–27. https://doi.org/10.1016/S0304-405X(00)00065-9

La Rocca, M., & Cambrea, D. R. (2019). The effect of cash holdings on firm performance in large Italian companies. *Journal of International Financial Management & Accounting*, 30(1), 30–59.

Lee, K.-W., & Lee, C.-F. (2009). Cash holdings, corporate governance structure and firm valuation. *Review of Pacific Basin Financial Markets and Policies*, 12(3), 475–508. https://doi.org/10.1142/S021909150900171X

Lemmon, M. L., & Lins, K. V. (2003). Ownership structure, corporate governance, and firm value: Evidence from the East Asian financial crisis. *The Journal of Finance*, 58(4), 1445–1468. https://doi.org/10.1111/1540-6261.00573

Li, S., Lin, Y. C., & Selover, D. D. (2014). Chinese state-owned enterprises: Are they inefficient? *Chinese Economy*, 47(5–6), 81–115.

Lian, Y., Sepehri, M., & Foley, M. (2011). Corporate cash holdings and financial crisis: an empirical study of Chinese companies. *Eurasian Business Review*, 1(2), 112–124.

Liu, L., Qu, W., & Haman, J. (2018). Product market competition, state-ownership, corporate governance and firm performance. *Asian Review of Accounting*, 26(1), 62–83. https://doi.org/10.1108/ARA-05-2017-0080

Luo, Q., & Hachiya, T. (2005). Corporate governance, cash holdings, and firm value: Evidence from Japan. *Review of Pacific Basin Financial Markets and Policies*, 8(4), 613–636. https://doi.org/10.1142/S0219091505000580

Megginson, W. L., Ullah, B., & Wei, Z. (2014). State ownership, soft-budget constraints, and cash holdings: Evidence from China's privatized firms. *Journal of Banking & Finance*, 48, 276–291.

Myers, S. C. (1984). The capital structure puzzle. *The Journal of Finance*, 39(3), 574–592. https://doi.org/10.1111/j.1540-6261.1984.tb03646.x

Myers, S. C., & Majluf, N. S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. *Journal of Financial Economics*, 13(2), 187–221. https://doi.org/10.1016/0304-405X(84)90023-0

Myers, S. C., & Rajan, R. G. (1998). The paradox of liquidity. *The Quarterly Journal of Economics*, *113*(3), 733–771. https://doi.org/10.1162/003355398555739

Neely, A., Gregory, M., & Platts, K. (1995). Performance measurement system design: A literature review and research agenda. *International Journal of Operations & Production Management*, *15*(4), 80–116.

Oler, D., & Waegelein, J. F. (2011). Can long-term performance plans mitigate the negative effects of stock consideration and high cash for acquirers? *Review of Quantitative Finance and Accounting*, *37*(1), 63–86. https://doi.org/10.1007/s11156-010-0195-y

Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (1999). The determinants and implications of corporate cash holdings. *Journal of Financial Economics*, *52*(1), 3–46. https://doi.org/10.1016/S0304-405X(99)00003-3

Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking & Finance*, *28*(9), 2103–2134.

Pearce, J. A., & Zahra, S. A. (1992). Board composition from a strategic contingency perspective. *Journal of Management Studies*, *29*(4), 411–438.

Peng, M. W., Bruton, G. D., Stan, C. V., & Huang, Y. (2016). Theories of the (state-owned) firm. *Asia Pacific Journal of Management*, *33*(2), 293–317. https://doi.org/10.1007/s10490-016-9462-3

Pouraghajan, A., Malekian, E., Emamgholipour, M., Lotfollahpour, V., & Bagheri, M. M. (2012). The relationship between capital structure and firm performance evaluation measures: Evidence from the Tehran Stock Exchange. *International Journal of Business and Commerce*, *1*(9), 166–181.

Rezaee, Z. (2008). *Corporate governance and ethics*. John Wiley & Sons.

Richard, P. J., Devinney, T. M., Yip, G. S., & Johnson, G. (2009). Measuring organizational performance: Towards methodological best practice. *Journal of Management*, *35*(3), 718–804. https://doi.org/10.1177/0149206308330560

Sardo, F., & Serrasqueiro, Z. (2018). Intellectual capital, growth opportunities, and financial performance in European firms: Dynamic panel data analysis. *Journal of Intellectual Capital*, *19*(4), 747–767. https://doi.org/10.1108/JIC-07-2017-0099

Shan, Y. G. (2013). Can internal governance mechanisms prevent asset appropriation? Examination of type I tunneling in China. *Corporate Governance: An International Review*, *21*(3), 225–241. https://doi.org/10.1111/corg.12022

Shan, Y. G. (2015). Value relevance, earnings management and corporate governance in China. *Emerging Markets Review*, *23*, 186–207. https://doi.org/10.1016/j.ememar.2015.04.009

Shan, Y. G., & McIver, R. P. (2011). Corporate governance mechanisms and financial performance in China: Panel data evidence on listed non-financial companies. *Asia Pacific Business Review*, *17*(3), 301–324. https://doi.org/10.1080/13602380903522325

Shan, Y. G., & Xu, L. (2012). Bad debt provisions of financial institutions: dilemma of China's corporate governance regime. *International Journal of Managerial Finance*, *8*(4), 344–364.

Sun, J., Yuan, R., Cao, F., & Wang, B. (2017). Principal–principal agency problems and stock price crash risk: Evidence from the split-share structure reform in China. *Corporate Governance: An International Review*, *25*(3), 186–199. https://doi.org/10.1111/corg.12202

Thenmozhi, M., Saravanan, P., & Sasidharan, A. (2019). impact of excess cash on earnings management and firm value: Evidence from China. *Corporate Ownership & Control*, *17*(1), 245–254.

Tobin, J. (1969). A general equilibrium approach to monetary theory. *Journal of Money, Credit and Banking*, *1*(1), 15–29. https://doi.org/10.2307/1991374

Tseng, T.-Y. (2012). Will China's split share structure reform mitigate agency problems? *Journal of Chinese Economic and Business Studies*, *10*(2), 193–207. https://doi.org/10.1080/14765284.2012.673781

Varaiya, N., Kerin, R. A., & Weeks, D. (1987). The relationship between growth, profitability, and firm value. *Strategic Management Journal*, *8*(5), 487–497. https://doi.org/10.1002/smj.4250080507

Villalonga, B., & Amit, R. (2006). How do family ownership, control and management affect firm value? *Journal of Financial Economics*, *80*(2), 385–417. https://doi.org/10.1016/j.jfineco.2004.12.005

Wu, S. (2019). Debt financing structure, ownership concentration and firm performance: a comparison of the listed state-owned and non-state-owned CMNEs. *Journal of Chinese Economic and Business Studies*, *17*(2), 147–168. https://doi.org/10.1080/14765284.2019.1615243

Yu, M. (2013). State ownership and firm performance: Empirical evidence from Chinese listed companies. *China Journal of Accounting Research*, *6*(2), 75–87. https://doi.org/10.1016/j.cjar.2013.03.003

Appendix

Appendix 1. Variables definitions.

Variables	Definitions
CASH	Cash and cash equivalent divided by total assets
ALTCASH	Natural logarithm of one plus cash and cash equivalent divided by total assets
EXCESS CASH	It is excess cash holding estimated from regression equation (Dittmar & Mahrt-Smith, 2007)
ROA	Ratio of earnings before taxes to total assets
ROE	Net Profit divided by shareholder equity
MTB	Market value of equity divided by book value of equity
TOBINSQ	It is computed as dividing market value of firm by assets' replacement cost (market value of equity + market value of debt) to book value of assets
FGSCORE	An index of 6 main governance variables
SOE	Dummy variable equalling 1 if a firm is state controlled and 0 otherwise
FAMILY	Dummy variable equalling 1 if a firm is controlled by a family and 0 otherwise
OWNCON	The percentage of shares held by the controlling shareholder
LEV	Total debt divided by total assets
SIZE	Natural logarithm of total assets
GRWT	Percentage change in sales from year t to year t-1
TANG	Tangible assets divided by total assets

Source: Authors formation.