

Earnings management and cash holdings: Evidence from energy firms in Vietnam

***Nguyen Vinh Khuong**

¹*University of Economics and Law, Ho Chi Minh City, Vietnam;*

²*Vietnam National University, Ho Chi Minh City, Vietnam*

* Corresponding Email: khuongnv@uel.edu.vn

Nguyen Thanh Liem

¹*University of Economics and Law, Ho Chi Minh City, Vietnam;*

²*Vietnam National University, Ho Chi Minh City, Vietnam*

liemnt@uel.edu.vn

Mai Thi Hoang Minh

University of Economics Ho Chi Minh City,

Ho Chi Minh City, Vietnam

hminh@ueh.edu.vn

Abstract. Earnings management practices can exacerbate information asymmetry between stakeholders such as creditors, suppliers and investors and the focal firm. However, different types of earnings management can lead to diverse consequences due to their different associations with information asymmetry and agency cost. In this study, we investigate the relationship between accrual-based earnings management (AEM), real activities management (RAM) and corporate cash holdings. The research findings suggest that real activities management has a positive impact on cash holdings, while accruals-based earnings management, has a negative impact on this measure. Our findings are robust to different measures of AEM, RAM and model specifications. The positive link between RAM and cash holdings implies that significant diminutions in discretionary production costs and selling expenses permit managers to mask the genuine performance of the firm, thus increasing information asymmetry. On the other hand, the inverse relationship between AEM and cash holdings may prove that accruals can be helpful in alleviating the information differentials between the firm and other stakeholders. Based on the research findings, we provide several implications for relevant stakeholders regarding the link between earnings management and cash holdings.

Received:

April, 2019

1st Revision:

September, 2019

Accepted:

February, 2020

DOI:

10.14254/2071-
8330.2020/13-1/16

Keywords: accrual-based earnings management, real activities management, corporate cash holdings, Vietnam.

JEL Classification: G30, G34, M41

1. INTRODUCTION

Cash holdings are important to firm performance, as this factor is a significant indicator measuring corporate financial performance (Simionescu, 2016). Managers have the discretion to decide on the levels of cash holdings, which exacerbates issues related to the monitoring cost of agency theory. The seminal research of Jensen (1986) examined the link between free cash flows and agency cost. Later studies have considered the impact of firm characteristics on the rationales of excessive cash holdings of enterprises (Al-Najjar & Clark, 2017; Bates, Kahle, & Stulz, 2009; J. Z. Chen & Shane, 2014; R. R. Chen, El Ghoul, Guedhami, & Nash, 2018; Di & Hanke, 2013; Harford, Mansi, & Maxwell, 2012; Ogundipe, Ogundipe, & Ajao, 2012; Opler, Pinkowitz, Stulz, & Williamson, 1999, 2001). The significance of cash-related studies should increase in the light of recently dramatic increases in cash hoarding of firms and in the US and other countries (Almeida et al., 2014; Bates, Chang & Chi, 2018; Orlova & Rao, 2018; Phan, Nguyen, Nguyen, & Hegde, 2019; Da Cruz, Kimura, & Sobreiro, 2019).

Prior investigations have suggested that firms should decide on their levels of cash holdings by trading off the costs and advantages of liquidity provisions (Miller & Orr, 1966). In addition to agency cost, the disadvantages of hoarding too much cash include the resulting decrease in interest income earned and imminent tax imposed on cash savings (Bigelli & Sánchez-Vidal, 2012). On the other hand, the benefits include diminished transaction costs in case of foraging the supplementary capital or assets' liquidation, and avoidance of having to use risky financial alternatives (Kim, Mauer, & Sherman, 1998; Opler, Pinkowitz, Stulz, & Williamson, 1999, 2001; Ozkan & Ozkan, 2004).

An issue that has recently raised attention is the quality of earnings and its implications for cash holdings. The association between cash holdings and earnings management is important for the management of both cash and earnings, especially for Vietnam's energy firms. Cash reserves in Vietnam's energy sector are relatively high compared to those of other international counterparts. For example, the average ratio of cash to asset increased from 5.5 per cent to 14.73 per cent between 1980 and 2004 for the US industrials firms (Bates et al., 2009). Meanwhile, Thu and Khuong (2018) documented that this rate can reach 71 per cent for energy firms in Vietnam. This fact renders research on the determinants of cash holdings in Vietnamese energy firms indispensable.

The second-quarter reports in the financial year 2017 of the listed energy firms in Vietnam reveal that the majority of enterprises stocked cash and cash equivalents up to thousands of billion VND. This figure far exceeds the value of total assets of many small and medium-sized enterprises present at the stock market in this country. Vietnam Gas Corporation's financial report showed that by the end of the second quarter of 2017, this firm had hoarded cash and cash equivalents reaching 14,551 billion VND which shows an increase of nearly 1,000 billion VND as compared to the beginning of the same year. On the other hand, electricity firms, both hydropower and thermoelectricity, have witnessed roughly double-digit profit growth recently and distributed much cash dividends to shareholders every year. Surprisingly, these firms have not received investors' attention and their market prices are rather low.

The mainstream findings from the previous studies suggest that higher financial reporting quality reduces information asymmetry between firm managers and stakeholders, and bolsters trust of external parties in firms (Leuz and Verrecchia, 2000; Bushman and Smith, 2001, Verrecchia, 2001; J. Francis, LaFond, Olsson & Schipper, 2005; J. R. Francis, 2001, 2004). In turn, the reduced information asymmetry helps

address economic conflicts among stakeholders and potential risks of firms. In contrast, poor financial reporting quality raises uncertainty about the financial health of the focal firm and garner doubts about the chances of firms engaged in earnings' manipulation. Previous studies have provided consistent results suggesting that the application of earnings management leads to severe destruction of quality in financial reporting (Balakrishnan, Blouin, & Guay, 2011; Bushman & Smith, 2001; J. Francis et al., 2005; J. R. Francis, 2004, 2011).

Our research provides significant contributions in many aspects. Firstly, to the best of our knowledge, this is the first study examining the link between managerial decisions related to earnings manipulation and corporate cash holdings in a developing country. Secondly, our research extends the literature on the factors affecting corporate cash holdings. Particularly, we show that in addition to the conventional determinants of cash holdings established in the previous studies, accruals-based earnings management and real activities management also play an important role, at least for listed energy firms in Vietnam. Thirdly, it is found that energy companies increase cash holdings through cost-cutting activities in the departments of production and sales. This can generate the problem of potential agency cost when managers have the advantage to determine the use of passive funds (Jensen, 1986). Finally, we provide evidence suggesting that accruals are not always destructive towards financial reporting quality, and this has important implications for both investors and policymakers. Our results are robust thanks to the use of System Generalized Method of Moments which enables the handling of heteroskedasticity, autocorrelation and endogeneity usually encountered in estimating empirical models, and the use of several proxies for RAM and AEM.

The rest of the current research progresses as follows. Section 2 exhibits the literature and hypothesis development. Sections 3 and 4 discuss the sample data, methodology and the descriptive statistics. Section 5 presents the results of our empirical examination and the discussion of results. Finally, we present the concluding remarks, limitations and recommendations.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. Accruals-based earnings management and level of cash holdings

High-level earnings management can generate corporate uncertainties in the short and long terms. The company's financial statements contain important financial information for the calculation of corporate current and future cash flows. In particular, the accruals amount presented on the balance sheet is a crucial component in calculating the cash flow for the company's operations. When the quality of these discretionary accruals is inferior, the amount of cash flow calculated from the report will not be able to reflect the company's current business risks. Opler et al. (1999) and Mikkelsen and Partch (2003) argue that high cash holding is a precautional mechanism against uncertainty about cash flows in the future when the cash flow fluctuations are larger.

Previous studies have recommended that decent accounting quality can undermine the information asymmetry between firms and investors, resulting in lower issuance costs and other costs that may arise when reaching for external funding. In addition, high accounting quality helps strengthen shareholders' trust in managers, leading to the more chances of business plans being implemented (Verdi, 2006). Easley and O'hara (2004) perform a comparison between models with and without information for investors. The model without information mostly contains personal information, predicting higher risk due to the lack of information for investors. On the contrary, the model with information empowers investors to explore the ability to combine sources of information better, thus changing portfolios in a more efficient manner. Therefore, to address the above problem, there emerges a need to increase shareholders' monitoring of managerial activities to reduce agency cost.

In Vietnam, studies of earnings management and cash holdings of listed companies have not yet been implemented. There have been studies on the determinants of cash holdings and earnings management (Khanh & Nguyen, 2018; Thu & Khuong, 2018), as well as the impact of AEM on cost of debt (Thu, Khanh, Ha, & Khuong, 2018). Nevertheless, in the context of energy companies, research on the relationship between accruals-based earnings management and level of cash holdings has not been conducted to re-examine agency cost hypothesis and information asymmetry hypothesis in developing countries. This current research is necessary in a sense that it fills the gap in developing countries such as Vietnam.

Accruals-based earnings management is relevant to the decision of companies' cash holdings for reasons related to information asymmetry and the cost of external financing. In theory, the manipulation of discretionary accruals can increase the intensity of information asymmetry between managers and external stakeholders. Asymmetric information influences the company's market valuation (Nanda & Narayanan, 1999) and adversely affects the access to credit sources because of higher transaction costs (Myers & Majluf, 1984). Garcia-Teruel et al. (2009) find that better information environment created by high-quality financial reporting lowers the monitoring cost exerted by shareholders, raising the likelihood that firms can access external funding, thus reducing the need to uphold precautionary cash. Dechow et al. (2010) suggest that earnings tend to be less persistent and less informative when they are chiefly composed of accruals. Consequently, the firm that have high levels of accruals need to reserve cash at a higher level to maintain operations and meet investment requirements. Consistent with this argument, previous investigations show that cash holdings has a positive relationship with the level of information asymmetry (Al-Najjar & Clark, 2017; Dittmar & Mahrt-Smith, 2007; Dittmar, Mahrt-Smith, & Servaes, 2003; Opler et al., 1999). Furthermore, accruals-based earnings management results in lower financial reporting quality, thus adding to the production of information asymmetry between firms and external capital suppliers (Shin et al., 2017; Mansali et al., 2019).

In short, accruals-based earnings management tends to enhance information asymmetry, making external capital difficult to obtain, and motivates businesses to hoard cash to overcome capital shortage to avoid underinvestment. This provides the foundation for our first hypothesis as follows:

Hypothesis H1: AEM is positively associated with the level of cash holdings.

However, there has been a growing body of literature suggesting that accruals are more informative than cash flow in the former's capacity as an indicator of corporate performance. Arya et al. (2003) argue that firms could use accruals to signal private information about their performance to the market. Linck et al. (2013) empirically test the link between discretionary accruals and firm value, and find that accruals reduce information asymmetry, easing financial constraints, thus enhancing firm value. Therefore, accruals are not always the culprit behind low-quality financial reports, and in some cases if properly handled, they could play a significant role in raising firm value and easing the information asymmetry problem in a developing market plagued by the lack of mechanism to protect the right of shareholders and debtholders. Following this argument, higher levels of accruals could help with the alleviation of information asymmetry, relieving firms from constraints and opening access to capital markets with more favourable borrowing conditions. As a result, firms will have less precautionary motivation to hoard cash. As a result, we place a contra hypothesis to H1 as follows:

Hypothesis H2: AEM is negatively associated with the level of cash holdings.

2.2. Real activities management and level of cash holdings

In a perfect scenario, the interest of managers aligns well with that of investors. In that case, higher cash outflows help communicate valuable projects such as capital investment, fixed assets, research and

development costs, advertising and staff training costs. Firms that meet target profits are less likely to be monitored by external stakeholders compared to those that fail to meet target income (Denis and Serrano, 1996). Therefore, when a firm shows signs of unabling to reach the target profit, managers tend to manipulate earnings to be able to attain the target numbers. Jensen and Meckling (1976) argue that this type of managerial behavior could raise the interest conflict with shareholders in the process of preparation of financial reports.

Schipper (1989) states that managers are empowered to use judgments in preparing financial statements, which opens door for manipulating financial statements through the adjustment of real activities. Roychowdhury (2006) and Zang (2012) detect changes in business activities to meet financial reporting objectives. Graham, Harvey, and Rajgopal (2005) emphasize that managers believe that financial report users frequently lever on short-term information rather than the company's cash flow information. Therefore, corporate executives have motivations to undertake real activities management for better short-term performance. Specifically, the study concludes that 80% of financial managers choose to lower operating costs to achieve the profit-related targets. Managers can opportunistically opt for real operations such as cutting costs in production, advertising, research and development activities to accomplish financial targets. Chang et al. (2018) also find that the positive association between real earnings management and cash holdings is stronger for firms with more binding financial constraints. Bates et al. (2009) and Huang et al. (2015) believe that firms with stronger growth opportunities are more likely to forsake valuable projects facing cash shortages.

Following this argument, cost-cutting activities in real operations actually reflect the worsening state of the company's financial health, but these could be challenging to uncover. Consistently, prior empirical studies also document the increases in real earnings management, especially after the introduction of Sarbanes-Oxley Acts, and cash holdings (Cohen et al., 2008; Duchin, 2010; Gao et al., 2013).

In summary, managers may manipulate real activities to boost income to achieve earnings targets. With unpredictable fluctuations of business cash flow when risks occur, aggressive real activities management is likely to help firms to save the much-needed cash to weather firms from difficult times. Alternatively, the positive link between real earnings management and cash holdings may be a consequence of firms signaling high growth opportunities and stockpiling cash to lower volatility risk. Both of these scenarios lead to the prediction that firms with more real earnings management tend to have higher cash holdings than companies that conduct business activities in a normal manner. This consolidates the theoretical basis for our final hypothesis:

Hypothesis H3: RAM is positively associated with the level of cash holdings.

3. MODEL AND VARIABLES

Empirical models

The research of Opler et al. (1999) is the basis for further studies examining the determinants for cash holding ratios (Afza & Adnan, 2007; Al-Najjar, 2013; Bates et al., 2009; Bigelli & Sánchez-Vidal, 2012; Dittmar & Mahrt-Smith, 2007; Hanlon, Maydew, & Saavedra, 2017; Kusnadi, Yang, & Zhou, 2015; Manoel, da Costa Moraes, Santos, & Neves, 2018; Ogundipe et al., 2012; Wang, 2015). The general argument that explains the levels of and changes in cash is to finance current operations and investments.

The regression models can be formulated as follows:

$$CASH_{it} = \delta_0 + \delta_1 AEM_{it} + \delta_2 PPE_{it} + \delta_3 SIZE_{it} + \delta_4 CFO_{it} + \delta_5 ROA_{it} + \delta_6 LEV_{it} + \delta_7 GROWTH_{it} + \varepsilon_{it} \quad (1)$$

$$CASH_{it} = \delta_0 + \delta_1 RAM_{it} + \delta_2 PPE_{it} + \delta_3 SIZE_{it} + \delta_4 CFO_{it} + \delta_5 ROA_{it} + \delta_6 LEV_{it} + \delta_7 GROWTH_{it} + \varepsilon_{it} \quad (2)$$

Where: CASH is the proxy for corporate cash holdings. Cash holdings are defined by the ratio of total cash and short-term investment to total assets (Afza & Adnan, 2007; Al-Najjar, 2013; Al-Najjar & Clark, 2017; Ferreira & Vilela, 2004; García- Teruel, Martínez- Solano, & Sánchez- Ballesta, 2009; Kim et al., 1998; Lee & Song, 2007; Manoel, da Costa Moraes, Santos, & Neves, 2018; Martínez-Sola, García-Teruel, & Martínez-Solano, 2013; Ogundipe, Ogundipe, & Ajao, 2012; Opler et al., 1999; Ozkan & Ozkan, 2004; Pinkowitz, Williamson, & Stulz, 2007; Saddour, 2006).

AEM is used as a proxy of accrual-based earnings management, defined by Jones (1991) model, Dechow, Sloan, and Sweeney (1995) model, Kothari, Leone, and Wasley (2005) model, and the Raman and Shahrur (2008) model. $RAM_{i,t}$ is the level of real earnings management, calculated by Roychowdhury (2006) model.

The coefficient δ_1 indicates the impact of AEM (RAM) on cash holdings. $\delta_2 \rightarrow \delta_7$: Slope coefficients representing the influence of the control variables on the dependent variable. $\epsilon_{i,t}$: error term.

The estimation of models (1) and (2) is conducted with System Generalized Method of Moments (System GMM). More common methods of fixed effects model, random effects model and pooled OLS are unable to deal with the potential endogeneity issue emanating from the two-way relationship between dependent variable (CASH) and explanatory variables. System GMM is also capable of providing unbiased estimates in the case of heteroskedasticity and autocorrelation, which are common in the construction of panel data.

Controls variables

We include other factors conventionally employed as determinants of cash holdings in previous studies. These control variables are: Tangible fixed asset (PPE), which is measured as the ratio of historical cost of tangible fixed assets to total assets; Firm size (SIZE), measured as the natural logarithm of total assets; Operating cash flow (CFO), defined by the ratio of cash flow from operations to total assets at year-end; Return on asset (ROA), defined by profits divided total assets at year-end; Firm leverage (LEV), measured as total liabilities on total assets, firm growth (GROWTH), calculated by the ratio of the change in revenue from year t and t-1 to the revenue in year t-1 (Al-Najjar, 2013; Bates, Kahle, & Stulz, 2009; Ferreira & Vilela, 2004; Khuong, Ha, Minh, & Thu, 2019; Martínez-Sola et al., 2013; Myers & Majluf, 1984; Ogundipe et al., 2012; Opler et al., 1999).

Measure of accrual-based earnings management

To estimate accruals-based earnings management, we use the following cross-sectional models suggested by Jones (1991), further modified by Dechow et al. (1995), Kothari et al. (2005), and Raman and Shahrur (2008). Four proxies of accruals-based earnings management are obtained by saving the residual from estimating the equations.

The model of Jones (1991) is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \epsilon_{i,t}$$

Model of Dechow et al. (1995) is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta(REV_{i,t} - AR_{i,t})}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \epsilon_{i,t}$$

Model of Kothari et al. (2005) is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta(REV_{i,t} - AR_{i,t})}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Model of Raman and Shahrur (2008) is as follows:

$$\frac{TA_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{\Delta REV_{i,t}}{A_{i,t-1}} + \beta_3 \frac{PPE_{i,t}}{A_{i,t-1}} + \beta_4 \frac{ROA_{i,t}}{A_{i,t-1}} + \beta_5 BM_{i,t} + \varepsilon_{i,t}$$

$$DA_{i,t} = TA_{i,t} - NDA_{i,t}$$

Where: TA : total accruals, total accruals are estimated as net income minus operating cash flows; DA : discretionary accruals, $NDA_{i,t}$: Non discretionary accruals for firm i in year t , $A_{i,t}$: Total assets for firm j in year $t-1$, $\Delta REV_{i,t}$: Change in the revenue (sales) for firm i in year t and year $t-1$, $\Delta AR_{i,t}$: Change in receivables for firm i from year t and year $t-1$, $PPE_{i,t}$: Gross properties, plants and equipments for firm i in year t , $ROA_{i,t}$ is the net income of firm i in year t scaled by the lagged total assets, $\beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are firm specific parameters.

Measure of real activities management

Following prior investigations (Braam, Nandy, Weitzel, & Lodh, 2015; Cohen, Dey, & Lys, 2008; Cohen & Zarowin, 2010; Manowan & Lin, 2013; Roychowdhury, 2006; Zang, 2012), the current research applies three metrics to examine the level of real activities management: the abnormal cash flows from operations (RAM_CFO), the abnormal discretionary expenses (RAM_DISX), and the abnormal production costs (RAM_PROD).

Abnormal cash flows from operations (RAM_CFO) can be derived from :

$$\frac{CFO_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Where: $CFO_{i,t}$: Cash flows from operations of firm i in period t ; $A_{i,t-1}$: Total assets of firm i in year $t-1$; $Sales_{i,t}$: Sales of firm i in year t ; $\Delta Sales_{i,t}$: Sales of firm i in year t less sales of firm i in year $t-1$; $\varepsilon_{i,t}$: residual term that captures the level of abnormal cash flows (RAM_CFO) of firm i in year t ; $\beta_1, \beta_2, \beta_3$ are firm specific parameters.

Abnormal discretionary expenses (RAM_DISX) can be derived from :

$$\frac{DISCEXP_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{SALES_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Where: $DISEXP_{i,t}$: The sum of Selling and Marketing Expenses and General and Administrative Expenses of firm i in year t ; $A_{i,t-1}$: Total assets of firm i in year $t-1$; $Sales_{i,t-1}$: Sales of firm i in year $t-1$; $\varepsilon_{i,t}$: residual term that captures the level of abnormal discretionary expenses (RAM_DISX) of firm i in year t ; β_1, β_2 are firm specific parameters.

Abnormal production costs (RAM_PROD) can be derived from :

$$\frac{PROD_{i,t}}{A_{i,t-1}} = \beta_1 \frac{1}{A_{i,t-1}} + \beta_2 \frac{SALES_{i,t}}{A_{i,t-1}} + \beta_3 \frac{\Delta SALES_{i,t}}{A_{i,t-1}} + \beta_4 \frac{\Delta SALES_{i,t-1}}{A_{i,t-1}} + \varepsilon_{i,t}$$

Where: $PROD_{i,t}$: The sum of cost of goods sold and change in inventory of firm i in year t ; $A_{i,t-1}$: Total assets of firm i in year $t-1$; $Sales_{i,t}$: Sales of firm i in year t ; $\Delta Sales_{i,t}$: Sales of firm i in year t less sales of firm i in year $t-1$; $\Delta Sales_{i,t-1}$: Sales of firm i in year $t-1$ less sales of firm i in year $t-2$; $\varepsilon_{i,t}$: residual term that captures the level of abnormal production costs (RAM_PROD) of firm i in year t ; $\beta_1, \beta_2, \beta_3, \beta_4$ are firm-specific parameters.

Following Cohen and Zarowin (2010) and Zang (2012), couple aggregate models of RAMs, RAM1 and RAM2, are also described. RAM1 is the total of RAM_PROD and RAM_DISX. RAM2 is the composite of RAM_CFO and RAM_DISX. We employ two proxies for real activities management, RAM1 and RAM2, to quantify the level of real earnings management of the focal firm in a fiscal year.

$$RAM1_{i,t} = RAM_DISX_{i,t} + RAM_PROD_{i,t}$$

$$RAM2_{i,t} = RAM_CFO_{i,t} + RAM_DISX_{i,t}$$

4. DATA

Our research employs panel data over a seven-year period from 2010 to 2016 for 29 listed firms in the energy sector in Vietnam, totalling a total number of 203 firm-year observations. In line with previous studies on real activities management (Cohen et al., 2008; Cohen & Zarowin, 2010; Ding, Li, & Wu, 2018; Roychowdhury, 2006; Zang, 2012), financial firms were eliminated from the sample. We use secondary data from financial statements, retrieved from Thomson Reuters EIKON, to calculate the dependent and independent variables.

Table 1 exhibits the descriptive statistics of the variables of this study. The parameters involved are the mean, standard deviation, minimum, median and maximum value of variables. The average value of the CASH is 71.04%, while their standard deviation is 7.19%. For the main independent variables, the average values of real activities management are 1.26 (RAM1) and 0.79 (RAM2), while the means of accrual-based earnings management are 0.47 (DAKOTHARI), 0.474 (DAMODI), 0.26 (DARAMAN) and 0.38 (DAJONES). PPE is 0.308, indicating that on average about a third of the firm's assets are fixed assets, but the maximum value of firms' fixed assets could almost account for the whole value of the firm. Energy firms are relatively large firms compared to the average size of other companies on the market (SIZE). ROA is approximately 6 per cent, but maximum return on assets could reach as much as 26.7 per cent, while some having significant losses. The cash flow from operations is about one tenth of the total assets, and consistently some firms have healthy cash flows reaching 40 per cent of total assets, while others suffer from negative operating cash flows. LEV is about half of the total assets, or on average half of the total assets are financed by bank loans. GROWTH is 0.136, indicating that on average firms increase sales by approx. 14 per cent, which is relatively fast.

Table 1

Descriptive of variables

VARIABLE	OBSERVATIONS	MEAN	SD	MINIMUM	MAXIMUM
CASH	196	0.7104	7.1910	0.0006	100.8504
RAM1	196	1.2564	1.4851	-0.5604	8.2503
RAM2	196	0.7948	1.1433	-0.0756	5.2650
DAKOTHARI	196	0.4743	1.0466	-3.9294	2.3721
DAMODI	196	0.4745	1.0451	-3.9355	2.3541
DARAMAN	196	0.2631	1.1924	-4.1148	1.8851
DAJONES	196	0.3819	1.0912	-3.8747	1.2234
PPE	196	0.3080	0.2330	0.0070	0.9661
SIZE	196	27.9256	1.7150	24.8171	31.6697
ROA	196	0.0628	0.0506	-0.1349	0.2670
CFO	196	0.0833	0.1041	-0.1779	0.4055
LEV	196	0.5360	0.1858	0.0320	0.9345
GROWTH	196	0.1362	0.4203	-0.6289	4.2341

Notes: Table 1 reports descriptive statistics of variables over the period from 2010 to 2016 for Vietnamese listed firms. CASH is calculated as total cash and short-term investment divided by total asset. RAM is real activities management indicator. DA is accruals-based earnings management indicator. SIZE proxies for firm size, calculated by the natural logarithm of total assets. LEV is calculated as the ratio of debt to total assets. PPE is a proxy for the level of tangible assets; PPE is defined by the ratio of tangible assets to total assets. ROA is defined by the ratio of net income to total assets. GROWTH is a proxy for firm growth, calculated by the change in revenue in year t and t-1 to revenue in year t-1. CFO is the proxy for operating cash flow, defined as cash flow divided total assets.

5. RESULTS AND DISCUSSION

Tables 2 presents the pair-wise correlations of all variables in this research. Results indicate that there should be no severe multicollinearity for all of the variables because none of the bi-variate correlation coefficients are higher than 0.9 (Tabachnick & Fidell, 1996). Cash holdings are positively correlated with firm size, operating cash flow, firm profit, tangible assets, and negatively correlated with firm leverage, firm growth.

Table 2

Pearson correlation coefficient matrix

	CASH	DA KOTHARI	DA MODI	DA RAMAN	DA JONES	PPE	SIZE	ROA	CFO	LEV	GROWTH
CASH	1										
DAKOTHARI	0.037	1									
DAMODI	0.038	0.953	1								
DARAMAN	-0.230	0.624	0.624	1							
DAJONES	0.053	0.780	0.781	0.792	1						
PPE	0.018	0.003	0.003	-0.049	0.008	1					
SIZE	0.161	0.482	0.484	0.314	0.718	0.229	1				
ROA	0.095	-0.048	-0.039	-0.282	-0.118	0.074	0.025	1			
CFO	0.006	-0.062	-0.058	-0.255	-0.194	0.241	0.034	0.477	1		
LEV	-0.091	0.206	0.201	0.212	0.174	-0.155	0.228	-0.588	-0.344	1	
GROWTH	-0.040	0.027	0.027	0.074	0.043	0.140	0.054	0.007	-0.054	0.202	1

Notes: CASH is calculated as total cash and short-term investment divided by total asset. RAM is real activities management indicator. DA is accruals-based earnings management indicator. SIZE proxies for firm size, calculated by the natural logarithm of total assets. LEV is calculated as the ratio of debt to total assets. PPE is a proxy for the level of tangible assets; PPE is defined by the ratio of tangible assets to total assets. ROA is defined by the ratio of net income to total assets. GROWTH is a proxy for firm growth, calculated by the change in revenue in year t and t-1 to revenue in year t-1. CFO is the proxy for operating cash flow, defined as cash flow divided total assets.

Table 3 presents the outcomes from estimating equation (1) using the two-stage GMM estimator. The model has been calculated with four proxies for accruals-based earnings management. We find that all the proxies representing AEM have a significantly negative influence on the level of cash holdings. This result implies that companies with lower discretionary accruals (or high reporting quality) need to maintain a higher level of cash holdings than those with higher levels of discretionary accruals (or low reporting quality). The analysis proceeds are in line with our research hypothesis H2 on the positive attributes of accrual-based earnings management. This finding is consistent with Arya et al. (2003) and Linck et al. (2013), which praise the beauty of accruals in enhancing the quality of financial reporting, and so lowering the motivation of firms to reserve more cash to avoid costly external financing.

The evidence in this paper implies that accruals reduce information asymmetry, easing financial constraints, thus enhancing firm value. Therefore, accruals are not necessarily linked to low-quality financial reports, and in some cases if properly handled, they could play a significant role in raising firm value and easing the information asymmetry problem in a developing market like Vietnam.

Table 3

Regression results with AEM model

Dependent variable	(1)	(2)	(3)	(4)
DAJONES	-1.134***			
	-3.08			
DAMODI		-1.165**		
		-2.06		
DAKOTHARI			-1.108*	
			-1.99	
DARAMAN				-4.088***
				-18.22
PPE	-1.497*	-2.027**	-1.914**	-2.09
	-1.84	-2.55	-2.36	-1.39
SIZE	1.074***	0.821***	0.804***	1.777***
	3.51	2.91	2.84	9.62
ROA	0.893	4.2279	3.676	-22.916***
	0.31	1.49	1.32	-6.34
CFO	-2.629**	-1.88	-1.821	-8.326***
	-2.35	-1.68	-1.65	-5.67
LEV	-2.927**	-0.234	-0.295	-6.500***
	-2.08	-0.17	-0.22	-4.37
GROWTH	-0.038	-0.0714414	-0.07	0.099
	-0.31	-0.9	-0.91	0.32
CONSTANT	-26.834***	-21.464***	-20.969***	-41.230***
	-3.48	-3.08	-3	-8.75
AR (2) test	0.709	0.41	0.532	0.278
Hansen test	0.741	0.741	0.732	0.145

Notes: CASH is calculated as total cash and short-term investment divided by total asset. RAM is real activities management indicator. DA is accruals-based earnings management indicator. SIZE proxies for firm size, calculated by the natural logarithm of total assets. LEV is calculated as the ratio of debt to total assets. PPE is a proxy for the level of tangible assets; PPE is defined by the ratio of tangible assets to total assets. ROA is defined by the ratio of net income to total assets. GROWTH is a proxy for firm growth, calculated by the change in revenue in year t and t-1 to revenue in year t-1. CFO is the proxy for operating cash flow, defined as cash flow divided total assets. *, **, *** denotes the level of significance of 10%; 5% and 1% respectively;

Table 4 presents the results of multiple regression analysis of model (2) on the link between RAM and cash holdings. The results show that RAM has a positive impact on cash holdings in both columns (1) and (2) and is statistically significant at 5%. This is consistent with the research hypothesis H3. Firms that meet target profits can be less subject to being monitored by external stakeholders compared to those that fail to meet target income (Denis and Serrano, 1996). Therefore, when firms are unable to reach the target profit, managers tend to manipulate real activities to attain the target numbers. Managers may prefer to manipulate real activities to boost income to achieve earnings targets. With unpredictable fluctuations of business cash flow when risks occur, aggressive real activities management is likely to help firms to save the much-needed cash to hedge firms from difficult times. Chang et al. (2018) suggest that the positive link between real earnings management and the value of cash holdings is stronger for firms with more binding financial constraints, which is consistent with the argument that RAM may indicate firms manage earnings to save cash.

The evidence from Table 4 also suggests that real activities earnings management could be a relevant predictor for corporate cash holdings decision. Also, this could mean that the investors may value short-term performance higher, and tend to pay less attention to company's cash flow information, which

motivates managers to employ real activities earnings management to boost short-term performance. Graham et al. (2005) document that managers believe that short-term information in the financial reports is more valuable than cash flow information, and that fourth fifths of the managers choose real earnings management through the decrease in operating costs to achieve the set targets. The motivation to undertake real earnings management could be larger following the introduction of the Sarbanes Oxley Acts, which demands the accordance with higher quality accounting standards (Cohen et al., 2008; Duchin, 2010; Gao et al., 2013). The positive association between real earnings management and cash holdings should be an indicator that policymakers and investors attend to, because this could reflect the harsh conditions that firms are encountering, forcing energy firms to hoard cash.

Table 4

Regression results with RAM model

Dependent variable	(1)	(2)
RAM1	0.782**	
	2.51	
RAM2		0.4366**
		2.32
PPE	-1.9044**	-0.9194**
	-2.13	-2.34
SIZE	1.013***	0.6351***
	4.46	3.03
ROA	-0.0478	1.6291
	-0.02	1.53
CFO	-2.905*	-2.201*
	-1.8	-1.86
LEV	-3.682**	-2.091*
	-2.54	-1.96
GROWTH	-0.085	-0.038
	-0.42	-0.66
CONSTANT	-25.714***	-15.963***
	-4.37	-3
AR (2) test	0.318	0.31
Hansen test	0.736	0.995

Notes: CASH is calculated as total cash and short-term investment divided by total asset. RAM is real activities management indicator. DA is accruals-based earnings management indicator. SIZE proxies for firm size, calculated by the natural logarithm of total assets. LEV is calculated as the ratio of debt to total assets. PPE is a proxy for the level of tangible assets; PPE is defined by the ratio of tangible assets to total assets. ROA is defined by the ratio of net income to total assets. GROWTH is a proxy for firm growth, calculated by the change in revenue in year t and t-1 to revenue in year t-1. CFO is the proxy for operating cash flow, defined as cash flow divided total assets. *, **, *** denotes the level of significance of 10%; 5% and 1% respectively

6. CONCLUSION

Prior literature on the determinants of cash holdings levels relies on a theoretical basis about the asymmetric information and agency costs. Accordingly, information asymmetry leads to access to external capital becomes expensive and challenging, and monitoring costs arise when there is a conflict of interest between the manager and the company's shareholder.

According to agency theory, managers conduct real activities manipulation (RAM) and resort to advanced accounting accruals tactics (AEM) to accomplish financial targets (Roychowdhury, 2006). These

actions can be a useful predictor towards firm's cash holding decisions. In this study, we establish and test hypotheses about the impact of AEM and RAM on the ratio of cash holdings.

Our research results confirm that RAM has a positive impact on cash holdings for two measures of RAM, and that managers tend to select cost reduction rather than reducing selling prices. Our results imply that the investors may value short-term performance higher, and tend to pay less attention to company's cash flow information, which motivates managers to employ real activities earnings management to boost short-term performance.

On the other hand, AEM has negative impact on cash holdings for four measures of AEM, suggesting that accruals are important in enhancing the quality of financial reporting, and so lowering the motivation of firms to reserve more cash to avoid costly external financing. The results of the study are significant for researchers, investors, and accountants about the impact of these two types of earnings management. Future studies may explore the regulatory relationship of corporate governance or legal system to the relationship between AEM, RAM and cash holdings.

The generalizability of the findings from the current study suffers due to the choice of firms in a single (energy) industry in Vietnam. Furthermore, the investigation of the effect of one or multiple governance mechanisms on the link between earnings management and cash holdings would add significantly to ascertain whether AEM or RAM is linked with agency costs or information asymmetry. Therefore, future studies could enlarge the scope and study firms of various industries to see whether the findings in our research still hold, and consider investigating both internal and external governance mechanisms to find out which act efficiently if AEM or RAM is opportunistically conducted.

ACKNOWLEDGEMENT

This research is funded by University of Economics and Law, Vietnam National University Ho Chi Minh City, Vietnam.

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).
- Almeida, H., Campello, M., Cunha, I., & Weisbach, M. S. (2014). Corporate liquidity management: A conceptual framework and survey. *Annual Review of Financial Economics*, 6, 135-162.
- 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., & 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.
- Arya, A., Sunder, S., Glover, J., 2003. Are unmanaged earnings always better for shareholders? *Accounting Horizons* 17, 111-116.
- Balakrishnan, K., Blouin, J., & Guay, W. (2011). Does tax aggressiveness reduce financial reporting transparency. *Unpublished manuscript. University of Pennsylvania, Philadelphia, P.A.*
- Bates, T. W., Chang, C. H., & Chi, J. D. (2018). Why has the value of cash increased over time? *Journal of Financial and Quantitative Analysis*, 53(1), 749-787
- Bates, T. W., Kahle, K. M., & Stulz, R. M. (2009). Why do U.S. firms hold so much more cash than they used to? *J. Financ.*, 65, 1985-2021
- Bigelli, M., & Sánchez-Vidal, J. (2012). Cash holdings in private firms. *Journal of Banking & Finance*, 36(1), 26-35.
- Braam, G., Nandy, M., Weitzel, U., & Lodh, S. (2015). Accrual-based and real earnings management and political connections. *The International Journal of Accounting*, 50(2), 111-141.
- Bushman, R. M., & Smith, A. J. (2001). Financial accounting information and corporate governance. *Journal of Accounting and Economics*, 32(1-3), 237-333.

- Chang, C., Kao, L., & Chen, H. (2018). How does real earnings management affect the value of cash holdings? Comparisons between information and agency. *Pacific-Basin Finance Journal*, 5, 47-64.
- Chen, J. Z., & Shane, P. B. (2014). Changes in cash: persistence and pricing implications. *Journal of Accounting Research*, 52(3), 599-634.
- Chen, R. R., El Ghouli, S., Guedhami, O., & Nash, R. (2018). State ownership and corporate cash holdings. *Journal of financial and quantitative analysis*, 1-42.
- Cohen, D. A., & Zarowin, P. (2010). Accrual-based and real earnings management activities around seasoned equity offerings. *Journal of Accounting and Economics*, 50(1), 2-19.
- Cohen, D. A., Dey, A., & Lys, T. Z. (2008). Real and accrual-based earnings management in the pre-and post-Sarbanes-Oxley periods. *The Accounting Review*, 83(3), 757-787.
- Da Cruz, A., Kimura, H., & Sobreiro V. A. (2019). What do we know about corporate cash holdings? A systematic analysis. *Journal of Corporate Accounting & Finance*, 30(1), 77-143
- Dechow, P. M., Ge, W., Schrand, C., 2010. Understanding earnings quality: A review of the proxies, their determinants and their consequences. *Journal of Accounting & Economics*, 50, 344-401.
- Dechow, P. M., Sloan, R. G., & Sweeney, A. P. (1995). Detecting earnings management. *Accounting Review*, 193-225.
- Di, H., & Hanke, S. A. (2013). The impact of double taxation on small firms' cash holdings. *Applied Financial Economics*, 23(16), 1349-1359.
- Ding, R., Li, J., & Wu, Z. (2018). Government affiliation, real earnings management, and firm performance: The case of privately held firms. *Journal of Business Research*, 83, 138-150.
- Dittmar, A., & Mahrt-Smith, J. (2007). Corporate governance and the value of cash holdings. *Journal of Financial Economics*, 83(3), 599-634.
- 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.
- Easley, D., & O'hara, M. (2004). Information and the cost of capital. *The journal of finance*, 59(4), 1553-1583.
- Faleye, O. (2004). Cash and corporate control. *The journal of finance*, 59(5), 2041-2060.
- Faulkender, M., & Wang, R. (2006). Corporate financial policy and the value of cash. *The journal of finance*, 61(4), 1957-1990.
- Ferreira, M. A., & Vilela, A. S. (2004). Why do firms hold cash? Evidence from EMU countries. *European Financial Management*, 10(2), 295-319.
- Francis, J. R. (2004). What do we know about audit quality? *The British accounting review*, 36(4), 345-368.
- Francis, J. R. (2011). A framework for understanding and researching audit quality. *AUDITING: A Journal of Practice & Theory*, 30(2), 125-152.
- Francis, J., LaFond, R., Olsson, P., & Schipper, K. (2005). The market pricing of accruals quality. *Journal of Accounting and Economics*, 39(2), 295-327.
- García-Teruel, P. J., Martínez-Solano, P., & Sánchez-Ballesta, J. P. (2009). Accruals quality and corporate cash holdings. *Accounting & Finance*, 49(1), 95-115.
- Graham, J. R., Harvey, C. R., & Rajgopal, S. (2005). The economic implications of corporate financial reporting. *Journal of Accounting and Economics*, 40(1-3), 3-73.
- Hanlon, M., Maydew, E. L., & Saavedra, D. (2017). The taxman cometh: Does tax uncertainty affect corporate cash holdings? *Review of Accounting Studies*, 22(3), 1198-1228.
- 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.
- Harford, J., Mansi, S. A., & Maxwell, W. F. (2012). Corporate governance and firm cash holdings in the US *Corporate governance* (pp. 107-138): Springer.
- Huang, P. Guo, J., Ma, T., & Zhang, Y. (2015). Does the value of cash holdings deteriorate or improve with material weaknesses in internal control over financial reporting? *J. Bank. Financ.*, 54, 30-45
- 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.

- Jones, J. J. (1991). Earnings management during import relief investigations. *Journal of Accounting Research*, 193-228.
- Khanh, H. T. M., & Nguyen, V. K. (2018). Audit Quality, Firm Characteristics and Real Earnings Management: The Case of Listed Vietnamese Firms. *International Journal of Economics and Financial Issues*, 8(4), 243-249.
- Khuong, N. V., Ha, N. T. T., Minh, M. T. H., & Thu, P. A. (2019). Does corporate tax avoidance explain cash holdings? The case of Vietnam. *Economics and Sociology*, 12(2), 79-93.
- 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.
- Kothari, S. P., Leone, A. J., & Wasley, C. E. (2005). Performance matched discretionary accrual measures. *Journal of Accounting and Economics*, 39(1), 163-197.
- Kusnadi, Y., Yang, Z., & Zhou, Y. (2015). Institutional development, state ownership, and corporate cash holdings: Evidence from China. *Journal of Business Research*, 68(2), 351-359.
- 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 & Banking Conference.
- Leuz, C., & Verrecchia, R. E. (2000). The economic consequences of increased disclosure. *Journal of Accounting Research*, 91-124.
- Linck, J. S., Netter, J., Shu, T., 2013. Can managers use discretionary accruals to ease financial constraints? Evidence from discretionary accruals prior to investment. *Accounting Review*, 88, 2117-2143.
- Manoel, A. A. S., da Costa Moraes, 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.
- Manowan, P., & Lin, L. (2013). Dual class ownership structure and real earnings management. *International Journal of Accounting and Finance*, 4(1), 86-97.
- Mansali, H., Derouiche, I., & Jemai, K. (2019). Accruals quality, financial constraints, and corporate cash holdings. *Managerial Finance*, 45(8), 1129-1145.
- Martínez-Sola, C., García-Teruel, P. J., & Martínez-Solano, P. (2013). Corporate cash holding and firm value. *Applied Economics*, 45(2), 161-170.
- Mikkelson, W. H., & Partch, M. M. (2003). Do persistent large cash reserves hinder performance? *Journal of financial and quantitative analysis*, 38(2), 275-294.
- Miller, M. H., & Orr, D. (1966). A Model of the Demand for Money by Firms. *The quarterly journal of economics*, 80(3), 413-435.
- 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.
- Nanda, V., & Narayanan, M. (1999). Disentangling value: Financing needs, firm scope, and divestitures. *Journal of Financial Intermediation*, 8(3), 174-204.
- 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.
- Opler, T., Pinkowitz, L., Stulz, R., & Williamson, R. (2001). Corporate cash holdings. *Journal of Applied Corporate Finance*, 14(1), 55-67.
- Orlova, S. V., & Rao, R. P. (2018). Cash holdings speed of adjustment. *International Review of Economics & Finance*, 54(1), 1-14.
- Ozkan, A., & Ozkan, N. (2004). Corporate cash holdings: An empirical investigation of UK companies. *Journal of Banking & Finance*, 28(9), 2103-2134.
- Phan, H. V., Nguyen, N. H., Nguyen, H. T., & Hegde, S. (2019). Policy uncertainty and firm cash holdings. *Journal of Business Research*, 95(1), 71-82
- 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.
- Raman, K., & Shahrur, H. (2008). Relationship-specific investments and earnings management: Evidence on corporate suppliers and customers. *The Accounting Review*, 83(4), 1041-1081.

- Roychowdhury, S. (2006). Earnings management through real activities manipulation. *Journal of Accounting and Economics*, 42(3), 335-370.
- Saddour, K. (2006). *The determinants and the value of cash holdings: Evidence from French firms*.
- Schipper, K. (1989). Earnings management. *Accounting horizons*, 3(4), 91.
- Simionescu, M. (2016). The Competition between London Companies Regarding Their Financial Performance. *Journal of Competitiveness*, 8(2).
- Tabachnick, B. G., & Fidell, L. S. (1996). *Using multiple statistics*: Harper Collins Publishers, New York, NY.
- Thu, P. A., & Khuong, N. V. (2018). Factors effect on corporate cash holdings of the energy enterprises listed on vietnam's stock market. *International Journal of Energy Economics and Policy*, 8(5), 29-34.
- Thu, P. A., Khanh, T. H. T., Ha, N. T. T., & Khuong, N. V. (2018). Perceived Audit Quality, Earnings Management and Cost of Debt Capital: Evidence from the Energy Listed Firms on Vietnam's Stock Market. *International Journal Of Energy Economics And Policy*, 8(6), 120-127.
- Verdi, R. S. (2006). Financial reporting quality and investment efficiency. Available at SSRN: <https://ssrn.com/abstract=930922> or <https://doi.org/10.2139/ssrn.930922>
- Verrecchia, R. E. (2001). Essays on disclosure. *Journal of Accounting and Economics*, 32(1-3), 97-180.
- Wang, L. (2015). Tax enforcement, corporate tax aggressiveness, and cash holdings. *China Finance Review International*, 5(4), 339-370.
- Zang, A. Y. (2012). Evidence on the trade-off between real activities manipulation and accrual-based earnings management. *The Accounting Review*, 87(2), 675-703.