



# Impact of Accounting Information on Financial Statements to the Stock Price of the Energy Enterprises Listed on Vietnam's Stock Market

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## ABSTRACT

This paper studies the impact of accounting information on financial statements to the stock price of energy enterprises listed on Vietnam's stock market. By using the OLS regression model and quantile regression model, the author studies the influence of factors such as return on assets (Roa), capital structure (LV), enterprise size (size), current ratio (CR), and accounts receivable turnover (turnover) to stock prices. Data from this study were collected from 44 energy enterprises during 2006-2016. The results show that Roa, enterprise size (size), current ratio (CR), and accounts receivable turnover (turnover) are positively correlated with the stock price, with an explanation level of 48.47%. Capital structure (LV) does not affect stock prices. Based on the research results, the authors propose some recommendations for investors and enterprises and suggest other research directions as well as adding new factors to the stock price.

**Keywords:** Accounting Information, Financial Statement, Stock Price, Energy Enterprises

**JEL Classifications:** E44, G2, Q43

## 1. INTRODUCTION

Energy plays a key role for sustainable development and responding to global climate change. For Vietnam, energy plays a crucial role in the process of industrialization and modernization. The government has made efforts to ensure national energy security and providing sufficient energy for socio-economic development. Vietnam's demand for energy is growing rapidly, especially electricity sector which requires a large investment capital, if only using state budget capital cannot meet. The stock market is an important channel of capital mobilization that can help energy companies raise capital to invest in big projects, but the degree of attractiveness of energy companies shares have attracted investors?

Stock prices are influenced by various factors, including the accounting information which is presented on the financial statements. In developed stock markets, there were many studies to seek evidence of the relationship between accounting information and stock prices. Ball and Brown (1968) conducted an empirical

study of the relationship between accounting information and stock prices on the New York Stock Exchange. This research results showed that profits which were published on the financial statements affecting stock prices. Based on the model by Ohlson (1995), many empirical studies have been conducted to examine the relative values of information on financial statements in different markets. The research results by Collins et al. (1997) indicated that the information on the financial statement which was based on Ohlson model to explain 54% of the stock price in the United States. King and Langli (1998) used a regression model to examine the relationship of earnings and book value of stock price and the research results explained 70%, 60% and 40% for the United Kingdom, Norway, and Germany. Beside, in this research, there was a significant difference in the relationship between accounting information and stock prices across countries and over time.

In Vietnam, there have been many studies the relationship between accounting information and stock prices such as Dung (2010), Hai et al. (2015) and Nguyễn (2016). The results of these studies are

not entirely the same, due to the fact that independent variables are used differently in the model. The previous studies mainly considered the impact of the book value per share, earnings per share what impacted on the stock price. However, accounting information on the financial statements also contains important information such as profitability, capital structure, size of enterprises, current ratio, and accounts receivable turnover that may affect stock prices. Based on previous studies, the authors found that there was no research in Viet Nam studying the impact of accounting information on financial statements of the above factors on the stock prices of enterprises, especially energy enterprises. Therefore, the objective of this study is to examine the impact of accounting information on financial statements on stock prices of energy companies listed on the Vietnam stock market. Also in this study, the authors used a quantile regression (QR) model to examine the effect of these factors on stock prices. In order to apply this model, the dependent variable must satisfy several assumptions about the standard distribution and the uniform variance; and if not satisfy the assumptions, the results of OLS model is no longer credible. Therefore, through this study, the research results will recognize more fully the factors that affect the stock price of energy enterprises by a QR model.

## 2. LITERATURE REVIEW

There are many scholars who study the relationship of stock prices with accounting information such as accounting profit, earnings per share, book value per share. Ball and Brown (1968) concluded that profit is one of the useful accounting information to determine stock prices. Accordingly, there has been a lot of empirical research to find and measure the relationship between accounting information and stock prices such as Lev and Ohlson (1982) and Walker (1997). These studies have measured the relevance of published accounting information to find out about this relationship. The model by Ohlson (1995) has led to the expansion of studies on the relationship between accounting and stock prices including the balance sheet items which is presented through net assets and indicators of the statement of income. The results of this study have strongly influenced and affirmed the view that accounting information has an impact on stock prices. Collins et al. (1997) studied the changes in stock value what related to the profitability and book value of equity in the United States for a period of 40 years. By using net profit models as a theoretical basis, the scholars have estimated a regression model that links the value of stock to the book value of equity and returns. Barth et al. (1998) indicated that book value of equity and profitability depending on the firm's financial capability. They used the bond as a measure of the financial capability of the company and used two kinds of samples from the United States.

Sharma et al. (2012) conducted a study examining the relationships between stock prices and explanatory accounting variables such as book value per share, dividends per share, earnings per share, dividend yield, dividends from 2000 to 2008 in India. The study results showed that the profit per share, dividend per share and book value per share has great influence on the market price of stocks. However, some indicators based on these financial statements showed a significant correlation with the indicators on the stock market.

Beside, Al-Hares et al. (2012) conducted a study of all non-financial companies listed on the Kuwait stock exchange (KSE) for the period 2003-2009. The study by Stark and Thomas (1998), Hand and Landsman (2005) and Lo and Lys (2000) pointed out that the stock price depends positively on the book value and earnings. These results reinforce the results of previous studies such as Green et al. (1996), Rees (1997), Chen et al. (2001) and Alfaraih and Alanezi (2011).

The results also show that the explanatory power of the model, including its book value and earnings, is almost indistinguishable from the model of book value and dividends. So we can say that besides the profit and book value of equity, the dividend is also a strong factor which impacts on stock prices.

In addition, based on the Ohlson model (1995), there have been many empirical studies in developing countries, such as Shamki (2012) in Jordan, Khanagha, (2011) in the UAE, Omokhudu and Ibadin (2015) in Nigeria, Khanna (2014) in India and Pirie and Smith (2008) in Asian countries. The results of these studies have shown the relationship between accounting information and stock prices with interpretation at different levels. Dimitropoulos and Asteriou (2009) conducted the study with data collected from a sample of 101 non-financial companies listed on the Athens Stock Exchange. By using OLS regression model, the results of this study showed that the ratio of working capital to total assets and net profit to revenue had a negative impact on the stock price.

In Vietnam, Dung (2010) applied the Ohlson model with the research data from 2003 to 2007 with  $R^2$  result of 40%. However, this research phase is the period when the newly Vietnam stock market and regulations on the quality of accounting information published is incomplete. Doan (2014) also applied the Ohlson regression model to examine the relationship between stock price and accounting information.

Based on data from 430 companies listed on the HSX and HNX in 2009, the authors investigated the effects of four factors affecting stock prices including book value, earnings per share, interest rate on equity and financial leverage. The research results show that only earnings per share, return on equity, have a positive and statistically significant impact on stock prices.

It can be seen that the majority of studies examine the effect of book value and earnings per share on stock prices. There are not many studies that consider other aspects of financial information such as profitability, capital structure, size, current ratio, accounts receivable turnover to stock prices. Therefore, in this study, consideration of the new factors affecting stock prices will be useful for the stakeholders to determine how the information on the financial statements affects stock prices.

## 3. METHODOLOGY

Koenker and Bassett (1982) are the first authors to perform a QR model instead of estimating the parameters of the average regression with the OLS model. By using OLS regression model will get only a single regression line which shows the average value of the variable conditions depending Y according to the values of

the independent variable X. At the same time, QR model shows the multiple regression functions for each dependent variable. To overcome these limitations, in this study the authors used QR model which was proposed by Koenker and Bassett (1982). On the other hand, according to Hao and Naiman (2007), the assumption in QR is not as stringent as OLS, for example, standard distribution conditions and homogeneous variances are not required. According to Koenker (2005) and Hao and Naiman (2007), QR model has the following advantages: It allows for a detailed representation of the relationship between dependent variables and independent variables, it does not need to just consider this relation on mean value as OLS regression model. In OLS regression, abnormal observations are often discarded for estimating OLS without deviation. On the other hand, QR is robustness, not affected by the presence of abnormal observations and the tests of the parameters of QR's not based on a standard calculation error. Furthermore, these tests are not based on any assumptions about the distribution pattern of the regression error. QR is particularly suited when there is a change in variance or in the metric form where the distribution function of the asymmetric dependent variable is around the mean value. Then, QR model on the different units will have a noticeable difference, indicating the different effects of the independent variable on the dependent variable in the different units. So, to overcome these limitations, in this study, the authors use QR model which were proposed by Koenker and Bassett (1982). Based on that, the authors establish the model as follows:

$$Y_i = x_i' \beta_0 + u_{0i}$$

$$\text{Quantile}_\theta(y_i|x_i) \equiv \inf\{y: F_i(y|x) \theta\} = x_i' \beta_\theta \quad (4)$$

$$\text{Assumptions: Quantile}_\theta(u_{0i}|x_i) = 0$$

Quantile<sub>θ</sub>(y<sub>i</sub>|x<sub>i</sub>) is the partial QR θ(0;1) of the dependent variable y<sub>i</sub>; α<sub>0</sub>, β<sub>0</sub> are estimated parameter vectors; u<sub>0i</sub> is the error component; F<sub>i</sub>(y|x) is the probability distribution function of y in terms of x and f<sub>0i</sub>(y|x) as the probability density function; change the quantile ε(0; 1) will reflect the entire distribution of the variable y<sub>i</sub>.

Regression using the OLS method only obtains a single regression line that represents the conditional average value of the dependent variable Y by the values of the independent variable X. In the mean-time, QR has showed multiple regression functions corresponding to each quantile of dependent variable (Figure 1).

Profitability can be measured by different criteria such as after-tax profit on equity, after-tax profit on assets, earnings per share, etc. In this study, profitability is measured by return on assets (Roa). This indicator is often analyzed by the investors to compare with

the stock in the same industry, from which the investors will make a decision to buy shares of the company. This indicator is often analyzed by the investors to compare with the stock in the same industry, from which the investors will decide which shares of the company to buy?

Besides, the financial structure represents the combination of payables and equity in managing the financial policies of the business. According to Pandey (1981), the ratio of financial structure is one of the factors that influence stock prices. The financial structure of a company with a high debt ratio will have a greater financial risk, so it will affect the decision of investors when selecting stocks with different financial structures. Moreover, there are accounting information on financial statement such as size, current ratio (CR), accounts receivable turnover (Turnover) are important financial indicators to assess the situation finance, management ability of the company. The higher the above indicators will reflect the better the financial status of the business, attract the investors and affect stock prices.

$$P_{it} = \beta_0 + \beta_1 Roa_{it} + \beta_2 Lv_{it} + \beta_3 Size_{it} + \beta_4 Cr_{it} + \beta_5 Return_{it} + u_{it}$$

β<sub>0</sub>: Intercept

u<sub>it</sub>: Random error

Dependent and independent variables are presented in Table 1.

In this research, the authors used quantitative methods to examine the impact of factors such as Roa, LV, Size, Cr, return on stock prices (price) of energy firms through 4 common linear regression models (OLS) and QR model. Research data is the secondary data which was collected from financial statements of energy companies listed on the Vietnam stock market in the period of 2006 - 2016. In total 44 companies, including 20 companies listed on the HSX and 24 companies listed on the HNX, with total sample observation is 349 (unbalanced data).

## 4. RESULTS AND DISCUSSION

According to the results of Table 2, out of 44 energy enterprises surveyed from 2006 to 2016, there were 349 observations, of which 154 observations were that the electricity sector accounted for 44.13%, the remaining 195 observations oil and gas enterprises, accounting for 55.87%. The number of energy companies listing on the stock market tends to increase over time, in 2006 there were only 13 enterprises but by 2016 there were 44 enterprises.

**Table 1: Variables in the research model**

Variable name	Type	Code	Measurement	Direction of impact
Stock price	Dependent	Price	Share price at the end of the year	
Roa	Independent	Roa	Profit after tax/total assets	+
Capital structure (LV)	Independent	Lv	Liabilities/total assets	-
Size of firm	Controlling	Size	The size of firm by revenue (net revenue)	+
Current ratio	Controlling	Cr	Short-term assets/short-term liabilities	+
Accounts receivable turnover	Controlling	Return	Net revenue/Receivables	+

Source: Own editing

Besides, during the period 2006 - 2016, share prices of energy companies tend to decrease over time from the 2007 to 2011 period, and tend to increase again from 2012 to 2016 (Figure 2).

Figure 3 shows that the stock price of oil and gas enterprises have a higher price than the stock price of the electricity enterprises in all phases addition from 2006 to 2016, while price volatility is also larger.

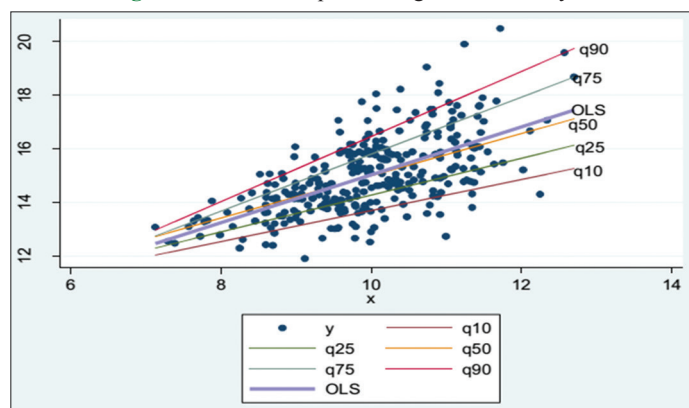
Statistical data in Table 3 shows that the average energy company's share price was 12,277 thousand Vietnam dong, higher than the par value, the lowest share price was 1.4 thousand Vietnam dong and the highest was 61,790 thousand Vietnam dong. Therefore, we can see that stocks of energy companies are not attractive to investors compared to other sectors. Energy companies had ratio of profit after tax/total assets was 6.3% and ratio of financial structure (liabilities/total assets) was 50.7%. Current ratio (CR) was 2.337, and the ratio of accounts receivable turnover (Turnover) was 11.031.

**Table 2: The number of energy enterprises in the sample**

Year	Number of enterprises		Total
	Power sector	Oil and gas industry	
2006	6	7	13
2007	8	11	19
2008	9	13	22
2009	8	10	18
2010	10	11	21
2011	17	23	40
2012	18	24	42
2013	19	24	43
2014	19	24	43
2015	20	24	44
2016	20	24	44
Total	154	195	349

Source: Data from Ho Chi Minh City Stock Exchange, Hanoi Stock Exchange and own editing

**Figure 1: Results of quantile regression of Y by X**



**Table 3: Descriptive statistics**

Variables	Number of observations	Average	SD	Minimum value	Maximum value
Price	349	12.277	10.365	1.400	61.790
Roa	349	0.063	0.071	-0.237	0.288
Lv	349	0.507	0.226	0.003	0.945
Size	349	13.513	1.970	7.450	18.111
Cr	349	2.337	2.783	0.114	25.882
Return	349	11.031	29.565	0.073	341.875

Source: Data from Ho Chi Minh City Stock Exchange, Hanoi Stock Exchange and own calculations from Stata 13.0. SD: Standard deviation

The correlation coefficient (r) is a statistical indicator that reflects the degree of linear relationship between variables. This coefficient varies from +1 to -1. Through the correlation coefficient, we can know the specific correlation between the dependent variable and the explanatory variable. At the same time, it shows the phenomenon appeared multicollinearity in the regression model (if  $r > 0.8$ ) (Table 4).

Table 5 shows the results of the OLS and QR model when considering the effect of accounting information factors on the financial statement on the stock price. According to the result of OLS model,  $R^2$  is 48.47%. Based on the results of the study presented in Table 5, four of the five accounting elements on the financial statements affect share prices and are statistically significant at 1%. These factors have positively affected on the stock price. However, the research results show that capital structure (LV) do not affect the stock price when tested by OLS model and at the level 4 of the quartile.

Table 5 also shows that the ROA is positively correlated with the share price of energy firms and is statistically significant at 1%, which is consistent with the initial assumptions. The results of this study are consistent with the findings of Dimitropoulos and Asteriou (2009) and Doan (2014), but contrary to the study by Nguyễn (2016).

The financial structure (Lv), has a negative relationship but does not have a meaningful significance to the stock price of the energy enterprise. When considering the regression results in quartiles, also for the same results, so this results contrast with findings of Pandey (1981), in agreement with the research by Nguyen (2016).

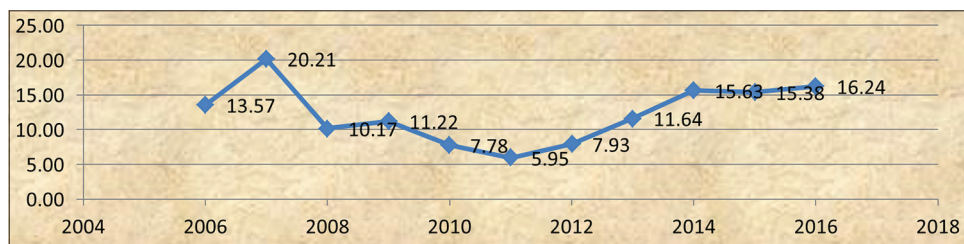
The control variables such as enterprise size (Size), current ratio (CR), accounts receivable turnover (Turnover) have positive relationship and have statistically significant in the medium and in quartiles.

## 5. CONCLUSIONS AND RECOMMENDATIONS

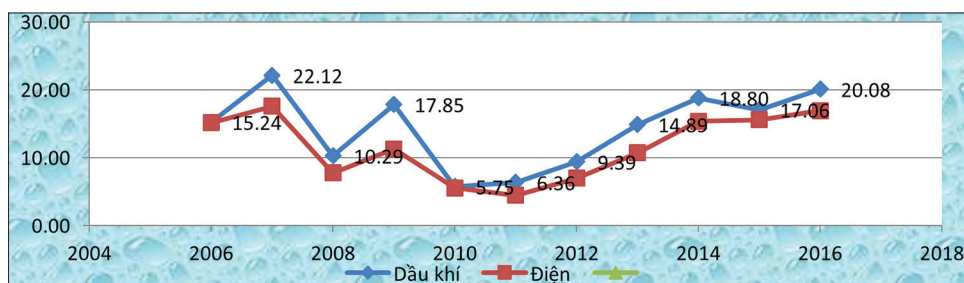
Based on the empirical results, the authors used the data from 349 observation to study 44 energy companies listed on the Vietnam stock market from 2006 to 2016 by OLS, QR model. Research shows that Roa, enterprise size (Size), current ratio (CR), and accounts receivable turnover (Turnover) have positive effects on stock prices. From the results of the study, the authors make some recommendations as follows:

1. For investors, when deciding to invest in securities, they should pay attention to the accounting information on the financial statements which affect on stock prices, such as

**Figure 2:** Average share price of energy companies for the period 2006-2016



**Figure 3:** Average share price of oil and gas enterprises and electricity enterprises in 2006-2016



**Table 4: Autocorrelation matrix**

	Price	Roa	Lv	Size	Cr	Return
Price	1					
Roa	0.4395*	1				
Lv	-0.1681*	-0.4281*	1			
Size	0.3077*	0.1221*	0.3365*	1		
Cr	0.1512*	0.2274*	-0.5132*	-0.2300*	1	
Return	0.2358*	0.1323*	-0.1279*	0.1576*	-0.015	1

Source: Data from Ho Chi Minh City Stock Exchange, Hanoi Stock Exchange and own calculations from Stata 13.0

**Table 5: Results of regression**

	VIF	OLS	QR25	QR50	QR75
Roa	1.36	33.265**	28.983**	39.209**	57.513**
		[7.940]	[5.241]	[6.406]	[11.080]
Lv	1.87	-2.77	0.532	-0.176	-0.106
		[3.288]	[1.941]	[2.372]	[4.103]
Size	1.31	1.329**	0.675**	1.076**	1.392**
		[0.378]	[0.186]	[0.228]	[0.394]
Cr	1.38	0.481**	0.279*	0.628**	0.999**
		[0.186]	[0.135]	[0.165]	[0.286]
Return	1.07	0.066**	0.058**	0.058**	0.064**
		[0.019]	[0.011]	[0.014]	[0.024]
_cons		-7.977	-5.702*	-8.828**	-11.154*
		[4.933]	[2.404]	[2.938]	[5.082]
N		349	349	349	349
R <sup>2</sup>		0.4847			

Source: Data from Ho Chi Minh City Stock Exchange, Hanoi Stock Exchange and own calculations from Stata 13.0. +P<0.1, \*P<0.05, \*\*P<0.01

Roa, enterprise size (Size), current ratio (CR), and accounts receivable turnover (Turnover).

- The firms should provide sufficient accounting information on the financial statements, within the prescribed time. The full disclosure and timely financial statements, audit reports, the report of the board of directors will create confidence for investors on transparency in information disclosure, is a good signal to attract investors. The firms need to publish financial

statements on time, because investors are very interested and have a great influence on investment decisions at this time.

- Profitability is one of the most important factor affecting the stock prices of energy enterprises. They need solution to save costs, high-performance production and business efficiency. In addition, energy companies should increase the use of high technology, friendly to the environment to attract investors, reduce the cost of raising capital.
- Besides, research results show that scale of firm has an impact on stock prices, so energy companies need to take advantage of economies of scale, to increase business efficiency and stock prices. Energy companies will be more financially managed as they can increase the ratio of current ratio (CR), and accounts receivable turnover (Turnover).

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