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Research Article

THE DETERMINANTS OF THE CAPITAL STRUCTURE OF THE REAL ESTATE FIRMS IN VIETNAM

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ABSTRACT

The selection of financing is a critical issue for firms, especially the long-term financing in which leads to firm's future investment opportunity. Capital structure decisions therefore are one of the most important issues in financial management in which can contribute to maximize the firm's value. Likewise, capital structure decisions affect the cost of capital and capital budgeting decisions. In the papers of Modigliani and Miller (1958) showed that capital structure or method of financing is irrelevant to the value of firm under the perfect market assumptions while Modigliani and Miller (1963) argued that capital structure is relevant with firm value under taxation condition. Subsequent researchers have relaxed assumptions such as bankruptcy cost, non-debt tax shield, agency cost, asymmetric information, and have introduced capital market frictions into the model. Seemingly, the main factors affecting capital structure decisions are related to these frictions. The results showed that these factor such as are size, profitability, tangilbility assets, growth opportunity, volatility have significant statistic to capital structure of the real estate firms in Vietnam.

INTRODUCTION

The urgency of the subject

In the process of formation and development of enterprises, capital plays a very important role, is the source of life for all its activities nghiep.Cau capital structure of the enterprise is defined as a combination liabilities (debt) and equity (equity) of long-term funds that can now be mobilized to finance projects aimed at creating property purposes, continue to operate and grow in the future .The choice of a rational capital structure to maximize the value of the company is one of the most important issues in financial management. To do that, finding out the factors related to capital structure as well as study the influence of each factor on the capital structure that is really needed. Each sector with specific characteristics will have different capital structures with certain influential factors, so need to study specific to individual sectors have the most obvious results. Vietnam property market are remarkable developments. However, with the sector's characteristics requires large capital, enterprises often have to depend a lot on the source of the loan should be difficult when credit markets tightened with increasingly high interest rates. So to find an optimal capital structure to maximize profits and increase the company value is extremely important.

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For these reasons above, our team choose the essay topic: "*the Determinants of the Capital Structure of the Real Estate Business in VietNam*".

Research objectives: Selection and analysis of the influence of the following factors: size of the business, profits, tangible asset structure, growth and business risks to the capital structure of real estate enterprises in country. Test the impact of these factors to draw conclusions and orientation of the capital structure of real estate enterprises.

Research methods

Qualitative methods: collect information using descriptive statistical methods, compares to analyze and assess the status of the capital structure of the enterprise. Quantitative methods: Building models using STATA software to determine the regression coefficients, testing the impact of these factors on the capital structure of the enterprise, then proceed to analyze the results and take some recommendations for structural situation which the real estate industry at present.

Object and scope of the study

Research object: The capital structure of real estate enterprises Vietnam shows the ratio of debt is affected by factors enterprise scale, profitability, structure of tangible fixed assets, growth and business risks.

Survey audience: 45 real estate companies listed on the Vietnam Stock Exchange Ho Chi Minh City (HOSE) 2013-2015 period.

Research scope

- Scope: data from the financial statements of 65 real estate companies listed on HOSE.
- Time range: 2013-2015 was the period reflect actual difficult situation in access and use of the corporate capital real estate Viet Nam

Literature review

Definition of capital structure

Research essay capital structure standpoint: capital structure of the business is the ratio between the debt with the total capital of the entrepreneur (the leverage ratio or financial leverage).

$$\text{Financial Leverage} = \frac{\text{Total debt}}{\text{Total capital}} \quad 100\%$$

This ratio shows how many percent of the invested capital is formed by enterprises debt. The higher ratio indicates the degree of autonomy of the lower now, synonymous with the level depending on the creditor higher. Research is beginning to study the structure of modern capital, Modigliani and Miller was launched in 1958. The theory launched studies on the business of the two market conditions: tax and no tax aims to analyze the impact of the tax and the cost of capital used up the change of capital structure of enterprises.

No-Tax case

Assumptions

- No corporate income tax and personal income tax.
- No transaction costs when buying and selling stocks.
- No financial starvation costs (costof bankruptcy, financial distress costs...).
- Perfect market, all investors are able to take a loan with the same interest rate.

According to that, the theory made the comment:

Proposition 1: In the absence of the tax Value of the Levered firm (VL) by the Value of Unlevered (VU), means:

$$V_L = V_U$$

Proposition 2: Profit on equity requirements related to the level in the same way using financial leverage or debt ratios.

$$K_E = K_0 + (K_0 - K_D).\frac{D}{E}$$

Note:

K_E: Profits required or expected profits on equity.
K_D: Interest rates or costs of using debt.
K_0: The cost of capital when companies use 100% of the equity.
D: The value of debt or bonds issuer.
E: Equity value of the company.

When a business increased use of debt in the capital structure, the risk of losing the ability to pay but now also facing increased. Therefore, the return on equity should increase. Thus, in case there is no tax, corporate capital structure does not affect the value of the enterprise.

Tax case

Proposition1: In the case of corporate income tax, Value companies Levered (VL) by the Value of Unlevered (VU) plus the present value of the tax shield.

$$V_L = V_U + T.D$$

Note:

V_L: Total Value of companies Levered.
V_U: Total Value of Unlevered.
D: Total debt of use.
T: Corporate income tax.

When the company debt, the tax savings due to the benefit from interest tax shield. Thus, the use of debt increases enterprise value. Use as much debt, the enterprise value increases and increases to a maximum when the business is funded 100% debt.

Proposition 2: In the tax case, required return on equity is related in the same direction with the level of financial leverage or debt ratios, this relationship is expressed by the formula:

$$K_E = K_0 + (K_0 - K_D).(1-T)\frac{D}{E}$$

However, the assumption of perfect markets given in this theory is impossible in practice, thereby limiting the possibility of the application of this theory.

Packing Order Theory

The theory was given by Stewart Myers and Nicolas Majluf in 1984. It explains the investment and financing decision of enterprises based on the basis of the information of any symmetry. The theory that managers will understand the business situation of the business and profitability of the project rather than external investors. Therefore, if the project is profitable prospects administrators will prioritize the use of available funds from retained earnings then borrow funds at low interest rates, and finally the issue of shares issued to mobilize new shareholders. Enterprise only issue stocks to raise capital from new shareholders when the company being valued higher net worth on the market. According to this study did not have a debt-equity mix ownership target defined as owners of capital are ranked first (retained earnings) and end position (new stock capital) of pecking order. This theory shows that profit is one of the factors affecting the company's capital structure. When corporate profits tend to increase retained earnings for investment projects, thereby reducing the external debt ratio.

Trade-off Theory

The theory was given by Kraus and Litzenberger in 1973. According to this theory, when debt ratios rise to an increase in

costs, called financial distress costs, offset the increased value of the company has a debt. At some point the ratio of debt, financial distress costs will exceed the benefits of the tax shield, then the value of the levered company started declining. The administrator can determine the optimal capital structure to maximize corporate value based on trade-offs and cost benefits of debt (Tax shield from interest and costs of financial starvation. Optimal capital structure in this case is the structure which includes a portion of the debt and the equity part, when the benefit from a debt increase just enough to offset the increased cost of poverty projected financial). This theory explained the limitations on costs of financial starvation of the M-M theory. However, the limitations of the theory is unable to explan why some very successful business but very few debt and unused tax shield despite their high incomes. Because according to this theory, any business can benefit high, high debt capacity to benefit from the tax shield. This limitation led to the birth of a new theory - the theory of packing order.

Related Research

Foreign Research

Rajan and Zingales (1995) studies the capital structure of the G-7 countries (countries with advanced engineering around the world) found that factors affecting capital structure of most G-7 countries are same: growth opportunities, profitability ratio, tangible assets and business scale.

Jean J.Chen (2003) study based on statistics of the 77 companies listed on the Shanghai Stock Exchange 1995-2000. Research shows that Chinese companies to build a structure which follow "new pecking order". The first is the retained earnings, then to equity, long-term debt is the last option - this is completely different from the theory of Myers pecking order SC (1984). Besides, the research also shows that a low debt ratio in these companies, this indicates that the listed companies in China funded primarily preferred equity rather than debt.

Philippe and the fortifications (2003) implementation of articles analyzing the determinants of the capital structure for the Group and 106 Swiss enterprises are listed on the Swiss stock market. The research was done in the period 1991-2000. The results show the business scale, tangible assets structure and business risks are related to the leverage ratio, while the growth and profit are not relevant.

Z.Frank and K.Goyal (2009) capital structure research of commercial companies (1950-2003) with the result found is earnings and business scale has the same dimensional effects with the ratio of leverage, while asset structure and growth, inflation expectations have opposite dimensional effects with this ratio.

Pornpen Thippayan (2014) research on 144 companies listed on the stock exchange of Thailand for 12 years (2000 to 2011). Research shows that the ratio of leverage of business increases with enterprise scale, and decreased significantly with profits. However there is no correlation between the ratio of leverage with the property structure, growth opportunities and business risk. From there take out the conclusion that the scale of the business and earnings are the two factors that determine the capital structure of enterprises in Thailand.

Le Thi Kim Thu (2012) conducted research on the real estate company listed on the Vietnam Stock Exchange in Ho Chi Minh City 2007-2011. Results from linear regression model shows the scale of the enterprise tax and the profit proportional to financial leverage, while the growth opportunities and the inflation rate is inversely proportional to the ratio.

Le Dat Chi (2013) based on traditional theories of capital structure (theory of trade, pecking order theory and the theory of the time the market) to research on companies listed on the Vietnam's stock exchange market (2007-2011). The results indicate the factors which affect the tax structure (+), inflation (-), the scale of enterprises (+), profitability (-), opportunities for growth (+).

Huynh Huu Manh (2010) study of 252 sample companies listed on Vietnam's stock market from 2008 to 2009. Regression method least squares (OLS) with three dependent variables: short-term debt to total assets, long-term debt to total assets, total liabilities to total assets, in order to determine the factors that affect the capital structure of the domestic enterprises. The results showed that the correlation to the debt include profitability, tangible assets, growth opportunities, liquidity and size of the enterprises.

Tran Hung Son (2008) used data from 45 non-financial companies listed on the Stock Exchange of Ho Chi Minh City has the largest market value (as of the time in July 2007). Research results show that firm size variable is proportional to the total debt, which is consistent with the Trade-off theory, means that the large-scale companies will ease access to loans than the ti smaller scale. Meanwhile turn profits proportional to the total debt, a result consistent with the pecking order theory, means the company will have operations profitable retained earnings to fund projects investment rather than external borrowing.

Tran Dinh Khoi Nguyen and Neelakanta (2006) study of the capital structure of small and medium enterprises in Vietnam (capital below 10 billion or labor number fewer than 300 people). The research sample included 558 business in the period 1998-2001. Results according to the OLS method based on linear regression models, with three dependent variables is the total debt to total assets, short-term loan on total assets, short term debt to another of the property; the independent variable is the scale of the enterprise, the enterprise scale, capacity of lucrative assets, tangible assets structure, growth, business risk. The results showed that the small and medium enterprises almost use debt to invest in the project. The results showed that the scale of the business and business risk proportional to the ratio of the debt, the property has impacts, yielding assets without affecting.

MATERIALS AND METHODS

Data Searching

The subject of the annual data collection on 45 businesses of real estate industry groups listed on the Ho Chi Minh City Stock Exchange (HOSE) in 3 years from 2013 to 2015.

Applying the model research on Vietnam enterprises on HOSE. These enterprises are 45 companies belonging to the real estate industry have full financial statements, the situation of continuous operation, data is collected on a reputable website: www.cophieu68.vn

Dependent variable: Capital structure is represented by the Leverage Ratio (LR) is defined by total debt ratio of total long-term funding of the enterprise.

$$LR=\frac{\text{Total debt}}{\text{Total liabilities}}$$

The explanatory variables: are the determinants of corporate capital structure specifically adopted from previous studies of Frank and Goyal (2009):

- ***Enterprise Scale (SIZE)*:** The bankruptcy cost theory to explain the relationship between the enterprise scale and debt ratio. Large enterprises are less likely to use loans in its capital structure. However, Titman and Wessels's research (1988) argued that small businesses will use less long-term debt because of difficulties in accessing loans.
- ***Profit (PRO***Pecking order theory indicates that if there is more profitable businesses, enterprises tend to mobilize finance from retained funds than through debt, the last one was the capital from new shareholders. So the inverse ratio correlation was between profit and financial leverage.
- ***Structure of tangible assets (TAN):***is the ratio of tangible fixed assets in the total assets of the business. These businesses have many assets will be easy to access mortgage loans. In this case, it is the proportional relationship.
- ***Growth opportunity (GRO):***is the ability of business growth. The business has huge growth opportunities will tend to enable at least the problems to decrease the debt represented. The administrator would encourage the conversion of the property from creditors to shareholders, this will require increased investors interest bonds and reduce the borrowing. The business opportunity in high growth will easily ignore these business opportunities if there are high financial leverage, so that these businesses would like equity than debt. The result is the proportionality relationship between growth opportunities and financial leverage.
- ***Business risk or Volatility (VOL):***are the corruption risks in the future business of the company. The company has many risks facing bankruptcy concerns high. When usefulness risk of interest tax shield will fall. Therefore, in theory offs, high risk will lead to results that are lower debt.

Data processing methods: Data were gathered from data released by the company, tool support is STATA software 13, apply the OLS method for modeling.

After the regression, we consider the value

•T-Test: evaluate whether the independent variables affect the dependent variable or not.
•R_2: the dependence of the model (R_2> 0).
•P-value: the model has reached statistical significance at α level of significance or not (P-value < α).
•After that, check the multicollinearity phenomenon, the phenomenon of change error variance, phenomenon, if the model is one of this phenomenon is overcome and regression back.

Research Models

Model:

LR= f(SIZE,PRO,TAN,GRO,VOL)

$$Y_{it}=\beta_0+\beta_1X_{1it}+\beta_2X_{2it}+\beta_3X_{3it}+\beta_4X_{4it}+\beta_5X_{5it}+\varepsilon_{it}$$

- β_0: Free coefficient of the model.
- β_j: The unknown coefficients of the variables.
- Y_{it}: The enterprise's leverage ratio **i** in period **t.**
- $X_{.it}$: Elements respectively enterprise scale, profitability, property structure, the structure of growth, volatility of the business **i** in period **t.**
- ε_{it}: Error numbers.

Research Hypothesis

- **H_1:** Firm sizeis a positively impact tolong term debt ratio.
- **H_2:** Profitability is a negatively impact to long term debt ratio.
- **H_3:** Tangible asset is a positively impact to long term debt ratio.
- H_4: Growth opportunity is negatively impact to long term debt ratio**.**
- **H_5*:*** Business risk is negatively impact to long term debt ratio.

The dependent variables and expectations are summarized in the following table:

Table 1. Expect Hypothesis

Variables	Calculation	Expectations
SIZE	Ln(Total Assets)	+/-
PRO	ROA	-
TAN	$\frac{\text{Fixed assets}}{\text{Total assets}}$	+
GRO	$\frac{\text{Total assets}_t \quad \text{Total assets}_{t-1}}{\text{Total assets}_{t-1}}$	-
VOL	$\frac{\text{Short term Assets}}{\text{Short term Debt}}$	-

RESULTS

Statistical description

Statistical description of the explanatory variables are presented in the following table:

The average value of the leverage ratio to total capital (LR) is0.5496296That means that if a contract now spend money to invest in the0.5496296 including debt.Maximum value, minimum value, standard deviation of the capital structurerespectively 0.95; 0.11; 0.1961396. The average value of enterprise scale (SIZE) is15.00612 means in the period of 3 years from 2013 to 2015 the scale of businesses average increase of 15.00612%.

Table 2. Descriptive statistics table

```
sum size pro tan gro vol lr
```

Variable	Obs	Mean	Std. Dev.	Min	Max
size	135	15.00612	1.904978	11.0186	20.3293
pro	135	.0222963	.0486833	-.25	.21
tan	135	.0774074	.1231346	.0001	.7889
gro	135	.1271607	.2602435	-.297	1.7372
vol	135	2.482677	1.792719	.3957	7.9307
lr	135	.5496296	.1961396	.11	.95

Table 3. Results of multiple regressions

```
reg lr size pro tan gro vol
```

Source	SS	df	MS		
Model	2.7133319	5	.542666381	Number of obs	= 135
Residual	2.44174957	129	.018928291	F(5, 129)	= 28.67
				Prob > F	= 0.0000
Total	5.15508147	134	.038470757	R-squared	= 0.5263
				Adj R-squared	= 0.5080
				Root MSE	= .13758

lr	Coef.	Std. Err.	t	P>|t|	[95% Conf.	Interval]
size	.0539801	.0068186	7.92	0.000	.0404894	.0674708
pro	-1.045299	.2541865	-4.11	0.000	-1.548213	-.5423845
tan	-.2251759	.1016264	-2.22	0.028	-.4262461	-.0241056
gro	.1190139	.0489632	2.43	0.016	.0221391	.2158888
vol	-.0219699	.0069212	-3.17	0.002	-.0356637	-.0082761
_cons	-.1802554	.1091054	-1.65	0.101	-.3961231	.0356124

Table 4. Sumamry results

Dependent variable	Independent variables	Regression coefficients were standardized	P-value	Expectations	Results
LR	SIZE	0,56337	0,00	+/-	+
	PRO	-0,5120438	0,00	-	-
	TAN	-0,501359	0,67	+	Not Affected
	GRO	0,0136371	0,619	-	Not Affected
	VOL	-0,156874	0,007	-	-

The maximum value, minimum value, standard deviation of enterprise scale in turn is 20.3293; 11.0186; 1.904978. The average value of corporate profits (PRO) is 0.0222963 means in stage 3 years from 2013 to 2015 the average corporate profits rose 0.022296. Maximum value, minimum value, standard deviation of corporate profits respectively 0.21; -0.25; 0.0486833. The average value of the tangible assets structure (TAN) is 0.0774074 means in the period of 3 years from 2013 to 2015 the average business capital structure increase 0.0774074. The maximum value, minimum value, standard deviation of enterprise assets structure in turn is 0.7889; 0.0001; 0.1231346. The average value of the business growth (GRO) is 0.1271607 means the 3-year period from 2013 to 2015 the growth rate of the average enterprise 0.1271607 mourning. Maximum value, minimum value, standard deviation of the growth rate is now 1.7372, respectively; -0.297; 0.2602435. The average value of the business risk (VOL) is 2.482677 mean 3-year period from 2013 to 2015 the average business risk increases 2.482677. Maximum value, minimum value, the approval order of business risks 7.9307 respectively; 0.3957; 1.792919.

Inspection results

Estimated results

After processing the data using STATA 13 for the results table as follows:

1. T-Test value: All the t statistic values are absolute values greater than 2 should the scale of business, profit, property structure, growth and spread of business risk has affected the debt ratio.
   - Enterprise scale (SIZE) with|t|= 7.92> 2.
   - Profit (PRO) with|t|= 4.11> 2.
   - Structure of tangible assets (TAN) with|t|= 2.22 > 2.
   - The growth rate (GRO) with|t|= 2.43 > 2.
   - Business risk or Volatility (VOL) with|t|= 3.17> 2

2. The value P-value of the independent variable are smaller than 0.05 means that both variables have meaning at a 5% significance level.
3. $\mathbf{B_1}$=0.539801 means that the size of the business have an impact the same way with the debt ratio. As firm size increased by 1%, the debt ratio increased by 0.539801%.
4. $\mathbf{B_2}$= -1.045299 means business profits have reverse impacts the rate of debt. When corporate profits increased 1% rate 1.045299%.
5. $\mathbf{B_3}$= -0.2251759 means tangible property structure-size businesses have reverse impacts the rate of debt. When the structure of tangible assets increased 1%, then the rate of debt reduction 0.2251759%.
6. $\mathbf{B_4}$= 0.1190139 means business growth for the impact on the debt ratio. When business growth increased by 1%, the rate of 0.1190139% increase in debt.
7. $\mathbf{B_5}$= -0.219699 means risky business impact against the rate of debt. When the business risk rising 1%, then the rate of debt reduction 0.219699%.

DISCUSSION

After checking and remedying the violation of OLS regression, the results indicate that:

1. B_1=0.056337means that the scale of the business increased 1%, the debt ratio increased to 0.056337%. The larger size of the enterprise proves financial strength of the business stronger, lower bankruptcy risk so with confidence from investors, they should access to easy loans. In addition, the greater the cost SIZE financial hardships small businesses likely to benefit from debt tax shield. The results showed a correlation between the size of the enterprise direction and debt ratio. This is similar to the research by *Pornpen Thippayan (2014)* (research on 144 companies listed on the Stock Exchange of Thailand in 12 years (2000- 2011)).
2. B2 = -0.5120438 means corporate profits rose 1%, the debt ratio decreased 0.5120438%. The research results are the opposite relationship between corporate profitability and debt ratios. This is consistent with the theory of "pecking order" when business activities effective, high profits will be retained by investors instead of borrowing outside. Results similar to the study by *Pornpen Thippayan (2014)* study of 144 companies listed on the Stock Exchange of Thailand in 12 years (2000- 2011)).
3. B5 = -0.156874 mean increased business risk 1%, the debt ratio decreased 0.156874%. Research results in the opposite relationship between business risk with debt. When rising business risks, financial companies are not confident enough to give business loans, while lending firm category also limits borrowing to avoid pressure. This is similar to the study of *Philippe and the fortifications (2003)* carried out the paper analyzes the determinants of capital structure for the group of 106 Swiss enterprises listed on the Swiss stock market.
4. The variable structure of tangible assets and the growth rate does not affect the debt ratio.

After remedying the breach of the model, the model research of factors affecting capital structure of the company real estate industry listed on HOSE. STATA software shows that there are three factors that influence to the capital structure of the company research, is that the scale of the enterprises (+), (-) business profit, business risk (-). Debt ratio increases with scale and significantly reduced according to profit and business risk. Meanwhile factor tangible asset structure and growth rate does not affect the debt ratio. In which the results of the impact of business scale and profitability coincided with research results of Pornpen Thippayan (2014) research on 144 companies listed on the Stock exchange of Thailand in 2000-2011 (original article). All three enterprise scale factors, profits and business risks contribute 71.55% to explain the meaning of the model. That can assert all three above factors played an important role in the decision of capital structure of the real estate business. This will be the scientific basis for planning funding policies logically contribute to improving business performance of enterprises. From this results the enterprise administrator might consider to adjust an optimal capital structure to ensure stable sources of capital for enterprises based on the study of the influence of the factors up debt ratio.

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