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Article

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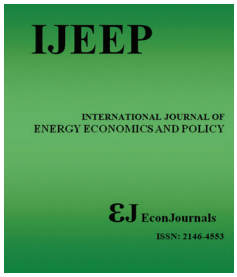

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Perceived Audit Quality, Earnings Management and Cost of Debt Capital: Evidence from the Energy Listed Firms on Vietnam's Stock Market

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ABSTRACT

This study examines the impact of perceived audit quality and accrual-based earnings management on cost of debt capital of the energy listed firms on Vietnam's stock market. Our data set includes 29 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016. We used FEM and REM estimator to test our hypotheses. The results confirm that there is no significant statistical association between accrual-based earnings management and cost of debt. There is a negative association between audit quality, firm size, return on assets and cost of debt while firm leverage and the tangible asset has a positive association. Moreover, global financial crisis has no statistically significant influence on the cost of debt capital. The research results have implications for regulators and investors about the stability of the economy in emerging markets.

Keywords: Cost of Debt, Earnings Management, Audit Quality, Energy Enterprises, Vietnam
JEL Classifications: M42, G32

1. INTRODUCTION

According to Bedford (2008), corporate leverage utilizes debt and equity, which have a tremendous influence on business performance. This is manifest in the context of the global financial crisis (GFC). And the impact of the global crisis on each country, each business sector is distinctive.

Vietnam is an emerging country which abstract foreign investor in many fields. They invest fixed assets, infrastructures, capital in many ways to develop the economy. Second, Vietnam is also a transition economy. This country has the state sector plays a major role in most of the situations. They intervention in the decision of board management, commercial banks, the policies of the government. Additionally, the characteristics of Vietnamese financial system could cause several issues in debt financing for firm investment. So, this study focus on cost of debt, a characteristic finance relevant to the bank, third party, the foreign investor in case of energy firms.

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 FEM and REM to analyze the model, this statistical technique is consistent with the panel data. In developing market circumstances, there are some independent variables represent this market such as firm size, profitability, financial leverage, tangible fixed asset, GFC.

This paper supports researchers to explain both the audit quality and accrual-based earnings management effect on cost of debt

in the Vietnamese context. Currently, there is non-research the impact of audit quality and earnings management effect on the cost of debt in Vietnam that the ground why this investigation is significant. Our sample is 29 energy listed firms which financial reporting in the period from 2010 through 2016.

This study contributes to the current literature in the following ways. Firstly, according to previous studies, examining the role of audit reputation in other markets (Blackwell et al., 1998; Kim et al., 2011; Minnis, 2011). This is different between emerging countries and western countries. Secondly, the study inspected at the effectiveness of debt valuation and audit quality by exhibiting empirical evidence that this relationship was sensitive to the impact of corporate control variables, based on signal theory and agency theory. Thirdly, auditing activities in Vietnam are in the process of integration with the application of auditing standards in line with international practices and declare the important role in the Vietnamese economy. Therefore, the research results confirm the role of auditing in enhancing the quality of information from financial reporting, for users of this information. Finally, this study shows empirical evidence of the impact of auditing quality on the cost of debt used in the context of Vietnam, which has not been previously investigated. Moreover, the relationship between them in energy firms is the strange idea in case of emerging Vietnam market. This helps to compare the differences with earlier studies in developed countries with the severe legal system. This research, therefore, provides empirical evidence to show the role of corporate governance and the "signal" from the audit conducted by Big 4 companies to creditors of listed companies in terms of developing country.

The rest of the article proceeds as follows. The section 2 of the article exhibits the literature and hypotheses development. Section 3 and 4 manifests the sample data, methodology. Section 5 displays 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. Vietnam Energy Enterprises Context

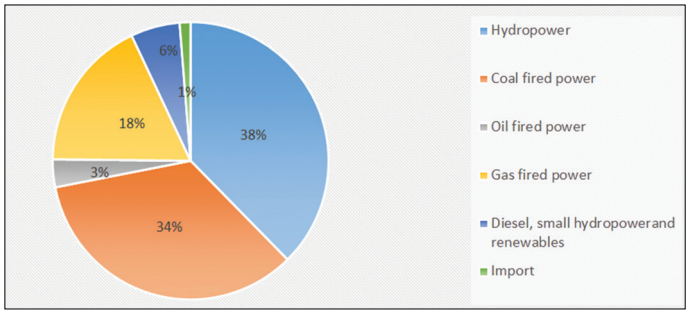
In Vietnam, the price is the cheapest in Southeast Asia because of reasonable labor costs and competitive fuel resources. This lead to creating a competitive advantage to attract investment capital from foreign direct investment. Vietnam is various in supplying raw materials to the energy industry. According to the annual EVN 2017, there are six main groups of materials to provide power sources in energy filed. These were shown in the chart below with capacity and percentage power source. Following the chart, the hydropower and coal-fired power include the large percentage 37.6% and 34.3% respectively while the percentage from import power source is lowest at 1.3% and capacity at 540MV.

The Chart 1 and the Table 1 show percentage of power source.

Table 1: Percentage of power source

Power source	Capacity (%)
	MV
Hydropower	15.857 (37.6)
Coal fired power	14.448 (34.3)
Oil fired power	1.370 (3.3)
Gas fired power	7.502 (17.8)
Diesel, small hydropower and renewables	2.418 (5.7)
Import	540 (1.3)
Total	42.135 (100)

Chart 1: Percentage of power source



Source: Annual 2017 EVN

2.2. Hypothesis Development

Based on signal theory and agency theory, we summarise the prior literature regarding audit quality, accrual-based earnings management and cost of debt capital. We construct the hypotheses as follows.

2.3. Audit Quality and Cost of Debt Capital

Audit quality is the abstract definition, and it can not directly observable. There are many ways to measure audit quality. According to (Blackwell et al., 1998; DeAngelo, 1981; Francis and Krishnan, 1999), they used the firm's size of the audit firms to measure audit quality. They explained that the firm was audited by Big N will be higher quality because they have more competence and more independence in their jobs. According to (Balsam et al., 2003; Li et al., 2010), they used auditor specialization to measure audit quality. According to (Brandon et al., 2004; Dhaliwal et al., 2008) they used auditor fees to measure audit quality. Another way is used auditor tenure to measure audit quality (Boone et al., 2008; Kim et al., 2013; Mansi et al., 2004).

According to DeAngelo (1981), audit quality depends on the professional competence of the auditor, the independence of the auditor, auditing time, and audit team. Because the auditors consider material errors in the financial reporting to cover them in financial reporting and then, they give the auditors opinion about financial reporting. Auditors opinion depend on four factors mentioned above. The lower probability material errors in the financial reporting, the higher the information in this was shown. Thus, information is important in making a decision. According to signal theory, the more exact information in the financial statement the more correct decision for interested users, because the managers need to provide information (signal) to the market so that third party properly assess the real economic situation of enterprises.

DeAngelo (1981) pointed out that the audit quality and firm size of the audit firms have a positive relationship. This demonstrated that the greater audit firms constantly have more independence

with their clients to endure reputational that they were established. According to Francis and Wilson (1988), they applied the audit firm's brand name to measure audit quality also show the same results. The financial reporting was audited by Big N have higher audit quality than the financial reporting was audited by non-Big N based on examining financial reporting and audit reporting was disclosed from the listed company on the stock market.

Vietnam is still an emerging market, so it is challenging to determine audit quality through auditor fees, auditor specialization, auditor tenure because these data do not publish. Instead, we determined the size of audit firms or audit firm's brand name to measure audit quality.

About cost of debt, In United States market, Blackwell et al. (1998) found that audit quality and cost of corporate bank loans) have a negative relationship. Also in this market, Fortin and Pittman (2007) did not find the exact relationship between audit quality and cost of debt, but they show that firms audited by Big N have a lower cost private -debt than firms did not audit by Big Six. In Korean market, Kim et al. (2007) esignated that audit quality through the reputation of the auditing firm has an influence on reducing borrowing costs. In Spain market, Cano–Rodríguez et al. (2008) tested on private companies, they indicated that firms audit by the Big Four has a negative impact on the debt valuation of companies. This result is the same as a study by Díaz (2009) examined public companies and Rodríguez and Alegría (2012) experimented on both private and public companies. In French market, Piot and Missonier-Piera (2009), did not observe a relationship between the cost of a debt-pricing and Big N audits.

There are researches on different markets gives the same results. We summarily previous to give the explanation as follows: Big four wants to remain their reputation, so they have motivated to show the high-quality impossible. According to agency theory, audit plays an important role in minimizing asymmetric information by asserting to investors that the information on the audited financial statements is true and fair (Datar et al., 1991; Jensen and Meckling, 1976). Therefore, if the company publishes the audit report with unqualified opinion, it will be a signal affecting the decision making of the investor. Morover, most people believed that firms were audited by big four have real information, real background, and a real institution for the financial statement according to signal theory. Thus, the third party, bank, interested user always need the role assurance from auditors in big four. This lead to firms gives lower interest, lower cost than firms did not audit by big four. The higher audit quality, the lower the cost of equity (Khurana and Raman, 2004; Mansi et al., 2004; Pittman and Fortin, 2004).

In Vietnam, especially in the energy firm, the financial statements of listed companies are audited. Study of the impact of audit quality on quality of financial reporting information in Vietnam reveals that the reputation of auditing firms may not affect the quality of information. This explicates a narrowing of the quality gap between Big 4 and non-Big 4 (Khanh and Nguyen, 2018), affecting cash flow in the company (Thu and Khuong, 2018). Nevertheless, in the context of energy companies, this relationship demands further research to confirm the role of audit quality. As a result, audited financial information can be a reliable source of information in the contract. Therefore, banks may need to rely less on alternative sources of information, when assessing the creditworthiness of borrowers, and overseeing old debt contracts. Thus, the quality of financial reporting information can be really important in valuing debt for listed companies in Vietnam. Quality audits affect the effectiveness of debt by increasing the credibility of financial information.

So we develop hypothesis relating to the influence of audit quality on the cost of debt as follows:

Hypothesis 1: Audit quality has a negative effect on the cost of debt.

3. EARNINGS MANAGEMENT AND COST OF DEBT

DeFond and Jiambalvo (1994) and DeAngelo et al. (1994) show that if firms have the debt contract violation, managers tend to use earnings management to show a great financial picture of firms. Thus, when managers use earnings management, they demonstrate high performance and good initial to reduce the cost of debt.

Bhattacharya et al. (2003) examined accrual-based earnings management in three countries. On the macroeconomic aspect, the research shows the result that a significant impact of earnings management on economic growth. This relevant to reduce the cost of debt through stimulus packages, investment incentives, and growth of these countries. Francis et al. (2004) checked the relationship between the cost of debt and seven attributes of earnings cover earnings management. Francis et al. (2005) investigated the relationship between discretionary accruals and the costs of debt. The research used data for the long period from 1970 to 2001, they exhibit that lower accruals quality firms have higher ratios of interest expense because of debt ranking and debt limit from the banks. McInnis (2010) investigated the connection between the cost of debt and income smoothing. The evidence that the negative relation between earnings smoothing and cost of debt in short-term debt, but in long-term debt, this relation show the converse results. Rodríguez-Pérez and van Hemmen (2010) used discretionary accruals to test accrual-based earnings management, the research examined the relationship between the cost of debt and earnings management. They affirmed that for firms have debt structure less diversified reduces the cost of debt and discretionary accruals. Contrast, firms have debt structure more diversified increase the cost of debt and discretionary accruals.

In this investigation, we develop hypothesis relating to the influence of accrrual-based earnings management on cost of debt as follows:

Hypothesis 2: Earnings management has mixed effect on cost of debt.

3.1. Controls Variables

We add some control variables in the research model to discuss the influences on the cost of debt from firm characteristics. First, the control variable: Firm size (SIZE), measured as the natural

logarithm of total assets. Assuming that larger firms are less risky, the authors predict that the variable correlate negatively with the cost of debt (Huguet and Gandía, 2014; Hyytinen and Pajarinen, 2007; Karjalainen, 2011; Mansi et al., 2004; Persakis and Iatridis, 2015; Petersen and Rajan, 1994; Pittman and Fortin, 2004; Rodríguez-Pérez and van Hemmen, 2010).

Second, the control variable: Return on asset (ROA) used to evaluate business activity, profitability which is measured as profit on total assets. Companies with high profit will be an advantage to repaying their debt, so we predict there is a negative relationship between ROA and cost of debt (Díaz, 2009; Huguet and Gandía, 2014; Karjalainen, 2011; Persakis and Iatridis, 2015; Piot and Missonier-Piera, 2009).

Third, according to agency theory, risks between agents (such as risk transfer and low investment) always exist. In detailed, maybe this is a conflict between the company and third party or lender. They used leverage (LEV) as a tool to cover this problem (Jensen and Meckling, 1976; Myers, 1977). In this study, we measured LEV as total liabilities on total assets. We expects a positive relationship between firm leverage and cost of debt (Huguet and Gandía, 2014; Karjalainen, 2011; Persakis and Iatridis, 2015; Pittman and Fortin, 2004).

Fourth, the collateral of the debt is expected to reduce the cost of debt. Therefore, we use the variable tangible fixed asset (PPE), which is measured as the historical cost of tangible fixed assets. We used this variable to control the value of the collateral of the asset (Huguet and Gandía, 2014; Hyytinen and Pajarinen, 2007; Karjalainen, 2011; Persakis and Iatridis, 2015; Pittman and Fortin, 2004). We expect a negative relationship between tangible fixed assets and the cost of debt.

Finally, we examine GFC influence on the cost of debt. We expect a positive relationship between financial crisis and the cost of debt (Chen et al., 2011; Easley and O'hara, 2004; Fernando et al., 2010; Persakis and Iatridis, 2015).

4. MODEL AND VARIABLES

Based on previous investigations, the research examines the impact of audit quality and earnings management behavior on the cost of debt capital. In addition, control variables suitable for the Vietnamese context are also considered in the model.

4.1. Measure of Earnings Management

Based on prior studies, discretionary accruals are used as a proxy of accrual-based earnings management.

To examine for robustness of our conclusions, we affirm to evaluate discretionary accruals crosswise two estimation models which apprehend various features of earnings manipulation, i.e. the Kothari et al. (2005) model, and the Raman and Shahrur (2008) model.

The research utilizes the approach from both the income statement and the cash flow statement to estimate the total accruals. Therefore, total accruals can be calculated as follows:

$$TA_{i,t}=NI_{i,t}-CFO_{i,t} \quad (1)$$

Where: $TA_{i,t}$: Total accruals for firm i in year t, $NI_{i,t}$: Net income for firm i in year t, $CFO_{i,t}$: Cash flows from operating activities for firm i in year t.

We obtain discretionary accruals, $DA_{i,t}$ for each firm i in each year t, following Kothari et al. (2005). The discretionary accruals (DA) are calculated as the residuals from:

$$\frac{TAC_{i,t}}{A_{i,t-1}}=\beta_1\frac{1}{A_{i,t-1}}+\beta_2\frac{(REV_{i,t}-AR_{i,t})}{A_{i,t-1}}+\beta_3\frac{PPE_{i,t}}{A_{i,t-1}}+\beta_4\frac{ROA_{i,t}}{A_{i,t-1}}+\varepsilon_{i,t} \quad (2)$$

Raman and Shahrur (2008) recommend a new method to measure accrual-based earnings management. They measure discretionary accruals by applying the Jones modified model (Kothari et al., 2005) and the extension of the firm. The model of Raman and Shahrur (2008) is formulated as follows:

$$\frac{TAC_{i,t}}{A_{i,t-1}}=\beta_1\frac{1}{A_{i,t-1}}+\beta_2\frac{REV_{i,t}}{A_{i,t-1}}+\beta_3\frac{PPE_{i,t}}{A_{i,t-1}}+\beta_4\frac{ROA_{i,t}}{A_{i,t-1}}+\beta_5 BM_{i,t}+\varepsilon_{i,t} \quad (3)$$

$$DA_{i,t}=TAC_{i,t}-NDA_{i,t} \quad (4)$$

Where: TAC: Total accruals, DA: Discretionary accruals, $NDA_{i,t}$: Non discretionary accruals for firm i in year t, $At\text{-}1$: Total assets for firm j in year $t\text{-}1$, $\Delta REV_{i,t}$: Change in the revenues (sales) for firm i in year t less revenue in year $t\text{-}1$, $\Delta AR_{i,t}$: Change in accounts receivables for firm i in year t less receivable in year $t\text{-}1$, $PPE_{i,t}$: 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, β_1, β_2, β_3, β_4, β_5 are firm specific parameters.

4.2. Model

This section focuses on developing the regression model that examines the impact of audit quality and earnings management on cost of debt in energy firms. The investigation hypotheses are examined using the FEM, REM regression analysis. Nevertheless, before applying regression analysis, the data should be tested for normality, linearity, homoscedasticity, and multicollinearity (Fox, 1997; Harrel, 2001).

The regression model can be formulated as follows:

$$COD_{it}=\delta_0+\delta_1 DA_{it}+\delta_2 AUD_{it}+\delta_3 SIZE_{it}+\delta_4 ROA_{it}+\delta_5 LEV_{it}+\delta_6 PPE_{it}+\delta_7 GFC_{it}+\varepsilon_{it}$$

Where

COD is measure of the cost of debt capital, which is calculated as interest expense for the year divided by short-term and long-term debt (Francis et al., 2005; Karjalainen, 2011; Lim, 2011; Lorca et al., 2011; Pittman and Fortin, 2004).

DA are used as a proxy of accrual-based earnings management, calculated by Kothari et al. (2005) model, and the Raman and Shahrur (2008) model.

AUD is proxy of audit quality, it take 1 if firms audit by Big 4, it takes 0 if firms audit by non-Big 4 (Chen et al., 2011; Choi and Wong, 2007; Kanagaretnam et al., 2016; Karjalainen, 2011; Persakis and Iatridis, 2015; Pittman and Fortin, 2004; Teoh and Wong, 1993).

SIZE is a proxy for firm size. In this study, it is calculated by the natural logarithm of total assets at year-end (Huguet and Gandía, 2014; Hyytinen and Pajarinen, 2007; Mansi et al., 2004; Persakis and Iatridis, 2015; Petersen and Rajan, 1994; Pittman and Fortin, 2004).

ROA is a proxy for profitability, ROA is defined by profits divided total assets at year-end (Piot and Missonier-Piera, 2009; Rodríguez and Alegría, 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 (Huguet and Gandía, 2014; Karjalainen, 2011; Persakis and Iatridis, 2015).

PPE is a proxy for Tangible asset; PPE is defined by tangible asset divided total assets at year-end (Huguet and Gandía, 2014; Karjalainen, 2011; Persakis and Iatridis, 2015; Pittman and Fortin, 2004).

GFC: Is a proxy for fianacial crisis, it take 1 if the period from 2010 to 2012, it take 0 if the period from 2013 to 2016 (Chen et al., 2011; Easley and O'hara, 2004; Fernando et al., 2010; Persakis and Iatridis, 2015).

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

$\delta_1 \rightarrow \delta_7$: Slope coefficients representing the influence of the associated independent variable on the dependent variable.

5. DATA

Vietnam stock market has Ho Chi Minh City stock exchange and the Ha Noi stock exchange. The Ho Chi Minh Securities Trading Center (HoSTC) was instituted in 2000 and then change the name as Ho Chi Minh Stock Exchange (HOSE) in 2007. At the commencement of listing, this stock exchange has only four listed companies. The Hanoi Stock Exchange (HNX) was inaugurated in 2005 with less qualificatory requirements of the listing, such as low minimum capital demand. From 2009 onwards, the number of listed companies on the two exchanges steadily expanded. Nevertheless, the stock market in Vietnam is really immature compared to other countries in the region. Listed companies in Vietnam also have less entrance to capital.

This study examines the impact of audit quality and earnings management on cost of debt of the energy enterprises listed on Vietnam's stock market. Our data set includes 29 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016, with a total of 203 firm-year observations being collected. Our data set includes 29 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016, with a total of 203 firm-year observations being collected. We use secondary data from financial statements, retrieved from Thomson Reuters EIKON to measure the dependent and independent variables.

Our data classified by the industry according to Thomson Reuters. The percentage of Electric Utilities is highest at 24.14%. The percentage of Consumer Electronics, Gas Utilities, Oil and Gas Drilling, Water Utilities are the same percentage at 3,45 which is lowest in our data. The Chart 2 and the Table 2 show percentage of industry according to Thomson Reuters.

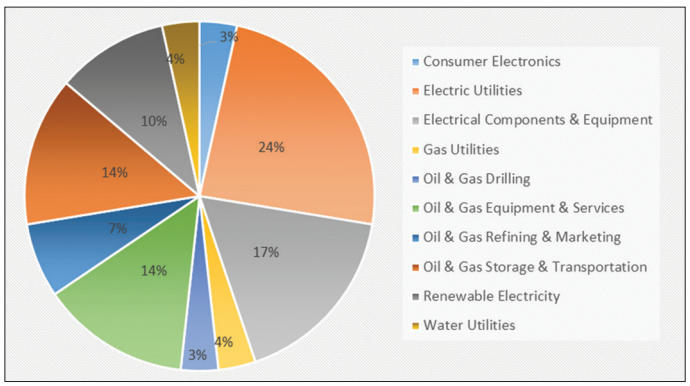
Descriptive statistics of variables is provided in Table 3.

Table 3 present the descriptive of variables for 203 observations (29 energy companies on Vietnam stock markets (HNX and HOSE) in the period from 2010 to 2016). The mean value of COD is -0.0111 which is lower than 0.0648 in Spanish SMEs, and the standard deviation of COD is 0.1073 which is lower than 0.0364 (Huguet and Gandía, 2014). The mean value of DA1 following Kothari et al. (2005) model is 0.7348, and the standard deviation of DA1 is 4.0103. The mean value of DA2 following Raman and Shahrur (2008) model is 0.5544, and the standard deviation of DA2 is 4.1468. While mean value of DA following Jones model as 0.101 is lower those value, and standard deviation of DA as 0.099 is higher these value (Huguet and Gandía, 2014). The percentage

Table 2: Percentage of industry

Count of firms	Industry	Percentage
1	Consumer electronics	3.45
7	Electric utilities	24.14
5	Electrical components and equipment	17.24
1	Gas utilities	3.45
1	Oil and gas drilling	3.45
4	Oil and gas equipment and services	13.79
2	Oil and gas refining and marketing	6.90
4	Oil and gas storage and transportation	13.79
3	Renewable electricity	10.34
1	Water utilities	3.45
Total	29	100

Chart 2: Percentage of industry according to Thomson Reuters



of firms audit by Big 4 is 41.38% which higher than 24.26% in Finland (Karjalainen, 2011).

6. RESULTS AND DISCUSSION

Table 4 displays a correlation matrix among variables employed in the paper. Cost of debt (*COD*) is negatively correlated with accrual-based earnings management (*DA*) and audit quality (*AUD)*. Cost of debt (*COD*) is negatively correlated with firm size, profitability, tangible assets, and positively correlated with firm leverage, GFC.

The research results designate that audit quality is negatively correlated with the cost of debt, indicating that audit quality influences the valuation of debt. Findings on the impact of audit quality on the cost of debt are consistent with previous empirical evidence from Spain and Korea (Cano-Rodríguez et al., 2008; Gill-de-Albornoz and Muñoz, 2006; Kim et al., 2007). Nevertheless, the results are contrary to empirical evidence from the United States (Fortin and Pittman, 2007). This befalls from higher investor protection under common law, which implies that the role of management or the signal from the audit by the Big 4 is still more prominent in the civil law environment has lower investor protection (Porta et al., 1998).

Notwithstanding, empirical evidence from the United States is restricted in the context of bond pricing (Fortin and Pittman, 2007), as these investors may rely on empirical monitoring experience, the supervisory role. The audit firm may be less significant in this context. Moreover, the reputation of an audit firm is sentenced to be more reliable, probably due to the enhanced independence, and is apprehended by the moneylenders of listed companies. Previous investigations from Finland provided mixed evidence on the impact of audit quality on cost of debt (Hyytinen and Pajarinen, 2007; Hyytinen and Väänänen, 2004). Audit firms that are audited by reputable firms will have a higher credit rating, and lower borrowing costs than less reputable companies (Hyytinen and Väänänen, 2004). In addition, the findings of Hyytinen and Pajarinen (2007) intimate that unqualified audit opinions have an impact on the valuation of debt in companies in Finland. Based on the above arguments, the results of this research confirm that the quality of the audit is reflected in the reputation of the audit firm that contributes to the reliability of the financial information of listed companies by lenders. Regression results are presented in Tables 5 and 6.

Research results explicate that the negative association between earnings management and cost of debt. However, this relationship is not statistically significant. The results of this investigation are consistent with (Francis et al., 2005; Persakis and Iatridis, 2015; Valipour and Moradbeygi, 2011) and in contrast to Fung and Goodwin (2013) and Rodríguez-Pérez and van Hemmen (2010). For control variables, the results reveal that the cost of debt capital is negatively correlated with firm size, firm profitability and positively correlated with the fixed assets and firm leverage. The results are consistent with previous investigations (Francis et al., 2005; Hyytinen and Pajarinen, 2007; Hyytinen and Väänänen, 2004; Jiang, 2008; Karjalainen, 2011).

Table 3: Descriptive of variables

Variable	Observations	Mean	SD	Minimum	Maximum
COD	203	−0.0111	0.1073	-0.6682	0.2071
Approach 1: Kothari et al. (2005) model					
DA1	203	0.7348	4.0103	-3.9294	55.6747
Approach 2: Raman and Shahrur (2008) model					
DA2	203	0.5544	4.1468	−4.1148	56.9304
SIZE	203	27.9236	1.6886	24.8170	31.6697
ROA	203	0.0618	0.0505	−0.1349	0.2670
LEV	203	0.5333	0.1868	0.0320	0.9345
PPE	203	0.3050	0.2333	0.0013	0.9661
Frequency	0	1			
AUD	58.62	41.38			
GFC	57.14	42.86			

The table reports summary statistics of variables over the period from 2010 to 2016 for Vietnamese listed firms. COD is the cost of debt, calculated interest expense for the year divided by total debt. DA is earnings management indicator. AUD is audit quality, it takes 1 if firms audit by Big 4, it takes 0 if firms audit by non-Big 4. SIZE is a proxy for firm size, it is calculated by the natural logarithm of total assets at year-end. ROA is a proxy for profitability, ROA is defined by profits divided by total assets at year-end. LEV is a measure of leverage level, which is calculated by the ratio of debt to total assets at year-end. PPE is a proxy for the tangible asset; PPE is defined by tangible asset divided total assets at year-end. GFC: Is a proxy for the financial crisis, it takes 1 if the period from 2010 to 2012, it takes 0 if the period from 2013 to 2016

7. CONCLUSION

The purpose of this paper is to examine the impact of audit quality and accrual-based earnings management on the cost of debt of energy listed companies on the two stock exchanges in Vietnam. Essentially previous investigations have demonstrated that audit

Table 4: Pearson correlation coefficient matrix

	COD	DA1	AUD	SIZE	ROA	LEV	PPE	GFC
COD	1							
DA1	−0.0607	1						
AUD	−0.0067	0.0189	1					
SIZE	−0.0338	0.101	0.5371	1				
ROA	−0.3377	−0.0451	−0.0116	0.0233	1			
LEV	0.516	0.0214	0.2317	0.2328	−0.5551	1		
PPE	−0.0091	−0.0883	0.1742	0.2359	0.0699	-0.1235	1	
GFC	0.1018	0.0725	0.0808	−0.0379	−0.0437	0.1135	0.0523	1

The table reports correlation matrix over the period from 2010 to 2016 for Vietnamese listed firms. COD is the cost of debt, calculated interest expense for the year divided by total debt. DA is earnings management indicator. AUD is audit quality, it takes 1 if firms audit by Big 4, it takes 0 if firms audit by non-Big 4. SIZE is a proxy for firm size, it is calculated by the natural logarithm of total assets at year-end. ROA is a proxy for profitability, ROA is defined by profits divided by total assets at year-end. LEV is a measure of leverage level, which is calculated by the ratio of debt to total assets at year-end. PPE is a proxy for the tangible asset; PPE is defined by tangible asset divided total assets at year-end. GFC: Is a proxy for the financial crisis, it takes 1 if the period from 2010 to 2012, it takes 0 if the period from 2013 to 2016

Table 5: Regression results with Kothari et al. (2005) model

Variables	FEM		REM	
	Coefficient	P value	Coefficient	P value
DA1	−0.0013	0.330	−0.0004	0.709
AUD	−0.0132*	0.074	−0.0306**	0.015
SIZE	−0.0077***	0.000	−0.0065	0.460
ROA	−0.3054***	0.000	−0.5981***	0.000
LEV	0.1961***	0.000	0.1573***	0.001
PPE	0.0446***	0.001	0.1125***	0.007
GFC	0.0051	0.371	0.0117	0.144
CONS	0.1138**	0.052	0.0982	0.681
R^2	8.82%		18.87%	
Fisher test	F (28,167) =15.78			
	P>F: 0.000			
Hausman test	χ^2 (7) =37.98			
	P>χ^2: 0.000			
Modified Wald test	χ^2 (29) =1742.47			
	P>χ^2: 0.000			
Wooldridge test	F (1, 28) =0.549			
	P>F: 0.4651			

*, **, *** denotes the level of significance of 10%; 5% and 1% respectively

Table 6: Regression results with Raman and Shahrur (2008) model

Variables	FEM		REM	
	Coefficient	P value	Coefficient	P value
DA2	−0.0016	0.252	−0.0005	0.603
AUD	−0.0123*	0.097	−0.0305**	0.015
SIZE	−0.0073***	0.001	−0.0066	0.455
ROA	−0.3176***	0.000	−0.5978***	0.000
LEV	0.1924***	0.000	0.1577***	0.001
PPE	0.0408***	0.003	0.1115***	0.008
GFC	0.0061	0.285	0.0119	0.139
CONS	0.1043*	0.083	0.1000	0.675
R^2	8.91%		18.47%	
Fisher test	F (28,167) =15.61			
	P>F: 0.000			
Hausman test	χ^2 (7) =28.35			
	P>χ^2: 0.002			
Modified Wald test	χ^2 (29) =1742.58			
	P>χ^2: 0.000			
Wooldridge test	F (1, 28) =0.550			
	P>F: 0.4643			

*, **, *** denotes the level of significance of 10%; 5% and 1% respectively

quality is measured by the reputation of the auditing firm, which is a reasonable measure in the context of listed companies.

Specifically, the positive and not statistically significant effects of the GFC on cost of debt. It confirms that GFC has no significant influence on the decision of investors to energy companies in Vietnam. As the economic leader of the country, energy companies always make a prominent contribution to GDP. The result of this study is the opposite of Persakis and Iatridis (2015).

We also discussed some of the limitations of this research and future research. First, research analyzes energy listed companies from a developing country similar to Vietnam. Due to cultural environment differences, the results may not be general in other countries in the region. In addition, the results of research on the impact of audit quality on the cost of debt can be influenced by endogenous variables. However, this has not been mentioned in the study. Finally, measuring output-based audit quality (audit opinion, investor aspect) may have different effects on the cost of debt. For future research, it will be essential to extend the analysis to other dimensions of audit quality to the cost of debt.

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