

Capital Structure and Firms' Performance: Evidence from Vietnam's Stock Exchange

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Abstract

Our paper examines what impact capital structure has on firms' performance in selected firms listed on HCMC Stock Exchange. The data is collected from 147 listed companies during the period from 2006 to 2014. The study not only checks the impact the level of leverage has on firms' performance, which is found to be negative in this study, but it also uses the short-term and long-term debt ratios to see the effect of debt maturity. However, there is no difference whether it is short-term or long-term. Tangibility is found to be negative with a very high proportion on average. With the suggestion that companies might invest too much in fixed assets and there is a lack of efficiency, this could be the alert for firms to improve their management process. Size and growth are found to be positive, since larger firms have lower costs of bankruptcy and higher growth rates associate with higher performance. Moreover, the study also adds the effects of industry and macroeconomics, and the result shows a correlation between the two factors and firms' performance.

Keywords: capital structure, firm's performance, Vietnam's stock exchange, macro-economic impact, stocks markets, leverage effect

1. Introduction

The mix between debt and equity is varied in the corporate world; therefore, each company has its own proportion of debt and equity in order to finance its business. The capital structure varies by many factors, such as with the ups and downs of the economy; maybe when a crisis is coming, then the proportion of debt will increase rapidly, and even at each stage of their life cycle, there are different mixes between these two; for example, at the start-up stage a company tends to have higher equity over debt, since the cost of interest is a real burden for them at the beginning due to the fluctuation of their income. However, as they grow and become large companies use more and more debt rather than sharing their rights by issuing new equity. Undoubtedly, using debt gives companies many advantages for management's main purpose of increasing the owners' wealth, then theoretically financing business through debt means that the return on owners' equity would rise, which owners always love to hear. Moreover, debt might be the solution for agency cost, and can also be a benefit as a tax shield.

On the other hand, debt also has negative impacts on firms' performance. One of these might be the outcome that a company could suffer from high and fixed interest expense that the company cannot afford to pay; for instance, the company does not have stable long-term income any longer, such as in start-up companies or companies which are having difficulty in competing, and when this happens bankruptcy can result. So technically, it is about how much debt and what kind of debt should a company use to have positive impact on their performance. Or put simply, should companies employ leverage, and if they do, what is the best choice? Long term or short term?

Therefore, how capital structure affects corporate performance is the question that has been the subject of numerous studies for different stock markets around the world (Chakraborty, 2010 for India; Saeedi & Mahmoodi, 2011 for Iran; Mahfuzah & Raj, 2013 for Malaysia; Ebaid, 2009 for Egypt). Till now, no empirical studies have been done for the growing stock markets in Vietnam. Capital structure refers to the way a company finances its business, whether through debt or equity. There are many empirical studies that have been conducted in order to find out the impact of capital structure on firms' performance (Rajan & Zingales, 1995; Arbabiyan &

Safari, 2009; Abor, 2005; Chen, 2004; Deesomsak et al., 2004). The majority of the studies have found a negative effect of debt on financial performance, with the same results stated specifically for short-term and long-term debt (Zeitun & Tian, 2007). However, short-term debt could also be positively related to performance (Touseef, 2014).

The purpose of this paper is to find out what effect capital structure has on firms' performance in Vietnam. Moreover, there is a small amount of empirical research that has been conducted on the impact of capital structure on firms' performance in developing countries. Most of the topics about capital structure have been about the determinants of capital structure. Therefore, this study is attempting to investigate the relationship between capital structure and firms' performance in Vietnam.

In addition, it is worth noting that the bond market and mutual funds in Vietnam have not yet been developed completely, hence the source of debt financing mainly comes from banks. Additionally, with the current situation in Vietnam, banks tend not to give too many long-term loans and the interest rate is rather high; therefore, short-term loans are dominating the structure of debt in Vietnamese firms. In this current situation, a majority of companies in Vietnam choose to finance their long-term business plans through short-term debt. Even big Vietnamese companies which are listed in the Ho Chi Minh City (HCMC) stock exchange are confronted with the same problem. In many cases, Vietnamese firms are forced to choose a capital structure which is not optimal, which therefore affects their performance and exposes them to the risk of increased interest rates in the short term.

Additionally, it has been found that tangibility has a significant correlation with the capital structure and companies with high growth rates tend to have a high proportion of debt. It was also pointed out that bankruptcy costs, which were presented by firm size, have an important effect on capital structure (Kraus & Litzenger, 1973; Harris & Raviv, 1991). Therefore, the three aforementioned elements should be used to evaluate firms' performance, since they are considered as the determinants of capital structure. The study also contains the effect of industry sector and macroeconomic impact.

2. Literature Review

Firms' profitability could be influenced by many factors, one of which is the structure of capital. Capital structure relates to the deciding sources to finance companies' business. Ordinarily, at the start-up of a firm, equity is used to run the business, since equity charges no fixed cost on the firm; on the other hand, as the firm grows, debt becomes a preferred choice of firms' capital, and in the remainder of their life cycle, debt is preferred.

In 1958, Modigliani and Miller had conducted a research that pointed out that in an ideal world with no bankruptcy cost, frictionless capital market and no taxes, the value of a firm does not depend on the structure of capital. Various empirical research studies have been conducted to examine Modigliani and Miller's theory, and most of them studied the relevance of capital structure on business firms. As a result, in 1963 Modigliani and Miller included taxes and other market imperfections, and found that firms really can maximize their value by using debt in their operations to take advantage of the tax shield. Other authors (Bradley et al., 1984; Kraus & Litzenger, 1973; Harris & Raviv, 1991) showed that there is an optimal capital structure of firms' financing.

Many empirical studies have been conducted to find out the impact of leverage on firms' performance. For instance, Simerly and Li (2000) found a negative impact of capital structure on financial performance. Additionally, Zeitun and Tian (2007) found that debt has a negative effect on both market and accounting performance. In contrast, Holz (2002) found a positive relation between capital structure and firms' performance; this was because banks would review the projects to guarantee the feasibility before giving loans to firms; therefore, firms could achieve an appropriate return. Margraves and Psillaki (2010) also found a positive relation between leverage and corporate performance.

However, not only the level of leverage but also the debt's maturity has a significant impact on firms' performance. Appiadjei (2014) found a positive relation between short-term debt and firm performance, and a negative impact of long-term debt was also pointed out. On the other hand, Tian and Zeitun (2007) found a negative impact on financial performance for both short-term debt and long-term debt. The mixed results among the empirical results encourage us to use both short-term debt and long-term debt, with the total debt as the measure for leverage. However, the study would be lacking if it did not include other factors such as growth, tangibility, and size, since these were also proved as determinants of capital structure and to have significant influence on profitability by many empirical studies.

3. Data and Methodology

The data used in this study was taken from the database of HCMC stock exchange (HOSE), containing the information about 147 listed companies. The companies belong to 17 sectors (Rubber, High-Tech, Oil, Energy, Tourism, Pharmacy, Education, Mining, Plastic, Manufacturing, Steel, Food, Commerce, Seafood, Transportation, Construction Material, Construction), and no companies from the financial sector are included in the data, since they are different from all the others and have high leverage by nature. In addition, all the companies in the data were required to have available financial statements from the years 2006 to 2014. The interested items were balance sheet and income statement, which provided the information about Fixed Assets, Total Assets, Short-term Debts, Long-term Debts, Total Debts, Owner's Equity, Net Income, Paid Interests, Net Revenues and Total share outstanding. The study uses Return on Asset (ROA) and Return on Shareholders' Equity (ROE) to measure financial performance of firms. In our study, we run the following regression:

$$Y = a + b.Leverage + c.Tangibility + d.Size + e.Growth + \varepsilon \quad (1)$$

$$Y = a + b.Leverage + c.Tangibility + d.Size + e.Growth + ME + Industry + \varepsilon \quad (2)$$

Y is *corporate performance* and alternatively measured by ROA, ROE and Tobin's Q with

$$ROA = \frac{Net\ Income + Paid\ Interests}{Total\ Assets}$$

$$ROE = \frac{Net\ Income}{Total\ Shareholders'\ Equity}$$

Leverage measured by using 'Debt Ratio' (DR), 'Short-term Debt to Total Assets' (SDR), 'Long-term Debt to Total Assets' (LDR) and TD/(TE+LTD) with

$$DR = \frac{Total\ Debt}{Total\ Assets}$$

$$SDR = \frac{Short - term\ Debt}{Total\ Assets}$$

$$LDR = \frac{Long - term\ Debt}{Total\ Assets}$$

$$TD/(TE + LTD) = \frac{Total\ Debt}{Total\ shareholder's\ Equity + Long - term\ Debt}$$

Tangibility is measured by using 'Fixed Assets to Total Assets' (FATA) with

$$FATA = \frac{Net\ Fixed\ Assets}{Total\ Assets}$$

Growth is measured by the change of net sales. *Size* is measured by taking the natural logarithm of net sales. Other 'Macroeconomic Factors' (ME) are measured by 9 dummy variables to control time effects from ME₁ to ME₉ represented for 2006 to 2014 respectively. *Industry* is measured by 17 dummy variables to control the effect of industrial sectors, Industry₁ to Industry₁₇ represented for Rubber, High-Tech, Oil, Energy, Tourism, Pharmacy, Education, Mining, Plastic, Manufacturing, Steel, Food, Commerce, Seafood, Transportation, Construction Material, Construction respectively. ε is the error term.

A strong correlation between leverage and firms' performance is expected to be found, whereas short-term debt ratio is expected to have negative impact on firms' performance, since it exposes firms to the risk of refinancing. Additionally, long-term debt is also expected to have negative impact on performance, because of the fluctuations of the market during the period. The growth opportunity is measured by using the change in net sales. As a result, a firm with high growth rate is expected to have high performance on its investments. Firm size is measured by using the natural logarithm of net sales. The firm size is expected to have positive relationship with corporate performance, since bankruptcy costs reduce with the size of the firm.

Moreover, the industry a firm is operating in would also be a vital point, since different industries have their own optimal capital structure; also the sensitivity to the market varies between different industries. Therefore, by

dividing the companies in the sample into 17 distinct sectors (Rubber, High-Tech, Oil, Energy, Tourism, Pharmacy, Education, Mining, Plastic, Manufacturing, Steel, Food Production, Commerce, Seafood, Transportation, Construction Material, Construction), we examine the question of whether there is an industry impact on companies' performance or not.

The period of the study includes the time when the global financial crisis (2007-2008) happened, and, therefore, there were several macroeconomic factors that affected firms' performance at that time, especially before and after the crisis. Therefore, we examine these effects by adding the 9 dummy variables which represent the period of 9 years respectively into our regression for ROA and ROE. A significant correlation between time effect and corporate performance is expected to be found, especially for the period between the time before and after the global financial crisis (2007-2008).

4. Empirical Result

Table 1 shows the summary statistics of the sample used in the study. The average ROA of the sample is 0.1072 (10.72%), the lowest ROA -0.36 (-36%) belongs to Viet Nhat Seafood Corporation in 2010, compared to the highest ROA of 0.73 (73%) in 2010 achieved by Truong Thanh Furniture Corporation. On the other hand, the mean of ROE is 0.1723 (17.23%), with the lowest of -0.97 (-97%) and the highest of 1.78 (178%); these were the ROAs of LAFOOCO in 2012 and ELCOM in 2006 respectively. Additionally, Tobin's Q has an average of 0.8379 (83.79%); this result is not really impressive since it indicates that on an average term, the market values of selected firms are lower than the book value of their total assets. Lastly, the standard deviations are 0.081, 0.184, and 0.679 for ROA, ROE and Tobin's Q respectively. Overall, the average ROA and ROE of the companies in the sample can be considered fairly good, since the firms are diversified from 17 sectors. However, considering the average market value of the selected firms, the rate of return is not as much as the investors expected.

Table 1. Statistics of the sample

Variable	Minimum	Maximum	Mean	Std. Deviation	N
ROA	-.36	.73	.1072	.081	1323
ROE	-.97	1.78	.1723	.184	1323
Tobin's Q	.09	5.50	.8379	.679	735
Growth	-.90	6.67	.2239	.516	1323
DR	.01	.98	.4760	.217	1323
SDR	.01	.96	.3740	.205	1323
LDR	0.00	.74	.1020	.143	1323
FATA	0.00	.94	.3136	.208	1323
Size	7.81	17.37	13.4749	1.289	1323
TD/(TE+LTD)	.01	26.80	1.0943	1.477	1323

The mean of Debt ratio (DR) and TD/(TE+LTD) is 0.4760 (47.6%) and 1.0943 (109.43%) respectively, which is most likely acceptable. Noticeably, the range of DR is from 0.01 (1%) to 0.98 (98%), meaning that there are companies which use only debt as the source for financing, and there are companies which consider only equity as the dominant source for financing. Specifically, Vimedimex, a pharmaceutical company, has been maintaining a Debt ratio around 95% over the years. On the other hand, the companies which choose equity as the main source of financing belong to the tourism and energy sectors; Vinagolf Corporation and Thac Mo HPC both had a Debt ratio of 0.01 (1%) in 2006 and they have been maintaining relatively low Debt ratio over the years.

Overall, the sample has an acceptable Debt ratio; however, most of the debt is short-term debt which has the average ratio of 0.3740 (37.4%) and range from 0.01 (1%) to 0.096 (96%). Additionally, long-term debt only takes the proportion of 0.1020 (10.2%) on average and range from 0.00 (0%) to 0.074 (74%). The standard deviations are 0.217, 0.205, 0.143, 1.477 for DR, SDR, LDR, TD/(TE+LTD) respectively.

The mean of growth is 0.2239 (22.39%) and range from -0.97 (-97%) to 6.67 (667%). This indicates that on average, firms in the sample have relatively high growth. The FATA has a mean of 0.3136 (31.36%) and range from 0.00 (0%) to 0.94 (94%). The 0.00 of FATA was reported as the fixed asset with the value of 0 in Hamico group's balance sheet, which was explained in their financial statement by the fact that they made all of their fixed assets into investments to another company. Lastly, the sample has an average Size of 13.4749 and range from 7.81 to 17.37, and the standard deviations are 0.516, 0.208, 1.289 for Growth, FATA, and Size respectively.

For the first model, we run the regressions respectively for each measure of leverage: DR, SDR and LDR, TDTC. Furthermore, we examine the effect of Industry sector and macroeconomic factors respectively. *Table 2* shows the results using DR for the regression of model 1.

Table 2. Regression for model 1 using DR (Note 1)

	ROA	ROE	Tobin's Q
Constant	0.004	-0.039	***-1.728
DR	***-0.142	***-0.117	***-0.852
FATA	**-.026	***-0.102	***0.385
Size	***0.013	***0.022	***0.207
Growth	***0.003	***0.011	0.051
Adjusted R ²	0.148	0.062	0.159
F-Statistics	***54.484	***22.71	***36.670
Observations	1323	1323	735

The regression leads to the following equations for ROA, ROE, and Tobin's Q:

$$ROA = 0.004 - 0.142.DR - 0.026.FATA + 0.013.Size + 0.003.Growth \quad (3)$$

$$ROE = -0.039 - 0.117.DR - 0.102.FATA + 0.022.Size + 0.011.Growth \quad (4)$$

$$Tobin's Q = -1.728 - 0.852.DR + 0.385.FATA + 0.207.Size + 0.051.Growth \quad (5)$$

The regression coefficients of DR for Tobin's Q, ROA and ROE are -0.852, -0.142 and -0.117 respectively. This means that if DR changes by 0.1, it would decrease Tobin's Q, ROA and ROE by -0.0852, -0.0142 and 0.0117 respectively, assuming the other factors remain unchanged. And they are all significant at 1% level, as expected DR has negative effects on the three measurements in the study. As a result, a high proportion of liabilities in the capital structure would lead to lower market value, Return on Asset and Return on Shareholders' Equity.

In addition, the coefficients of FATA are -0.026, -0.102 and 0.385 for ROA, ROE and Tobin's Q respectively. This indicates that if FATA changes by 0.1, ROA, ROE and Tobin's Q will move by -0.0026, -0.0102 and 0.0385 respectively. The coefficients are significant at 1% level for ROE and Tobin's Q, and at 5% level for ROA. Overall, FATA has negative impact on accounting measures (ROA and ROE in this study) and positive relation to market performance (Tobin's Q). Lastly, Size and Growth both have positive relation to the three measures, and the coefficients are significant at 1% level except for the coefficient of Growth to Tobin's Q; therefore, the results need to be interpreted carefully. The R²s show that overall the model for ROA can explain 14.8% of all the variability, only 6.2% is accounted for by ROE and 15.9% is accounted for by Tobin's Q. And the F-statistics indicate that overall the significant level of the model is at 1% level.

Table 3 shows the result of the regression for model 1 using short-term debt to total assets instead of total debt to total assets.

Table 3. Regression for model 1 using SDR (Note 2)

	ROA	ROE	Tobin's Q
Constant	*0.040	-0.016	***-1.514
SDR	***-0.138	***-0.123	***-0.870
FATA	**-.083	***-0.158	0.041
Size	***0.010	***0.020	***0.194
Growth	***0.028	***0.071	0.040
Adjusted R ²	0.133	0.080	0.146
F-Statistics	***51.742	***29.630	***32.436
Observations	1323	1323	735

The regression leads to the following equations for ROA, ROE and Tobin's Q:

$$ROA = 0.040 - 0.138.SDR - 0.083.FATA + 0.020.Size + 0.028.Growth \quad (6)$$

$$ROE = -0.016 - 0.123.SDR - 0.158.FATA + 0.022.Size + 0.071.Growth \quad (7)$$

$$\text{Tobin's } Q = -1.514 - 0.870.SDR + 0.041.FATA + 0.194.Size + 0.041.Growth \quad (8)$$

The results show that short-term debt has negative impact on all the three measurements. Specifically, the coefficients of SDR for Tobin's Q, ROA and ROE are -0.138, -0.123 and -0.870 respectively, with the significant level of 1%. This indicates that if SDR increases by 0.1, it will decrease Tobin's Q, ROA and ROE by -0.0138, -0.0123 and -0.087 respectively under the condition that the other factors are holding the same. The results lead to a conclusion that using short-term overall would somehow lead to lower Tobin's Qs, ROAs and ROEs for firms. The other variables for ROA and ROE are quite similar to what the first regressions have shown. However, there is one difference in the regression for Tobin's Q, which is the coefficient of FATA. It is insignificant. The models are accounted for 13.3%, 8% and 14.6% of all the variability of ROA, ROE and Tobin's Q respectively. And the F-Statistics show that overall the model is significant at 1% level.

Table 4 shows the results for model 1 using long-term debt to total assets as the measure of leverage.

Table 4. Regression for model 1 using LDR (Note 3)

	ROA	ROE	Tobin's Q
Constant	0.000	-0.045	***-1.567
LDR	***-0.124	**_-0.086	***-0.529
FATA	*0.022	**_-0.074	***0.600
Size	***0.008	***0.017	***0.164
Growth	***0.027	***0.070	0.090
Adjusted R ²	0.071	0.068	0.104
F-Statistics	***26.081	***25.089	***22.278
Observations	1323	1323	735

The regressions lead to the following equations for ROA, ROE and Tobin's Q.

$$ROA = 0 - 0.124.LDR + 0.022.FATA + 0.008.Size + 0.027.Growth \quad (9)$$

$$ROE = -0.045 - 0.086.LDR - 0.074.FATA + 0.017.Size + 0.070.Growth \quad (10)$$

$$\text{Tobin's } Q = -1.567 - 0.529.LDR + 0.6.FATA + 0.164.Size + 0.090.Growth \quad (11)$$

According to the results, long-term debt negatively impacts all three measures of corporate performance. The coefficients of LDR to ROA, ROE and Tobin's Q are -0.124, -0.086 and -0.529 respectively and they are all significant at 1% level. The coefficients indicate that if LDR increases by 0.1, it will have the consequence that ROA, ROE and Tobin's Q will decrease by 0.0124, 0.0086 and 0.0529 respectively. Additionally, the coefficients of FATA are 0.022, -0.074, and 0.6 respectively; FATA, therefore, has a positive impact on ROA and Tobin's Q with the significant level of 5% and 1% respectively. The R²s show that the model is accounted for 7.1%, 6.8%, and 10.4% for all the variability of ROA, ROE and Tobin's Q respectively. And the F-statistics indicate that overall the model has the significant level of 1%.

Table 5 shows the results for the regression of model 1 using TDTC.

Table 5. Regression for model 1 using TDTC (Note 4)

	ROA	ROE	Tobin's Q
Constant	0.015	-0.016	***-1.683
TD/(TE+LTD)	***-0.015	-0.016	***-0.095
FATA	**_-0.048	***-0.109	**0.250
Size	***0.009	***0.017	***0.184
Growth	***0.003	***0.011	0.058
Adjusted R ²	0.081	0.045	0.122
F-Statistics	***30.190	***16.707	***26.511
Observations	1323	1323	735

The regression leads to the following equations for ROA, ROE and Tobin's Q:

$$ROA = 0.015 - 0.015.TD/(TE+LTD) - 0.048.FATA + 0.009.Size + 0.003.Growth \quad (12)$$

$$ROE = -0.016 - 0.016.TD/(TE+LTD) - 0.109.FATA + 0.017.Size + 0.011.Growth \quad (13)$$

$$Tobin's Q = -1.683 - 0.095.TD/(TE+LTD) + 0.250.FATA + 0.184.Size + 0.058.Growth \quad (14)$$

The regression shows that 'TD/(TE+LTD)' has negative impact on ROA, ROE and Tobin's Q. Specifically, the coefficients of TD/(TE+LTD) for ROA, ROE and Tobin's Q are -0.015, -0.016 and -0.095 respectively. The result indicates that when TD/(TE+LTD) increases by 1, it will decrease ROA, ROE and Tobin's Q by -0.0015, -0.0016 and -0.0095 respectively, assuming that the other factors remain unchanged. The significant levels are 1% for ROA and Tobin's Q; however, it is insignificant for ROE. For this reason, the result of ROE has to be carefully interpreted. Overall, the models are accounted for 8.1%, 4.5% and 12.2%, the variability of ROA, ROE and Tobin's Q respectively. And the F-statistics indicate that overall the model is significant at 1% level.

In model 2, we examine in detail the impacts of capital structure on firms' performance according to different industries and macroeconomic factors. The regression in Table 6 shows similar results as in Table 2.

Table 6. Regression for model 2 (Note 5)

	ROA	ROE
Constant	** -0.068	*** -0.203
FATA	*** -0.046	*** -0.102
Size	*** 0.016	*** 0.028
Growth	*** 0.002	*** 0.01
DR	*** -0.125	*** -0.092
Rubber	*** 0.063	*** 0.124
High-Tech	-0.019	*** 0.165
Oil	0.020	*** 0.101
Energy	0.012	0.025
Tourism	-0.015	-0.019
Pharmacy	0.002	0.022
Education	-0.043	** -0.129
Mining	*** 0.058	*** 0.085
Plastic	0.009	0.015
Steel	** -0.014	0.000
Food Production	** 0.019	0.017
Commerce	-0.021	-0.009
Sea Food	0.004	-0.001
Transportation	0.007	0.003
Construction Material	-0.014	** -0.045
Construction	-0.008	0.016
Y2006	*** 0.046	*** 0.136
Y2007	*** 0.049	*** 0.118
Y2008	*** 0.022	*** 0.051
Y2009	*** 0.044	*** 0.113
Y2010	*** 0.037	*** 0.069
Y2011	*** 0.027	** 0.032
Y2012	0.009	0.007
Y2013	0.000	0.000
Y2014	-0.008	-0.007
Adjusted R ²	0.252	0.191
F-Statistics	*** 16.945	*** 12.174
Observations	1323	1323

DR is still negatively related to ROA and ROE with the significant levels of 1%. The Rubber industry has positive relation to both ROA and ROE, and the significant levels are at 1% level. Mining industry also has positive relation with ROA and ROE at the significant level of 1%. High-tech and Oil industries have positive relation to ROA and ROE at 1% level. On the other hand, Education has negative relation to ROE at the significant level of 5%. The coefficients of Steel and Food industries have the significant level of 5%, however Steel industry has negative relation to ROA while Food industry holds a positive relation to ROA. Additionally,

the period from 2006 to 2011 has positive relation to ROA and ROE, and the coefficients are significant at 1% level; except for the year 2011, the coefficient has significant level of 5%. This is the period containing the time before the global financial crisis (2007-2008) happened, during the crisis and after it. Overall, when including the industrial and year variables, the R^2 s increased and indicates that 25.2% and 19.1%, the variabilities of ROA and ROE respectively, are accounted by the model.

Table 7 shows the regression for model 1, using DR as the measure of leverage for the period between 2006 and 2008. The regression leads to the following equations for ROA and ROE.

$$ROA = 0.015 - 0.105.DR - 0.038.FATA + 0.012.Size + 0.017.Growth \quad (15)$$

$$ROE = -0.071 - 0.084.DR - 0.125.FATA + 0.02.Size + 0.051.Growth \quad (16)$$

Table 7. Regression for model 1 using DR from 2006 to 2008

	ROA	ROE
Constant	0.015	-0.071
DR	***-0.105	**0.084
FATA	**-.038	***-0.125
Size	***0.012	***0.020
Growth	***0.017	***0.051
Adjusted R^2	0.101	0.066
F-Statistics	***13.364	***8.746
Observations	441	441

A similar result is obtained for ROA compared with the period from 2006 to 2014. DR still has negative impact on ROA with the coefficient of -0.105 and significant at 1% level; this means if DR increases by 0.1, it will decrease ROA by 0.0105. On the other hand, DR surprisingly has a different result compared to Table 2. DR now has a positive impact on ROE with the coefficient of 0.084 and significant at 5% level; this means when DR rises by 0.1, as a result ROE will grow by 0.0084. The other variables have coefficients which represent similar results compared to Table 2. FATA still has negative impacts on both ROA and ROE, at the significant level of 5% and 1% respectively. Size and Growth both have positive relation with ROA and ROE at the significant level of 1%.

5. Discussion

5.1 Leverage

The results from the regression show that capital structure does have an influence on firms' performance, especially accounting performance. Specifically, the results from Tables 2, 3, 4 and 5 indicate that all the variables which are represented for capital structure (DR, SDR, LDR, TD/(TC+LTD)) negatively impact firms' performance, measured by using ROA and ROE and Tobin's Q; only TC/(TC+LTD) is insignificant to ROE in the study. This finding leads to the overall conclusion that a higher level of leverage is associated with a lower firm performance. This result might be explained by the fact that due to agency conflict, firms had over-leveraged themselves, and as a result performance was being negatively affected. Another reason might be the poor judgment of creditors when giving loans, since the non-performing loans inside the Vietnamese banking system were fairly high during the time of the study.

It is not surprising that SDR decreases firms' performance as predicted, not only by accounting measurements but also Tobin's Q. Short-term debt exposes firms to the risk of refinancing, and during the period of the study, even with support from the government, the interest rate highly fluctuated and sometimes it was unbearably high. Hence, a higher portion of short-term debt leads to lower performance.

In the previous study by Holz (2002), long-term debt indicated a positive relation with firms' performance. This was explained by the fact that banks were carefully reviewing the projects to guarantee their feasibility and success. In Vietnam, the banking system seems not to be so efficient and its credit judgment not so effective. This might explain why a higher level of long-term debt leads to lower performance of Vietnamese firms.

5.2 Tangibility

Tangibility was found to be negative and significant in most of the results, with a very high proportion on average. This would indicate that Vietnamese companies in Ho Chi Minh City stock exchange had invested too much into fixed assets; however, they were unable to take advantage of the massive amount of fixed assets, and

obviously the way they use their assets is not efficient. As a result, performance is not increased but decreased.

5.3 Size

From all the results, firm size is mainly positively related and significant to all the measures of firms' performance in the study. This is consistent with previous studies, since large firms can make higher returns than smaller companies due to better management, more investment diversification and economies of scale.

5.4 Growth

Growth is mostly significant and positively related to all measures of performance in the study. The reason might be that the high growth rate would come with the lower cost of capital and also indicates better efficiency in using assets. Hence, growth opportunities are positively related to firms' performance.

5.5 Industrial and Time Effect

The study also added the dummy variable for industrial sectors and time effect to test whether industry and economic environment have any impacts on firms' performance and what would happen with the variables of capital structure when adding the industrial and time effects. The results in Table 6 show that only two industries (Rubber and Mining) are positively related and significant to ROA and ROE. This is understandable since Vietnam relies heavily on natural resources and they contribute an important part of Vietnam's annual GDP. High-tech and oil industries have positive relation and they are significant to ROE, but insignificant to ROA. Steel industry is negatively significant to ROA but insignificant to ROE. Education and construction material industries are negatively related and significant to ROE, but insignificant to ROA. The food production industry is positively related and significant to ROA but insignificant to ROE. The other industries are insignificant to both ROA and ROE.

The time factor has been added to examine the effects of macroeconomic development on firms' performance. Interestingly, the variables representing the years 2006 to 2011 are all positively related and significant to both ROA and ROE. From 2006 to 2008, we could understand that it was the situation before the global financial crisis came to Vietnam. However, for 2009 to 2011, the explanation could be that the Vietnamese government had established appropriate policies in order to stabilize the economy. Also the companies in the study are all the top companies in Vietnam so it is easier for them to take advantage of the government's policies, and the bankruptcy of many small- and medium-sized companies has improved their opportunities due to reduced competition. From 2012 to 2014, the variables are insignificant; it might be that the situation had been more stable than the previous years, so there was less impact on firms' performance than in other years. In conclusion, macroeconomics does have an influence on firms' performance.

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Notes

Note 1. ***/ **/ * means significant at 1% level, 5% level, and 10% level respectively. ROA stands for Return on Asset, ROE stands for Return on Shareholders' Equity, DR stands for Total debt to total asset, FATA stands for Total net fixed asset to total asset, Size is the natural logarithm of net sales, and Growth is the change in net sales.

Note 2. ***/ **/ * means significant at 1% level, 5% level, and 10% level respectively.

Note 3. ***/ **/ * means significant at 1% level, 5% level, and 10% level respectively.

Note 4. ***/ **/ * means significant at 1% level, 5% level, and 10% level respectively.

Note 5. ***/ **/ * means significant at 1% level, 5% level, and 10% level respectively.

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