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The Impact of Capital Structure on the Profitability of Vietnamese Listed Banks

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ABSTRACT

The purpose of this study is to look into the influence of capital structure on the profitability of seventeen listed banks in Vietnam from 2012 to 2020. Return on Total Assets (ROA) is used to determine profitability, whereas Debt to Total Assets (DA), business size, growth potential, and tangibility are used to determine capital structure. Descriptive statistics, correlation, and panel data regression models were used to examine the data. The findings reveal that capital structure has a significant negative influence on a firm's profitability. Based on empirical research, these results provide important insights for banks and lending organizations.

KEYWORDS: Capital Structure, Debt, Profitability, Return on Total Assets, Total Assets

I. INTRODUCTION

One of the most puzzling themes in corporate finance literature is capital structure (Brounen, 2003). A mix of debt and equity in a firm is what this word refers to. Choosing an ideal capital structure is one of many strategic decisions made by corporate executives since it helps to lower the cost of capital and has a direct impact on the firm's profitability (Tailab, 2014).

Many researchers from all around the world have taken an interest in the aforesaid topic. However, the present study findings are conflicting. Many studies have discovered that a company's capital structure has a negative impact on its profitability (Tailab, 2014; Mahfuzah and Raj, 2012; Mohammad and Jaafer, 2012; Tran Thuy Minh Chau, 2018). The findings of Abor (2005), Gill, Nahum, and Neil (2011), Suleiman M.Abbadi and Nour Abu Rub (2012), and Singh and Bagga (2019), on the other hand, suggest that the debt-to-assets ratio and profitability are positively correlated.

Vietnam is undergoing a transformation as a result of integration and globalization; the economy is working under the market mechanism, with government control and macro management. Enterprises and commercial banks must assure efficient operations to survive and develop quickly, thus profitability is a primary priority. There has been relatively little research on the impact of capital structure on the profitability of Vietnamese listed banks up to this point.

It is both academically and practically significant to investigate the impact of capital structure on the profitability of Vietnamese listed banks. The study emphasizes the link between bank capital structure and profitability from an academic standpoint. In practice, this research has substantial consequences for banks in terms of governance, helps government agencies in managing commercial bank operations, and supports investors in assessing and making investment decisions. As a result, the research study "The Effect of Capital Structure on Profitability: An Empirical Analysis of Vietnamese Listed Banks" must be carried out.

II. LITERATURE REVIEW

Abor (2005) used a sample size of 20 companies listed on the Ghana stock market (GSE) in his research (Abor, 2005).

The goal is to figure out how capital structure and profitability are related. Short-term debt has a positive relationship with Return on Equity (ROE), but long-term debt has a negative relationship with ROE. Furthermore, total debt and ROE have a positive association, according to this study.

Abor's research opens the path for a number of subsequent investigations. Gill, Nahum, and Neil studied a sample of 272 American companies listed on the New York Stock Exchange. The connection between capital structure and profitability was estimated using correlations and regression analysis. Short-term debt to total assets (SDA), long-term debt to total assets (LDA), and total debt to total assets (DA) all have positive effects on ROE in the manufacturing business, according to empirical findings. The research also claims that SDA and DA have a positive impact on service industry profitability (Gill et al, 2011).

Mohammad Fawzi Shubita and Jaafer Maroof Alsawalhah's research aims to expand on Abor and Gill's

findings on the impact of capital structure on profitability. Financial data from 39 industrial enterprises registered on the Amman Stock Exchange during a 6-year period was utilized as a data source (2004 to 2009). The findings reveal a negative relationship between debt and profitability. The data also suggest that when control factors are included, profitability rises (Mohammad and Jaafer, 2012).

Suleiman M.Abbadi and Nour Abu-Rub (2012) released a study based on information gathered from 28 Palestinian financial institutions between 2006 and 2010. The influence of capital structure on the performance of these institutions was investigated using ordinary least squares (OLS) and Multiple Linear Regression (MLR). They discovered a substantial link between efficiency and return on assets, as well as total deposit to total assets (Suleiman and Nour, 2012).

Mahfuzah Salim and Raj Yadav (2012) studied a panel of 237 Malaysian businesses listed on the Bursa Malaysia Stock Exchange from 1995 to 2011. The data reveal that short-term debt, long-term debt, and total debt are all adversely associated to ROA, ROE, and EPS. Tobin's Q ratio shows a strong positive relationship with both short- and long-term debt (Mahfuzah and Raj, 2012).

Singh and Bagga's study looked into the effect of capital structure on the profitability of Nifty 50 firms listed on the National Stock Exchange of India between 2008 and 2017. Singh and Bagga used four different regression models to investigate the impact of total debt and total equity ratios on profitability, as well as ROA and ROE. Pooled OLS, fixed effects (FEM), and random effects models (REM) have all been studied. The findings show that capital structure has a considerable positive impact on a company's profitability (Singh and Bagga, 2019).

Tran Thuy Minh Chau (2018) used a sample size of 566 listed firms on Hochiminh Stock Exchange (HOSE) and Hanoi Stock Exchange (HNX) during a 10-year period (2005-2014) to examine the impact of capital structure on the profitability of these companies (excluding financial institutions). Capital structure (containing SDA, LDA, and DA) has a negative association with ROA and ROE, according to research. The findings contradict Modigliani and Miller's (1963) theory that the corporation will take advantage of the tax shield by taking on more debt (Tran Thuy Minh Chau, 2018; Modigliani and Miller, 1963).

Using a panel data sample of 130 joint stock businesses in Thua Thien Hue province over a 5-year period, Tran Thi Bich Ngoc, Nguyen Viet Duc, and Pham Hoang Cam Huong evaluated the influence of capital structure on performance (2010-2014). According to the research, capital structure has a considerable negative influence on ROE, ROA, and Earnings per Share (EPS). Furthermore, it demonstrates that company size has a beneficial impact on ROA and EPS. Finally, it was discovered that growth prospects and asset structure are inversely connected to ROE and ROA (Tran Thi Bich Ngoc et al, 2017).

According to the research cited above, there are several different results about the influence of capital structure on profitability. As a result, it is critical to investigate the impact of capital structure on the profitability of Vietnamese listed banks. This research aids in determining if the influence of capital structure on profitability in the Vietnamese banking sector is compatible with the findings of previous studies.

Tran Thuy Minh Chau (2018) conducted research on the influence of capital structure on the profitability of listed firms on the Vietnamese stock exchange, which included a wide range of sectors. Following this study model, the authors focused the investigation solely on the banking sector.

III. MODEL AND METHODOLOGY

3.1. Data and variables

The focus of this study is on the influence of capital structure on profitability of 17 commercial banks listed on the HOSE and HNX during a nine-year period (2012 - 2020). The research period must be chosen based on the availability of the data needed.

All variables used in this study are listed in Table 1.

Table 1. Definition of Variables Used

Abbreviation	Variables	Definition	Authors
ROA	Return on Total Assets	Net income/ Average Total Assets	Abor (2005); Mahfuzah and Raj (2012); Tran Thi Bich Ngoc et al. (2017); Tran Thuy Minh Chau (2018); Singh and Bagga (2019)
DA	Total Debt to Total Assets	Total Debt/Total Assets	Abor (2005); Suleiman and Nour (2012); Mahfuzah and Raj (2012); Mohammad and Jaafer (2012); Tran Thuy Minh Chau (2018)
SIZE	Firm's size	Logarithm of total assets	Abor (2005); Mahfuzah and Raj (2012); Mohammad and Jaafer (2012); Tran Thi Bich Ngoc et al. (2017); Tran Thuy Minh Chau (2018)
GROWTH	Growth opportunity	(Net Sales$_n$ – Net Sale$_{n-1}$) / Net Sale$_{n-1}$	Abor (2005); Mohammad and Jaafer (2012); Mahfuzah and Raj (2012); Tran Thuy Minh Chau (2018)
TANG	Tangibility	Fixed Assets/ Total Assets	Tran Thuy Minh Chau (2018)

Source: Authors' own collection

The authors selected ROA as a profitability indicator based on previous research (Abor, 2005; Gill et al, 2011; Suleiman and Nour, 2012). DA stands for capital structure and is an independent variable (Abor, 2005). SIZE (Abor, 2005; Gill et al, 2011; Muhammad et al, 2016), GROWTH (Abor, 2005; Gill et al, 2011), and TANG (Muhammad et al, 2016) are also included in the model as control variables. The following is how the research model was created:

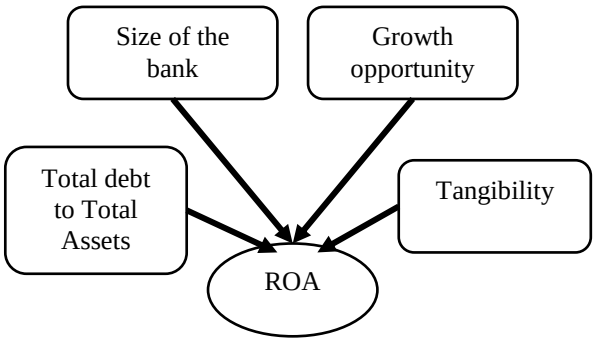

Figure 1: Research model
Source: Authors' own collection

When one of the participants to an economic transaction has more essential information than the others, this is known as asymmetric information. Managers have more information about the firms they run than outside investors or creditors, according to this theory. As a result, they perceive capital structure modification as a signal of the information held by managers (George et al, 1970). Smaller organizations, according to Pettit and Singer (1985), will have more asymmetric information since the quality of their financial statements is lower than that of large corporations. Small firms, on the other hand, have a greater cost of capital mobilization (particularly share issuance) than bigger businesses. Furthermore, the issue of additional shares to raise cash will decrease present shareholders' ownership. This is extremely troublesome for small and medium-sized businesses, because present shareholders may lose control or be annexed or merged. As a result, the following hypotheses for the study were developed based on Pecking Order theory (Myers and Majluf, 1984).

H1. The bank's capital structure (defined by DA) has a negative impact on profitability.

H2. The size of a bank (defined by SIZE) has a positive impact on its profitability.

H3. The bank's profitability is positively impacted by the growth opportunity (defined by GROWTH).

H4. Tangibility (defined by TANG) has a positive impact on the profitability of the bank.

3.2. Techniques used

Descriptive statistics

By giving concise descriptions of the sample, descriptive statistics aid in describing and understanding the characteristics of a given data set. Measures of central tendency and variability are both included in descriptive statistics. The mean, median, and mode are all indices of central tendency measures. The standard deviation, variance, minimum and maximum variables, kurtosis, and skewness, on the other hand, are all indices of variability.

Correlation Analysis

The relationship between two variables is represented by correlation. The greater the association between the two variables, the higher the correlation. Correlation not only shows the intensity of relationships between two variables, but it also shows the direction of such associations.

Regression Analysis - Pooled OLS, Fixed Effects, Random Effects

The authors utilized this method to assess the strength of the independent factors' influence on the dependent variable (DA, SIZE, GROWTH, and TANG) (ROA). The following is a description of the research model used in this paper:

Profitability = f (Debt to Total Assets, firm's size, growth opportunity, tangibility)

$$ROA_{it} = \beta_0 + \beta_1 DA_{it} + \beta_2 SIZE_{it} + \beta_3 GROWTH_{it} + \beta_4 TANG_{it} + u_{it}$$

To evaluate the model, the authors employed pooled ordinary least squares (OLS), fixed effects (FEM), and random effects (REM). The Hausman test was then used to determine which method was most suited. To discover the model's defects, multicollinearity, serial correlation, and heteroskedasticity tests were used. Finally, any model defects (if any) will be addressed in order to assure the accuracy of regression findings.

IV. THE RESULTS

4.1 Descriptive statistics

The factors employed in this study are listed in Table 2. The average ROA is 0.9 percent. These banks have an average capital structure of 91.8 percent. The State Bank of Vietnam, other credit institutions, and depositors finance the majority of these entities' obligations. A rather high DA ratio is frequent in the banking industry. Because they hold a significant amount of fixed assets in the form of a branch network, banks have a larger debt burden.

Table 2. Descriptive Statistics

Variables	Mean	Minimum	Maximum	Std. Deviation
ROA	0.009	0.00001	0.031	0.007
DA	0.918	0.780	0.959	0.023
SIZE	8.274	7.180	9.181	0.446
GROWTH	0.151	-0.663	3.148	0.403
TANG	0.005	0.0009	0.019	0.004

Source: Authors' own calculation

4.2 Correlation matrix

Table 3 shows the relationships between the variables. The data demonstrate that DA and ROA have a high negative connection (-38%).

Furthermore, the table illustrates that multicollinearity between DA and SIZE, GROWTH and TANG is possible. However, when checking for multicollinearity, the correlation matrix is rarely employed; instead, the VIF command is used. The authors will go through how to utilize this command later on.

Table 3. Correlation Matrix

	ROA	DA	SIZE	GROWTH	TANG
ROA	1.0000				
DA	-0.3827	1.0000			
SIZE	0.2662	0.4490	1.0000		
GROWTH	0.2270	0.0435	-0.0887	1.0000	
TANG	-0.2447	-0.0862	-0.0938	-0.1190	1.0000

Source: Authors' own calculation

4.3 Regression results

The authors used three approaches to do panel data regression: Pooled OLS, FEM, and REM. The Hausman tests then reveal that FEM is better at describing the impact in the model. As a result, the authors focus solely on the FEM results and explain them in depth.

At the 5% level of significance, Table 4 clearly shows that DA has a negative influence on ROA. To put it another way, when total debt grows, the return on assets decreases. Similar results are reported by Mahfuzah Salim and Raj Yadav, 2012; Mohammad Fawzi Shubita and Jaafer Maroof Alsawalhah, 2012; Tran Thuy Minh Chau, 2018; Tran Thi Bich Ngoc, Nguyen Viet Duc, and Pham Hoang Cam Huong, 2017. At the 5% level of significance, only the SIZE variable has a positive influence on ROA, whereas the remaining variables (including GROWTH and TANG) have no effect on ROA.

Table 4. Results of Regression Analysis

	OLS	FEM	REM
DA	-0.1466 (0.000)	-0.1523 (0.000)	-0.1466 (0.000)
SIZE	0.0115 (0.000)	0.0162 (0.000)	0.0115 (0.000)
GROWTH	0.0039 (0.000)	0.0035 (0.000)	0.0039 (0.000)
TANG	-0.4149 (0.003)	-0.3814 (0.039)	-0.4149 (0.003)
Hausman	0.0000		

Source: Authors' own calculation

4.4 Multicollinearity and serial correlation test

The authors used the VIF command to examine multicollinearity after doing regression. The findings demonstrate that all VIFs are less than two (Table 5). As a result, there was no multicollinearity.

Table 5. Multicollinearity Result

Variable	VIF	1/VIF
DA	1.28	0.782004
SIZE	1.27	0.790273
GROWTH	1.03	0.968204
TANG	1.03	0.973460
Mean VIF	1.15	

Source: Authors' own calculation

The authors obtained the result in Figure 2 by doing a Wooldridge test for serial correlation in the model with the xtserial command. This establishes the existence of the serial correlation.

```
Wooldridge test for autocorrelation in panel data
H0: no first-order autocorrelation
    F(  1,      16) =    105.994
           Prob > F =      0.0000
```

Figure 2: Wooldridge test result

Source: Authors' own calculation

4.5 Generalized method of moments (GMM)

The regression findings (Table 6) reveal that DA still has a negative influence on the ROA after correcting the model's defects. This does not contradict the regression results presented in section 4.3.

Table 6. Regression Analysis Results - Gmm

	Co.ef	P value
DA	-0.1994	0.000
SIZE	0.0099	0.000
GROWTH	0.0047	0.000
TANG	-0.6242	0.000

Source: Authors' own calculation

V. CONCLUSION AND IMPLICATIONS

The authors examine the impact of capital structure on the profitability of 17 listed banks in Vietnam from 2012 to 2020. According to descriptive statistics, all of these institutions were too reliant on debt. According to correlation study, DA has a negative impact on ROA.

The study employed a regression model with panel data with Pooled OLS, FEM, REM, and Hausman test to determine which approach was most suited. To identify the model's defects, multicollinearity, serial correlation, and heteroskedasticity tests were used. After correcting the defects, the results demonstrate that capital structure is an essentially important component that has a negative influence on bank performance. The findings of the fixed effect model reveal that when total debt rises, the return on assets decreases. Similar results are reported by Mahfuzah Salim and Raj Yadav, 2012; Mohammad Fawzi Shubita and Jaafer Maroof Alsawalhah, 2012; Tran Thuy Minh Chau, 2018; Tran Thi Bich Ngoc, Nguyen Viet Duc, and Pham Hoang Cam Huong, 2017. Only the SIZE variable has a positive influence on ROA among the control variables; the

other variables (including GROWTH and TANG) have no effect on ROA.

The findings suggest that these banks' financial management should be mindful of the influence of capital structure on their profitability. It's clear that these banks' debt accounts for a significant amount of their total capital (over 90%), and the research findings also reveal that debt has a negative influence on the bank's profitability. As a result, the management should think about lowering their debt ratio.

Furthermore, these institutions must make greater use of the firm's size in order to increase profitability, as the size of the business has a positive impact on profitability.

The findings of this study also suggest that, in addition to other market elements, investors should consider the capital structure when evaluating a bank's profitability. As a result, they will be able to conduct a more accurate investment analysis.

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