Phung Anh Thu; Nguyen Vinh Khuong

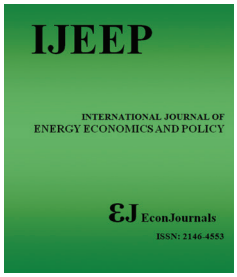
**Article**

# Factors effect on corporate cash holdings of the energy enterprises listed on Vietnam's stock market

International Journal of Energy Economics and Policy

**Provided in Cooperation with:**
International Journal of Energy Economics and Policy (IJEEP)

*Reference:* Phung Anh Thu/Nguyen Vinh Khuong (2018). Factors effect on corporate cash holdings of the energy enterprises listed on Vietnam's stock market. In: International Journal of Energy Economics and Policy 8 (5), S. 29 - 34.




**International Journal of Energy Economics and Policy**

ISSN: 2146-4553

available at http: www.econjournals.com

**International Journal of Energy Economics and Policy, 2018, 8(5), 29-34.**

# Factors Effect on Corporate Cash Holdings of the Energy Enterprises Listed on Vietnam's Stock Market

**Phung Anh Thu[1]*, Nguyen Vinh Khuong[2]**

[1]Faculty of Finance and Accounting, Nguyen Tat Thanh University, Ho Chi Minh City, Vietnam, [2]Faculty of Accounting and Auditing, University of Economics and Law, Viet Nam National University, Ho Chi Minh City, Vietnam.
*Email: phunganhthu1990@gmail.com

**ABSTRACT**

This study examines the factors effect on corporate cash holdings of the energy enterprises listed on Vietnam's stock market. Our data set includes 28 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016, with a total of 196 firm-year observations being collected. We used GMM estimator to test our hypotheses. The results show a negative association between leverage, return on assets, operating cash flow and corporate cash holdings while a tangible asset has a positive relationship.

**Keywords:** Corporate Cash Holdings, Energy Enterprises, Vietnam
**JEL Classifications:** G33, G31

## 1. INTRODUCTION

Cash resources furnish firms extremely demanded fiscal independence, thereby allowing them to arise their strategy with restricted external resistance (Boubaker et al., 2015). In addition, the cost of using internal capital is perpetually less expensive than external capital. Companies with a high cash-flow ratio will have more investment options to maximize profits when the money is tight.

The factors effect on cash holding justifies examination because cash holding has expenses. Corporations strength handle cash to suffice future obligation but meantime, they may not fund in profitable outlines. High levels of cash may consequently designate agency cost between manager and shareholders (Jensen, 1986). Another important cost of holding cash is the opportunity cost if firms are patronizing off their profitable schemes to keep it.

The examination of the operators of the lately recognized great corporate cash holding is of interest both from academic and practical research (Al-Najjar, 2013; Al-Najjar and Clark, 2017; Boubaker et al., 2015). Hence, investigations correlated to cash control are intermittent in academic literature, particularly due to the fact that firms keep the significant percentage of their assets in cash. These difficulties are linked to the occurrence of market shortcomings, such as asymmetric information, agency problems, transaction costs and financial distress (Ferreira and Vilela, 2004; Jensen, 1986; Jensen and Meckling, 1976; Martínez-Sola et al., 2013).

Several investigations have examined the influences of asymmetric information on corporate cash holdings (Al-Najjar and Clark, 2017; Dittmar et al., 2003; Ferreira and Vilela, 2004; García-Teruel et al., 2009; Kim et al., 1998; Manoel et al., 2018; Opler et al., 1999; Ozkan and Ozkan, 2004), and have encountered that cash holdings are positively linked to the degree of asymmetric information. Definitely, information asymmetry and agency cost perform it dilemma and valuable for firms to receive reserves. Hence, firms may increase up their liquid current assets to diminish the costs connected to necessity on outside financing.

We use a data from energy listed firms on the Ho Chi Minh City Stock exchange and the Ha Noi Stock exchange from 2010 to 2016. We utilize GMM to determine the inherent endogeneity difficulty. In developing market circumstances, there are some independent variables represent this market such as financial leverage, firm

growth rates, firm size, profitability, cash flows from operating activities, and fixed assets.

Our investigation contributes the agency cost literature on corporate cash holding in the Vietnamese context. This article encourages researchers to explain both the firm characteristics and the impact of this on cash holding. Currently, there is non-research on firm characteristics and cash holding in Vietnam that the ground why this investigation is significant. Our sample is 28 energy listed firms which disclose financial statements reporting incorporating the period from 2010 through 2016.

The rest of the paper proceeds as follows. The next section of the paper shows the literature and develops the research hypotheses; section 3 and 4 presents the methodology; section 5 presents the results of our empirical analysis and the discussion of results; finally we present the main conclusion, the limitations and few recommendations.

## 2. LITERATURE REVIEW

### 2.1. Some Theory Support Hypothesis

#### *2.1.1. Pecking order theory*

Pecking Order Theory was developed by Myers and Majluf (1984) to explain corporate investment and financing decisions based on the unbalanced information. Because executives better understand the external investors about the company's business as well as the profitability of future projects. Therefore, if the projects are promising, highly profitable, the best way to fund is to use the available resources from retained earnings. Asymmetric information performs investors by thinking that they know a little about the prospects, potential, and value of the company. So they always act to protect themselves in the market in the direction of always lowering the price of new shares issued or reduced in dividends and high valuations with the shares increase the rate of paying dividends or increase the rate Credits (Frank and Goyal, 2007). Results, internal cost save more than the capital cost from the capital market because there is the asymmetry information between the company and the third party, investors. In details, To optimize costs in the company, they tend to chose internal funds as cash, high liquid asset, and then they chose external repositories in the sequence of secure borrowing, risky debt financing, and finally the equity (Ferreira and Vilela, 2004; Ozkan and Ozkan, 2004; Pinkowitz et al., 2007).

#### *2.1.2. Trade-off theory*

Following prior studies, Firms want to optimize their shareholders' benefits by counting profits and costs. Firms borrow funds for investment will increase profit and bear the cost of debt or interest expenses (Afza and Adnan, 2007; Al-Najjar, 2013; Manoel et al., 2018). Small firms always consider it is necessary to give high debt while they cannot afford the interest they create. And the return on debt is not enough to cover the cost. Therefore, according to trade off theory, businesses have high volatility, low capital, low interest, low interest, high market book tend to have less debt Myers and Majluf (1984). This leads to them tend to hold more cash in fact. According to Boubaker et al. (2015), the increase in cash holdings will reduce some risks of bankruptcy, a risk of loss of liquidity, finance distress… However, cash holdings will cause some limitations. Consider the aspect of opportunity costs, businesses holding high cash they will ignore some investment deals. But that would be profitable for them in the future (Ferreira and Vilela, 2004; Frank and Goyal, 2007; Gill and Shah, 2012).

### 2.2. Hypothesis

Based on fundamental theories, we summarise the prior literature regarding corporate cash holdings and construct the hypotheses as follows.

#### *2.2.1. Firm size and corporate cash holdings*

According to pecking order theory, small companies will have lower credit limits than multinational companies. Hence, small companies regularly provoke higher interest expenses than large and multinational companies. Therefore, small companies need to keep more cash to guarantee liquidity (Al-Najjar, 2013; Al-Najjar and Belghitar, 2011; Manoel et al., 2018). Moreover, the larger the company, the less information asymmetry than the small company. Large companies are also less likely to undergo bankruptcy because of the breakdown of their investment in own business (Al-Najjar, 2013; Ozkan and Ozkan, 2004). Therefore, large companies will adopt flexible financial policies and not necessarily take in the midpoint of many cash and cash equivalent ratios (Al-Najjar, 2013; Guizani, 2017; Hall et al., 2014; Manoel et al., 2018).

On the other hand, small companies are less likely to lose liquidity and lead to financial difficulties. Therefore, small companies need to hold high cash to prevent this risk (Al-Najjar, 2013; Ozkan and Ozkan, 2004). At this point, the size of the company is seen as a proxy for financial difficulties.

In this investigation, we develop hypothesis relating to the influence of firm size on the level of cash holdings as follows:

Hypothesis 1: Firm size has a mixed effect on corporate cash holdings.

#### *2.2.2. Firm leverage and corporate cash holdings*

According the trade-off theory firms with high leverage face high financial risk. Therefore, under the supervision of financial institutions, it is necessary for the corporation to have high cash holdings. That means firms have various insurance assets or high liquid asset in order to demonstrate their ability to repay, in the case of financial distress (Opler et al., 1999; Ozkan and Ozkan, 2004). Thus, there is a positive association of firm leverage to corporate cash holdings.

On the other hand, companies with high cash holding ratios frequently hardly borrow from financial institutions (Al-Najjar, 2013; Ferreira and Vilela, 2004). This is consistent with the study Ozkan and Ozkan (2004), this research considers financial leverage as a proxy for debt issuance. The high leverage gets a high return on investment and high-interest costs, this lead to reduce their ability to hold cash. In addition, when companies have a good credit policy tend to expand their business, they will use retained earnings to reinvest this lead to reduce their cash and

cash equivalents. Thus, the company usually tends to borrow for reinvestment, which increases leverage, this is consistent with the theory of pecking order. The prior researchers show the same result a negative association of leverage to corporate cash holdings (Bates et al., 2009; Bigelli and Sánchez-Vidal, 2012; Kim et al., 1998).

In this investigation, we develop hypothesis relating to the influence of firm leverage on the level of cash holdings as follows:

Hypothesis 2: Leverage has mixed effect on corporate cash holdings.

### *2.2.3. Firm growth and corporate cash holdings*

Firms that need strong growth and regularly demand extraordinary investment, so attending to high financial risk. That is the reason why firms tend to retain high cash in order to withdraw the lack of finance or the business dissolution of the organization. According to asymmetry information theory, firms with great growth usually have low information asymmetry. Corporations are obtaining it difficult to assemble outside the capital, leading to a higher balance of cash holdings. According to the foregoing arguments, cash holdings are positively correlated to growth opportunities. Previous studies have the same research results on this issue (Bates et al., 2009; Ferreira and Vilela, 2004; Kim et al., 1998; Lee and Song, 2007; Opler et al., 1999).

According to information asymmetry theory, growing companies want to have a flexible cash flow to invest. According to the pecking order theory, they want to use more the company's internal capital to invest, to minimize costs because of decreasing asymmetric information (Al-Najjar and Clark, 2017; Han and Qiu, 2007; Hardin et al., 2009). In this case, growing companies want to hold high cash. According to previous studies, have the same conclusion about the negative relationship between cash holdings and corporate growth (Afza and Adnan, 2007; Opler et al., 1999; Ozkan and Ozkan, 2004; Pinkowitz et al., 2007; Saddour, 2006). So, pecking order theory explains both sides of this relation.

As a results, we construct the following hypothesis:

Hypothesis 3: Firm Growth has mixed effect on corporate cash holdings.

### *2.2.4. Profitability and corporate cash holdings*

According to the pecking order theory, highly profitable companies often have high cash reserves for reinvestment, also consistent with previous research (Al-Najjar and Clark, 2017; Kim et al., 1998; Manoel et al., 2018). Following by (Ferreira and Vilela, 2004; Opler et al., 1999), companies used to retained earnings to create liquidity and competitive advantage in their businesses, that the reason why they keep a high level of cash holdings to give them the advantage. Thus, profitability has a positive effect on corporate cash holdings.

Conversely, when the retained earnings are prioritized for debt repayment by the firm, this leads to hold low cash (Kim et al., 1998; Lee and Song, 2007). Profitability has a negative effect on corporate cash holdings.

Therefore, we construct the following hypothesis.

Hypothesis 4: Profitability has mixed effect on corporate cash holdings.

### *2.2.5. Operating cash flow and corporate cash holdings*

The trade-off theory indicates cash flow as an alternative source of liquidity in case firms face to finance distress or bankruptcy (Hardin et al., 2009). High cash flow firms frequently acquire high costs to raise capital, as they pay high information asymmetry cost. This leads to giving low cash holdings (Myers and Majluf, 1984). According to research by Kim et al. (1998) pointed out that, based on the pecking order theory, high cash-flow companies regularly tended to use internal cash. In this case, they use cash to cover an external debt, this leads to low cash holdings. Therefore, we consider the negative relation.

On the other hand, to avoid bankruptcy risk or investment business losses, higher cash flow companies with tend to hold cash. The reason was given by the previous research (Bigelli and Sánchez-Vidal, 2012; Han and Qiu, 2007; Opler et al., 1999; Ozkan and Ozkan, 2004). The higher cash flow firms fluctuation, the greater profits fluctuation. Thus, preventing potential risks from the fluctuations, the companies want to hold more money.

In this study, we establish the hypothesis of the relationship between operating cash flow and the level of cash holdings as follows:

Hypothesis 5: Operating cash flow has mixed effect on corporate cash holdings.

### *2.2.6. Tangible asset and corporate cash holdings*

According to Titman and Wessels (1988), when the company demanded to increase its liabilities it needed asset mortgages to ensure its loans. If the company has assets to mortgage they conduct not to hold too much cash at the unit. In addition, companies have fixed-asset can quickly transform to cash, which means high liquidity, leading to a decrease in cash holdings (Drobetz and Grüninger, 2007). When required, firms can trade these assets to solve the problem of solvency.

This leads to the following hypothesis:

Hypothesis 6: Tangible asset has a negatively effect on cash holdings.

## 3. MODEL AND VARIABLES

In this section, we begin by measuring cash holdings, then estimating the regression model of determinants effects on cash holding from the explanatory factors identified in the current literature. The relation between cash holdings and determinate variables is also discussed from various theoretical perspective.

This section focuses on developing the regression model that examines determinants of cash holdings in Vietnam on energy firms. We use Arellano and Bond (1991) linear dynamic GMM

to account for the omitted variable problem, country-specific heterogeneity, and endogeneity issue.

The regression model can be formulated as follows:

$$CASH_{i,t} = \mu CASH(-1)_{i,t} + \delta_1 SIZE_{i,t} + \delta_2 LEV_{i,t} + \delta_3 GROWTH_{i,t} + \delta_4 ROA_{i,t} + \delta_5 CFO_{i,t} + \delta_5 PPE_{i,t} + \varepsilon_{i,t}$$

Where CASH as a proxy for corporate cash holdings, cash holdings determined by total cash and short-term investment divided total asset (Afza and Adnan, 2007; Al-Najjar, 2013; Al-Najjar and Clark, 2017; Ferreira and Vilela, 2004; García-Teruel et al., 2009; Kim et al., 1998; Lee and Song, 2007; Manoel et al., 2018; Martínez-Sola et al., 2013; Ogundipe et al., 2012; Opler et al., 1999; Ozkan and Ozkan, 2004; Pinkowitz et al., 2007; Saddour, 2006).

CASH as a proxy for corporate cash holdings, Cash holdings determined by total cash and short-term investment divided total asset.

SIZE is a proxy for firm size, *SIZE* is a proxy for firm size. In this study, it is calculated by the natural logarithm of the book value of total assets at year-end (Al-Najjar, 2013; Al-Najjar and Clark, 2017; Dittmar et al., 2003; Ferreira and Vilela, 2004; García-Teruel et al., 2009; Gill and Shah, 2012).

LEV is a measure of leverage level, *LEV* is a measure of leverage level, which is calculated by the ratio of debt to total assets at year-end (Han and Qiu, 2007; Hardin et al., 2009; Kim et al., 1998; Lee and Song, 2007).

GROWTH is the proxy for firm growth, GROWTH is calculated by the ratio of revenue year-end minus revenue previous year and revenue previous year (Al-Najjar, 2013; Drobetz and Grüninger, 2007; Gill and Shah, 2012; Han and Qiu, 2007).

ROA is a proxy for Profitability, *ROA* is defined by profits divided total assets at year-end (Pinkowitz et al., 2007; Saddour, 2006).

CFO is a proxy for Operating cash flow, *CFO* is defined by cash flow divided total assets at year-end (Bates et al., 2009; Dittmar et al., 2003; Kim et al., 1998; Opler et al., 1999)

PPE is a proxy for Tangible asset; PPE is defined by tangible asset divided total assets at year-end (Dittmar et al., 2003; Drobetz and Grüninger, 2007).

$\varepsilon_{i,t}$: Error term.

$\delta_1 \rightarrow \delta_5$: Slope coefficients representing the influence of the associated independent variable on the dependent variable

## 4. DATA

This study examines the factors effect on corporate cash holdings of the energy enterprises listed on Vietnam's stock market. Our data set includes 28 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016, with a total of 196 firm-year observations being collected. We used GMM estimator to test our hypotheses. The results show a negative association between leverage, return on assets, operating cash flow and corporate cash holdings while a tangible asset has a positive relationship.

Our data set includes 28 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016, with a total of 196 firm-year observations being collected.

We use secondary data from financial statements, retrieved from Thomson Reuters EIKON to measure the dependent and independent variables. Descriptive statistics of variables is provided in Table 1.

## 5. RESULTS AND DISCUSSION

Table 2 exhibits correlation matrix among variables utilized in the paper. None of the correlations among variables, which are proxy distinctive constructs, are extremely correlated (>0.90) to appoint a problem with multicollinearity (Gujarati and Porter, 2003). Cash holding is negatively correlated with firm leverage, firm growth and positively correlated with firm size, profitability, operating cash flow, tangible assets (Table 3).

The energy listed firms landscape manifests that firm leverage, profitability, operating cash flow and fixed assets are the key determinants of corporate cash holdings. Firm size and firm growth are not identified as the significant impact of cash holdings in the energy listed firms in Vietnam.

Clarify the original hypothesis with a theoretical framework, we distinguish a negative association between firm leverage and corporate cash holdings: Energy listed firms that are capable to collect the debt are scarce possible to handle cash as they are able to borrow funds externally. Therefore, firm leverage can be inspected as a proxy for holding cash (Al-Najjar, 2013; Ferreira and Vilela, 2004; Manoel et al., 2018; Ozkan and Ozkan, 2004). Uniformly firms with the capacity to reach outside repositories are less in demand of cash to settle for investments.

The regression result point that there is a negative association between profitability and cash holdings. This conclusion consistent

**Table 1: Descriptive of variables**

| VARIABLE | Observations | Mean±SD | Minimum | Maximum |
|---|---|---|---|---|
| CASH | 196 | 0.7104±7.1910 | 0.0006 | 100.8504 |
| SIZE | 196 | 27.9256±1.7150 | 24.8171 | 31.6697 |
| LEV | 196 | 0.5360±0.1858 | 0.0320 | 0.9345 |
| GROWTH | 196 | 0.1362±0.4203 | −0.6289 | 4.2341 |
| ROA | 196 | 0.0628±0.0506 | −0.1349 | 0.2670 |
| CFO | 196 | 0.0833±0.1041 | −0.1779 | 0.4055 |
| PPE | 196 | 0.3080±0.2330 | 0.0070 | 0.9661 |

The table reports summary statistics of variables over the period from 2010 to 2016 for Vietnamese listed firms. CASH is the cash holding indicator, calculated as total cash and short-term investment divided total asset. SIZE is firm size, that is, natural log of assets. LEV is firm leverage, measured as ratio of total debt over total assets. GROWTH is sale growth rate. ROA is the ratio of net income after taxes to total assets. CFO is net operating cash flow and total assets. PPE is the ratio of net plant, property and equipment to total assets. SD: Standard deviation

with hypothesis 4 and contrary the predicted positive sign from pecking order theory (Myers and Majluf, 1984). This force designate that smaller profitable firms that are ready to spend interests "to retain the privilege of spending dividends" are not able to receive additional funds from external institutions such as financial institutions and consequently retain cash for any emergencies to advance their financial positions.

Furthermore, the correlation between cash holdings and operating cash flow is negative and significant at the 5% level. This association reveals that firms which produce higher cash flows maintain smaller cash holdings. This is consistent with the expectational hypothesis (Hardin et al., 2009; Kim et al., 1998). When a business generates cash flow from normal business operations, there will be a tendency to increase its investment because many cash holdings will not create profit and increase shareholder benefits.

The coefficients on the proxy variable for the fixed asset (PPE) is estimated to be significantly negative (Hypothesis 6). This result is contrary to an expectational hypothesis (Drobetz and Grüninger, 2007). This can be explained by the fact that fixed-asset investment is regularly of high value, leading to a depression in cash holdings. In addition, in the energy sector, the value of fixed capital investments is considerably large. This is consistent with the context of the sample data and a new contribution to this investigation.

On the other hand, we did not find a significant correlation between cash holdings and firm growth, which is consistent with the results of (García-Teruel et al., 2009; Guney et al., 2007). Firm size is positive and does not have statistical significance to hold cash. According to Ozkan and Ozkan (2004), other factors may have influenced the relationship between firm size and cash holding.

**Table 2: Pearson correlation coefficient matrix**

| | CASH | SIZE | LEV | GROWTH | ROA | CFO | PPE |
|---|---|---|---|---|---|---|---|
| CASH | 1 | | | | | | |
| SIZE | 0.1608 | 1 | | | | | |
| LEV | −0.0908 | 0.2282 | 1 | | | | |
| GROWTH | −0.0397 | 0.0542 | 0.2023 | 1 | | | |
| ROA | 0.0952 | 0.0245 | −0.5878 | 0.0074 | 1 | | |
| CFO | 0.0055 | 0.0341 | −0.3439 | −0.0544 | 0.4766 | 1 | |
| PPE | 0.0176 | 0.2292 | −0.1545 | 0.1395 | 0.0735 | 0.2408 | 1 |

The table reports correlation matrix over the period from 2010 to 2016 for Vietnamese listed firms. CASH is the cash holding indicator, calculated as total cash and short-term investment divided total asset. SIZE is firm size, that is, natural log of assets. LEV is firm leverage, measured as ratio of total debt over total assets. GROWTH is sale growth rate. ROA is the ratio of net income after taxes to total assets. CFO is net operating cash flow and total assets. PPE is the ratio of net plant, property and equipment to total assets

## 6. CONCLUSION

Corporate cash holdings are an important issue in accounting and finance and have interested enormous deliberation amongst academics (Al-Najjar, 2013; Al-Najjar and Clark, 2017; Manoel et al., 2018; Martínez-Sola et al., 2013; Pinkowitz et al., 2007). Nevertheless, the continuing controversy has not adequately harangued the cash holdings management in emerging economies. Accordingly, the purpose of this investigation is to contribute new empirical confirmation on the impact of firm characteristics on corporate cash holdings in Vietnam context. Using the data obtained from a sample of 28 energy listed firms in Vietnam stock market held from the year 2010 to 2016. Data collected from the Thomson Reuter database. GMM regression models were employed to interpret the data. This accommodates succeeded endogenous changes and assure the sustainability of the model compared to previous studies. Results achieved in this investigation are constant with empirical evidence on corporate cash holding literature. Our conclusions confirm that tangible assets positively impact cash holdings, whereas firm leverage, profitability and operating cash flow a negative impact, whereas firm size, growth opportunities were all determined to become an insignificant influence on the cash holdings of energy lister firms. Our research ought to possible implications to shareholders in the energy firms. High level of corporate cash holdings is regularly correlated with latent agency struggle. The free cash flow theory explicitly claims that managers frequently inspect cash holdings as free cash flows and oftentimes abuse them for individual advantages. An immeasurable knowledge of the direction between firm characteristics and cash holdings, shareholders relinquish acquainted decisions concerning the cash balances of the corporations of their prospect. Consequently, based on the conclusions of our research, an investor should rationally presume that a firm with high quick asset replacements, high debt, and equity expense should maintain lower cash holdings. If for the unusual object, a firm with high quick asset delegates, high debt, and equity expense has high cash holdings, this force is a flag of a potential agency conflict. Furthermore, managers of energy companies should not settle too much cash on their hands because it will lead to

**Table 3: Dynamic GMM- regression results**

| VARIABLES | Coefficient | Standard error | T | P-value | [95% conf. Interval] | |
|---|---|---|---|---|---|---|
| Lag of Dep. Var | 9.0846 | 19.7979 | 0.46 | 0.647 | −30.075 | 48.244 |
| SIZE | 14.0104 | 13.0679 | 1.07 | 0.286 | −11.837 | 39.858 |
| LEV | −61.7064** | 28.4445 | −2.17 | 0.032 | −117.968 | −5.444 |
| GROWTH | 4.9081 | 6.1071 | 0.8 | 0.423 | −7.172 | 16.988 |
| ROA | −171.4599*** | 65.9376 | −2.6 | 0.01 | −301.882 | −41.038 |
| CFO | −40.0326** | 17.4347 | −2.3 | 0.023 | −74.518 | −5.547 |
| PPE | 54.9935* | 32.0312 | 1.72 | 0.088 | −8.363 | 118.350 |

The table reports parameter estimates of the model: $CASHi, t = \mu CASH(-1) i, t+\delta 1SIZEi, t+\delta 2LEVi, t+\delta 3GROWTHi, t+\delta 4ROAi, t+\delta 5CFOi, t+\delta 5PPEi, t+\varepsilon i, t.$ Where: CASH is the cash holding indicator, calculated as total cash and short-term investment divided total asset. SIZE is firm size, that is, natural log of assets. LEV is firm leverage, measured as ratio of total debt over total assets. GROWTH is sale growth rate. ROA is the ratio of net income after taxes to total assets. CFO is net operating cash flow and total assets. PPE is the ratio of net plant, property and equipment to total assets. *, **, ***denotes the level of significance of 10%; 5% and 1% respectively

a deterioration in the market for capital. The research is focused only on energy companies on the Vietnamese stock market. Consequently, the conclusions of this study cannot be generalized to the whole market. Future studies can be researched for entire companies listed on the Vietnamese stock market or for specific sectors such as banking and insurance.

## REFERENCES


Afza, T., Adnan, S. (2007), Determinants of Corporate Cash Holdings: A Case Study of Pakistan. Paper presented at the Proceedings of Singapore Economic Review Conference (SERC).

Al-Najjar, B. (2013), The financial determinants of corporate cash holdings: Evidence from some emerging markets. International business review, 22(1), 77-88.

Al-Najjar, B., Belghitar, Y. (2011), Corporate cash holdings and dividend payments: Evidence from simultaneous analysis. Managerial and Decision Economics, 32(4), 231-241.

Al-Najjar, B., Clark, E. (2017), Corporate governance and cash holdings in MENA: Evidence from internal and external governance practices. Research in International Business and Finance, 39, 1-12.

Arellano, M., Bond, S. (1991), Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations. The review of Economic Studies, 58(2), 277-297.

Bates, T.W., Kahle, K.M., Stulz, R.M. (2009), Why do US firms hold so much more cash than they used to? The Journal of Finance, 64(5), 1985-2021.

Bigelli, M., Sánchez-Vidal, J. (2012). Cash holdings in private firms. Journal of Banking and Finance, 36(1), 26-35.

Boubaker, S., Derouiche, I., Nguyen, D.K. (2015), Does the board of directors affect cash holdings? A study of French listed firms. Journal of Management and Governance, 19(2), 341-370.

Dittmar, A., Mahrt-Smith, J., Servaes, H. (2003), International corporate governance and corporate cash holdings. Journal of Financial and Quantitative Analysis, 38(1), 111-133.

Drobetz, W., Grüninger, M.C. (2007), Corporate cash holdings: Evidence from Switzerland. Financial Markets and Portfolio Management, 21(3), 293-324.

Ferreira, M.A., Vilela, A.S. (2004), Why do firms hold cash? Evidence from EMU countries. European Financial Management, 10(2), 295-319.

Frank, M.Z., Goyal, V.K. (2007), Trade-off and pecking order theories of debt. Handbook of Empirical Corporate Finance, 2, 135-202.

García-Teruel, P.J., Martínez-Solano, P., Sánchez-Ballesta, J.P. (2009), Accruals quality and corporate cash holdings. Accounting and Finance, 49(1), 95-115.

Gill, A., Shah, C. (2012), Determinants of corporate cash holdings: Evidence from Canada. International Journal of Economics and Finance, 4(1), 70.

Guizani, M. (2017), The financial determinants of corporate cash holdings in an oil rich country: Evidence from Kingdom of Saudi Arabia. Borsa Istanbul Review, 17(3), 133-143.

Gujarati, D., Porter, D. (2003), Multicollinearity: What happens if the regressors are correlated. Basic Econometrics, 72(3), 363-381.

Guney, Y., Ozkan, A., Ozkan, N. (2007), International evidence on the non-linear impact of leverage on corporate cash holdings. Journal of Multinational Financial Management, 17(1), 45-60.

Hall, T., Mateus, C., Mateus, I.B. (2014), What determines cash holdings at privately held and publicly traded firms? Evidence from 20 emerging markets. International Review of Financial Analysis, 33, 104-116.

Han, S., Qiu, J. (2007), Corporate precautionary cash holdings. Journal of Corporate Finance, 13(1), 43-57.

Hardin, W.G., Highfield, M.J., Hill, M.D., Kelly, G.W. (2009), The determinants of REIT cash holdings. The Journal of Real Estate Finance and Economics, 39(1), 39-57.

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., Meckling, W.H. (1976), Theory of the firm: Managerial behavior, agency costs and ownership structure. Journal of Financial Economics, 3(4), 305-360.

Kim, C.S., Mauer, D.C., Sherman, A.E. (1998), The determinants of corporate liquidity: Theory and evidence. Journal of Financial and Quantitative Analysis, 33(3), 335-359.

Lee, Y., Song, K. (2007), Why have East Asian Firms Increased Cash Holdings so much after the Asian Financial Crisis? Paper presented at the th Australian Finance and Banking Conference.

Manoel, A.A.S., da Costa M.M.B., Santos, D.F.L., Neves, M.F. (2018), Determinants of corporate cash holdings in times of crisis: insights from Brazilian sugarcane industry private firms. International Food and Agribusiness Management Review, 21(2), 201-218.

Martínez-Sola, C., García-Teruel, P.J., Martínez-Solano, P. (2013). Corporate cash holding and firm value. Applied Economics, 45(2), 161-170.

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.

Ogundipe, L.O., Ogundipe, S.E., Ajao, S.K. (2012). Cash holding and firm characteristics: Evidence from Nigerian emerging market. Journal of Business Economics and Finance, 1(2), 45-58.

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.

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

Pinkowitz, L., Williamson, R., Stulz, R.M. (2007), Cash holdings, dividend policy, and corporate governance: A cross country analysis. Journal of Applied Corporate Finance, 19(1), 81-87.

Saddour, K. (2006), The Determinants and the Value of Cash Holdings: Evidence from French Firms. Paris: Université Paris Dauphine.

Titman, S., Wessels, R. (1988), The determinants of capital structure choice. The Journal of Finance, 43(1), 1-19.