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## Article

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## Effect of Debt Structure on Earnings Quality of Energy Businesses in Vietnam

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### ABSTRACT

The paper examines the impact of debt structure (DS) on the earnings quality (EQ) of energy businesses (DN) in Vietnam. The authors measure EQ in terms of profit management to consider the effect of accounts payable; short-term debts and loans; long-term debts and loans on EQ. The research uses generalized least squares regression method with data gathered from 468 observations collected at energy enterprises listed on the stock market in Vietnam in the period of 2009-2018. The study results have found that accounts payable to suppliers and short-term debts and loans have negative effect on EQ; while long-term debts and loans have positive effect on EQ. Besides, firm size has a positive effect on EQ, while profitability is a not statistically significant variable. The empirical research results are useful basis to help businesses improve their EQ, thereby helping businesses to consider an appropriate level of DS.

**Keywords:** Debt Structure, Earnings Quality, Energy Business

**JEL Classifications:** M40, G32, Q43

### 1. INTRODUCTION

Energy plays a key role in sustainable business development and responses to global climate change. For Vietnam, energy plays an essential role in the process of industrialization and modernization. The Vietnamese Government has expressed strong determination and put high efforts to ensure national energy security as well as to provide sufficient energy for socio-economic development. Vietnam's energy demand is growing rapidly at a high rate, requiring large capital investment. Only state budget cannot meet the demand of large fundings.

The capital structure relates to business funding decisions and has gained many attentions by researchers around the world. This is an important decision of the companies to minimize liquidity risks, resolve conflicts in representation issues, increase funding flexibility and especially reduce capital mobilization costs as well as risk. (Bellovary et al., 2005) have asserted that earnings quality

(EQ) is an important factor in assessing the financial health of a business. However, the authors also warn of the fact that investors, creditors and other users of financial statements often overlook this important factor. (Chou et al., 2011) point out another fact that most investors often use financial statements to assess the business performance with the belief that profit figures reported will provide reliable information to serve the evaluation. This has created an incentive for managers to distort EQs to "beautify" the financial statements of businesses. The act of falsifying these real profits clearly deflects the assessments of investors and creates a false optimism about the entire production and business activities. Therefore, when the company publishes high profits on the financial statements, it does not necessarily mean it is operating effectively. Investors and creditors may question whether the reported figures are real or are just formulated by managers to create an incorrect image of the business growth. The "Enron incident" and a series of other collapses have shown that many businesses reported high profits, yet still face difficulties in

business operations and some of them eventually went bankrupt. This consequence stems from the fact that the reported profits do not reflect exactly what is actually happening in the production and business activities.

(Gupta and Fields, 2006) argue that one of the important motivations for distorting corporate profits is to avoid liquidity problems stemming from being unable to borrow new debt at the near due date. This profits distortion clearly affects the quality of the reported profit figures of businesses. (Chou et al., 2011) previous studies show businesses are motivated to change their own EQ for the better so that they can succeed in attracting financial resources. Although the choice of debt structure (DS) depends on factors related to the business strategies, there is a possibility that managers can adjust the profitability to distort the real value of the businesses with the intention to mobilize external funding more easily.

The authors believe that if the company can effectively manage its debt, it can increase cash flows and raise capital for development. Normally, to serve the business operations, the company can mobilize funds by issuing shares (using equity) or borrowing through various forms (using loans). When a business carefully and efficiently plans its debts, it can utilize a flexible and long-term financial resource with lower interest rates than equity. By considering the DS, the company can forecast its cash flow through maturity and fulfillment of debt obligations. As the result, business can manage the cash flow and increase its value.

Studies from the above have provided sufficient evidence that DS has an impact on EQ. Specifically, the components of debt, such as credit due to suppliers (accounts payable), bank loans (short-term, long-term), debts from issuing bonds affect the quality of profit figures reported. In addition, financial leverage and the tightness of the loan terms also affect the EQ of the business. The evidence found from previous studies is one of the main motivations for this impact to be studied in the Vietnamese context.

There have been a number of studies on the relationship and effects of DS on EQ in countries around the world and in Vietnam. Some studies related to EQ, DS, and profit management, such as (Tâm, 2013), (Hung et al., 2018), (Dang et al., 2018), (Đặng et al., 2019), (Thanh et al., 2019), (Dang et al., 2019), (Nguyen and Nguyen, 2019). However, there has not been any research on the impact of DS on EQ in the energy industry, which is a content that is very interested by investors and managers. Therefore, it is important to expand and deepen the impact of DS on the EQ of energy businesses in a developing economy of Vietnam.

## 2. THEORETICAL BASIS

### 2.1. Some Concepts

#### 2.1.1. Earnings quality

(Healy and Wahlen, 1999) stated that one of the means for managers to convey information about their business activities to investors is through financial reports. Nevertheless, investors often believe that these reports can help them distinguish between businesses that perform well and those that do not. It is this perception that

motivates executives to intervene in the financial statements and only publish information that serves for their purposes, thus, can bring damage to investors. (Bellovary et al., 2005) argued that the EQ depends on the truthfulness of the reported financial numbers that reflect the “real profit” of the business, as well as the usefulness of these reported figures for the profit forecast in the future. In addition, the authors believed that EQ is affected by the stability and retention period of reported profits.

In fact, there are many ways to define EQ depending on their purposes. Regulators view profit as high quality when they comply with the requirements and regulations of the Acceptable General Accounting Standards. Meanwhile, lenders say that profits are of high quality when it can quickly be converted into money (Dechow and Schrand, 2004). Jamie Pratt (2003) defines EQ as the measure of the difference between profit on the income statement and net profit. (Schipper and Vincent, 2003) define EQ as the extent to which the profit figures in reports indicate a true representation of profit.

#### 2.1.2. DS

The DS of the business is the collection of payment obligations that the company must fulfill. The DS shows how businesses finance their assets through various forms of debt. In this study, to match the characteristics of Vietnamese enterprises, the DS is mainly considered with two basic components: (i) Short-term debts and loans (debts with a term of  $\leq 1$  year, and include payables and short-term borrowings); (ii) Long-term debts and loans (debts with a term of more than 1 year, and include long-term loans and bonds).

### 2.2. Some Theories

In a perfect capital market under the assumption of (Modigliani and Miller, 1958) decisions on capital structure do not change the value of enterprises. (Modigliani and Miller, 1963) add an element of imperfection which is the tax, and suggest that the value of the borrower will be higher due to the higher tax shield from debt compared to the non-borrower. Subsequent studies determined the importance of DS because of its ability to address other market imperfections such as agent conflicts (Myers, 1977), information asymmetry (Flannery, 1986), (Kale and Noe, 1990), liquidity risks (Diamond, 1991) and taxes (Bricker et al., 1995), (Lewis, 1990).

## 3. OVERVIEW AND RESEARCH HYPOTHESES

### 3.1. Study Overview

In recent years, there have been a number of studies on EQ, the impact of DS on EQ and the impact of DS on profit management. For instance, (Gupta and Fields, 2006) have done research projects on DS and possible profit management capabilities of managers. This study focuses on examining corporate EQ and the relationship between EQ and short-, medium- and long-term debts. The study found a positive relationship between profit management and debt use. (Sercu et al., 2006) studied the relationship between profit management and debt management. The results of this study show a positive relationship between profit management and financial leverage.

(Fung and Goodwin, 2013) examined short-term debt, supervision and earnings management based on accrual accounting. The authors found that short-term debt is positively related to profit management. However, when the research was applied to high credit rating companies, they found a negative relationship between short-term debt and profit distortion (represented by arbitrary accruals), which is consistent with the hypothesis of debt supervision. This leads to the conclusion that for firms with a high level of credits, the relationship between short-term debt and arbitrary accruals is stronger than those with low level of credits. (Liu et al., 2010) consider whether or not businesses manage profit before issuing bonds to get lower borrowing costs. The evidence shows that there has been a management of profits before the issuance of corporate bonds. The study results point out that there is a positive and statistically significant relationship between profit management and the current arbitrary accrual (representing profits management measure). More importantly, research has shown an inverse relationship between observed anomalies and accrued borrowing costs. This means that businesses will get debt at a lower cost when managing their profits in an upward direction.

(Kim and Qi, 2010) examines the relationship between real-life conversion decisions and the binding on loan terms. The result discloses that a higher level of profit management happens when loan terms are more tightly bound. This result shows that: (i) Enterprises use profit management to avoid violating loan terms; and (ii) enterprises are more likely to distort profits when the ability to renegotiate loans that have violated the terms is limited. The authors also discovered the positive relationship between loan terms and profit management occurring before and after the application of the US Sarbanes - Oxley Act. (Chou et al., 2011) conducted a review on the relationship between profit management behavior and the firms' DS (short, medium and long-term debts). The results from this study show that firms that perform profit management tend to issue long-term debt to avoid external scrutiny and high borrowing costs when using the short-term debts.

(García-Teruel et al., 2010) conducted research on accruals quality and DS. The results show that there is a negative and statistically significant relationship between long-term debt and accruals quality. That means businesses with high accruals quality often borrow debt with a longer term. This is in line with the theory that firms with higher accruals quality can reduce the problem of asymmetric information and adverse selection between businesses and lenders, helping lenders feel secure in granting debts to businesses with longer maturities. (Valipour and Moradbeygi, 2011) conducted a review of the relationship between corporate debt financing and EQ. The results show a negative and statistically significant relationship between debt and EQ. More specifically, the authors classify debts into two levels: high and low level of debts. With a low debt level, there is a negative relationship between debt and EQ. This means that businesses that borrow at lesser amount are less likely to manage profits. Meanwhile, businesses with higher debt ratios often record more accruals to manage profits in order to avoid violating the terms of the loan contracts and reduce the cost of debt financing.

(Thanh et al., 2019) conducted a study to investigate the relationship between debt ratio and profit management based on regression model and panel data of 432 Vietnamese listed non-financial

institutions in the period of 2006-2017. The estimated results show the non-linear effect of debt ratio on profit management in two modes: (i) Positive effects in the low debt regime and (ii) negative effects in the high debt regime. These results imply that changes in debt ratios occur in profit management before and after companies reach their optimal debt threshold.

### 3.2. Research Hypotheses

DS has a close relationship and affects the EQ, so each of the DS components such as accounts payable to suppliers, short-term debts and loans, long-term debts and loans will affect the EQ of the business. Based on an overview of empirical studies of (Sercu et al., 2006), (Gupta and Fields, 2006), (Fung and Goodwin, 2013), (Liu et al., 2010), (Kim and Qi, 2010), (Chou et al., 2011), (García-Teruel et al., 2010), (Valipour and Moradbeygi, 2011), (Thanh et al., 2019), (Dang et al., 2019), (Hung et al., 2018), (Dang et al., 2019) and the theoretical basis, the authors construct some research theories as follows:

H<sub>1</sub>:Accounts payable are statistically significant and have a negative effect on the EQ of the business.

H<sub>2</sub>:Short-term debts and loans are statistically significant and have a negative effect on the EQ of the business.

H<sub>3</sub>:Long-term debts and loans are statistically significant and have a negative effect on the EQ of the business.

In addition, a number of control variables that can significantly affect the EQ will be included in the model, namely:

Firm size, (Watts and Zimmerman, 1990) argue that large firms face higher political costs and therefore have a stronger incentive to use accounting assumptions. In order to reduce political costs, the authors formulate the following hypothesis:

H<sub>4</sub>:Firm sizes are statistically significant and have a positive effect on the EQ of the business.

Profitability, research by (DeFond and Park, 1997) shows that when current profits are high, business executives often take profit management measures to save a part of profit for the next period in case the next period returns are not as expected and vice versa. Thus, there is an inverse relationship between the profitability and EQ as formulated in the following hypothesis:

H<sub>5</sub>:Profitability is statistically significant and have a negative effect on the EQ of the business.

## 4. RESEARCH METHODOLOGY

### 4.1. Research Models

From the research overview and the established hypotheses, the research team built a research model as follows:

$$EQ_{it} = \beta_0 + \beta_1 APDebt_{it} + \beta_2 StDebt_{it} + \beta_3 LtDebt_{it} + \beta_4 SIZE_{it} + \beta_5 ROA_{it} + \epsilon_{it} \quad (1)$$

The variables in the research model are detailed in Table 1.

### 4.2. Measuring EQ

There are many ways to measure EQ through profit management, the authors use the model of Jones (1991). The variable EQ measured via proxy is the remainder of equation (2). The EQ is the opposite of the remainder of the following equation:

**Table 1: Independent variables in the research model**

Variables	Code name	Measurement	Expected signs
Earnings quality	EQ	The absolute value of the residual from the equation, multiplied by (-1): $ACC_{it} = \alpha + \beta_1(REV_{it} - AR_{it}) + \beta_2 PPE_{it} + \varepsilon_{it}$	
Accounts payable	APDebt	Accounts payable/total assets	-
Short-term debts and loans	StDebt	Short-term debts and loans/total assets	-
Long-term debts and loans	LtDebt	Long-term debts and loans/total assets	-
Firm size	SIZE	The size of the business by assets log (total assets)	+
Profitability (return on assets)	ROA	Net profit after taxes/total assets	-

Source: Authors' compilation

$$ACC_{it} = \beta_0 + \beta_1(REV_{it} - AR_{it}) + \beta_2 PPE_{it} + \varepsilon_{it} \quad (2)$$

In which:

$\Delta REV_{it}$  is the difference between the turnover of business  $i$  in year  $t$  and year  $t-1$

$PPE_{it}$  is the cost of business  $i$ 's fixed assets in year  $t$

$A_{it-1}$  is the total assets in year  $t-1$

$\alpha_1, \alpha_2, \alpha_3$ , are the parameters of each business.

The profit management variable will be taken as a residual  $\varepsilon_{it}$  because profit management is the profit-correcting behavior, so whether there is an increase or decrease (equivalent to an adjustable cumulative variable is positive or negative), they are behaviors of profit management. Thus,  $\varepsilon_{it}$  is the measurement of the EQ; the higher the  $\varepsilon_{it}$  deviation, the lower is the EQ. The EQ measured by profit management is determined by  $EQ = EM \times (-1)$ .

### 4.3. Research Data

This paper uses data collected from the Vietnamese Stock Exchanges in the period of 2009-2018. Moreover, in order to determine the variables in the research model, the data was taken from period of 2008 to 2018 from audited financial statements of energy enterprises. After determining the indicators, the data of 468 observations are used to perform the analysis and regression. To consider and select the appropriate models, the research team used generalized least square (GLS) regression methods. The authors tested the autocorrelation phenomenon and the variance change phenomenon. The model test results show that the P-value received was equal to  $0.000 < \alpha$  (5%). This implies that the hypothesis  $H_0$  is rejected and that there is no variance change in the models with a 5% significance level. Therefore, the authors conducted another test to overcome defects of regression model by GLS regression method.

## 5. RESEARCH RESULTS AND DISCUSSION

Statistical data (Table 2) shows that EQ has the average value of -1.657; the smallest is -12.617 and the highest is -0.015; the standard deviation is 1.997. The portion of accounts payable (APDebt) is 13.2%; short-term debts and loans is 10.6% and the ratio of long-term debts and loans is 19.4% compared to the average total assets of the enterprise. The size of the firm (SIZE) is measured as a logarithm of the average firm's total assets which equals to 27,887. The ratio of profit after tax to total assets is (ROA) of 6.9%.

Figure 1 shows the DS of selected energy firms over the period of 2009-2019. For accounts payable and short-term debts and loans, there was no big change between years, while long-term debts and loans tended to decrease over time, from 24% in 2009, to 17% in 2018.

Table 3 shows the correlation coefficients between the variables. The purpose of examining the close correlation between the independent and dependent variables is to eliminate factors that may lead to multicollinearity before running regression model. In fact, the correlation coefficient between the independent variables in the research model does not have any pair  $> 0.8$ , so it is less likely to have multi-collinear phenomena when using the regression model. After performing descriptive statistics and correlation matrix analysis, the authors conducted an estimate of the research model using the GLS estimation method.

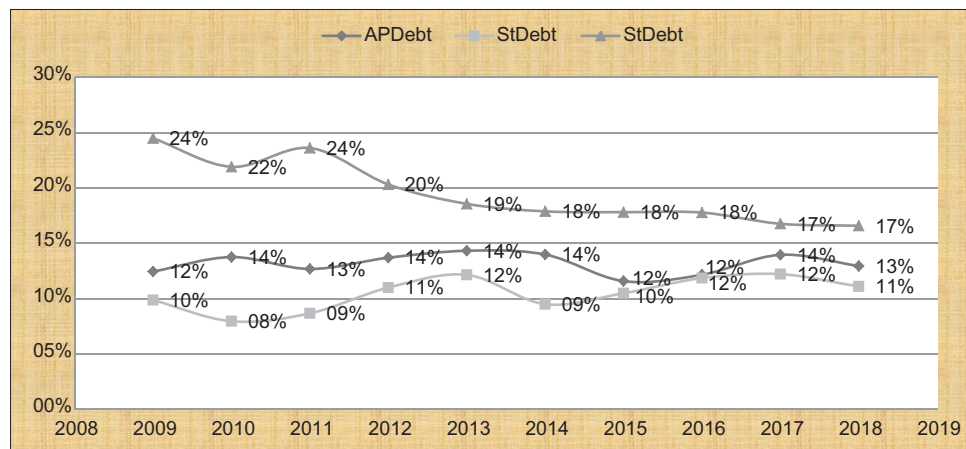
The results by GLS method (Table 4) show that the DS has an impact on EQ and is statistically significant, as follows:

Accounts payable have a negative impact on EQ and are statistically significant at 1%. This is consistent with the hypothesis  $H_1$  and correlates with the research results of (Gupta and Fields, 2006), yet disagrees with the study of (Tâm, 2013) and (Sercu et al., 2006). This means that commercial credits or accounts payable have a great influence on the EQ of Vietnamese energy businesses. It could be explained that in order to implement commercial credit terms that are beneficial to them, energy enterprises have made profit management measures to achieve the goals, thus their EQ decreases.

Short-term debts and loans have an opposite effect on EQ and are statistically significant, which is consistent with the hypothesis  $H_2$ . The results of this study are similar to those of (Gupta and Fields, 2006), (Fung and Goodwin, 2013) but contrary to that of (Tâm, 2013). The research results show that when the ratio of short-term debts and loans increases, the EQ decreases. This may be due to the reason that to deal with the terms of short-term loans of credit institutions, enterprises must take measures to manage profits, causing EQ to decrease.

On the other hand, long-term debts and loans positively affect the firm's EQ. This research result is contrary to the established hypothesis  $H_3$ , consistent with the research of (García-Teruel et al., 2010), yet in contrast to the study of (Chou et al., 2011).

The control variables are all positively related to EQ. This result is consistent with the hypothesis  $H_4$  and agreed with the research by

**Figure 1:** Firms debt structure for the period of 2009-2018

Source: Authors' compilation

**Table 2: Descriptive statistics**

Variables	Observations	Average	Standard deviation	Minimum value	Maximum value
EQ	468	-1.657	1.997	-12.617	-0.015
APDebt	468	0.132	0.129	0.000	0.662
StDebt	468	0.106	0.112	0.000	0.535
LtDebt	468	0.194	0.193	0.000	0.759
SIZE	468	27.887	1.485	24.384	31.898
ROA	468	0.069	0.065	-0.113	0.416

Source: Authors' calculation using Stata 14.0

**Table 3: Correlation matrix**

	EQ	APDebt	StDebt	LtDebt	SIZE	ROA
EQ	1					
APDebt	-0.3263	1				
StDebt	-0.1824	0.1115	1			
LtDebt	0.3463	-0.3951	-0.253	1		
SIZE	0.2091	-0.061	0.0007	0.3201	1	
ROA	-0.044	-0.2043	-0.2778	-0.2773	-0.0882	1

Source: Authors' calculation using Stata 14.0

**Table 4: Multivariate regression results**

Variables	GLS model
APDebt	-4.110**
StDebt	-2.555***
LtDebt	1.393**
SIZE	0.191***
ROA	-2.722*
_cons	-6.253***
N	468

Source: Authors' calculation using Stata 14.0. t statistics in brackets \*P&lt;0.1, \*\*P&lt;0.05, \*\*\*P&lt;0.01

(Watts and Zimmerman, 1990). Nevertheless, ROA has an opposite effect on EQ but not statistically significant, and not in agreement with the research of (DeFond and Park, 1997).

## 6. CONCLUSIONS AND RECOMMENDATIONS

For the purpose of studying the impact of DS on the energy business's EQ in Vietnam, the authors performed regression with

appropriate methods on table data collected from 468 observations of Vietnamese energy enterprises in the period from 2009 to 2018. The research results show that the accounts payable to suppliers, short-term debts and loans are statistically significant and negatively related to EQ; while long-term loans and debts are positively related to EQ. Based on the research results, the authors suggest the following recommendations:

With the above results, the study has made useful contributions to subjects using financial statements in the consideration of EQ. For credit institutions, the determination of EQ is related to DS, partly in considering the ability to earn incomes to repay loan contracts and minimize potential risks in the business operations. When EQ is appreciated, it means that the enterprise has the ability to generate incomes to meet loan conditions. The research results provide investors with a useful tool to assess the financial health of businesses. From there, investors can invest more accurately and reasonably based on the available data.

Businesses need to study to expand firm size. This is a necessary condition for businesses to gain resources to improve the EQ, and to limit the costs incurred due to representation issues. Large-scale enterprises with many growth opportunities will implement long-term debt policy, which accounts for a large proportion of the total debt.

Investors and the credit institutions' concern is not how much money a business can make, but importantly how it creates income streams. Investors need to understand how money is actually generated by researching and analyzing the data to assess the EQ of the business.

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