PalArch's Journal of Archaeology of Egypt / Egyptology

THE IMPACT OF CAPITAL STRUCTURE ON BUSINESS PERFORMANCE OF REAL ESTATE ENTERPRISES LISTED AT HO CHI MINH CITY STOCK EXCHANGE

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Nguyen Minh Ngoc, Nguyen Hoang Tien, Pham Bao Chau, Tran Le Khuyen. The Impact Of Capital Structure On Business Performance Of Real Estate Enterprises Listed At Ho Chi Minh City Stock Exchange-- Palarch's Journal Of Archaeology Of Egypt/Egyptology 18(8), 92-119. ISSN 1567-214x

Keywords: Real Estate, Business Performance, Capital Structure

ABSTRACT

This study is conducted to investigate the impact of capital structure on business performance of 25 firms in the real estate industry listed on Ho Chi Minh City Stock Exchange (HOSE) from 2011 to 2018. The research results show that capital structure has a negative impact on the business performance. In addition, the study has also found that tangible asset (TANG) shows a positive impact on performance of real estate firms and is consistent in all 03 regression models according to FGLS. This shows that the more listed real estate firms have tangible fixed asset, the more effective is their business performance. With control variables including firm size (SIZE), liquidity (LIQ), asset growth (GROWTH), economic growth (GDP), inflation rate (INF), the study found no evidence to conclude the relationship between these control variables and business performance.

INTRODUCTION

Capital structure decision plays an important role for managers because this is a decision that affects the ability of shareholders to maximize profit, thereby maximizing the efficiency of the business. Therefore, the impact of capital structure on business performance is of great interest to managers, shareholders and investors (Detthamrong et al, 2017). Besides, business performance is the core issue in production and business activities, it is a long-term goal that covers all firms in general and real estate firms in particular. Business performance is assessed through the ratios of the profitability that a firm achieves based on its book and market value. Capital structure construction also plays a very important role for financial managers as it has a

direct impact on business value and the ability to amplify income for owners. Enterprises often mobilize capital from many different sources (issuing shares, bonds, borrowing from banks, credit institutions). The choice of capital source with the proportion as much affects the business performance of the enterprise. Hence the relationship between business performance and capital structure is considered an important issue and is of considerable interest (Tien, 2015; Tien, 2020; Tien et al, 2020).

Many studies on the effects of capital structure on business performance have been carried out in many different countries, most of them in developed countries. However, in recent years, many empirical studies have been carried out in countries with transition and developing economies. Some studies show a positive relationship between capital structure and business performance (Detthamrong et al, 2017; Nasimi, 2016; Derayat, 2012), while some have found opposite results (Azeez et al, 2015; Tailab, 2014; Soumadi & Hayajneh, 2012). As such, empirical studies on this relationship give different results when data samples are collected from different industries and countries.

The real estate market is one of the markets with an important position and role for the national economy, having direct relations with the financial and monetary markets, the construction and labor market (Ngoc, 2014). Currently, for investors, the real estate market is a very attractive investment channel. When bank deposit rates are quite low, the gold and forex markets are less attractive because of the government's tight control policies, speculators are easily attracted to the real estate market with higher yields along with the ability to preserve value before inflation. According to the results reported from the Ho Chi Minh City City Real Estate Association (HoREA), the growth signal of the real estate market in 2017 and 2018 is very positive. In addition, FDI inflows into the real estate market ranked second after manufacturing and processing industry. These signs partly show the attractiveness of the real estate industry to investors in the coming time and its position for the economic development of Vietnam (Tien, 2017; Tien & Anh, 2017).

In addition, the State has set a roadmap to tighten real estate loans within 3 years from the beginning of 2020. In addition, the State Bank of Vietnam (SBV) has also increased the risk factor for real estate business to limit the capital flowing into this sector. Due to the characteristic of the real estate industry that requires a large capital source, most businesses have a relatively high ratio of loans to total assets. Research on the effects of capital structure on real estate business performance will help firms in this sector build a reasonable capital structure, thereby contributing to the improvement their operational efficiency (Tien et al, 2019). Although there have been quite a few studies on the effects of capital structure on the business performance of enterprises, there has not been a specific study analyzing the effects of capital structure on the business performance of real estate companies listed on HOSE (Tien, 2019; Tien, 2019a). The research results of this article are the basis for the real estate listed business managers in Vietnam to build a reasonable capital structure to improve their performance in the future.

The specific objectives of the article are as follows:

Determine the relationship between capital structure and performance of firms in the real estate industry listed on HOSE.

Quantify the impact of capital structure on the performance of firms in the real estate industry listed on HOSE.

Proposing policy suggestions to build reasonable capital structure to improve the performance of real estate firm listed on HOSE.

The spatial scope of the study includes 25 firms in the real estate industry listed on the HOSE. The time range stretches from 2011 to 2018.

The article uses a combination of qualitative and quantitative research methods. Qualitative methods are used to summarize the theoretical basis and previous studies related to the effects of capital structure on the performance of the business so that we can build research models. Quantitative method uses stata 14.0 software to quantify the impact of capital structure on the performance of real estate firms listed on HOSE.

The article systematizes the theoretical issues of capital structure, the impact of capital structure on the performance of enterprises. Therefore, the research results have made certain contributions to the completion of the theoretical framework on the effects of capital structure on the performance of enterprises. In practical terms, the research results help experts, leaders and managers have a more comprehensive and complete view of measuring the impact of capital structure on business performance. This is the condition to develop suitable solutions to improve the operational efficiency from capital structure for firms in the real estate industry listed on HOSE.

THEORETICAL FRAMEWORK

Overview of capital structure

Concept of capital structure

Capital structure is defined diversely by many researchers around the world. Capital structure is the choice between debt, equity or derivative securities to finance a firm's business (Myers, 1984). According to Abor (2005), capital structure is a combination of many different securities. Besides, Gill et al (2011) argued that capital structure is a combination of debt and equity that firms use in business activities. Meanwhile, Nirajini and Priya (2013) argued that the capital structure is a combination of long-term capital (common shares, concessional shares, bank loans) and short-term debt (overdraft and overdraft loans, payables to the seller). According to Firer et al (2004), capital structure refers to the mix of debt and equity that firms use to finance their operations.

Measuring capital structure

According to Ross et al (2003), capital structure is the combination of the use of debt and equity in a certain proportion to finance the production and business activities of enterprises. This ratio reflects the percentage of a company's assets that are financed by debt. This coefficient is used to determine the firm's ability to guarantee debt repayment. The lower the debt ratio, the more debt can be guaranteed in the event of bankruptcy. Conversely, the higher the ratio, which means that the company often approves its debts to finance its operations, the more likely the firm is insolvent. If a company borrows heavily to finance its high operating costs, it can be more profitable than issuing shares. If the company's profits are much higher than the cost of borrowing, the company's shareholders get a lot of benefits. However, the profits earned from investment and business activities from the borrowed money may not cover the borrowing costs which could result in the company going bankrupt. Therefore, borrowing debt or issuing additional shares is a difficult problem for businesses. To evaluate and measure the financial structure, previous studies often base on the measures of financial leverage of the business, including: debt ratio; debt to equity ratio; delf-financing coefficient.

The debt ratio shows the extent of the firm's use of borrowed capital, which shows how much of the company's assets are invested by the loan. This coefficient helps to evaluate the financial status, including the ability to ensure repayment of debts and risks of the business. The debt ratio depends heavily on the business lines and the fields in which the business operates, which can be measured as follows:

Overall debt ratio (D / A) = Total liabilities / Total assets.

Short-term debt ratio (SD / A) = Short-term debt / Total assets.

Long-term debt ratio (LD / A) = Long-term debt / Total assets.

Typically, if the overall debt ratio is greater than 50%, it means that the firm's assets are financed by more liabilities, whereas if the overall debt ratio is less than 50%, then the business's assets is financed primarily by equity capital. In principle, the smaller the coefficient, the less a firm will face financial difficulties because the firm is less dependent on debt to finance its business. The debt ratio depends on the industry of business and the field in which the business operates.

Theories Of Capital Structure

The fundamental theory of capital structure

Modigliani and Miller (1958) lay the foundation for the study of capital structure when stating that capital structure does not affect the market value of firms in perfect capital markets. Perfect capital markets exist with the following assumptions:

• No cost for buying or selling securities;

• No single investor can influence stock prices;

• All investors have access to available information;

• The same interest rate for all borrowers to borrow or lend;

• When operating under the same conditions, the level of business risk will be the same;

• The same business's homogenous expectations for all investors;

• Managers will maximize value for shareholders (no agency costs incurred).

While the perfect capital market assumptions are rigid and do not exist in practice, this model is useful for identifying situations where capital structure does not affect firm value, making a topic for later researchers to develop and expand on this theory. With the development of the capital market, many of Modigliani and Miller (1958) 's (1958) perfect capital market assumptions do not exist in reality. Modigliani and Miller realize of this limitation and expands the assumption when considering corporate value in the event of taxes. Modigliani and Miller (1963) show that enterprise value increases when firms use more leverage because they benefit from the tax shield of interest. This means businesses will benefit from using more leverage. This view of Modigliani and Miller is subject to many typical debates.

Specifically, Stiglitz (1969) carried out research to check the theory of Modigliani and Miller and the results showed that individuals can pay higher interest rates than businesses, and some businesses can pay interest rate higher than other businesses. Besides, the loan cost varies from lender to lender. As such, the assumptions of the same interest rate for all loan or loan investors by Modigliani and Miller are not consistent. The assumption of no bankruptcy costs and the net expectation of corporate profit is also rejected by conclusions from Stiglitz's (1974) later research. Wald (1999) when comparing capital structure choices of firms in France, Germany, Japan, UK and USA found that capital structure choices in these countries are different despite the leverage ratio. It is the difference in tax policy and agency cost as well as the asymmetric information between shareholders and creditors that leads to this difference. Thus, although Modigliani and Miller's theories do not match in practice, this theory is very important because it has laid the foundation for the contributions of later researchers to the modern financial economy.

Capital structure trade-off theory

Myers (1984) admits that the optimal debt ratio is determined by the trade-off between the benefits and the costs of debt. Similarly, the optimal leverage is determined when there is a balance between the benefits and the cost of debt, and then firm value reaches a maximum (Shyam & Myers, 1999). Key factors

that contribute to explain and clarify this theory include bankruptcy costs, taxes and the cost of financial exhaustion. Fama and French (2002) argue that bankruptcy costs are expected to increase as profits decrease and that the threat of these costs pushes firms toward lower target leverage. The more debt a firm uses, the greater the tax shield benefits (Modigliani & Miller, 1963) but in return the costs of financial exhaustion include increasing legal and administrative costs (Myers, 1984 & 2001). Thus, the core content of this theory is that the value of the levered firm is equal to the value of the non-levered firm plus the present value of the tax shield minus the present cost of financial exhaustion. Target debt ratios are not the same across firms, for example firms with a majority of intangible assets tend to borrow less than firms with predominantly tangible assets (Long & Malitz, 1985).

Therefore, these firms often tend to capital structures with low debt ratios. However, this theory has not solved the problem that some enterprises have good business performance but little debt or some countries reduce taxes, but enterprises in these countries still use high debt. Brennan and Schwartz (1978) argued that there exists an optimal capital structure where the benefits of the tax shield from interest are equal to the cost of bankruptcy to achieve this optimal level. Fama and French (2002) said that when the capital structure of the business has not achieved the target capital structure, they will adjust to achieve this capital structure, but the speed of adjustment is not fast but slow because of arising transaction costs, asymmetric information. Therefore, it is only in the long term that the firm will achieve its target capital structure. In the condition of zero adjustment costs, the businesses achieve optimal capital structure.

In fact, the cost of issuing equity, the transaction costs incurred affect the rate of capital structure adjustment (Altinkilic & Hansen 2000; Strebulaev, 2007). In addition, debt covenants also affect the rate of capital structure adjustment (Devos et al, 2017). The purpose when making debt covenants is to protect the interests of creditors. Specifically, the debt covenant may not allow an enterprise to issue more new debt when its net working capital or interest rate is too low, or limit the payment of dividends and investment activities of the enterprise. The results show that when there are debt covenants, the rate of capital structure adjustment is lower than that of enterprises without debt covenants. When the business is heavily bound by debt covenants, the adjustment speed is slower than normal.

Theory of pecking order

Myers and Majluf (1984) argued that it was asymmetric information between managers (inside firms) and investors (outside firms) that shaped the theory of pecking order. Because managers have a lot of internal information, know the actual business situation, growth potential, and risks of the business better than investors, they will decide to implement a capital structure likely to achieve the business's goals. It is the disproportionate information that influences the choice of internal or external funding, considering whether to issue debt or equity. The source of internal funding here is retained earnings as they have

lower issuance and transaction costs than other sources of funding (e.g., Debt Issuing). Myers (1984) presents the content of pecking order theory as follows:

Internal funding is given first priority;

Target dividend payment policy based on investment opportunities of the business;

Rigid dividend policy and unpredictable fluctuations in returns and investment opportunities mean that internal cash flows arising may be larger or smaller than capital expenditure. If smaller, the enterprise can withdraw the cash balance in advance or withdraw capital from market securities;

When outside funding is required, the safe securities will be issued first. The implication is, the firm uses debt first, followed by hybrid securities such as convertible bonds and finally ordinary shares.

Many experimental evidence has proven the validity of this theory. Zeidan et al. (2018) investigates whether pecking order theory is appropriate for owners of private unlisted firms in Brazil. The results show that more than 50% of owners of these firms prefer to use internal capital over other sources of funding, even when the firm has subsidized loans. Thus, pecking order theory is consistent with the preferences of owners of small and medium-sized private businesses in Brazil. Allini et al (2018) examined the relevance of the theory of pecking order in emerging economic markets, namely Egypt, when surveying sample data of 106 companies listed on the EGX stock exchange in 2003-2014 period. The results show that profitable businesses are less likely to choose external funding sources. This is evidence that businesses in Egypt adhere to the theory of pecking order quite well.

Theory of market timing

Market timing plays an important role when it comes to raising capital and allows businesses to minimize the cost of capital to maximize firm value. Graham and Harvey (2001) argue that managers choose the right moment for firms to enter the capital market by issuing debt when they perceive low market rates. In addition, Baker and Wurgler (2002) argued that determining the timing of participation in the equity market is very important in deciding capital structure. Specifically, when the market value of shares is high, at this time businesses prefer to issue shares over debt issuance, and buy back shares when the market price is low. At a time when the cost of equity is low, firms choose to issue shares and buy back shares when the cost of capital is high. Finally, when investors expect the earning potential of the business, that is the time when the business will issue shares. Baker and Wurgler (2002) conclude that optimal capital structure does not exist in this theory and that capital structure changes when firms choose to enter the capital market. The implication of the market timing theory is that the manager's decision to issue shares or debt is affected by market conditions. Equity's market timing theory depends on the consideration of equity market prices and the market timing theory of debt, which states that debt issuance is the option used by firms

when its costs of debt are lower compare with the past or compare market conditions with other capital markets. A new finding of this theory is that when there is rejuvenation and experienced factors in the board of directors, the form of debt issuance is preferred over the issue of shares. This result is drawn using data of 219 non-financial firms listed in Russia during 2008-2015 (Zavertiaeva & Nechaeva, 2017).

METHODOLOGY

Research Model

Model variables description

Dependent variables

The dependent variable in the study is performance measured according to the accounting approach, including 03 representative variables: ROA, ROE (Sheikh & Wang, 2013; Hasan et al., 2014; Nasimi, 2016; Detthamrong et al., 2017; Le & Phan, 2017), and ROS (Tan et al, 2020; Nghi & Nam, 2018; Loc & Tuan, 2009).

Interpreting variables

Based on previous studies by Khan (2012), Abor (2005 & 2007) the capital structure metrics used are: Short-term debt to total assets (SDTA) , Long-term Debt to Total Assets (TDTA). In this article, the authors measure the capital structure of the business according to the approach of Ross et al (2003). Accordingly, the capital structure is determined based on the overall debt ratio, total debt to total assets (TDTA, DA).

Controling variables

Business performance is not only explained by indicators of measuring capital structure (explanatory variables), but also many other factors such as firm size, growth, tangible fixed assets, liquidity. The variables measuring these factors contribute to explain more detailed and clearer business performance. Based on the review model from previous studies by Sheikh and Wang (2013), Vy and Nam (2013), the authors use 4 control variables in the research model including: Firm size, growth, Tangible and liquid assets.

Enterprise size (SIZE)

Business size can affect business performance in many different directions. The empirical evidence supports a positive relationship between firm size and performance (Muritala, 2012; Salim & Yadav 2012; Soumadi & Hayajneh, 2012). Meanwhile, the opposite relationship is found in the study of Gunasekarage et al (2007).

Liquidity (LIQ)

Goddard et al (2005) argued that there is a positive relationship between firm's liquidity ratio and firm's profitability. Highly liquid companies can easily adapt to rapid changes in competitive environments. Liquidity has a positive relationship with the LDTA, but this relationship is insignificant when studying capital structure in emerging markets, particularly in Vietnam. Because liquidity affects capital structure, thus affects business performance.

Tangible assets (TANG)

The inverse relationship between tangible assets and business performance has been demonstrated by Sheikh and Wang (2013). Also in the study of Margaritis and Psillaki (2010); Le and Phan (2017), TANG is calculated by the ratio of tangible fixed assets to total assets.

Growth (GROW)

There are many ways to measure growth, growth is calculated based on the percentage change in revenue (Fosu, 2013) or according to Soumadi and Hayajneh (2012) based on the ratio of difference in book value of assets. The empirical evidence of Salim and Yadav (2012), of Sheikh and Wang (2013) supports a positive correlation between growth and performance performance.

Economic growth (GDP)

The macroeconomic growth is measured by the real GDP growth index included in the research model to control the effect of macroeconomic characteristics on the performance of real estate enterprises. Azeez et al (2015) found a positive relationship between economic growth and firm performance.

Inflation (INF)

Inflation is also taken into consideration in the research model. In the study of Azeez et al (2015), the inflation rate has a negative impact on the business performance of the firms.

Proposed research model

Based on the theoretical foundation of the effects of capital structure on the business performance of enterprises, combining the overview of the experimental research models presented above, the author applied Khan (2012)'s research model because of the similarities in the study of a developing country's one given economic sector.

The article offers 3 research models o the impact of capital structure on business performance of real estate firms listed on HOSE:

Model 1: $ROA_{it} = \beta 0 + \beta 1DA_{it} + \beta 2SIZE_{it} + \beta 3GROWTH_{it} + \beta 4TANG_{it} + \beta 5LIQ_{it} + \beta 6GDP_t + \beta 7INF_t + \varepsilon_{it}$

Model 2: $ROEit = \beta0 + \beta1DAit + \beta2SIZEit + \beta3GROWTHit + \beta4TANGit + \beta5LIQit + \beta6GDPt + \beta7INFt + \varepsilon it$

Model 3: $ROSit = \beta0 + \beta1DAit + \beta2SIZEit + \beta3GROWTHit + \beta4TANGit + \beta5LIQit + \beta6GDPt + \beta7INFt + \varepsilon it$
Where:

ROA: profit after tax on total assets.

ROE: return after tax on equity.

ROS: profit after tax on revenue.

DAit = Total liabilities over total assets of company i in year t

SIZEit = Total assets of company i in year t

GROWTHit = The variable of growth in total assets of company i in year t

TANGit = Net fixed asset value over total assets of company i in year t

LIQit = Company i's liquidity ratio in year t

GDPt = Economic growth in year t

INFt = Inflation rate in year t

εit = Error.

Table 3.1: Variables in the research model

Variables	**Calculation**
Dependent variables	
Return on Assets (ROA)	Profit after tax / average total assets
Return on Equities (ROE)	Profit after tax / average equity
Return on Sales (ROS)	Profit after tax / revenue
Internpreting variables	
Debts to Assets (DA)	Total debt / total assets
Controling variables	
Size (SIZE)	Natural logarithm of total assets
Growth (GROW)	The growth rate of total assets
Tangibles (TANG)	Tangible fixed assets / total assets
Liquidity (LIQ)	Short-term assets / short-term liabilities
Economic growth (GDP)	Real GDP growth rate
Inflation (INF)	CPI growth rate

Source: Authors' synthesis

Research Procedure

In order to determine the impact of capital structure on the business performance of firms in the real estate industry listed on HOSE, the authors collect audited financial data of companies from 2011 to 2018 This survey helps the authors have an overall picture of the impact of capital structure on the performance of real estate companies listed on HOSE.
The research process of the topic includes the following main steps:

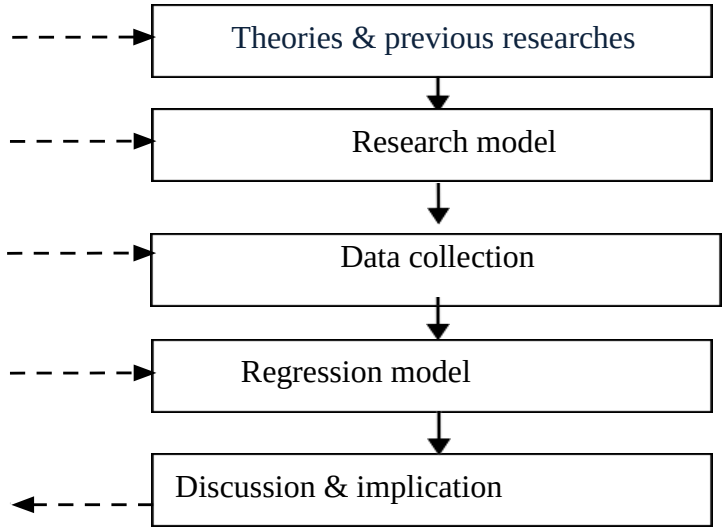

Figure 3.1: Research procedure

Source: Authors' synthesis

Research Methodology

The article applies quantitative methods to determine and quantify the impact of capital structure and control factors on the business performance. Specifically, it is implemented as follows:

Step 1: Perform descriptive statistics, analyze the correlation between the variables.

Step 2: Performing regression of Pooled OLS, FEM, REM, FGLS models and tests to choose suitable model.

Step 3: Check multicollinearity, variance, autocorrelation of selected model. If there is a problem of variable or autocorrelation, the article uses the general least squares estimation method (FGLS) to overcome.

Descriptive statistical analysis

Based on statistical information about the number of observations, mean value, maximum value, minimum value, and standard deviation of the variables, the authors summarize and give general statements.

Correlation analysis

Analysis of the correlation coefficient matrix is to consider whether there is a multicollinearity phenomenon among the variables in the model. Observing the results in the correlation coefficient matrix, if the correlation coefficients of the variables are less than about 0.8, there may not occur pair correlation between the variables in the model. However, this approach sometimes does not give accurate results in cases where the correlation coefficient is small but multicollinearity still exists. To overcome this, the author used variance inflation factor (VIF).

Regression analysis

Baltagi (2005) gives general form of data regression, which is presented as follows:

$Yit = \beta 1 + \beta itXit + uit$

In which:

i = 1, 2,…. N: The ith enterprise; t = 1, 2,… T: Time interval t;

Yit: Dependent variable of the ith enterprise at time t;

Xit: Value of X for enterprise i at time t;

βit: Angular coefficient of firm i at time t;

uit: Random error of firm i at time t.

Gujarati (2011) gives many regression models, the models used in this study include Pool OLS, FEM, REM.

Pool OLS model

Pool OLS model is a simple regression model, does not consider the time and space factors of the data, only estimates the normal OLS regression. Therefore, the coefficients in the model do not change over time and by each enterprise. However, the limitation of this model is that the autocorrelation phenomenon often occurs because the Durbin Watson coefficient is quite low (Gujarati et al, 2009).

$Yit = \beta 1 + \beta 2\ X2it + \beta 3\ X3it + uit$

In which:

i: The ith cross unit; t: Time t; uit: Random error.

FEM model

In the fixed effects model, we assume that the slope of the root varies by firm and that the slope coefficient is constant. Note that the root offset may be different for each firm, but the root of each enterprise does not change over time. The difference in the origin of each enterprise can be attributed to the specific characteristics of each enterprise such as: management style (Gujarati et al., 2009; Gujarati, 2011).

The FEM model is presented as follows:

$Yit = \beta 1i + \beta 2\ X2it + \beta 3\ X3it + uit$

REM model

In this model, we assume that β1i is a random variable with the mean value of β1. The difference of each firm is shown in the random error (Gujarati, 2011).

The REM model is presented as follows:

$Yit = \beta 1i + \beta 2\ X2it + \beta 3\ X3it + uit$

With: $\beta 1i = \beta 1 + \varepsilon i$

Where, β i is the random noise class with the mean of 0 and the variance of. Instead of the above formula, we have the following equation:

$Yit = \beta 1 + \beta 2\ X2it + \beta 3\ X3it + uit + \varepsilon i$
In which:

εi: Error component of cross unit;

uit: combined error component between cross unit and time series.

Testing to select and fix the defects of the model

Testing multi-collinearity phenomenon

Gujarati and Porter (2009) used the VIF to detect multicollinearity phenomenon. If the correlation coefficient is closer to 1, the larger the VIF, the multi-collinearity phenomenon occurs. In the absence of multicollinearity between the variables, VIF = 1.

Testing variance change

Gujarati (2011) argued that the variance of each factor depending on selected value of the explanatory variables, is a constant number, this is the assumption of the constant variance (homoscedasticity). Several tests are commonly used to check variance of change: White test, Wald test, and LM test (Breusch and Pagan Lagrangian). Two theories are set out:

H0: Variance does not change;

H1: Variance changes.

If p-value <significant level, reject hypothesis H0, if p-value> significance level, accept hypothesis H0, conclude there is no variance change phenomenon.

Testing autocorrelation

Gujarati (2011) proposed two hypotheses when testing for autocorrelation:

H0: There is no autocorrelation phenomenon;

H1: There is a autocorrelation phenomenon.

The author used the Wooldridge test to check autocorrelation. If p-value <significant level, reject hypothesis H0, if p-value> significance level, accept hypothesis H0, conclude no autocorrelation phenomenon.

Hausman test

Gujarati and Porter (2009) performed Hausman test to choose between two models FEM and REM. Two theories are put forward:

H0: There is no correlation between the error component of cross unit and explanatory variable;

H1: There is correlation between the error component of the cross unit and the explanatory variable.

If p-value <significant level, reject hypothesis H0, FEM model is suitable. If p-value> significance level, accept hypothesis H0, REM model is suitable.

Robust test

When variance changes appear, the OLS estimate for the results of the coefficients is still not biased, but the variance, covariance between the estimated coefficients obtained from the OLS regression is biased. Therefore, White (1980) proposed the method of stable standard error while keeping estimated coefficients from the OLS method, but the variance of the estimated coefficients is re-estimated. After performing this test, there is no heteroskedasticity (variance change).

RESULTS AND DISCUSSION

Descriptive Statistics Of Researched Variables

This study was conducted with 25 real estate companies listed on HOSE from

2011-2018 with a sample of 200 observations summarized in Table 4.1 below.

Table 4.1: Descriptive statistics of researched variables

Variables	Observations	Mean	Std.deviation	Min	Max
ROE	200	0.0860857	0.1749957	-0.735	0.428
ROA	200	0.0434536	0.0704369	-0.2605855	0.14851
ROS	200	0.0604286	0.0847121	-0.125	0.307
DA	200	0.492664	0.1793407	0.159052	0.930514
SIZE	200	28.02766	1.247358	25.58137	32.82648
GROWTH	200	40.90664	13.4312	-95.21206	1093.407
TANG	200	0.1585136	0.1948191	0.002558	0.915833
LIQ	200	2.365289	2.262135	0.2267725	19.66348
GDP	200	6.213095	0.6100429	5.247367	7.075788
INF	200	6.126686	0.6503683	-0.1907881	21.26066

Source: Authors' analysis

The results of descriptive statistical analysis in Table 4.1 show:

ROE of real estate businesses listed on HOSE in the period 2011-2018 has an average value of about 0.086, the minimum value is -0.735 and the maximum value is 0.428, the standard deviation is about 0.175. In general, ROE of real estate companies has grown unevenly in the period 2011-2018.

The average ROA of real estate companies listed on HOSE in the period 2011-2018 fluctuated around 0.043, in which the minimum value is about -0.26 and the maximum value is about 0.148, showing the different ROA between companies. ty. In general, the ROA rate of real estate businesses listed on the HOSE has grown unevenly over the years in the period 2011-2018.

The variable ROS has the average value of 0.06, the smallest value of -0.125, the maximum value of 0.307, and the standard deviation of 0.084. In general, this ratio of real estate companies has not changed steadily over the years in the period 2011-2018.

In general, it can be seen that the performance of real estate businesses listed on HOSE over the years 2011-2018 tends to change in a positive direction. The ratios of ROS, ROA and ROE indicate that the performance of these companies has also improved and performed better and better, as is the year-to-year positive growth of return on total assets. and return on equity. It can be said that the companies have operated effectively during this period, but the efficiency is not high. Although revenue increased quite high, but profit from operating activities did not grow much while costs grew rapidly, cost of goods sold accounted for the majority of total costs of businesses.

A common feature of Vietnamese real estate companies is the high rate of debt financing for existing assets. The variable total debt to total assets (DA) shows that, in the period 2011-2018, the average value is 0.492664, which means that on average, 49.26% of assets are formed for every 100 dongs. from debt. In general, the debt ratio has changed unevenly over the years, but the debt ratios of real estate companies in the sample are all 40% higher. The sharp increase in equity in the years 2014-2016 led to a rapid increase in total assets of real estate businesses while the total debt of companies did not increase much, making the debt ratio decrease.

With a characteristic of Vietnamese real estate companies is maintaining a high debt ratio, this helps companies operate efficiently, take advantage of the tax shield, but the use of high debt ratio also brings a number of risks to companies such as liquidity risk. However, in the positive economic situation in the 2016-2018 period, the use of debt brings many benefits for companies. From 2016-2018, the rate of using debt of real estate companies tends to increase. This is because the credit in the real estate industry grew well during this period, and the policies to help businesses grow credit are also applied effectively.

For the enterprise size variable (SIZE), the lowest value is about 25.58, the highest value is about 32.82, and the average value is about 28.02. The firms in the sample have their size mainly centered around the mean.

For the tangible asset (TANG) variables, the average value is about 0.158, the lowest and highest value range is from 0.002 to 0.915, the standard deviation is about 0.194, indicating that the TANG value of the sample revolves around. mean values with relatively wide dispersion.

Revenue growth of research firms has an average value of more than 40%. This is a pretty impressive growth figure. The GROWTH variable has a large standard deviation of 13.43, which shows that the variation of this variable is very wide, showing that the growth of the firms in the observed sample is not uniform. Minimum and maximum value of this variable is a very wide range from -95.21 to 1093.41 shows that during the research period, there are many businesses with negative growth but there are also extremely impressive revenue growth businesses with the next year's revenue maybe 10 times more than the previous year.

Liquidity variable (LIQ) has average value of 2.37, standard deviation 2.26,

minimum value 0.23, maximum value 19.66. The average value of short-term solvency shows that the firm has paid more attention to short-term payments, possibly due to lessons learned from the risk of insolvency leading to a decrease in the value of the business during the economic crisis.

The variable of economic growth (GDP) has the average value of 6.21, the smallest value of 5.24, the maximum value of 7.07, the standard deviation of 0.61.

The inflation rate variable (INF) has the mean of 6.12, the minimum value is -0.19, the maximum value is 21.26, and the standard deviation is 0.65.

Correlation Analysis Of Independent Variables

Table 4.2: Correlation matrix of independent variables

Variables	DA	SIZE	GROWTH	TANG	LIQ	GDP	INF
DA	1.00						
SIZE	0.3652	1.00					
GROWTH	-0.1400	-0.0549	1.00				
TANG	-0.3941	-0.0180	0.2063	1.00			
LIQ	-0.0883	0.0129	0.0236	-0.1920	1.00		
GDP	-0.0239	0.0697	-0.0510	-0.1359	0.0241	1.00	
INF	-0.0044	-0.0439	0.0285	0.2607	-0.1046	-0.6323	1.00

Source: Authors' analysis

The results of correlation analysis between the independent variables in the model are presented in Table 4.2, we see that there is no serious multicollinearity phenomenon in the independent variables, the correlation coefficient is in the range from -0.394 to 0.365 . However, these coefficients are not greater than 0.8, so when using regression model, there will be less multicollinearity between variables. Therefore, the results in Table 4.2 show the suitability of these variables in the research model.

Table 4.3: VIF

Variables	**VIF**	**1/VIF**
SIZE	5,91	0,169220
GROWTH	3,78	0,264610
TANG	3,38	0,296042
LIQ	2,48	0,403221
GDP	2,46	0,406032
INF	2,49	0,406847

Mean VIF	4,66	

Source: Authors' analysis

To test multi-collinearity among variables in the research model, the author used the VIF test. A general convention is that if VIF> 10 then it is a sign of high multicollinearity. The results in Table 4.3 show that the VIF coefficients of the research variables in the model are all less than 10, so it can be concluded that the model with the proposed research variables does not suffer from multicollinearity.

Regression Analysis

To clarify the research results, authors present regression results between independent variables and dependent variable which are, in turn, measurement indicators for the performance of real estate enterprises, including: ROA, ROE and ROS.

Regression analysis of independent variable ROA

Table 4.4: Regression analysis of independent variable ROA with Pool OLS, FEM, REM và FGLS

Variables	**Pool OLS**	**FEM**	**REM**	**FGLS**
DA	-0.0800311***	-0.0667803**	-0.0800311***	-0.0671905***
SIZE	0.000673	0.0000287	0.000673	0.0009977
GROWTH	0.0044768	-0.0069847	0.0044768	0.0014957
TANG	0.664566***	0.5745207***	0.664566***	0.6789714***
LIQ	0.0014955	0.0026104*	0.0014955	0.0022582**
GDP	0.0002095	0.0059632	0.0044901	0.006289**
INF	0.0002095	0.000607	0.0002095	0.0001865

Note: *, **, *** corresponds to the significance level 10%, 5% and 1%

Source: Authors' analysis

Table 4.4 shows the regression results between the independent variables and the performance measured by the ROA variable and performed by the Pool OLS, FEM, REM and FGLS models respectively. The results of the Hausman model selection test show that the FEM model is more suitable than the REM model. Besides, the test of variance change and autocorrelation shows that FEM model has the phenomenon of variance change and autocorrelation. Therefore, to overcome these shortcomings of the FEM model, the authors

continue to carry out the model regression according to the FGLS method to correct variance and autocorrelation. The regression results in Table 4.4 show that the variable DA has a negative effect on ROA with the significance level of 1%. In addition, the variables TANG, LIQ, and GDP all showed positive correlation with the dependent variable ROA. The variables SIZE, GROWTH, INF have not shown a clear and significant impact on the variable ROA.

Regression analysis of independent variable ROE

Table 4.5: Regression analysis of independent variable ROE with Pool OLS, FEM, REM và FGLS

Variables	Pool OLS	FEM	REM	FGLS
DA	0.3331871	0.0121379	0.3331871	-0.067414***
SIZE	-0.0802012	-0.0894065*	-0.0802012*	-0.0006424
GROWTH	0.3578656	0.3342023	0.3578656	0.0473597
TANG	0.2980647	0.3006516	0.2980647	0.5782234***
LIQ	0.0016333	0.0044625	0.0016333	0.0017893
GDP	0.0462595	0.0406236	0.0462595	0.0060366*
INF	0.0042026	0.003822	0.0042026	-0.000113

Note: *, **, *** corresponds to the significance level 10%, 5% and 1%

Source: Authors' analysis

Table 4.5 shows the regression results between the independent variables and the performance is measured by the variable ROE. Columns (1), (2), (3) show the regression results, performed in turn according to the Pool OLS, FEM, and REM models.

Based on the results of selection Hausman test model, REM model is more suitable than FEM model. In addition, tests on variance change and autocorrelation show that the REM model has the phenomenon of variance change and autocorrelation. Therefore, to overcome these shortcomings of the REM model, the authors performed the model regression according to the FGLS method, which corrects the variance of change and autocorrelation.

The regression results in Table 4.5 show that the variable DA has a negative effect on ROE with significance level of 1%. In addition, the variables TANG, GDP showed the same and significant correlation with the dependent variable ROE. The variables SIZE, GROWTH, LIQ, INF have not shown a clear and significant impact on the variable ROE.

Regression analysis of independent variable ROS

Table 4.6: Regression analysis of independent variable ROS with Pool OLS, FEM và REM

Variables	Pool OLS	FEM	REM	FGLS
DA	-0.6293581	-0.8598034	-0.6293581	-0.6831312*
SIZE	0.1658361**	0.0730211	0.1658361**	0.1694282**
GROWTH	-0.0428526	-0.0751988	-0.0428526	-0.0137316
TANG	2.505256**	2.336496**	2.505256**	2.58456***
LIQ	-0.0169709	-0.0098373	-0.0169709	-0.0235753
GDP	-0.2113897	-0.2043815	-0.2113897	-0.0917401
INF	-0.0316274**	-0.031164**	-0.0316274**	-0.0240166*

Note: *, **, *** corresponds to the significance level 10%, 5% and 1%

Source: Authors' analysis

Table 4.7 shows the regression results between the independent variables and the performance measured by the variable ROS. Columns representing regression results are performed according to the Pool OLS, FEM, REM and FGLS models respectively. The results of model selection Hausman test show that the REM model is more suitable than the FEM model. In addition, tests on variance change and autocorrelation show that REM model has the phenomenon of variance change, but no autocorrelation phenomenon. Therefore, to overcome this defect of the REM model, the authors perform the model regression according to the FGLS method to correct the variance of change. The regression results in Table 4.6 show that, the variable DA has a negative effect on ROS with significance level of 1%. Besides, the variables SIZE, TANG all show the same and significant correlation with dependent variable ROS. Particularly, the variable INF had a negative effect on the variable ROS at the significance level of 10%. The variables GROWTH, LIQ, GDP have not shown any clear and significant impact on the variable ROS.

Research Results Discussion

Table 4.9: Summary of regression analysis results

Variables	Business performance			Conclusion
	Model 1	Model 2	Model 3	
DA	-	-	-	Negative impact
SIZE	No impact	No impact	+	No consistent evidence
GROWTH	No impact	No impact	No impact	No consistent evidence

TANG	+	+	+	Positive impact
LIQ	+	No impact	No impact	No consistent evidence
GDP	+	No impact	No impact	No consistent evidence
INF	No impact	No impact	-	No consistent evidence

Source: Authors' synthesis

Summary of regression results in three models with variables representing performance dependent variables (ROA, ROE, and ROS) in turn shows an inverse relationship between capital structure and business performance of real estate firms listed on HOSE in the period 2011-2018 are consistent across all regression models. This can be explained for a number of reasons as follows. First, according to agency cost theory, borrowing will reduce the agency cost between owner and manager, the creditor acts as the supervisor of the business in the use of capital. However, in Vietnam, this role of the creditor has not performed well, so borrowing does not reduce agency costs between the owner and manager (Le & Phan, 2017).

Second, compared to the stock market, the development of the debt market in Vietnam is still slow, so companies in the real estate industry listed in the research period often mobilize capital from issuing shares instead of issuing debt. If enterprises mobilize capital from outside, then loans from banks are often used, so they cannot take advantage of the tax shields from debt issuance (Tianyu, 2013; Le and Phan, 2017).

In addition, studies on the effects of capital structure on business performance have mixed results when conducted in developed and developing countries. Most studies are done in developed countries, the relationship between capital structure and corporate performance is positive, whereas for developing countries like Vietnam it is the opposite. Studies in developing countries such as: Salim and Yadav (2012); Tianyu (2013); Le and Phan (2017) also agree with this result.

Besides the results on the relationship between capital structure and the performance of real estate firmslisted on HOSE, findings on the influence of the remaining control variables in the model are also very interesting. The variable tangible assets (TANG) shows a positive impact on the performance of real estate businesses listed on HOSE in the period 2011-2018 and is consistent in all 03 regression models according to FGLS. This shows that the more listed real estate firms have tangible fixed assets, the more efficient their performance is. Research results show that real estate enterprises make long-term investments and tend to modernize machinery and equipment to improve product quality, which will help increase their competitiveness in the market, improve profitability and business performance. This result is consistent with research by Farooq et al (2016). However, this result is contrary to the studies of Kausar et al (2014) and Long (2016). The authors found evidence of an inverse relationship between the ratio of tangible fixed assets to total assets

and firm performance.

The fact that businesses invest too much in tangible assets will make asset turnover very slow. Too much tangible assets make working capital, necessary for turnover, decrease, making it difficult for business operations. In addition, with control variables including firm size (SIZE), liquidity (LIQ), asset growth (GROWTH), economic growth (GDP), inflation rate (INF) there is no clear statistical evidence to conclude the relationship between these control variables and firm performance in the sample.

Conclusion And Policy Implication

CONCLUSION

This study is conducted to investigate the impact of capital structure on the performance of 25 firms in the real estate industry listed on HOSE from 2011 to 2018. The research results show that capital structure has a negative impact on the performance of businesses in research sample. In addition, the study has also found tangible assets (TANG) variable, which shows a positive impact on the performance of real estate businesses listed on HOSE in the period 2011-2018 and is consistent in all 03 regression models according to FGLS. This shows that the more listed real estate firms have tangible fixed assets, the more efficient their performance is. With control variables including size (SIZE), liquidity (LIQ), asset growth (GROWTH), economic growth (GDP), inflation rate (INF), the study found no evidence to conclude the relationship between these control variables and firm's performance.

Policy Implication

Based on the research results, in the next section authors will present some policy suggestions to improve the performance of businesses in the real estate industry listed on HOSE.

Firstly, businesses in the real estate industry should consider using leverage. When using leverage, businesses face financial exhaustion costs as well as tax shield benefits from interest, so businesses consider using financial leverage as well as finding a threshold for debt to take advantage of. Take advantage of financial leverage is to improve business performance. Besides, investors should consider the debt ratio of the business in the real estate industry before making investment decisions.

Second, tangible assets have a positive impact on the performance of businesses in the real estate industry. Therefore, to increase their performance, listed companies in the real estate industry need to increase long-term investments and tend to modernize machines and equipment to improve product quality. That will help businesses increase their market competitiveness, profits and improve business performance.

Third, although not showing the consistency in results in the regression models, but the enterprise size variable (SIZE) also shows a positive correlation with the variable ROS. This result is consistent with the trade-off

theory that larger firms are more likely to take on debt because these firms are able to diversify risk, so they can taking advantage of the tax shield benefits from the best interest loans, thereby improving business performance (Sheikh & Wang, 2013). This result is similar to the research results of Salim and Yadav (2012); Soumadi and Hayajneh (2012); Amin and Jamil (2015); Le and Phan (2017). Especially, in the context that businesses in the real estate industry of Vietnam the more with larger scale, the more advantageous they can be by accessing to advanced and diversified technology compared to other real estate companies in the same industry. In addition, large-scale enterprises often have brands and reputations in the market, making it easier to access external capital sources as well as make sales activities. Therefore, in order to increase business performance for real estate listed companies, it is necessary to increase the size of the business, specifically, to increase the total assets of the business.

Finally, the government should develop a balance between the bond market and the stock market to provide firms in the industry with more channels of capital mobilization, especially from the bond market. Normally, businesses in the real estate industry often mobilize long-term capital in the bond market, however, the bond market in Vietnam is not yet developed, it is difficult for businesses to mobilize capital on this channel. In which, businesses depend mainly on loans from banks, while interest rates from this channel are quite high.

Limitation And Further Research

Firstly, research data of the topic is collected from 25 businesses in the real estate industry listed on HOSE, in the period 2011-2018. The sample size is limited at 200 observations, so the results of the study do not guarantee high generalization for businesses operating in other industries. Therefore, the next research direction should be done to expand the sample size for many branches, to expand the research stage in order to further improve the generalization of the research results.

Second, this study only uses a limited number of control variables (SIZE, TANG, LIQ, GROW, GDP, INF). However, in real world conditions, there are many factors that affect business performance. Therefore, the next research direction will expand in the direction of adding control factors belonging to the group of economic characteristics such as interest rates, money supply of the economy to increase the relevance of the model and the sustainability of the research results (Tien et al, 2018).

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