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Capital Structure and Financial Performance of Firms: Evidence from Vietnam

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Abstract--- *This paper examines the impact of capital structure on financial performance of listed firms in Hanoi stock exchange, the second biggest stock market in Vietnam. The paper uses pooled ordinary least squares (Pooled OLS), fixed effect model (FEM) and random effect model (REM) to process the panel data for the period 2015-2019. The results show that capital structure negatively effect on financial performance, which is represented by three indicators as return on equity (ROE), return on total assets (ROA) and earnings per share (EPS). On the other hand, the firm size positively impact on ROA and EPS while growth opportunities and asset structure negatively affect ROE and ROA.*

Keywords--- *capital structure, financial performance, Hanoi stock exchange.*

I. INTRODUCTION

One of the clear explanation of the capital structure and its effects on firm level decision was given by Stiglitz (1974), who stated that the firm level decisions could be classified under 4 headings: (1) financing of investments, (2) profit distribution, (3) amount of investment, and (4) selection of investment projects. Stiglitz mentioned that the first two decisions can be regarded as financial decisions, and the remaining are the real decisions. From this point of view, the discussions about the capital structure is about explaining the interactions between the financial and real decisions of the firm. On the other hand, if the Modigliani and Miller's (1958) propositions are accepted than there should be no interactions between financial and real decisions of firms.

Over the past 15 years, along with the development of Vietnam stock market, so far, Hanoi stock exchange (HNX) continues to increase in size and improve on quality. By the end of 2019, the capitalization scale in the market has steadily grown over the years, up to now reaching 192 trillion VND, more than 100 times higher than the end of 2005. The liquidity of the HNX is on uptrend in spite of fluctuations. This figure is particularly meaningful in the context that many enterprises depend on bank loans, especially in periods of very high interest rates and difficult to access loans. Some firms have increased their sizes more than a dozen times through the issuance on the HNX. In this circumstance, the fact of conducting a study to find an optimal capital structure is meaningful not only for the performance of the joint stock companies on the HNX in particular but also for the Vietnam stock market in general.

The paper is structured as follows. Section 2 summarizes the theoretical basis of capital structure and the impact of capital structure on firm performance. This part also highlights literature review. Section 3 presents methodology and empirical models. Section 4 analyzes the empirical results. Section 5 concludes and provides some recommendations.

II. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

Theoretical framework

Capital structure has been defined by many authors and scholars. However, these definitions are explicit and have the same meaning. This research adopts that of Pandey (1999) which says "a company's capital structure refers to its debt ratio relative to equity on the balance sheet It is a snapshot of the amounts and types of capital that a firm has access to, and what

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financing methods it has used to conduct growth initiatives such as research and development or acquiring assets". From this definition, we can say that capital structure is a trend at how a company finances its assets through a combination of debt, equity or mixture between securities and that a company's capital structure is then the figuration or structuring its liabilities. The following capital structure theories have evolved from capital structure literature.

Modigliani and Miller (MM) theory

Modigliani and Miller provided the seminal in capital structure under certain assumptions include no taxes, homogenous expectations, perfect capital markets, and no transaction costs. This theory which called "capital structure irrelevance" states that the relationship between capital structure and cost of capital is irrelevant, that mean the increases in debt does not effect on cost of capital. In a result, the investor's expectations of future benefits are totally effect on firm value and cost of capital.

Latterly, Modigliani and Miller introduced new evidence that cost of capital effect on capital structure, and thus effect on firm value with taking taxes as assumption into consideration, which refer that borrowing give tax advantage, because the interest will deduct from the tax which result what is known as tax shields, which in turn reduce the cost of debt and then maximize the firm performance.

Pecking order theory

Pecking order theory is the result of asymmetric information. The pecking order model does not discuss the optimal capital structure as significant point, but states that firms have two main sources to fund its financial needs which are internal and external finance; the theory claims that firms prefer to use firstly internal finance such as excess liquid assets or retained earnings then external finance. If internal financing is not enough to fund investment projects, firm may or may not obtain external financing, and if they do. In order to minimize additional costs of asymmetric information, the manager head for choosing between the different sources of external finance, firms prefer to use debt leverage firstly, secondly issuance of preferred stock and finally issuance of common stock

Trade-off theory

Trade off theory is an extension of the MM theory developed by Miller. The theory proposes that the firm's optimal capital structure include the tradeoff among the influences of firms and personal taxes, agency costs and bankruptcy costs, etc. Trade-off theory expect that corporations choose levels of debt in order to achieve a balance among the benefits from the interest tax shield with the costs related to a future financial distress or with current financial inflexibility.

The agency theory

Agency cost theory which provided by Jensen & Meckling (1976) is discussing the conflict of interest between principals (shareholders) and decision makers (agents) of firms (managers, board members, etc), this conflict stems from the difference in behavior or decision by point out that the parties (agents and shareholders) often have different goals and different tolerances toward risk. In this case, the managers whom are responsible of guiding the firm toward to achieve them personal goals rather than maximizing benefits to the shareholders. Hence, the main conflict that shareholders face is to ensure that managers (agents) do not invest the free cash flow in unprofitable projects. In other words, increasing the debt to equity ratio would assist firms to make sure that managers are running the firm more efficiently.

The market timing theory

The market timing (or windows of opportunity) theory, states that firms prefer external equity when the cost of equity is low, and prefer debt otherwise. According to the market timing theory, corporate executives sometimes perceive their risky securities as misvalued by the market. Conditional on having financing needs, firms issue equity when they perceive the relative cost of equity as low, and issue debt when they perceive the relative cost of equity as high. How do they judge the relative cost of equity? On the one hand, they may know themselves or their industries better. On the other hand, they may follow certain psychological patterns. For example, reference points, as suggested by prospect theory, may play a role.

Literature review

The study of the impact of capital structure on firm performance is derived from the use of data in developed countries. Roden & Lewellen (1995) investigated the capital structure of 48 businesses in the United State for the period 1981-1990 and pointed out the positive relationship between capital structure and firm performance. Hadlock & James (2002) argue that high-profit businesses will use more debt. Recently, this relationship has also been explored in developing countries. Majumdar & Chhibber (1999) examined the relationship between capital structure and performance of firms in India and figured out a negative relationship between debt ratio and firm's profit. Salim & Raj Yadav (2012) also found an inverse relationship between debt ratio and performance of listed companies on the Malaysian Stock Exchange.

Badar and Saeed (2013) indicated the impact of using leverage in firm's capital structure on its performance. The authors conducted empirical research on all firms of food sector listed on Karachi stock exchange for the period of 2007-2011. Long term debts to total assets, total debt to equity and short term debts to total assets were the proxy for capital structure and firm performance were measured by return on asset and asset turnover ratio. They showed that long term debts significantly positive impact while short term debts negatively effect on firm performance.

Sauraph Chadha & Anil K. Sharma (2015) regressed a sample size of 422 listed Indian manufacturing companies on Bombay stock exchange to analyze the relationship between leverage and firm performance in the period of 10 years from 2003-2004 to 2012-2013. They found that financial leverage has no impact on the firm's financial performance parameters of return on asset and Tobin's Q. However, it is negative and significantly correlated with return on equity. Other independent variables like size, age, tangibility, sales growth, asset turnover and ownership structure are significant determinants of a firm's financial performance in the Indian manufacturing sector.

Emin (2016) investigated the relation between firms' financial and real decisions in terms of capital structure and firm performance. Such possible relation is analyzed for the manufacturing firms, which are traded in Borsa Istanbul during the period of 2003-2015. Return on equity and return on assets are used as measures of firm performance; and short-term debt to total assets, long-term debt to total assets and debt to equity is used as explanatory variables; the total assets are control variables. The findings of the study presented that for both short-term debt and long-term debt have a negative and statistically significant effect on both return.

Elena Alexandra Nenu et al. (2018) contributed to the literature by investigating the drivers of capital structure of the firms listed on the Bucharest stock exchange for the period 2000-2016. By using multivariate fixed-effects regressions and two-step system generalized method of moments, GMM on a panel comprising the companies. They pointed out that leverage is positively correlated with the size of the company and the share price volatility. On the other hand, the debt structure has a different impact on corporate performance, whether this calculated on accounting measures or seen as market share price evolution.

Asian A Umobong & Diette-Abayeh Ayebanengiyefa (2019) examined capital structure composition and financial performance of food and beverage firms with data obtained from Nigeria stock exchange. They indicated significant positive relationship between short term debt over total asset ratio and Tobin Q, long term debt to total asset relate significantly positively with Tobin Q and earnings yield. Also, there is significant positive relationship between debt equity ratio and earnings yield. The authors also found significant negative relationships between short term debt and earnings yield, long term debt and price earnings ratio, and between debt equity ratio and Tobin Q. Additionally, there exists insignificant negative relationship between short term debt and price earnings ratio and between debt equity ratio and price earnings ratio.

Most recently, John MacCarthy & Helena Ahulu (2019) collected data from seventeen firms listed on the Ghana stock exchange from 2009 to 2018 to conduct a quantitative research to investigate the effect of capital structure on firms'

performance. The study revealed that short-term debt and total debt accounted for 67% and 76.3% respectively of capital used to finance the operations for the period. Moreover, the findings pointed out that there is significant and negative relationship between capital structures and firms' performance. They concluded the firms should minimize the use of debt capital and rather concentrate on equity capital to finance their operations.

Subsequently, the paper will review some typical studies in Vietnam. Le & Phung (2013) examined the impact of capital structure on firm performance in all firm listed in Vietnam stock exchange in the period of 2007-2011. Their finding is capital structure has a significant negative impact on firm performance. Phuc (2014) studied the effect of capital structure on financial performance of 217 listed firms in Vietnam stock exchange in the period 2007-2012. The independent variables used in this study include short term, long term debts, total debt and the dependent variables measuring financial performance are ROA and ROE. Research results showed that long-term debt has a positive impact on ROA and ROE, while short-term debt and total debt have a statistically significant negative impact on the business performance. Then, Thuy (2015) investigated the impact of capital structure on financial performance of 72 construction listed firms in Vietnam stock market in the period 2009-2014. The empirical results showed that capital structure made negatively effect on ROE. In 2018, Chau conducted the study on the effect of capital structure on performance of all listed firms in Vietnam stock exchange over 2005-2014 period. The author arrived at conclusion that both short term, long term and total debts impact negatively on financial performance. And most recently, Tam (2019) studied the relationship between capital structure and financial performance of 52 listed real estate firms in Vietnam stock exchange from 2014 to 2018. By using FEM, the empirical found that short term and total debts reduces financial performance as measured by ROA, ROE and EPS. However, using short-term debt brings more investment opportunities for businesses, while long-term debt is not statistically significant for financial performance at the 10% significance level. The study results also found that the proportion of fixed assets has the negative effect on performance measured by ROA and no statistical significance for financial performance measured by ROE, EPS, Tobin' Q.

III. METHODOLOGY AND HYPOTHESES

Data and variables

Data for this study is taken from annual financial statements of firms in Hanoi Stock Exchange for the period of 2015-2019. For each year in the analyzing period, total of 383 firms are included in the sample set, hence, there is total of 1,915 observations. This study adopts the three accounting based measure of performance including return on equity (ROE), return on assets (ROA) and earning per share (EPS). The paper takes total debt to total assets as a proxy - debt ratio (DR) - for capital structure of a firm. Additionally, the size, growth and structure of asset of a firm will be put into the model as control variables.

Hypotheses

H1: There is a negative relationship between capital structure (DR) and financial performance (ROE, ROA, EPS).

H2: There is a positive relationship between capital structure (DR) and the size of firms (SIZE).

H3: There is a positive relationship between capital structure (DR) and the growth of firms (GR).

H4: There is a positive relationship between capital structure (DR) and the structure asset of firms (STA).

Model and methodology

In order to test these hypotheses, the paper used some models to run regression as

$$ROE_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 SIZE_{it} + \alpha_3 GR_{it} + \alpha_4 STA_{it} + \varepsilon_{it} \quad (1)$$

$$ROA_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 SIZE_{it} + \alpha_3 GR_{it} + \alpha_4 STA_{it} + \varepsilon_{it} \quad (2)$$

$$EPS_{it} = \alpha_0 + \alpha_1 DR_{it} + \alpha_2 SIZE_{it} + \alpha_3 GR_{it} + \alpha_4 STA_{it} + \varepsilon_{it} \quad (3)$$

In which: α_0, α_1, α_2, α_3 and α_4 are estimated parameters; ε_{it} is error term

This study uses three methods to run regression models for the panel data as follows: pooled least squares regression model (Pooled OLS), fixed effect model (FEM) and random effect model (REM). Then, Hausman and Breusch-Pagan LM tests were conducted to select the appropriate model for the three research models. Next, multicollinearity, autocorrelation, heteroskedasticity tests were carried out to ensure the reliability of the regression results.

IV. EMPIRICAL RESULTS

Table 1 describes the variables used in the study. The average value of ROA of all listed firms is 3.1 %, while the average value of ROE is only 3.3 %, EPS is about 2,798 Vietnamdong. This proves that in the period 2015-2019, all listed firms in Hanoi stock exchange were rather operating effectively. The average capital structure of these firms is 48.6%, showing that the debt ratio is quite high, accounting for nearly a half of the total capital.

Table 1: Descriptive statistics

	Mean	Median	Maximum	Minimum	Std.Dev.
ROA	0.031	0.008	0.452	-0.325	0.068
ROE	0.033	0.023	1.461	-29.144	1.354
EPS	2,798.8	195.622	106,502.4	-8,700.08	9,865.542
DR	0.486	0.511	1.121	0	0.266
SIZE	15.715	16.884	20.426	11.566	1.886
GR	13.432	0.069	3,000.122	-1.121	204.224
STA	0.415	0.325	5.125	-0.179	0.418

Source: Author's estimation

Unit root tests on panel data are run for all variables and the results of Levin, Lin & Chu; Im, Pesaran and Shin and PP-Fisher Chi-square show that all variables in the three research models are stationary at a 1% significance level. Then, the study run regression with panel data for all three models by Pooled OLS, FEM and REM. The Hausman and Breusch - Pagan LM tests show that OLS is the most suitable for model (1), FEM is for model (2) and REM for model (3).

Table 2 show that the coefficient of DR variable is negative and statistically significant at 10% in the model (1) and 1% in models (2) and (3). This proves that the capital structure represented by the ratio of total debt to total assets negatively impacts on firm performance (ROE, ROA and EPS). The empirical result support hypothesis H1 and being consistent with pecking order theory and studies of Salim & Raj Yadav (2012), Le & Phung (2013), Thuy (2015), Emin (2016), John MacCarthy & Helena Ahulu (2019).

The coefficient of the SIZE variable is positive in all three models (1), (2) and (3). However, it is only statistically significant in models (2) and (3) at a 1% significance level, showing that the size of firm positively impacts on the performance proxied by ROA and EPS. The result support hypothesis H2 and being in line with Phuc (2014), Chau (2018), Elena Alexandra Nenu et al. (2018).

Table 2: Empirical results

Independent variables	Dependent variables (ROA, ROE, EPS)		
	ROE (by OLS)	ROA (by FEM)	EPS (by REM)
DR	-0.466*	-0.112***	-3.336***
	(0.305)	(0.041)	(1.255)
SIZE	0.0188	0.049***	1.088***
	(0.021)	(0.018)	(0.244)
GR	-0,000**	-0.000***	-0.000
	(0.000)	(0.000)	(0.001)
STA	-0.275*	-0.006*	-0.062
	(0.146)	(0.038)	(0.357)
Const.	0.0189	-0.688***	-15.000***
	(0.399)	(0.171)	(20.666)

Note: The asterisks *, ** and *** denote the statistical significance at the 10, 5 and 1 percent levels, respectively

Contrary to the expectations, the GROWTH variable negatively impact on firm performance. The coefficient of this variable is negative and statistically significant at 5% for model (1), 1% for model (2) and not significant for model (3). This

result shows that high growth opportunities can reduce the performance of firms. According to pecking order theory, firms grasp high growth opportunities are more likely to use debt and thus may experience financial difficulties resulting in increasing a conflict of interest between the owner and the creditor. In that case, firms' management will act for the benefit of the owner and invest less and thus reduce the financial performance.

For STA variable, the coefficient is negative in three models. However, it is only statistically significant at the 10% level in models (1) and (2). This shows that the asset structure has a negative impact on ROE and ROA, proving that the use of long-term assets of the studied firms is not really effective. Thus, the hypotheses H3 and H4 are rejected.

V. CONCLUSION

This study uses panel data of 383 listed firms in Hanoi stock exchange in the period of 2015-2019 to analyze the impact of capital structure (represented by the ratio of total debt/total assets) to financial performance (represented by three indicators as ROE, ROA and EPS). To select the appropriate model, the study run regression with 3 models by Pooled OLS, FEM and REM and conducted necessary tests. The empirical results show that capital structure is an important factor, negatively affecting all three indicators representing the financial performance of listed firms. Besides, ROA and EPS are positively affected by the size of the firms. In addition, ROE, ROA are negatively impacted by growth opportunities and asset structure.

The findings indicate that managers of listed firms in Hanoi stock exchange need to be more clearly aware of the role of capital structure on financial performance. Currently, the debt ratio accounts for a high proportion of the total capital (nearly 50%) and the research results indicate that the debt ratio negatively impact on financial performance. Therefore, managers should consider reducing the debt ratio in the firm's capital structure. In addition, these firms also need to take better advantage of the size of the business to improve operating efficiency because the size positively affects the performance. Moreover, for firms with high growth opportunities, administrators need to pay attention to balance the interests between owners and creditors when making investment decisions to avoid reducing business performance. Finally, management board should improve the efficiency of long-term assets to improve return on each share and thereby increase the value of firms.

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