『経済科学』第68巻第1号（2020年6月発行）
THE ECONOMIC SCIENCE, Vol.68, No.1, June 2020
DOI:10. 18999/ecos. 68. 1. 47

Corporate Cash Holdings and Agency Problem: Evidence from Vietnam*

DAO Thi Thuong**

This paper examines the effects of state ownership, age after equitization, and the interaction term between state ownership and age after equitization on corporate cash holdings of listed firms on Vietnamese stock exchanges from 2010 to 2017. Our regression results show that state ownership positively impacts on the level of cash holdings, which attributes to agency theory. Specially, this paper provides empirical evidence that cash holdings reduce as the firm age after being equitized increases. Also, along with an increase in age after equitization, a positive effect of state ownership on cash holdings diminishes as a result of a better reputation and a lower degree of information asymmetry these such firms have on the market.

Keywords: Cash and cash equivalents, cash holdings, agency problem, reputation, listed firms in Vietnam

* Received for publication on March 1, 2019. Revision accepted for publication on February 5, 2020. (*Editorial Committee*)

** Graduate Student, Graduate School of Economics, Nagoya University. A Member of the Research Group named Financila Management, Foreign Trade University.

Ⅰ. Introduction

Cash is an indispensable factor for setting up and running a business smoothly. With sufficient cash reserves, a company does not only have to be fixated on finding sources of cash in any possible way but also allows the manager to seize the opportunities on the market that make a breakthrough development. Therefore, studies on cash holdings have been concerned and carried out in developed countries since the 1950s with studies on building a model of the demand for money by firms (Baumol, 1952; Miller and Orr, 1966). Then, in the late 1990s, researchers have carried out empirical studies on the determinants of cash holdings such as Kim et al. (1998), Opler et al. (1999), Ozkan and Ozkan (2004), Bates et al. (2009) and Bigelli and Sánchez-Vidal (2012).

In recent studies, researchers are interested in the relationship between state ownership and cash holdings. However, both theories and empirical evidence still show conflicting results. State ownership is associated with agency problems and poor corporate governance (Shleifer and Vishny, 1994; Megginson and Netter, 2001; Megginson et al., 2014) because managers are typically entrenched bureaucrats, less subject to pressures from the stock, product, or labor markets, and less internally monitored by individual shareholders (Chen et al., 2018). Therefore, high state ownership leads to more severe agency problems. Agency problems lead to high cash holdings (Jensen, 1986; Opler et al., 1999). Using a sample of newly privatized firms from 59 countries, Chen et al. (2018) provide evidence about a positive relation between state ownership and corporate cash holdings, consistent with agency theory. In contrast, the soft budget constraint theory suggests that the transaction cost and precautionary motives should be less for state-owned enterprises (SOEs)[1] because of being able to raise external funds at a lower cost, hence SOEs hold less cash. For a sample of Chinese listed firms, Megginson et al. (2014) document that state ownership is negatively associated with corporate cash holdings.

Taken together, the effect of state ownership on cash holdings is still an empirical question. Hence, the first objective of this study is to shed the light on the potential relation between state ownership and corporate cash holdings in Vietnam. Second, I examine how cash holdings change as the effect of being exposed to the stock market by the time since equitization. The number of firms and the timing of equitization in Vietnam provide us an interesting research circumstance where I analyze the relationship between cash holdings and recently equitized firms. Since the early 1990s, Vietnamese government performed equitization program in order to improve the efficiency of former SOEs and decrease the burden on government budget; to force the non-strategic sectors of state to compete with private sector; to closely associate equitization with the capital market and the securities market development (Abonyi, 2005; Art. 1, Decree 187 from 2004). Transformed into public companies and listed, firms must comply with many requirements on information disclosure that anyone can access, such as submission of quarterly, semi-annual, and annual financial statements on time. Information disclosure rules help to improve the transparency of Vietnam's stock market, reduce the degree of information asymmetry and agency problems in equitized firms compared to former SOEs. Therefore, firms with a longer history of capital market transactions would have a better reputation as well as an improvement in the amount of information the markets have about such firms, which helps firms easier to access external capital when needed, therefore reducing their demand for cash. As a result, cash holdings should be negatively associated with age after equitization, and the positive effect of state ownership (if any) should be weakened by the time.

Financial information and state ownership ratios of non-financial listed firms on the Ho Chi Minh Stock Exchange (HOSE) and the Hanoi Stock Exchange (HNX) over eight years (2010-2017) are used for analysis. Our regression results show that state ownership ratio positively impacts on cash holdings according to agency theory, confirming the result by Chen et al. (2018).

The contribution in this paper is the new evidence that cash holdings are related to the age after equitization in the context of SOEs. This evidence is

new in the corporate finance literature and makes this paper different from the existing studies. In particular, the regression results show a negative relation between firm age from equitization (firm age, henceforth) and cash holdings. Furthermore, the negative coefficients of the interaction term between firm age and state ownership ratio prove that the effect of state ownership diminishes as the time passes after equitization. Besides, unlike findings by Megginson et al. (2014), this paper shows the evidence that there is no evidence for soft-budget constraint theory by providing the regression results that the coefficients of the interaction term between state ownership ratio and bank debt are negative and significant.

Apart from shedding the light that agency theory is dominant to explain for corporate cash holdings by Vietnamese listed firms, this detection supports the view that agency problems are likely to exist in firms invested by the State. Therefore, these firms need to have a good governance practice to mitigate agency problems. The disclosure, transparency of information is a useful way of reducing agency issues.

Ⅱ. Literature Review, the Economic and Financial System of Vietnam and Hypothesis Development

1. The literature on state ownership and its effects on cash holdings

(1) The literature on state ownership

It is said that SOEs are usually less efficient or, at least, less profitable than privately owned enterprises. Shleifer and Vishny (1994) argue that the inefficiency of SOEs is the result of political pressures from the politicians who control them. Politicians acting on their political goals may take on politically expedient projects, as opposed to the NPV maximization mission (Megginson et al., 2014). Another primary source of the inefficiency of SOEs stems from less-prosperous firms being allowed to rely on the state for capital supplying, leading to soft-budget constraints (Megginson and Netter, 2001). Besides, SOEs tend to use more debt than private firms because most SOEs (except for those are privatized) cannot sell equity to private investors, but they easily borrow at favorable rates (Dewenter and Malatesta, 2001).

Privatization-that is defined as the intentional sale of SOEs or other state-owned assets to the private sector-has spread around the world as the result of the disappointment of states with the underperformance of SOEs. This is a legitimate-often a core-tool of statecraft by governments of more than 100 countries (Megginson and Netter, 2001). The modern privatization started in the early 1980s in the UK, and privatized firms were broadly recognized as being more efficiently run after divestiture. The success of privatization in the UK convinced many other countries to launch the sale of SOEs through public offerings. Privatization through share issues was performed by Denmark, Italy, Malaysia, and Singapore in 1985; in France, Australia, Belgium, the Netherlands, Jamaica, Japan, Spain, Sweden, and the US and in during late 1986 and 1987. Then privatization programs spread rapidly to the developing countries of South America, Africa, and South Asia, mostly through private sales. In the 1990s, the waves of privatization shifted to communist countries such as Eastern Europe and the former Soviet Union, China, and Vietnam. Regardless of their ideological basis, the objectives of privatization are raising revenue for the state, promoting economic efficiency, decreasing government interference in the economy, promoting wider share ownerships, providing the opportunity to introduce competition, and exposing SOEs to market discipline (Megginson et al., 1994; Megginson and Netter, 2001).

As systematically reviewed by Megginson and Netter (2001), privatization works in the sense that almost privatized firms become more efficient, more profitable, and financially healthier, and increase their capital investment spending for both transition and non-transition economies. Megginson et al. (1994) document economically and statistically significant increases in output, operating efficiency, profitability, capital spending, and dividend, coupled with a significant reduction in leverage for a sample of 61 firms from 18 non-transition countries after privatization. Notably, they provide evidence that during their research span of the -3 to + 3-year period surrounding privatization, SOEs were rarely subsidized while they

were being prepared for privatization, and after divestment, there were no subsidies for privatized firms. Also, Boubakri and Cosset (1998) used a data set of 79 firms from 21 developing countries and 32 industries over 1980-1992 and confirm that following privatization the increases in real sales (output), profitability, efficiency (sales per employee), and capital spending, dividend payment coupled with significant declines in leverage.

Similarly, the positive effects of privatization were reported in almost cases in transition economies like Eastern Europe and the former Soviet Union (Megginson and Netter, 2001). However, some other notable points about privatizations in those countries are the number of firms privatized in some way in transition is much greater than in non-transition economies, and the results of privatizations depend on the structure of ownership.

Privatization in China differs from privatizations used in market economies or the mass privatizations executed in Central and Eastern Europe, Russia, or Mongolia (Sun and Tong, 2003). The reform in China has progressed without wholly market liberalization or democratization. Regarding share issuing privatization in China, there are six types of shares according to China's laws, which are state, legal person (also called institutional), foreign, management, employee, and individual shares (Chen et al., 2009). Using state ownership measured as the fraction of state shares, Sun and Tong (2003), Wei et al. (2005) document that firm performance is negatively related to state ownership in privatized firms. Chen et al. (2009), however, argue that legal person shares can be owned by a number of assorted entities, ranging from merely SOEs to private firms and state shares can be owned by different types of state-shareholders (such as the state asset management bureaus, central SOEs, local state). Thus, using state shares fraction as a proxy for state ownership may distort the results and leads to inaccurate conclusions. Chen et al. (2009) divided listed firms into those controlled by state asset management bureaus (SAMBs), SOEs affiliated to the central government (SOECGs), SOEs affiliated to the local government (SOELGs), and private investors. Chel et al. (2009) find that SOECG controlled firms are the best, SAMB and private controlled firms are the worst, and SOELG controlled firms are in the middle in term of operating performance.

(2) The literature on the effects of state ownership on cash holdings

1) The agency theory

Prior studies have shown that in many cases, agency problems are a common phenomenon in state-owned enterprises. Chen et al. (2018) state that managers of SOEs are typically entrenched bureaucrats leading to more severe agency problems. SOEs belong to the public but are under the control of politicians. Therefore, there is no strong incentive for individuals to monitor managerial behavior (Vickers and Yarrow, 1991). The mechanisms for monitoring the performance results of SOEs are usually performed by executive government agencies. Monitoring, however, basically degrades into an inefficient bureaucratic pyramid of multi-level administrative control and perfunctory reports (Abramov et al., 2017). Furthermore, the objective of SOEs is usually not profit maximization but is related to such kind of things like redistribution to favored interest groups, employment levels, patronage, and so on (Vickers and Yarrow, 1991). SOEs' managers, therefore, are evaluated by the achievement of political goals and are less subject to pressures from the stock, product, or labor markets (Chen et al., 2018). Both internal monitoring and external corporate governance mechanisms are weak; managers of SOEs have incentives to consume private benefits.

The previously cited literature suggests that high state ownership is associated with weaker monitoring by non-state shareholders or outsiders, serious information asymmetry, and more agency problems. Therefore, according to this agency theory, firms with high residual state ownership hold more cash. Consistent with this view, Chen et al. (2018) find that state ownership is positively related to corporate cash holdings. Also, they find that privatized state-controlled firms or politically connected firms hold more cash than their counterparts. For the sample of listed firms in China, Kusnadi et al. (2015) also show the evidence that state-controlled firms hold more

cash than non-state-controlled firms.

2) The soft-budget constraint theory

János Kornai formulated the soft-budget constraint (SBC) theory by observing the phenomenon that the chronic loss-making Hungarian state-owned enterprises were never allowed to go bankrupt during that country's experiment with market reforms (Kornai, 1979, 1980). These firms were always saved or bailout of financial difficulties by government subsidies or other instruments.

Regarding equitized SOEs, Anderson et al. (2000) show that when the central government retains ownership in equitized firms, more than two-thirds of firms still have soft budget constraints. Furthermore, Frydman et al. (2000) investigate performance differences between privatized firms controlled by outsiders and those controlled by governments and argue that in comparison with privatized firms, state banks, and tax authorities significantly show softer imposing financial discipline on state firms than on their privatized firms.

Related to cash holdings, based on SBC theory, Megginson et al. (2014) argue that state ownership is inherently connected with soft-budget constraints: the higher the state ownership, the softer the budget constraint, or the less financially constrained is the firm. Financially unconstrained firms hold less cash, so it is expected the negative relation between cash holdings and state ownership. Consistent with this argument, they provide evidence from a sample of Chinese listed firms that state ownership is negatively associated with corporate cash holdings.

2. Some aspects of Vietnam's economy

(1) A short description of the Economy of Vietnam

In Vietnam, the only legal and ruling party is the Communist Party of Vietnam (CPV), which sets out all directions and policies for the socio-economic development of Vietnam. In the period 1975-1985: after the Vietnam war, Vietnam followed a centralized bureaucratic management mechanism, with two main types of firms, which were state-owned and collective enterprises. There was virtually no private business or foreign direct investment. The economy experienced a big crisis with the annual inflation rate higher than 700%; exports were less than half of imports; budget resources were strained by high military expenditures and support for loss-making SOEs (Abonyi, 2005).

In 1986, The Sixth National Congress approved the Doi Moi Program that eradicates the system of bureaucratic centralized management based on state subsidies; and to move to a multi-sector, market-oriented economy with a role for the private sector to compete with the state in non-strategic sectors. Doi Moi program combined government planning with free-market incentives and encouraged the establishment of private firms and foreign investment, including foreign-owned enterprises. The Law on Foreign Investment enacted in 1988, allowed foreign investments in Vietnam. The Law on Companies and the Law on Private Enterprise in 1990 provided an important basis for the establishment and operations of private firms (Abonyi, 2005).

(2) The financial market in Vietnam

1) The bank market

During the centrally planned economy period from 1975 to 1986, virtually no financial market had existed before the 1986 Doi Moi startup. Vietnam demonstrates specific features of a bank-based financial system where banks are dominant players (Nguyen et al. 2018). Although joint-stock commercial banks increased their numbers immediately after their appearance in 1990 (in 2009, there were 37 joint-stock commercial banks), the leading positions in the market still belong to five state-owned commercial banks.

2) The securities market

Vietnam stock market (VSM) was officially put into operation on July 28th, 2000. After more than 16 years, a significant and speedy expansion in terms of VSM scale has opened up a long-term capital mobilization and a new investment channel for the economy. By the end of 2015, Vietnam's stock market had 686 listed companies and listed investment funds. The total capitalization of the stock market is equal to 34.5% of GDP 2015 (Nguyen and Nguyen, 2016).

Despite the remarkable development of the financial market, Vietnam's bond market is still small. Especially, the growth of the corporate bond sector is

really limited. Based on financial information disclosed by listed firms on HOSE and HNX, bank loans are dominant. In particular, banks provided 70-80% of the total long-term loans of firms, whereas loans from corporate bonds just accounted for 14-20% of total long-term loans. The number of firms has capital from issuing bonds is small, around 20 firms over a total of 686 listed firms over the period 2010-2017.

(3) The equitization of State-owned enterprises

In the centrally planned period, the government managed the economy mainly by administrative orders. SOEs operated based on the orders of the authorities. The government allocated capital and materials, labors to enterprises, and enterprises gave all products to the State. In the case of making losses (profits), the government would cover all losses (collects).

After the Sixth National Congress of the Communist Party of Vietnam in 1986, the first legal provisions-Decree 217 in 1987-for SOEs reform were enacted to improve SOEs' governance and steering them more towards market activities. This law abandoned the regime of allocating supplies, delivering products, and implemented the regime of purchasing supplies and selling products according to economic contracts. However, SOEs were still under the control of the ministries or provincial government. Therefore, SOEs did not face the disciplinary effects of the market, and the threat of takeover like private firms do. Gainsborough (2002) argues that SOEs had a long tradition of behaving in non-sanctioned ways. Besides, management in SOEs was appointed on the basis of political decisions with salaries and job security not related to economic performance. With such a governance system, SOEs run ineffectively; therefore, the government stepped towards equitization. SOEs were transformed into joint-stock companies, and the state reduced their ownership ratio by selling a proportion of state shares in the enterprise, and employees were given preferential access to such shares. The purposes of SOE equitization were to create a new type of enterprise with diversified owners to strengthen the performance of SOEs; to lead to more efficient use of state assets at the same time decrease the burden on government budget; and to mobilize capital in the new types of SOEs (Abonyi, 2005).

A pilot equitization program during the 1992-1996 period focused on equitizing several small and medium-sized SOEs in non-strategic business areas, but only five SOEs were equitized. After that, the bolder reform was carried out towards the entire small and medium-sized enterprises. As a result, twenty-five SOEs were equitized over the period of 1996-1998. The next step, the government classified SOEs into three groups according to their level of importance, and equitization gained momentum: 845 SOEs were equitized between 1998 and 2002. The equitization took place more aggressively when the State determined there is no need to hold 100% capital in many firms, as well as the option of liquidating some of them. Consequently, 1,292 SOEs were equitized from 2002 to 2004. By February 2008, the State had equitized around 4,000 SOEs. Most equitized enterprises were small, and basically, no equitization of large SOEs was executed (Wacker, 2017).

According to Abonyi (2005), the number of SOEs is around 12,300 by 1990-1991. In 2017, this number had been reduced dramatically to 2,486, and there were 1,167 joint-stock companies having state ownership under 50%, making up a total of 3,653 firms have state ownership, accounted for only 0.65% total enterprises (GSO, 2018). However, these firms are much larger and more capital-intensive than non-state capital firms (GSO, 2018).

Equitization in Vietnam also had positive impacts on privatized and equitized firms' performance. O'Toole et al. (2016) used a rich data set of 23,120 observations with 15,990 observations for private and 7130 observations for SOEs. O'Toole et al. (2016) document that privatized firms and equitized firms with state ownership below 50% show a positive relationship between the fundamental Q[2)] and investment suggesting efficiency in capital allocation. But they also found no significant relationship between Q and investment for SOEs.

3. Hypothesis development

As already mentioned in the literature review

section, poor corporate governance and more severe agency problems are inherent in state ownership. Therefore, according to agency theory, state ownership positively impacts on cash holdings. In contrast, according to the soft budget constraint theory, the high state ownership is associated with less cash holdings. Following Chen et al. (2018) and Megginson et al. (2014), I replicate their hypothesis to confirm which theory is true for Vietnamese firms.

Hypothesis 1: State ownership is positively related to cash holdings according to agency theory, while it is negatively related to cash holdings due to soft budget constraint theory.

After confirming that agency theory is dominant for Vietnamese firms, I argue that as firm age increases, cash holdings decrease due to a better reputation and an improvement in the amount of information the market has about such firms. Faulkender (2002) argues that firm age can affect cash holdings because firm age is associated with the degree of information asymmetry between the firm and capital markets. In more detail, along with an increase in firm age, firms have a longer history of capital market transactions as well as successful operations. Therefore, ceteris paribus, firm age brings about a better reputation and an improvement in the amount of information the markets have about such firms. For equitized listed firms in Vietnam, investors only have information about these firms since equitization because when firms are 100% state-owned, they just provide the information about their business activities and performances to the government only. Therefore, I apply the argument of Faulkender (2002) to the age from equitization and consider that older firms should receive a lower marginal benefit from cash, as raising external funds when needed should be easier, therefore lowering their cash holdings level. Hence, I hypothesize below my main Hypothesis 2. Even if controlling state ownership, age from equitization, i.e., the number of years after an SOE is equitized, is negatively associated with cash.

Hypothesis 2: Age from equitization is negatively related to cash holdings.

As the third hypothesis, it is interesting to see the cross-term of state ownership and age. The higher firm age gives a firm a better reputation and decreases the information asymmetry, which helps to mitigate the agency problems because of state ownership. Therefore, I argue that given the level of state ownership, the positive effect of state ownership on cash holdings becomes weaker as the year passes after being equitized. In other words, the interaction between age and state ownership is expected to affect cash holdings negatively as the third hypothesis below:

Hypothesis 3: The effect of state ownership on cash holdings diminishes as age from equitization becomes older.

The previous studies have not examined these two hypotheses yet regarding the relationship between cash holdings and the age after equitization.

Ⅲ. Data

1. Characteristics of the sample

From 2010 to 2014, some equitized firms did not disclose information about state ownership, and since 2015 some state-owned economic groups have been equitized with high residual state ownership. If the sample includes these firms, the mean of state ownership ratio might yearly increase in the research period and show the wrong trend of reducing state ownership by the government. Therefore, to evaluate the yearly changes of state ownership and cash ratio, all firms that have not full financial and state ownership information for analysis are excluded. Finally, the sample for this research is strong balanced panel data, including 233 nonfinancial Vietnamese listed firms (of them, 140 firms are listed on HSX, and 93 firms are listed on HOSE) covering eight years from 2010 to 2017, leading to an aggregate sample of 1864 firm-year observations. These enterprises are classified into 14 supersectors[3] (under the Industry Classification Benchmark) which are oil and gas, chemicals, basic resources, construction and materials, industrial goods and services, automobiles and parts, food and beverage, personal and household goods, health care, retail, media, travel and leisure, utilities and technology.

In these 233 listed firms, there are 180 firms[4] (accounted for 77.25%) that used to be 100% SOEs, and

there are six firms established with more than 50% state-owned capital (accounted for 2.58%), the others 47 firms (20.17%) are private firms and joint-stock companies with state ownership below 50%. By the end of 2010, the state had divested 22 equitized firms. There were 170 listed firms that had state-owned capital (of them, 158 firms were former 100% SOEs), and 63 firms totally private at the end of 2010. From 2010 to 2017, the state continued selling all their stakes in 35 firms, then there were 135 firms that had state-owned capital (of them, 123 firms were former 100% SOEs), accounted for roughly 58 % and 98 firms totally private, accounted for 42% in total firms of the sample at the end of 2017. The number of firms with state ownership greater than 50% in 2010 and 2017 were 53 (accounted for 22.75%) and 52 (accounted for 22.32%).

2. Measurement of variables

The data used in this paper is provided by FIINGROUP Joint-stock company (previously as StoxPlus Joint Stock Company), except for the year of equitization is self-collected from profiles of listed firms on website http://cafef.vn/. Financial variables are calculated based on yearly audited financial statements over the period from 2010 to 2017 of the Vietnamese nonfinancial listed firms on the Hanoi Stock Exchange (HNX) and Ho Chi Minh Stock Exchange (HOSE).

In this paper, the term "cash" means the amount of cash and cash equivalents. Variables are defined as Table 1. CASH is the ratio of the total amount of cash and cash equivalents to total assets. STATE is state ownership ratio in a firm[5]. STATE_D equals one if state ownership ratio greater than zero and zero otherwise. AGE is year t minuses the year of equitization. SIZE is the natural log of total assets. GROWTH is the sales' yearly growth rate. CFLOW is the ratio of net cash flow from operation to total assets. NWC is the ratio of current assets minus current liabilities minus cash and cash equivalents, divided by total assets. FAR is fixed assets to total assets ratio. LEV is the ratio of total debt to total assets. BANKDEBT is the ratio of the sum of short-term loans and long-term loans to total debt. DVD is a proxy for dividend payment and equals one if a firm pays cash dividends, and zero otherwise.

3. Summary statistics

Table 2 presents summary statistics, including the mean, four quartiles, and the standard deviation of variables. The table shows that the average cash holdings to total assets ratio of Vietnamese listed firms is 9.8 %, which is almost the same with the average cash holdings ratio in previous studies in Vietnam. Specifically, the mean of cash ratio of big firms listed

Table 1. The definition of the variables used in this paper

Variable	Definition
CASH	The ratio of the total amount of cash and cash equivalents to total assets
STATE	It is a proxy for state ownership ratio in a firm
STATE_D	Equals one if state ownership ratio greater than zero and zero otherwise
AGE	Year t minuses the year of equitization
SIZE	The natural log of total assets
GROWTH	The sales' yearly growth rate
CFLOW	The ratio of net cash flow from operation to total assets
NWC	The ratio of current assets minus current liabilities minus cash and cash equivalents, divided by total assets
FAR	Fixed assets to total assets ratio
LEV	The ratio of total debt to total assets
BANKDEBT	The ratio of the sum of short-term loans and long-term loans to total debt
DVD	Equals one if a firm pays cash dividends, and zero otherwise

Table 2. Summary statistics of variables

Variable	Number of Obs.	Mean	25%	Median	75%	Std. Dev
CASH	1864	0.098	0.023	0.059	0.136	0.112
STATE	1864	0.253	0	0.211	0.501	0.231
AGE	1864	9.676	7	10	12	3.593
SIZE	1864	26.911	25.981	26.841	27.943	1.483
GROWTH	1864	0.358	-0.054	0.083	0.238	6.437
CFLOW	1864	0.051	-0.025	0.043	0.120	0.148
NWC	1864	0.102	-0.024	0.082	0.215	0.197
FAR	1864	0.260	0.010	0.209	0.377	0.203
LEV	1864	0.515	0.343	0.552	0.689	0.223
BANKDEBT	1864	0.429	0.193	0.460	0.668	0.283
DVD	1864	0.790	1	1	1	0.408

(Note) See Table 1 for the definition of variables. The sample includes equitized listed SOEs and listed non-SOEs for the period from 2010 to 2017. The number of firms for each year is 233.

on the Ho Chi Minh Stock Exchange (HOSE) and listed firms on both stock exchanges in Vietnam are 9.6 % (Vo, 2017) and 9.7 % (Nguyen et al., 2016) respectively. With the same measurement, Ozkan and Ozkan (2004) report the mean and median of cash holdings in the UK from 1995-1998 are 9.9% and 5.9%; Kim et al. (1998) report that the mean and median values of the cash ratio in the US are 8.1% and 4.7% respectively which are just about similar with my research results (9.8% and 5.9% in that order).

As shown in Table 2, the average of the state ownership ratio for my sample of firms is 25.3% (the median is 21.1%). The average firm age (AGE) is 9.676 years. The mean of SIZE is 26.911, which means the average firm has total assets of 1480 billion VND. Firms in my sample have an average yearly sales growth rate (GROWTH)[6] of 35.8%. The average operating cash flow to total assets (CFLOW) of firms is 5.1%. The means of networking capital to total assets (NWC) and fixed assets to total assets (FAR) ratios are 10.2% and 26%, respectively. The average debt ratio (LEV) is 51.5%, which is similar to research for the 2006-2009 period by Okuda and Nhung (2012) with the value of 50.4% and slightly

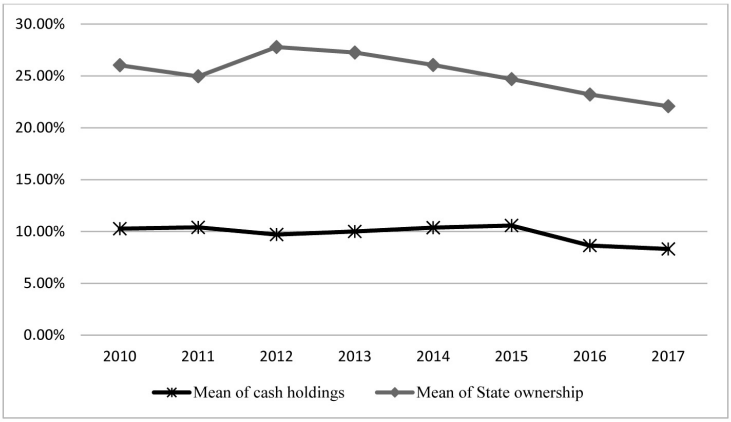

Fig.1. State ownership and cash holdings in Vietnam 2010-2017

(Note) The number of sample firms is 233, including SOEs and non-SOEs. The mean of state ownership denotes the sample average of state ownership ratio (STATE) for each firm. The mean of cash holdings denotes the sample average of CASH. See the definition of variables in Table 1.

higher[7] than the numbers reported by Toan Luu and Tran Bao (2017) with the ratio of 46.3%. Firms in my sample have bank debt to total debt ratio of 42.9% on average. Finally, 79% of observations have dividend payments.

Ⅳ. The Determinants of Cash Holdings

1. A snapshot of cash holdings and state ownership

The time trends of the mean of cash ratio and the mean of state ownership are demonstrated in Fig. 1. The figure shows that from 2010 to 2017, both state ownership and cash ratio slightly decreased. The average state ownership ratio was 26% in 2010, then except for an increase in 2012, average state ownership annually gradually reduced to 22% in 2017. The mean of cash ratio declined by approximately 2% from 10.3% in 2010 to 8.3% in 2017, but from 2010 to 2015, the cash ratio slightly fluctuated around 10% to 10.5%.

2. Univariate tests

Table 3 presents univariate comparisons of main descriptive variables by cash ratio quartile. I am interested in whether the characteristics of firms in the fourth quartile, which reserve the highest cash holdings, are different from those in the first quartile with the lowest cash balances. I use a t-test to check the hypothesis that fourth-quartile firms are significantly different from the first-quartile firms. It turns out that firms' characteristics do not always change monotonically with cash holding, such as NWC, SIZE. Thus, comparing the firms in the first and fourth quartiles of cash holdings is not adequate to describe the relation between cash holdings and firm characteristics.

As shown in Table 3, firms in the fourth quartile of cash holdings differ significantly from firms in the

Table 3. Univariate comparison of means and medians of measures of firm characteristics

Variable	1st quartile	2nd quartile	3rd quartile	4th quartile	t-statistic
CASH range	0.00005-0.023	0.023-0.059	0.059-0.136	0.136-0.961	
CASH	0.011 (0.010)	0.040 (0.039)	0.090 (0.086)	0.250 (0.213)	-42.426 (0.000)
STATE	0.224 (0.153)	0.254 (0.209)	0.261 (0.258)	0.271 (0.252)	-3.100 (0.002)
AGE	9.575 (9)	9.730 (10)	9.923 (10)	9.476 (9)	0.422 (0.673)
SIZE	26.933 (26.920)	26.985 (27.005)	26.940 (26.920)	26.783 (26.552)	1.531 (0.126)
GROWTH	0.420 (0.061)	0.191 (0.082)	0.151 (0.088)	0.668 (0.090)	-0.418 (0.676)
CFLOW	0.020 (0.014)	0.033 (0.022)	0.060 (0.053)	0.094 (0.085)	-8.405 (0.000)
NWC	0.066 (0.033)	0.112 (0.092)	0.135 (0.119)	0.095 (0.080)	-2.156 (0.031)
FAR	0.333 (0.292)	0.275 (0.224)	0.233 (0.196)	0.2010 (0.170)	9.889 (0.000)
LEV	0.596 (0.639)	0.565 (0.593)	0.502 (0.540)	0.398 (0.375)	14.306 (0.000)
BANKDEBT	0.557 (0.593)	0.500 (0.551)	0.392 (0.390)	0.267 (0.140)	16.477 (0.000)
DVD	0.614 (1)	0.777 (1)	0.873 (1)	0.895 (1)	-10.534 (0.000)

(Note) The number of sample firms is 233, including SOEs and non-SOEs. The mean and median (medians are bracketed) of variables are presented on the left side (1st to 4th quartile); t-values and p-values (p-values are bracketed) are presented on the right side (t-statistic). See the definitions of variables in Table 1.

first quartile of cash holdings at the 1% level for STATE, CFLOW, FAR, LEV, BANKDEBT, DVD variables and at the 5% level for NWC variable. In general, most variables I am considering change monotonically as predicted by theories.

Specifically, the cash flow to assets ratio rises monotonically with cash ratio. The same result holds for the dividend payment (DVD). In contrast, the fixed assets to total assets ratio decreases monotonically across quartiles of cash holdings. Bank debt ratio and leverage ratio also decline from the first to the fourth quartile of the cash-to-assets ratio. However, firm age from equitization, firm size, and non-cash networking capital to assets change non-monotonically over the four quartiles of cash holdings. The average firm age in the fourth quartile of cash holdings is the youngest. The mean and median of firm size over the four quantiles are similar. The firms belong to the highest cash holding range are even smaller than the ones with the least cash, but this difference is insignificant. NWC increases over the first three quartiles and decreases in the fourth quartile.

For STATE variable, as expected, the univariate relation between cash and state ownership ratio is monotonic, and the firms with higher cash ratios are the firms with high state ownership ratio in terms of both mean and median values.

To investigate the pattern of relation between state ownership and cash ratio in more detail, I calculate the mean and median of cash holdings to see how they change as the state ownership range. The first group includes all firm-years that state ownership is lower than 5%-the point that defines whether a shareholder is a major shareholder and with state ownership smaller than 5%, there is no member of the board of directors of a firm is representative for the government. The second group includes all firm-years that state ownership ratio is greater than or equal to 5% and is less than 25%, the third group state ownership range is from 25% to 45%, and the fourth one includes observations that have state ownership is greater than or equal to 45%.

As can be seen in Fig.2, both mean and median of cash holdings of the fourth group-where the state ownership ratios are the highest-are the highest compared with other groups. The medians of cash ratio increase from the first to the forth range of state ownership. This, moreover, show that firms at higher state ownership ratio range hold more cash.

3. The relation between variables

Table 4 shows that for the Pearson correlation matrix, CASH has positive and significant correlations with STATE, CFLOW, DVD, and has significant negative relations with SIZE, FAR, LEV, BANKDEBT. The correlation coefficients among CASH and AGE, NWC are negative, and the correla-

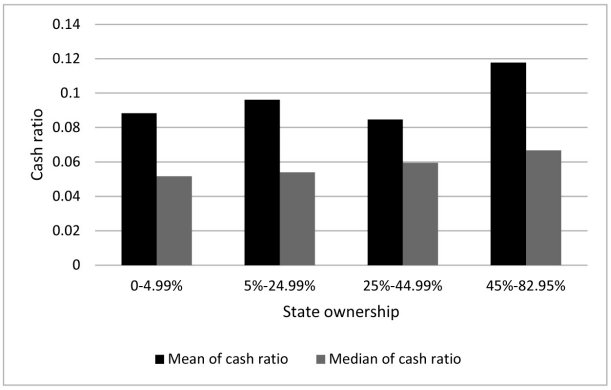

Fig. 2. Cash holdings by state-ownership ratio range

(Note) The number of sample firms is 233, including SOEs and non-SOEs. Total firm-years observations are 1864 from 2010-2017. The mean and median of CASH are calculated based on four groups of STATE which are lower than 5%, from 5% and lower 25%, from 25% and lower 45%, and greater than or equal to 45%. See the definition of variables in Table 1.

Table 4. Correlation Matrix

	CASH	STATE	AGE	SIZE	GROWTH	CFLOW	NWC	FAR	LEV	BANKDEBT	DVD	VIF
CASH	1	0.077 (0.001)	0.001 (0.974)	-0.066 (0.004)	0.057 (0.014)	0.256 (0.000)	0.083 (0.000)	-0.229 (0.000)	-0.338 (0.000)	-0.398 (0.000)	0.266 (0.000)	-
STATE	0.093 (0.000)	1	-0.160 (0.000)	0.011 (0.633)	-0.078 (0.001)	0.101 (0.000)	-0.116 (0.000)	0.048 (0.040)	0.159 (0.000)	-0.085 (0.000)	0.223 (0.000)	1.15
AGE	-0.035 (0.133)	-0.187 (0.000)	1	-0.040 (0.083)	-0.100 (0.000)	0.008 (0.739)	0.124 (0.000)	-0.153 (0.000)	-0.149 (0.000)	-0.028 (0.222)	-0.067 (0.004)	1.1
SIZE	-0.010 (0.000)	0.033 (0.150)	-0.010 (0.679)	1	0.118 (0.000)	-0.027 (0.248)	-0.305 (0.000)	0.083 (0.0000)	0.361 (0.000)	0.403 (0.000)	0.093 (0.000)	1.32
GROWTH	0.006 (0.782)	-0.026 (0.2582)	0.027 (0.249)	-0.029 (0.213)	1	-0.041 (0.075)	-0.056 (0.015)	0.028 (0.232)	0.068 (0.003)	0.050 (0.030)	0.027 (0.240)	1.01
CFLOW	0.177 (0.000)	0.093 (0.000)	0.009 (0.711)	-0.027 (0.244)	-0.011 (0.645)	1	-0.061 (0.008)	0.243 (0.000)	-0.269 (0.000)	-0.158 (0.000)	0.158 (0.000)	1.13
NWC	-0.0339 (0.143)	-0.1276 (0.000)	0.135 (0.000)	-0.319 (0.000)	0.005 (0.819)	-0.056 (0.016)	1	-0.369 (0.000)	-0.526 (0.000)	-0.307 (0.000)	0.012 (0.603)	2
FAR	-0.241 (0.000)	0.071 (0.002)	-0.151 (0.000)	0.084 (0.000)	-0.024 (0.300)	0.174 (0.000)	-0.393 (0.000)	1	-0.104 (0.000)	0.350 (0.000)	0.033 (0.150)	1.78
LEV	-0.329 (0.000)	0.144 (0.000)	-0.163 (0.000)	0.357 (0.000)	0.002 (0.930)	-0.205 (0.000)	-0.535 (0.000)	-0.070 (0.003)	1	0.339 (0.000)	-0.071 (0.002)	2.19
BANKDEBT	-0.450 (0.000)	-0.072 (0.002)	-0.026 (0.272)	0.392 (0.000)	-0.042 (0.072)	-0.139 (0.000)	-0.296 (0.000)	0.3617 (0.000)	0.378 (0.000)	1	-0.061 (0.010)	1.68
DVD	0.195 (0.000)	0.224 (0.000)	-0.076 (0.002)	0.092 (0.000)	-0.044 (0.056)	0.110 (0.000)	-0.004 (0.8675)	0.010 (0.6551)	-0.071 (0.002)	-0.067 (0.004)	1	1.10

(Note) This table reports the coefficients of correlations among cash holdings and other variables with the Pearson correlation in the lower triangle and the Spearman correlation in the upper triangle. The values in parentheses denote the p-value of Pearson and Spearman correlation, respectively. The number of sample firms is 233, including SOEs and non-SOEs. See the definition of variables in Table 1.

tion coefficient between CASH and GROWTH is positive, but these are insignificant.

The Spearman correlation matrix shows that CASH has significant positive correlations with STATE, GROWTH, CFLOW, NWC, DVD, and has negative correlations with SIZE, FAR, LEV, BANKDEBT. The coefficient of correlation between CASH and AGE is insignificantly positive. However, the most important thing is that Table 4 shows there is no issue of multicollinearity because the correlations coefficients between independent variables are not high, and VIF values are in acceptable ranges.

4. Regression results and discussion

(1) Regression models

The general model for Eq. (1) is estimated using ordinary least squares (OLS) regressions for the pooled sample as below:

$$CASH_{i,t} = a_0 + \gamma_1 STATE_{i,t} + \gamma_2 AGE + \gamma_3 (STATE_{i,t} x AGE_{i,t}) + \beta_k X_{i,t} + Industry\ fixed\ effects + \varepsilon_{i,t} \quad (1)$$

Subscripts i and t denote firm i at the end of year t. The dependent variable is $CASH_{i,t}$. State ownership, age from equitization, and the interaction between state ownership and AGE are the focuses of my analyses and the main explanatory variables. For state ownership, I use alternatively state dummy variable (STATE_D) that equals one if state ownership ratio greater than zero, otherwise zero, instead of STATE. In Hypothesis 1, the predicted sign of coefficient γ_1 is positive for the agency theory but negative for the soft budget constraint theory. In Hypothesis 2, the predicted sign of coefficient γ_2 is negative because time passing after equitization would bring about a better reputation and an improvement in the amount of information the markets have about such firms, reducing the marginal benefit from cash, therefore lowering cash holdings. In Hypothesis 3, I predict that the coefficient of the interaction term between STATE and AGE γ_3 has a negative sign for the reason that with the same level of state ownership, a better reputation and less the information

asymmetry degree as the result of higher age help to mitigate the agency problems.

$X_{i,t}$ is a k-vector of control variables ($k = 1, 2, 3, \ldots K$) which include firm size (SIZE), growth opportunities (GROWTH), net operation cash flow (CFLOW), net working capital (NWC), fixed asset ratio (FAR), leverage (LEV), ability to access external capital (BANKDEBT), and dividend payment (DVD). Because of the disadvantage of the economies of scale, smaller firms are likely to be more financially constrained; they tend to maintain higher cash balances than larger firms to cope with unforeseen future liquidity shocks (Megginson et al., 2014). Therefore, I expect a negative relation between cash holding level and firm size according to the trade-off theory. To capture growth opportunities, following Dittmar et al. (2003), Bigelli and Sánchez-Vidal (2012), Vo (2017), I use the sales' yearly growth rate - GROWTH and expect that it is positively associated with cash holdings. Sales are the source of cash, and to cope with sales growth, firms have to increase working capital as the results they have to provide more cash for higher demand for working capital. Most empirical studies supported the pecking-order theory on the extent that firms hold more cash when they make lager cash flow from their operation such as Opler et al. (1999), Ozkan and Ozkan (2004), Bigelli and Sánchez-Vidal (2012) and Megginson et al. (2014). Therefore, the variable for cash flow generated by a firm is expected to positively affect cash balances. Because non-cash current assets can be converted into cash at a low cost, they serve as the substitutions of cash. Hence, it is expected to be negatively related to cash holdings. Cash to total asset ratio has a negative nature relation with fixed assets to total assets ratio because cash and fixed-assets are components of total assets. Therefore, I expect that fixed assets ratio and cash ratio have a reverse relation as John (1993), Drobetz and Gruninger (2007), Tiago and Caldeira (2014), and Nguyen and Le (2017). According to the pecking order theory, enterprises typically raise debt when their internal capital is not sufficient to finance their investments. Therefore, leverage is expected to negatively affect cash holdings. To measure the ability to raise external funds, Ozkan and Ozkan (2004) employed the ratio of bank debt to total debts. If this ratio is high, it means that this is a good company (assessed by banks), and therefore this company is able to access external capital easily. Bank debt is expected to have a negative effect on cash holdings. The fact that capital markets penalize dividend cuts with significant stock price declines (Jensen 1986). Ozkan and Ozkan (2004) suggested that in order to avoid a circumstance in which dividend-paying companies are short of cash to pay dividends, those companies might hold more cash than non-dividend-paying companies might. In these cases, a positive relationship between cash holdings and dividend payments can be seen. Bigelli and Sánchez-Vidal (2012), Megginson et al. (2014), and Kusnadi et al. (2015) find that dividend payments are associated with more cash holdings. They explain that companies pay dividends as they earn more money, and vice versa, no dividend could be associated with a lack of cash. Therefore, it is predicted that DVD is positively associated with cash holdings.

Industry dummies are also included in all regressions to control for the corresponding fixed effects. Specifically, the industry dummies are based on the 14-industry classification benchmark.

(2) Results and discussion

Table 5 presents results for pooled OLS regression models. Column (1) and (2) present the regression results with STATE and STATE_D, respectively. Column (3) presents the results for the model includes AGE and control variables without state ownership variable. Column (4) presents the results for the model with STATE, AGE, the cross-term between STATE and AGE, and other control variables. Column (5) presents the results for the model with STATE_D, AGE, the cross-term between STATE_D and AGE, and other control variables.

As can be seen in Table 5, state ownership measured by STATE and STATE_D variables has positive coefficients in all of the four models and highly significant at the 1% level for the model (1), (4) and (5) and at the 5% level for the model (2). These are consistent with Hypothesis 1 that firms with high state ownership (or have state ownership) hold more cash,

confirming the finding by Chen et al. (2018).

Coefficients for the AGE variable are negative and significant in all regressions indicating that the cash ratio decreases as time passes after equitization, and it is in line with Hypothesis 2. Besides, significant negative coefficients of the interaction terms in model (4) and (5) show that the effect of state ownership on cash holdings diminishes as the time passes after firms being equitized, which is consistent with hypothesis 3. The results confirm the effectiveness of equitization in Vietnam on the aspect that equitization and privatization increase transparency and reduce the degree of information asymmetry and agency problems in comparison with former SOEs. In more detail, Panel B of Table 5 shows the marginal effects of STATE, AGE and their interaction term on cash holdings according to regression coefficients in model 4 while Panel C of Table 5 presents the marginal effects of STATE_D, AGE and the interaction term between STATE_D and AGE on cash holdings as the regression results of model 5.

Panel B of Table 5 indicates that with the same state ownership ratio level, a firm with a year older has a lower cash ratio because of the significant negative coefficients for AGE. Also, as the coefficients of the interaction term are statistically significant negative, so at high state ownership, the cash reduction is greater. This is logical because the high state ownership is associated with serious information asymmetry and more severe agency problems (Chen et al., 2018) leading to high cash holdings, thereby under the effectiveness of a better reputation and the less information asymmetry, the larger cash decrease would be. Particularly, at state ownership of 75%, the marginal effect of AGE is - 0.68% (-0.003 - 0.005*75%). At state ownership of 50%, this marginal effect on cash holdings level is - 0.55% (-0.003 - 0.005*50%). At state ownership of 25% and 0%, the marginal effects of AGE on cash ratio are only -0.43% (-0.003 - 0.005*25%) and -0.3% (-0.003 - 0.005*0%), respectively. As shown in Panel B, when evaluating the marginal effect of STATE, AGE, and their interaction term simultaneously, as a firm becomes older one year, the effect of AGE helps to reduce the main effect of STATE on cash holdings. Specifically, the total effects thereof at state ownership of 75%, 50%, 25%, 0% are 5.32% (6%-0.68%), 3.45% (4%-0.55%), 1.57% (2%-0.43%) and - 0.3% (0%-0.3%) compared to the main effect of STATE of 6.00%, 4.00%, 2.00% and 0%, respectively.

Panel C of Table 5 shows that the marginal effect of AGE leads to an averagely 0.6 percentage-point decline (-0.002-0.004*1) in cash holdings in firms with state ownership greater than zero, while this marginal effect for firms with zero state ownership is only - 0.2% (-0.002-0.004*0). As a result, a year passes after equitization, the total effect of STATE_D, AGE, and their cross-term is smaller than the main effect of STATE_D on cash holdings. These results are also statistically and economically significant because the increase in age promotes transparency and reduces information asymmetry. Therefore, the effect of AGE leads to a greater reduction in cash in firms with state ownership greater than 0, which are associated with more information asymmetry and severe agency problems.

Also, Table 5 reveals that debts (LEV) and net working capital (NWC) are significantly negatively associated with cash holdings. These findings are also in line with my prediction and most empirical evidence in prior studies (Opler et al., 1999; Bates et al., 2009; Megginson et al., 2014, among others). For fixed asset ratio (FAR), the estimated coefficients are also negative as hypothesized and findings by John (1993), Drobetz and Gruninger (2007), Tiago and Caldeira (2014), and Nguyen and Le (2017) but contradict the regression result for 28 listed energy companies in Vietnam from 2010 to 2016 by Phung and Nguyen (2018). Yet, this is not a big thing as Phung and Nguyen (2018) document that the conclusions of their study are only applied to the energy sector and cannot be generalized to the whole market.

Table 5. The determinants of corporate cash holdings

	(1)	(2)	(3)	(4)	(5)
VARIABLES	CASH	CASH	CASH	CASH	CASH
STATE	0.043***			0.080***	
	(0.010)			(0.026)	
STATE_D		0.010**			0.045***
		(0.005)			(0.013)
AGE			-0.004***	-0.003***	-0.002*
			(0.001)	(0.001)	(0.001)
STATE x AGE				-0.005*	
				(0.002)	
STATE_D x AGE					-0.004***
					(0.001)
SIZE	0.001	0.001	0.002	0.002	0.002
	(0.002)	(0.002)	(0.002)	(0.002)	(0.002)
GROWTH	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CFLOW	0.045**	0.047**	0.051**	0.048**	0.049**
	(0.020)	(0.021)	(0.020)	(0.020)	(0.020)
NWC	-0.308***	-0.305***	-0.310***	-0.311***	-0.311***
	(0.024)	(0.024)	(0.024)	(0.024)	(0.024)
FAR	-0.251***	-0.245***	-0.260***	-0.266***	-0.263***
	(0.020)	(0.020)	(0.020)	(0.021)	(0.021)
LEV	-0.267***	-0.258***	-0.271***	-0.282***	-0.279***
	(0.021)	(0.021)	(0.020)	(0.021)	(0.021)
BANKDEBT	-0.074***	-0.079***	-0.074***	-0.067***	-0.069***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
DVD	0.028***	0.032***	0.030***	0.026***	0.028***
	(0.005)	(0.005)	(0.005)	(0.005)	(0.005)
Constant	0.364***	0.364***	0.403***	0.389***	0.368***
	(0.058)	(0.059)	(0.059)	(0.057)	(0.057)
Industry dummy	Yes	Yes	Yes	Yes	Yes
Observations	1,864	1,864	1,864	1,864	1,864
R-squared	0.460	0.455	0.468	0.473	0.472

Panel B: The marginal effects of AGE - continuous state ownership (model 4)

STATE (%)	Change in AGE (year)	The main effect of STATE on cash ratio	The effect of AGE on cash ratio	The total effect of STATE, AGE and their interaction term on cash ratio
75%	1	6.00%	-0.68%	5.32%
50%	1	4.00%	-0.55%	3.45%
25%	1	2.00%	-0.43%	1.57%
0%	1	0	-0.30%	-0.30%

Panel C: The marginal effects of AGE- dummy state ownership (model 5)

STATE_D	Change in AGE (year)	The main effect of STATE_D on cash ratio	The effect of AGE on cash ratio	The total effect of STATE_D, AGE and their interaction term on cash ratio
1	1	4.5%	-0.60%	3.90%
0	1	0.00%	-0.20%	-0.20%

(Note) The number of sample firms is 233 for each year, including listed SOEs and listed non-SOEs. See Table 1 for the definition of variables. Heteroscedasticity-robust standard errors are in parentheses. *** denotes p-value is less than 1%, ** denotes p-value is less than 5%, * denotes p-value is less than 10%, respectively.

Inversely, Table 5 shows that the cash ratio (CASH) is significantly positively related to operating cash flow (CFLOW). The finding is consistent with my prediction and with most empirical prior studies such as Opler et al. (1999), Dittmar et al. (2003), Ozkan and Ozkan (2004). Positive and significant coefficients of DVD variable in all regressions support the view that dividend-paying firms hold higher cash balances as findings by Ozkan and Ozkan (2004), Bigelli and Sánchez-Vidal (2012) and Megginson et al. (2014).

The signs of coefficients for SIZE and GROWTH control variables are not in line with the predicted effects and not statistically significant. The coefficients of SIZE are positive as the finding for the sample of listed firms on HOSE in the study by Vo (2017), but not significant in my study. Also, the coefficients of the GROWTH variable are negative and insignificant compared to positive and significant thereof by findings of Vo (2017). The reasons for these differences are the dissimilar datasets and explanatory variables used in the regression models of the two studies. The sample of this paper includes all firms listed on HOSE and HSX and most of them are former nonstrategic small and medium-sized SOEs.

(3) Robustness tests

1) State ownership, bank loans, and cash holdings

Megginson et al. (2014) argue that soft-budget constraint (SBC) stems from state ownership. At high state ownership, firms have relatively soft budget constraints and hence heavily lean on loans from state-owned banks for liquidity needs. Conversely, low state ownership leads to relatively harder budget constraints, and hence these firms could not rely on bank loans for liquidity needs. In short, a firm's cash holdings should be more sensitive to change in bank loans at high state ownership and less sensitive at low state ownership. Similar to China, Vietnam's financial system, dominated by state-owned banks, is fertile ground for SBC syndrome. Therefore, following Megginson et al. (2014), I add the interaction term between state ownership and bank debt to Eq. (1), and keep AGE as a control variable but exclude the cross-term between AGE and STATE in Eq. (1) to check the SBC syndrome and compare the results with Megginson et al. (2014).

$$CASH_{i,t} = a_0 + \gamma_1 STATE_{i,t} + \gamma_2 (STATE_{i,t} x BANKDEBT_{i,t}) + \beta_k X_{i,t} + Industry\ fixed\ effects + \varepsilon_{i,t} \quad (2)$$

The regression results are presented in Table 6. Column (1) and (2) are the regression results of Eq. (2) with STATE and STATE_D, respectively. The effects of state ownership, age, and all other control variables have no change compared to the results of table 5 except for the coefficients of GROWTH are positive but still insignificant. However, the main focus in this section is the effect of the interaction term between state ownership and bank debt.

The estimated sign of coefficients of BANKDEBT is negative and significant, which is consistent with Megginson et al. (2014). However, the negative and highly significant coefficients of the interaction terms between state ownership and bank debt contradict the results of Megginson et al. (2014). Therefore, my result suggests no evidence for soft budget constraint theory. In particular, both the coefficients of BANKDEBT and the interaction term are negative. Thus, high state ownership leads to a greater reduction in cash ratio as the effect of BANKDEBT. However, the positive coefficient of state ownership ratio tells us that as the high state ownership, the more cash holdings. Therefore, to interpret the marginal effects on cash holdings, I must evaluate state ownership, bank debt, and their interaction term simultaneously. Panel B of Table 6 presents the total effect of state ownership, bank debt, and their interaction on cash holdings.

As can be seen in panel B, the sensitivity of cash holdings to bank debt is high when state ownership is high and low when state ownership is low, but to the extent that firms with high state ownership keep more cash. The conclusion holds for using the state dummy variable. These results are dissimilar to the finding by Megginson et al. (2014) that at high state ownership, an increase in bank debt leads to a greater reduction in cash holdings.

Table 6. State ownership, bank loans, and cash holdings

Panel A: Regression results	(1) cash	(2) cash
STATE	0.085*** (0.021)	
STATE_D		0.037*** (0.009)
BANKDEBT	-0.041*** (0.013)	-0.031** (0.015)
STATE x BANKDEBT	-0.105*** (0.035)	
STATE_D x BANKDEBT		-0.061*** (0.016)
AGE	-0.004*** (0.001)	-0.004*** (0.001)
SIZE	0.002 (0.002)	0.002 (0.002)
GROWTH	0.000 (0.000)	0.000 (0.000)
CFLOW	0.051** (0.020)	0.052*** (0.020)
NWC	-0.308*** (0.024)	-0.309*** (0.024)
FAR	-0.259*** (0.021)	-0.256*** (0.020)
LEV	-0.282*** (0.021)	-0.278*** (0.021)
DVD	0.025*** (0.005)	0.028*** (0.005)
Constant	0.368*** (0.058)	0.376*** (0.058)
Industry dummy	Yes	Yes
Observations	1,864	1,864
R-squared	0.476	0.474

Panel B: The marginal effects of BANKDEBT- continuous state ownership

STATE (%)	Change in BANKDEBT	The total effects of STATE, BANKDEBT and their interaction term on cash ratio
75%	10%	5.18%
50%	10%	3.32%
25%	10%	1.45%
0%	10%	-0.41%

(Note) The number of sample firms is 233 for each year, including listed SOEs and listed non-SOEs. See Table 1 for the definition of variables. Heteroscedasticity-robust standard errors are in parentheses. *** denotes p-value is less than 1%, ** denotes p-value is less than 5%, * denotes p-value is less than 10%, respectively.

2) Regression results for other cash variable measurement and unbalanced panel

Bates et al. (2009) document that the cash to non-cash assets ratio creates extreme outliers for firms with most of their assets in cash. Hence, for the robustness check, I use cash and cash equivalents to non-cash assets (CASHN) as the dependent variable. The Eq. (1) becomes:

$$CASHN_{i,t} = a_0 + \gamma_1 STATE_{i,t} + \gamma_2 AGE + \gamma_3 (STATE_{i,t} x AGE_{i,t}) + \beta_k X_{i,t} + Industry\ fixed\ effects + \varepsilon_{i,t} \quad (3)$$

Table 7 reports the regression results for robustness

Table 7. Regression results of robustness tests.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
VARIABLES	CASHN	CASHN	CASHN	CASHN	CASHN	CASHN	CASH
STATE	0.228*		0.233	0.130**		0.265**	0.097***
	(0.122)		(0.203)	(0.065)		(0.057)	(0.018)
AGE		-0.014***	-0.010**		-0.006**	-0.002	-0.000
		(0.006)	(0.004)		(0.003)	(0.002)	(0.001)
STATE x AGE			-0.014			-0.016**	-0.007***
			(0.011)			(0.006)	(0.002)
SIZE	-0.027	-0.025	-0.025	-0.014**	-0.013**	-0.015**	-0.001
	(0.018)	(0.017)	(0.017)	(0.007)	(0.007)	(0.007)	(0.001)
GROWTH	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
CFLOW	0.044	0.075	0.056	0.103	0.124*	0.105	0.074***
	(0.109)	(0.100)	(0.107)	(0.082)	(0.075)	(0.081)	(0.017)
NWC	-1.116***	-1.118***	-1.128***	-0.951***	-0.940***	-0.954***	-0.319***
	(0.364)	(0.364)	(0.368)	(0.184)	(0.180)	(0.185)	(0.018)
FAR	-1.000***	-1.018***	-1.050***	-0.819***	-0.807***	-0.832***	-0.258***
	(0.380)	(0.384)	(0.397)	(0.198)	(0.195)	(0.203)	(0.015)
LEV	-0.953***	-0.944***	-1.003***	-0.770***	-0.744***	-0.776***	-0.263***
	(0.336)	(0.326)	(0.352)	(0.172)	(0.163)	(0.175)	(0.015)
BANKDEBT	-0.038	-0.050	-0.015	-0.036	-0.054*	-0.030	-0.055***
	(0.060)	(0.053)	(0.068)	(0.038)	(0.032)	(0.040)	(0.008)
DVD	0.059***	0.073***	0.052**	0.080***	0.094***	0.083***	0.038***
	(0.022)	(0.026)	(0.021)	(0.020)	(0.024)	(0.020)	(0.004)
Constant	1.816**	1.965**	1.901**	1.217***	1.289***	1.269***	0.383***
	(0.796)	(0.855)	(0.814)	(0.311)	(0.331)	(0.329)	(0.040)
Industry dummies	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Observations	1,864	1,864	1,864	3,217	3,217	3,217	3,217
R-squared	0.131	0.130	0.135	0.141	0.140	0.142	0.454

(Note) The number of sample firms of the balanced dataset and the unbalanced dataset include listed SOEs and listed non-SOEs. See Table 1 for the definition of variables. Heteroscedasticity-robust standard errors are in parentheses. *** denotes p-value is less than 1%, ** denotes p-value is less than 5%, * denotes p-value is less than 10%, respectively.

checks. Columns (1) to (3) report the results of the balanced dataset, while columns (4) to (6) are regression results for an unbalanced dataset using CASHN. Column (7) shows the regression results of Eq (1) for the unbalanced dataset.

For the balanced dataset, the outliers generated by using CASHN are significant for my sample and make R squared values dramatically smaller compared to the R-squared values using CASH as a proxy of cash holdings. Besides, outliers make the coefficients of state and the interaction term between state ownership and age for the balanced dataset in column (3) becoming insignificant. But the significant negative effect of age on cash holdings does not change.

The results of robustness checks using an unbalanced dataset presented in columns (4), (5), (6) and (7) one more time confirm that state ownership is positively and significantly associated with cash holdings while age after equitization negatively affects cash holdings. The negatively significant coefficients of the cross-terms between STATE and AGE in columns (6) and (7) confirm that the effect of state ownership diminishes due to the time passing after equitization.

Ⅴ. Conclusion

Vietnam is a socialist republic country, before 1990, almost of all enterprises are 100% state-owned enterprises; however, many problems exist in those firms that force the Government of Vietnam has an economic reform program. A number of SOEs have been equitized and listed on stock exchanges in order to reduce the inefficiency of those firms and promote

the development of the stock market in Vietnam.

This study examines the effects of state ownership, age from equitization, and the interaction between age and state ownership on the level of cash of listed firms in Vietnam. The regression results provide strong evidence that state ownership is positively associated with cash holdings, which is consistent with the prediction of the agency theory and confirms the finding by Chen et al. (2018). Analysis based on state ownership ranges also shows that firms belong to the highest state ownership ratio range have the highest mean and median of cash holdings.

I further investigate that the coefficients of AGE and the cross-term between AGE and STATE are negative and significant. As time passes after being equitized, firms would have a better reputation and an improvement in the amount of information the market has about such firms. These would help to reduce the marginal benefit of holding cash as well as agency problems, leading to a decrease in cash holdings of listed firms in Vietnam. Besides, this paper shows no evidence for the soft-budget constraint theory due to the effect of state ownership. The reason probably is most listed firms in my sample were equitized from non-strategic SOEs. Another contribution of this paper is the finding that firms with high state ownership hold more cash, suggesting SOEs need having a good governance practice to mitigate the agency problems. The equitization process will not make much sense if corporate governance does not change, and the government still holds dominant portions in enterprises.

Acknowledgments

The author is deeply indebted to her academic supervisors, Professor Akihiro Noguchi and Professor Katsutoshi Shimizu, who always carefully read her paper, and gave her guidance as well as helpful comments that helped to substantially improve the paper. The author is grateful to an anonymous referee for their valuable comments and helpful suggestions. The author is responsible for all remaining mistakes. This paper is developed from the paper presented at the International Conference on Business, Economics and Information Technology (ICBEIT) in Osaka held in March 2018. The author would like to thank the participants at the Modern Capital Accounting and the Finance Workshops in May 2019 for their comments.

Notes

1) I employ the definition of SOEs according to the Vietnamese general statistics office (GSO), which are the firms with more than 50% state ownership. It is easier to compare with prior studies about Vietnam's state-owned enterprises (SOEs) such as Wacker (2017), and O'Toole et al. (2016) used data and the term "SOEs" of GSO.
2) O'Toole et al. (2016) state that the most well-known measure of Q (the ratio of the market value of equity and bonds to the book value of the firm) is not applicable in their research as their interest is in SMEs, the majority of whom do not have financial market listings. They used a vector autoregression (VAR) on firm performance indicators to estimate a "fundamental Q" which can be used as a proxy for the Q statistic for firms without bond or market listings.
3) This classification is based on FTSE Russel Benchmark as the link below:https://www.ftserussell.com/data/industry-classification-benchmark-icb
4) 176 over a total of 180 state-owned firms were equitized before 2008, it means that the majority of this sample is non-strategic small and medium-sized SOEs (see Wacker, 2017). When the state equitized those firms, they aimed at mobilizing capital of domestic and foreign individuals, economic organizations, and social organizations as well as improving equitized firms' governance and moving them towards market competitiveness.
5) It is different from China that Vietnam's laws do not divide shares into six types: state, legal person (also called institutional), foreign, management, employee, and individual shares (Chen et al. 2009). Therefore, state ownership in this paper (STATE) is the fraction of total shares owned by state shareholder(s). In a firm, there may be one or more than one state shareholders including the State management authorities, State Capital Investment Corporation (SCIC), state economic groups, and state corporations, state institutions, finance, and investment state-owned companies. This may lead to the difference between state ownership in this paper and Megginson et al. (2014) when firms have state shareholders own legal shares according to China's laws. For example, a firm has 20% shares owned by the state management authority and 35% shares owned by a 100% SOE, state ownership ratio is 20% in Megginson et al. (2014), but state ownership ratio in this paper is 55%. Another case is if a firm is a subsidiary of a 100% SOE with 60% ownership, state ownership in my

case is 60% but 0% in Megginson et al. (2014).

6) At least 75% of 1864 values of the market to book ratio are lower than 1. It means that most of the firms are valued lower than their book values. This is abnormal, the reason for that may be the undeveloped financial market in Vietnam. Therefore, I use the GROWTH variable (measured by yearly sales growth rate) to capture the growth opportunities of firms following Dittmar et al. (2003), Bigelli and Sánchez-Vidal (2012), Vo (2017).

7) The reason for the slight difference from Toan Luu and Tran Bao (2017) is my data set includes not only listed firms on Ho Chi Minh Stock Exchange but also listed firms on Hanoi Stock Exchange and the period of research by Toan Luu and Tran Bao (2017) is 11 years, from 2006-2016.

Appendix Table

Year of Equitization

Firm	Year of equitization	Firm	Year of equitization	Firm	Year of equitization	Firm	Year of equitization
AAA	2007	HAT	2006	PIT	2004	STC	2005
AAM	2002	HAX	1999	PLC	2003	STG	2007
ALT	1998	HBE	2004	PMS	1999	SVC	2005
ALV	2008	HCC	2001	PNC	1999	TBX	2001
ANV	2000	HCT	2003	PNJ	2004	TC6	2007
APC	2003	HEV	2004	POM	2008	TCL	2007
APP	2003	HGM	2005	PRC	2002	TCS	2007
ASM	1997	HHC	2003	PTC	2004	TCT	2001
BBC	1999	HHG	2001	PVD	2005	TJC	2000
BBS	2003	HLY	2003	PVG	2007	TKC	2007
BCC	2006	HMH	2002	PVS	2006	TLG	2005
BDB	2007	HPG	2001	PVT	2007	TLH	2009
BLF	2006	HST	2005	PVV	2007	TMC	2000
BMC	2001	HT1	2000	PVX	2004	TMP	2006
BPC	1999	HTC	2001	PXI	2009	TMT	2006
BST	2004	HTI	2007	PXS	2009	TNA	2000
BTP	2006	HTP	2003	QHD	2003	TNG	2003
BTT	2004	HVT	2005	QNC	2005	TPC	2001
C92	2004	ICG	2006	QST	2004	TPH	2004
CAN	1999	IMP	2001	QTC	2003	TS4	2001
CII	2001	KDC	2002	RAL	2004	TSC	2003
CJC	2005	KHP	2004	RDP	2005	TV2	2007
CKV	2005	KMT	2005	REE	1993	TV3	2007
CLC	2003	KSB	2006	S55	2004	TXM	2006
CMC	2004	KSH	2000	S74	2007	TYA	2005
CMI	2007	L10	2007	SAM	1998	UNI	1993
CMS	2007	L18	2006	SAV	2001	V12	2003
CMT	2003	L35	2006	SBT	2007	VBC	2002
CMV	2007	L43	2005	SC5	2004	VC1	2003
CT6	2002	L61	2005	SCD	2004	VC2	2003
CTB	2004	LAF	1995	SCJ	2003	VC6	2000
DAD	2007	LBE	2004	SCL	2007	VC7	2002
DAE	2004	LBM	2003	SD2	2006	VC9	2004
DBC	2004	LCD	2004	SD4	2007	VCC	2005
DC2	2004	LDP	1999	SD5	2004	VCM	2007
DC4	2004	LHC	2000	SD6	2005	VCS	2005
DHA	2000	LM7	2007	SD9	2005	VDL	2003
DHC	2002	LO5	2006	SDA	2003	VGP	2001
DHT	2000	LTC	2000	SDC	2004	VGS	2007
DIC	2005	LUT	2003	SDD	2004	VHC	2007
DL1	2007	MCO	2003	SDG	2007	VHG	2003
DLG	2007	MDC	2007	SDN	2000	VIS	2003
DMC	2004	MHC	1998	SDT	2005	VIT	2007
DNY	2008	MIM	2004	SDU	2007	VKC	2003
DPM	2007	MKV	2002	SEB	2003	VLA	2007

DPR	2006	NAV	2001	SED	2007	VMD	2006
DQC	2005	NBC	2005	SFN	2000	VNE	2005
DRC	2005	NGC	2005	SGC	2004	VNF	2001
DST	2004	NHA	2007	SGD	2004	VNG	2005
DTL	2007	NST	2005	SIC	2004	VNL	1999
DTT	2004	NTP	2004	SJC	2003	VNS	2003
DVP	2002	OCH	2006	SMC	2004	VSC	2002
DZM	2001	ONE	2001	SPM	2007	VSH	2005
EBS	2004	OPC	2002	SPP	2007	VSI	2008
ECI	2007	PAC	2004	SRA	2004	VTB	2004
GIL	2000	PGC	2003	SRC	2005	VXB	2004
GMC	2004	PGS	2007	SSC	2002		
HAD	2003	PGT	2007	SSM	2004		
HAS	2000	PHR	2008	ST8	2002		

(Note) The year of equitization is self-collected from profiles of listed firms on website http://cafef.vn/

References

Abonyi, G. (2005), *Policy Reform in Vietnam and the Asian Development Bank's State-Owned Enterprise Reform and Corporate Governance Program Loan.* Asian Development Bank, Working Paper Series, No.70, ISSN 1655-5252.

Abramov, A., Radygin, A., Entov, R., and Chernova, M. (2017), "State ownership and efficiency characteristics", *Russian Journal of Economics,* Vol. 3, No. 2, pp.129-157.

Anderson, J. H., Korsun, G., and Murrell, P. (2000), "Which enterprises (believe they) have soft budgets after mass privatization? Evidence from Mongolia", *Journal of Comparative Economics,* Vol. 28, Iss. 2, pp.219-246.

Bates, T., Kahle, K., and Stulz, R. (2009), "Why do US firms hold so much cash than they used to?", *Journal of Finance,* Vol. 64, No. 5, pp.1985-2021.

Baumol, J. W. (1952), "The transactions demand for cash: an inventory theoretic approach", *Quarterly Journal of Economics,* Vol. 66, No.4, pp.545-556.

Bigelli, M., and Sánchez-Vidal, J. (2012), "Cash holdings in private firms", *Journal of Banking and Finance,* Vol. 36, No. 1, pp.26-35.

Boubakri, N., and Cosset, J-C. (1998), "The financial and operating performance of newly-privatized firms: Evidence from developing countries," *The Journal of Finance,* Vol. 53, No. 3, pp.1081-110.

Chen, G., Firth, M., and Xu, L. (2009), "Does the type of ownership control matter? Evidence from China's listed companies", *Journal of Banking & Finance,* Vol. 33, Iss. 1, pp.171-181.

Chen, R., Ghoul, S. E., Guedhami, O., and Nash, R. (2018), "State ownership and corporate cash holdings", *Journal of Financial and Quantitative Analysis,* Vol. 53, No.1, pp.2293-2334.

Dewenter, K., and Malatesta, P. (2001), "State-owned and privately owned firms: An empirical analysis of profitability, leverage and labor intensity", *American Economic Review,* Vol. 91, No. 1, pp.320-334.

Dittmar, A., Mahrt-Smith, J., and Servaes, H. (2003), "International corporate governance and corporate cash holdings", *Journal of Financial and Quantitative Analysis,* Vol. 38, No. 1, pp.111-133.

Drobetz, W., and Gruninger, M.C. (2007), "Corporate cash holdings: Evidence from Switzerland", *Financial Markets and Portfolio Management,* Vol. 21, No. 3, pp. 293-324.

Faulkender, M.W. (2002), *Cash Holdings among Small Business.* Washington University, St. Louis, SSRN, Working Paper.

Frydman, R., Gray, C., Hessel, M., and Rapaczynski, A. (2000), "The limits of discipline: Ownership and hard budget constraints in the transition economies." *Economics of Transition,* Vol. 8, Iss. 3, pp.577-601.

Gainsborough, M. (2002), "Understanding communist transition: property rights in Ho Chi Minh City in the late 1990s", *Post-Communist Economies,* Vol.14, No. 2, pp. 227-243.

General Statistic Office of Vietnam (GSO), (2018), *Statistical Yearbook of Vietnam 2018*. Statistical Publishing House.

Jensen, M. (1986), "Agency costs of the free cash flow, corporate finance and takeovers", *American Economic Review,* Vol. 76, No.2, pp.323-329.

John, T.A. (1993), "Accounting measures of corporate liquidity, leverage, and costs of financial distress", *Financial Management,* Vol. 22, No. 3, pp.91-100.

Kim, C.S., Mauer, D.C., and Sherman, A.E. (1998), "The determinants of corporate liquidity: Theory and evidence", *The Journal of Financial and Quantitative Analysis,* Vol. 33, No. 3, pp.335-359.

Kornai, J., (1979), "Resource-constrained versus demand-constrained systems", *Econometrica,* Vol. 47, No. 4, pp. 801-819.

Kornai, J. (1980), *Economics of Shortage.* North-Holland, Amsterdam.

Kusnadi, Y., Yang, Z., and Zhou, Y. (2015), "Institutional development, state ownership, and corporate cash

holdings: Evidence from China", *Journal of Business Research,* Vol. 68, No. 2, pp.351-359.

Megginson, W. L., Nash, R. C., and van Randenborgh, M. (1994), "The financial and operating performance of newly privatized firms: An international empirical analysis", *Journal of Finance,* Vol. 49, No. 2, pp.403-452.

Megginson, W. L., and Netter, J., (2001), "From state to market: A survey of empirical studies on privatization", *Journal of Economics Literature,* Vol. 39, No. 2, pp. 321-389.

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

Miller, M. H., and Orr, D. (1966), "A model of the demand for money by firms". *Quarterly Journal of Economics,* Vol. 80, No. 3, pp.413-415.

Nguyen, T.L.H., Nguyen, L.N.T., and Le, T.P.V. (2016), "Firm value, corporate cash holdings and financial constraint: A study from a developing market", *Australian Economic Papers,* Vol. 55, No. 4, pp.368-385.

Nguyen, H. T. T., and Nguyen, T.T.T. (2016), "The overview of Vietnam securities market over 16 years of establishment and development 2000-2016", *Nomura Journal of Asian Capital Markets,* Vol.1, No. 1, pp.31-39.

Nguyen, M.H., and Le, M.T. (2017), "Impact of capital structure and cash holdings on firm value: Case of firms listed on the Ho Chi Minh Stock Exchange", *International Journal of Economics and Financial Issues,* Vol. 7, No. 1, pp.24-30.

Nguyen, T.N., Stewart, C., and Matousek, R. (2018), "Market structure in the Vietnamese banking system: A non-structural approach", *Journal of Financial Regulation and Compliance,* Vol. 26 No. 1, pp.103-119.

Okuda, H., and Nhung, L. T. P. (2012), "Capital structure and investment behavior of listed companies in Vietnam: An estimation of the influence of government ownership", *International Journal of Business and Information,* Vol. 7, No. 2, pp.137-164.

Opler, T., Pinkowitz, L., Stulz, R., and Williamson, R. (1999), "The determinants and implications of corporate cash holdings", *Journal of Financial Economics,* Vol. 52, No. 1, pp.3-46.

Ozkan, A., and Ozkan, N. (2004), "Corporate cash holdings: An empirical investigation of UK companies", *Journal of Banking and Finance,* Vol. 28, No.9, pp. 2103-2134.

O'Toole, C. M., Morgenroth, E. L. W., and Ha, T. T. (2016), "Investment efficiency, state-owned enterprises and privatisation: Evidence from Vietnam in transition", *Journal of Corporate Finance,* Vol. 37, pp.93-108.

Phung, A. T., and Nguyen, V. K. (2018), "Factors effect on corporate cash holdings of the energy enterprises listed on Vietnam's stock market", *International Journal of Energy Economics and Policy,* Vol. 8, No. 5, pp.29-34.

Shleifer, A., and Vishny R. (1994), "Politicians and firms", *Quarterly Journal of Economics,* Vol. 109, No. 4, pp. 995-1025.

Sun, Q., and Tong, H. S. (2003), "China share issue privatization: The extent of its success." *Journal of Financial Economics,* Vol. 70, Iss. 2, pp.183-222.

Tiago, R.L., and Caldeira, J.F. (2014), "Capital structure, cash holdings and firm value: A study of Brazilian listed firms", *Revista Contabilidade and Finance,* Vol. 25, No. 64, pp.46-59.

Toan Luu, D. H., and Tran Bao, K. C. (2017), "Bank financing and corporate governance: Empirical evidence from Vietnam", *Asian Economic and Financial Review,* Vol. 7, No. 11, pp.1055-1074.

Vickers, J., and Yarrow, G. (1991), "Economic perspectives on privatization." *Journal of Economic Perspectives,* Vol. 5, No. 2, pp.111-132.

Vo, X.V. (2017), "Foreign ownership and corporate cash holdings in emerging markets", *International Review of Finance,* Vol. 18, No. 2, pp.297-303.

Wacker, K. M. (2017), "Restructuring the SOE sector in Vietnam", *Journal of Southeast Asian Economies,* Vol. 34, No. 2, pp.283-301.

Wei, Z., Xie, F., and Zhang, S. (2005), "Ownership structure and firm value in China's privatized firms: 1991-2001", *Journal of Financial and Quantitative Analysis,* Vol. 40, No.1, pp.87-108.