DETERMINANTS OF CAPITAL STRUCTURE: EMPIRICAL EVIDENCE FROM VIETNAMESE LISTED CONSTRUCTION COMPANIES

Nguyen Thuy Anh[*]
Le Thi Thanh Huyen[**]

Abstract:

This paper employs a new database containing the market and accounting data (from 2007 to 2013) of more than 100 Vietnamese listed construction companies to describe their capital structure characteristics. As a result, we found that business risk, tangibility and growth also considerably impact on debt-to-capital ratio while size and tax are insignificantly associated with the capital structure of Vietnamese construction firms. In addition, different from other researches in other countries, Vietnamese construction companies tend to have much lower long-term debt.

Keywords: *capital structure, leverage, listed companies.*

Date of submission: 15th September 2014 - Date of approval: 29th January 2015

1. Introduction

Leverage or capital structure referring to the proportion of debt relative to equity in a firm's total assets, is an indication of how firms finance their activities and investments. The capital structure decision is at the center of many other decisions in the area of corporate finance which includes dividend policy, project financing, financing mergers, and buyouts and so on. In Vietnam, construction industry accounts for a large proportion of GDP (5.4% in 2013 - GSO Vietnam) and has been characterized by a huge capital need and a significant amount of fixed assets. In difficulty times from 2008 to 2013, making reasonable decisions of capital structure is an urgent requirement for construction firms. In those days, the consequences of insufficient capital can be seen in construction companies with a range of the projects constantly delayed. As a result, determining factors impacting on capital structure in construction companies in Vietnam is quite important.

The aim of this study is to carry out an empirical testing to determine the firm-specific factors affecting the capital structure decisions of Vietnamese construction firms. The studies also used panel data of 7-year period and detailed analysis of difference between short-term and long-term debt as well

[*] PhD, Foreign Trade University, Email: nguyenthuyanhftu@gmail.com
[**] BA, Foreign Trade University

as market and book value ratios. Moreover, it is thanks to an extended set of available data, the study is able to use the larger sample of listed construction firms with more than 100 companies. The researched data, therefore, are updated and reflect the current movement of construction industry.

2. Literature review

Kayo and Kimura (2011) shows that a significant part of the leverage variance is due to intrinsic firm characteristics while the total of the time-level, industry-level characteristics and country-level account for 58%. Therefore, it can be seen that the firm characteristics are the most relevant when explaining the variances of leverage. Previous researches suggest a number of factors, which are likely to have an impact on a company's leverage. In a cross-country study, Rajan and Zingles (1995) find the four important variables including growth, tangibility, profitability and size. Many other studies (Titman and Wessels, 1988; Castanias, 1983; Bradley, Janell and Kim, 1984) also show risk (earning volatility) and investment opportunity (market-to-book value) as important determinants of debt policy. This study will examine the impact of seven firm-specific factors – firm size, growth, profitability, tangibility, liquidity, tax, and risk.

2.1. Business risk

According to the trade-off theory, higher risk (earnings volatility) increases the probability of financial distress. Therefore, the relationship between leverage and risk is predicted to be negative. Meanwhile, Thies and Klock (1992) reached the conclusion that risk has negative relationship with long-term debt but positive relationship with short-term debt as high variability shifts financing from long-term debt to short-term debt and equity.

2.2. Tax

From the trade-off theory, taxes should be positively correlated with leverage due to tax deductibility of interest payments. The higher the tax is, the more debt a firm should employ since it can save greater part of the profit by the means of tax shields. Pettit and Singer (1985) notice, however, that the smaller firms are less likely to be profitable. Consequently, it is less probable for them to take advantage of tax shields. Contrary to the above conclusions, Sogorb and Mira (2005) find the negative relation. Antoniou, Guney and Paudyal (2002) who performed a study on listed companies, reported mixed evidence - the tax effect varies across Germany, France, and the United Kingdom.

2.3. Size

According to Rajan and Zingales, 1995, large firms are prone to be more diversified and less likely to bankruptcy. They tend to incur lower direct costs in issuing debt or equity. Thus, large firms are expected to employ higher amount of debt than small firms. It is also argued that smaller firms would have less long-term debt and more short-term debt because of shareholders-lenders conflict (Titman and Wessels, 1988). Other studies such as Rajan and Zingales, 1995, reveal a significant positive relation between size and debt ratio.

2.4. Liquidity

As predicted by the pecking order theory, firms with high liquidity will borrow less. The fact that a firm with more current assets is expected to generate more internal inflows, which can be used to finance its operating and investments activities. Thus a negative relationship between liquidity and leverage is expected. Friend and Lang (1988) stated

that liquidity is negatively and significantly related to leverage. On the other hand, trade-off theory suggests a positive relationship between leverage and liquidity because higher liquidity ratio reflects the greater ability of a firm to meet short-term obligation on time.

2.5. Tangibility

According to trade-off hypothesis, tangible assets act as collateral and provide security to lenders in the event of financial distress. Collaterally also protects lender from moral hazard problem caused by the shareholders-lenders conflict (Jensen and Mekling, 1976). Thus, firms with higher tangible assets are expected to have high level of debt. According to the maturity principle, net fixed assets shift financing from short-term debt to long-term debt while inventory shifts financing from equity to short-term debt and long-term debt (Thies and Klock, 1992). Some studies report a significant positive relationship between tangibility and total debt (Titman and Wessels, 1988; Rajan and Zingales, 1995. Other study finds a positive relationship between tangibility and long-term debt, but a negative relationship between tangibility and short-term debt (Van der Wijst and Thrik, 1993).

2.6. Profitability

According to the interest tax shield hypothesis, which is derived from Modigliani and Miller (1963), firms with high profits would employ high debt to gain tax benefits. On the contrary, the pecking order theory of Myers and Majluf (1984) postulates that companies prefer internal financing to debt to equity. Firms with higher profitability will employ higher retained earnings and less debt. The interest tax shield hypothesis may not work for those firms that have other avenues, like depreciation, to shield their taxes (DeAngelo and Masulis, 1980). Most empirical results confirm the pecking order hypothesis (Titman and Wessels, 1988; Rajan and Zingales, 1995; Michaelas et al., 1999). Shah and Hijazi (2004) also confirmed that profitability turned out to be most significant and influential determinant of capital structure with its negative relationship with the leverage.

2.7. Growth

As the firms grow, their requirement of finance tends to increase. According to agency theory, firms with greater growth opportunities have more flexibility to invest sub-optimally, and thus have a tendency to expropriate wealth from debt-holders to shareholder because of the asset substitution effect. Therefore, the high-growth firms will reduce the use of debt financing. The trade-off theory also suggests the same result since growth opportunities are considered as intangible assets and cannot be collateralized. Similarly, Myers (1977) found that firms with growth potential will tend to have less leverage since growth opportunities can produce moral hazard effects and push firms to take more risk. In order to mitigate this problem, growth opportunities should be financed with equity instead of debt. Smith and Watts (1992) also find the predicted negative relation between debt and growth opportunity.

An opposite relationship is supported by pecking order theory. The rationale behind such decision is that issuing new equity increases the asymmetric information related costs that could be reduced through issuing of debt. Hence , pecking order theory postulates a positive relationship between growth and financial leverage. Baskin (1989) reports a significant positive relation between growth and leverage. Firms with high growth will tend to look to external funds to fit the growth (Michaelas et al., 1999). Growth is likely to put

a strain on retained earnings and push the firm into borrowing. In that case, firms would look to short-term, less long-term for their financing needs. Some studies found growth positively related to capital structure (Michaelas et al., 1999; Bevan and Danbolt, 2002).

We will summarize the relationship between determinants and leverage based on the trade-off and pecking order theory as below.

Table 1: Relationship between each factor and leverage according to the trade-off theory and the pecking order theory

	The trade-off theory	The pecking order theory
Tax	+	
Size	+	-
Risk	-	+
Liquidity	+	-
Tangibility	+	
Profitability	+	-
Growth	-	+

3. Methodology

3.1. Data, sample, and measures

This study investigates the impact of firm-specific factors on firms' leverage. The sample of study selected contains 109 Vietnamese construction companies listed on HNX and HOSE exchange. The data set used in the analysis is extracted from these companies' published balance sheet and income statement information for the period 2007 to2013 which is constantly available on database of website http://finance.vietstock.vn/. Companies that exist throughout the 5-year period with no missing data are included in the study. We also exclude companies with zero sales and negative 4-year average earnings. The sample consists of both financially sound companies and distressed companies in order to avoid survival bias, since the probability of bankruptcy may have a significant influence on firms' financing decisions. After eliminating outliners, the sample size is 109 companies, compared to the population of 120 listed construction firms on all Vietnamese stock exchanges. In this way, the sample of the study consists of 676 firm-year observations. However, with some companies lacking market value due to unlisted years, we use its relevant book value to replace.

Table 2: Definitions of variables

Variables	Definitions
BTD	total debt/book value of total assets
BLD	long-term debt/book value of total assets
BSD	short-term debt/book value of total assets
MTD	total debt/market value of total assets
MLD	long-term debt/market value of total assets
MSD	short-term debt/market value of total assets
TAX	effective tax rates=total tax expenses/earnings before taxes(EBT)
SIZE	log (sales)
RISK	standard deviation(operating income/book value of total assets)
LIQIDID	total current assets/total current liabilities
TANG	net fixed assets/book value of total assets
PROFIT	operating income/book value of total assets
GROWTH	total market value of total assets/ book value of total assets

Hypothesis

Table 3 Hypotheses

Hypothesis H1:	Tangibility has a positive effect on leverage
Hypothesis H2:	Business risk has negative effect on leverage
Hypothesis H3:	Firm size has a positive effect on leverage
Hypothesis H4:	Tax has a positive effect on leverage
Hypothesis H5:	Growth opportunities have a negative effect on leverage
Hypothesis H6:	Profitability has a negative effect on leverage
Hypothesis H7:	Liquidity has a positive effect on leverage

3.2. Research methodology

In order to process, analyze the data and test the hypotheses stated earlier, the Ordinary Least Square (OLS) regression analysis will be applied. The data is collected as panel data or longitudinal data which observations are both across firms and over time. First, we will run the pooled OLS model, all observations are put together and the regression coefficients describe the overall influence with no specific time or individual aspect. This will leave us with a sample of 109 firms and a total of 676 firm-year observations. The pooled OLS regression assumes that the error term captures the differences between the firms (cross-sectional units) over the time. The model can also be called as constant co-efficient model because in this model both slopes and intercepts are assumed to be constant. Second, we also run cross-sectional regression using cross-sectional data for each year with the number of observations varying according to year. After that, we will compare the each year's results to determine whether coefficients stabilize through years. Since this study analyzes the correlation between financial leverage and its determinants, the multiple regression models are necessary. This technique can provide the degree and characteristics of the relationship between chosen variables. The results of coefficients in models are in between -1 and 1 in which 1 is significantly positive relationship and -1 is significantly negative relationship. This paper, in addition, also used histograms as the tool to indicate the frequency distribution of all measures of leverage.

In general, the baseline model is constructed as follows.

$$LEVi = \beta0 + \beta1RISKi + \beta2TAXi + \beta3SIZEi + \beta4LIQUIDi + \beta5TANGi + \beta6PROFITi + \beta7GROWTHi + \varepsilon i \quad (1)$$

Where:

LEV denotes a leverage measure,

Other determinant variables' definitions are presented in table 2,

$\beta0$ is the intercept or the expected value of Y when value of all independent variables is equal to 0,

Other β is the slope coefficient of each corresponding independent variable,

ε is the random error term, and

i denotes an individual firm.

Finally, in order to test the robustness of the model, we run different regressions with different combinations of explanatory variables by dropping PROFIT and GROWTH, one by one, from the original pooled model because of their high correlations with each other. Besides, we also drop insignificant variables such as SIZE, TAX.

4. Results

4.1. Descriptive statistics

Table 4 provides means, median, standard deviation and some other important indicators for all dependent and independent variables from the pooled data of 109 listed companies during 2007-2013 with 676 firm-year observations. In general, the listed construction companies employ a relatively high level of debt in their capital structure.

To specify, in terms of book value ratios, the total debt ratio is about 69.4% while the maximum and minimum are 94.5%, 16.5% respectively. In addition, the mean of book value long term debt ratio is roughly one-fifth the short-term debt ratio. The biggest number for long-term debt ratio standing at 77.9% is much larger than the minimum value of -0.001%, which left behind a quite high standard deviation-to-mean ratio with approximately 1.2. By comparison, the average market value debt ratios are a bit higher than

Table 4: Summary of descriptive statistics of all variables

	Mean	Std. Dev.	Minimum	Maximum	Obs.
BTD	0.694	0.156	0.165	0.945	676
BLD	0.117	0.141	0	0.779	676
BSD	0.577	0.180	0.021	0.926	676
MTD	0.792	0.159	0.069	0.990	676
MLD	0.129	0.150	0	0.730	676
MSD	0.663	0.200	0.023	0.970	676
RISK	0.032	0.023	0.0023	0.137	676
TAX	0.200	0.181	-1.520	2.34	676
SIZE	584,969,713,942	1,379,209,534,817	2,047,734,711	15,013,936,714,932	676
LIQ	1.340	0.471	0.001	4.486	676
TANG	0.201	0.006	0.003	0.983	676
PROFIT	0.045	0.059	-0.169	0.694	676
GROWTH	0.881	0.172	0.270	2.691	676

Notes:

This table presents summary statistics of the measures of leverage, and their determinants based on pooled sample data of 676 firm-year observations from 2007 to 2013. BTD: total debt ratio in book value, defined as total debt over book value of total assets. BLD: long-term debt ratio in book value, defined as long-term debt over book value of total assets. BSD: short-term debt ratio in book value, defined as short-term debt over book value of total assets. MTD: total debt ratio in market value, defined as total debt over market value of total assets. MLD: long-term debt ratio in market value, defined as long-term debt over market value of total assets. MSD: short-term ratio in market value, defined as short-term debt over market value of total assets. RISK: business risk, defined as the standard deviation of the ratio of operating income to total assets during the current year and 6 prior years. TAX: effective tax rates, defined as the ratio of total tax expenses to earnings before taxes. SIZE: firm size, defined as sales revenue in VND. LIQUID: liquidity, defined as the ratio of total current assets to total current liabilities. TANG: tangibility, defined as the ratio of net fixed assets to total assets. PROFIT: profitability, defined as the ratio of operating income to total assets. GROWTH: growth opportunity, defined as the market value of total assets over book value of total assets. Obs. is the number of observations. Std. Dev. is the standard deviation of each variable.

the book value debt ratios. Specifically, 79.16% represents the average market value total debt ratio whereas the most significant number is up to around 99%. Similarly, the mean market value short-term debt rate is five times bigger than its long-term ratio with the former being 66% and the latter 12.9%.

With respect to independent variables, the average risk is nearly 3.2% while the mean profit stands at 4.5% and tax, on average, is about 20%. Size, on the other hand, with the average value of nearly 585 billion VND witnesses the big gap between the maximum and minimum with the former nearly 15,014 billion VND and the latter 2 billion VND. Likewise, the difference between the biggest and the lowest in liquidity (4.49 and 0.001) leads to the pretty large standard deviation-to-mean ratio of around 0.35. Tangibility and growth with the different means 0.2, 0.88 respectively have quite the same standard deviation-to-mean ratio of nearly 0.2. The maximum value of the former is 0.98, compared to 0.0026 of the lowest whereas 2.69 is the highest number of the latter, in comparison with 0.27 being the minimum.

4.2. Correlation matrix

To examine the existence of multicolinearity among variables, correlation matrix is adopted. Table 5.2 provides correlation matrix for the pooled data of 676 firm-year observations. In general, independent variables have collinearity less than 0.7, free from serious problems of multicollinearity and the correlation matrix proves a more competent regression models. To specify, we observe that size and profitability are positively related to the firm growth. In other words, the growing companies are more likely to be profitable and bigger. The most noticeable negative correlation is seen between risk and size with -0.123. It means that the large-size firms are exposed to less business risk than the smaller ones. In respect of dependent-independent variables correlation, the higher the risk is, the lower the dependent values are, especially, for book total debt and market total debt with -0.36797 and -0.3695 respectively. In addition, the profit and book debt ratios are negatively affected, as reflected in pecking order theory, which means that the companies having more profit base on their own finance rather than borrowing whereas size and leverage shows a positive correlation. For example, the correlation for book value total debt ratio stands at 0.205. About book value ratios, as can be seen, tax seems to be statistically negatively and insignificant to leverage with the highest number only -0.06 and the lowest one -0.002 while growth is fairly positively related. By comparison, with correlation rate between liquidity and long term ratio 0.5184 shown, the more net fixed assets are, the more long term debt is; at the same time, the less short term debt is used. Likewise, the correlation between short term debt-to-assets proportion and tangibility is noticed with -0.45. That means the company has more fixed assets, it needs lower short-term debt ratio. About market value ratios, in general, growth, liquidity and tangibility negatively impact on total debt and short term debt ratios while the opposite is true of long term debt ratio with the ratios being 0.04, 0.148, and 0.52 respectively. Similar to book value ratios' results, tax and market value ratios' correlation is close to zero, meaning a statistically insignificant.

This table presents the correlation between all variables used in this study. The significant coefficients are printed in bold. Variable definitions are discussed in Table 2

Table 5: Correlation matrix

	RISK	TAX	SIZE	LIQ	TANG	PROFIT	GROWTH	B-TD	B-LD	B-SD	M-TD	M-LD	M-SD
RISK	1												
TAX	-0.01817	1											
SIZE	**-0.12343**	0.044012	1										
LIQ	0.12359	0.009745	-0.14151	1									
TANG	0.020846	-0.01168	-0.04605	-0.09268	1								
PROFIT	0.16533	0.02298	0.007597	0.10931	0.049418	1							
GROWTH	0.06649	-0.07238	**0.223026**	-0.02874	-0.04777	**0.205316**	1						
B-TD	**-0.36797**	-0.01597	0.204803	**-0.57741**	-0.06627	-0.29476	0.117477	1					
B-LD	-0.14394	-0.0147	0.10278	0.117759	0.518392	-0.07996	0.0934	0.252804					
B-SD	-0.20957	-0.00151	0.095926	-0.59992	**-0.45122**	-0.1911	0.027881	**0.669894**	-0.52792	1			
M-TD	**-0.36946**	0.027602	0.053868	**-0.47855**	-0.08444	-0.38715	-0.40031	0.792163	0.132355	0.583753	1		
M-LD	-0.15745	-0.00937	0.082999	0.14819	**0.523713**	-0.09204	0.040105	0.240714	0.972903	-0.54543	0.165164	1	
M-SD	-0.17648	0.027589	-0.01927	**-0.49199**	**-0.45903**	-0.23909	-0.35326	0.449983	-0.62202	0.876195	**0.672931**	-0.61477	1

Correlations														
		Risk	**Tax**	**Size**	**Liq**	**Tang**	**Profit**	**Growth**	**B-TD**	**B-LD**	**B-SD**	**M-TD**	**M-LD**	**M-SD**
Risk	Pearson Correlation	1	-.018	-.123**	.124**	.033	.165**	.066	-.368**	-.144**	-.210**	-.369**	-.157**	-.176**
	Sig. (2-tailed)		.637	.001	.001	.385	.000	.084	.000	.000	.000	.000	.000	.000
								676	676	676	676	676	676	676
tax	Pearson Correlation	-.018	1	.044	.010	-.007	.023	-.072	-.016	-.015	-.002	.028	-.009	.028
	Sig. (2-tailed)	.637		.253	.800	.863	.551	.060	.679	.703	.969	.474	.808	.474
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
size	Pearson Correlation	-.123**	.044	1	-.142**	-.043	.008	.223**	.205**	.103**	.096*	.054	.083*	-.019
	Sig. (2-tailed)	.001	.253		.000	.265	.844	.000	.000	.007	.013	.162	.031	.617
	N	676	676	676	676	676	676	676	676	676	676	676	676	676

liq	Pearson Correlation	.124**	.010	-.142**	1	-.099**	.109**	-.029	-.577**	.118**	-.600**	-.479**	.148**	-.492**
	Sig. (2-tailed)	.001	.800	.000		.010	.004	.456	.000	.002	.000	.000	.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
tang	Pearson Correlation	.033	-.007	-.043	-.099**	1	.041	-.038	-.069	.585**	-.504**	-.105**	.589**	-.524**
	Sig. (2-tailed)	.385	.863	.265	.010		.283	.329	.074	.000	.000	.006	.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
profit	Pearson Correlation	.165**	.023	.008	.109**	.041	1	.205**	-.295**	-.080*	-.191**	-.387**	-.092*	-.239**
	Sig. (2-tailed)	.000	.551	.844	.004	.283		.000	.000	.038	.000	.000	.017	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
growth	Pearson Correlation	.066	-.072	.223**	-.029	-.038	.205**	1	.117**	.093*	.028	-.400**	.040	-.353**
	Sig. (2-tailed)	.084	.060	.000	.456	.329	.000		.002	.015	.469	.000	.298	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
B-TD	Pearson Correlation	-.368**	-.016	.205**	-.577**	-.069	-.295**	.117**	1	.2 **	.670**	.792**	.241**	.450**
	Sig. (2-tailed)	.000	.679	.000	.000	.074	.000	.002		.000	.000	.000	.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
B-LD	Pearson Correlation	-.144**	-.015	.103**	.118**	.585**	-.080*	.093*	.253**	1	-.528**	.132**	.973**	-.622**
	Sig. (2-tailed)	.000	.703	.007	.002	.000	.038	.015	.000		.000	.001	.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
B-SD	Pearson Correlation	-.210**	-.002	.096*	-.600**	-.504**	-.191**	.028	.670**	-.528**	1	.5 **	-.545**	.876**
	Sig. (2-tailed)	.000	.969	.013	.000	.000	.000	.469	.000	.000		.000	.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
M-TD	Pearson Correlation	-.369**	.028	.054	-.479**	-.105**	-.387**	-.400**	.792**	.132**	.584**	1	.1 **	.673**
	Sig. (2-tailed)	.000	.474	.162	.000	.006	.000	.000	.000	.001	.000		.000	.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
M-LD	Pearson Correlation	-.157**	-.009	.083*	.148**	.589**	-.092*	.040	.241**	.973**	-.545**	.165**	1	-.615**
	Sig. (2-tailed)	.000	.808	.031	.000	.000	.017	.298	.000	.000	.000	.000		.000
	N	676	676	676	676	676	676	676	676	676	676	676	676	676
M-SD	Pearson Correlation	-.176**	.028	-.019	-.492**	-.524**	-.239**	-.353**	.450**	-.622**	.876**	.673**	-.615**	1
	Sig. (2-tailed)	.000	.474	.617	.000	.000	.000	.000	.000	.000	.000	.000	.000	
	N	676	676	676	676	676	676	676	676	676	676	676	676	676

***. Correlation is significant at the 0.01 level (2-tailed).*

**. Correlation is significant at the 0.05 level (2-tailed).*

4.3. Regression models

Table 6 presents regression results for pooled OLS regression from pooled data and cross-section regression from cross-sectional data of each year.

Firstly, we will interpret the results of the pooled OLS regression model. In general, almost the results are consistent with the correlation matrix. These results suggested that almost variables namely risk, profitability, tangibility, liquidity, and growth are significantly related to capital structure in listed construction firms in Vietnam while the opposite is true of tax and size. Overall, the average adjusted R-squared value of more than 0.6 which denotes that at least 60% of observed variability in debt ratios can be explained by differences in the studied independent variables while remaining less than 40% is attributed to other variables beyond this study. Moreover, F-statistic value is quite high with the average of more than 60, which suggests that the explanatory variables have significantly explained at least 60 % of the variation in the leverage level and also indicates the validity, significance and a good fit of the model. Furthermore, the adjusted R-squared and F-statistic values for market value ratios is 1.2 times larger than those for book value ratios implies the more reliable results from market value debt ratios. *About risk,* the most statistically significant variable amongst explanatory ones, we find negative ratios between risk and all dependent variables both market and book value debt ratios, which supports hypothesis *H1*. The small P-value (the biggest is 0.003) indicates that the relationship between leverage and risk is statistically significant. Moreover, the coefficient value for book value total debt, book value long term debt ratio, book value short term ratios are roughly -1.8, -0.95, and -0.88, respectively while their counterparts in market value are around -1.7, -1.1, -0.6. It means, for example, for a 1% increase in business risk, the market value total debt ratio will decline by about 1.7%. This finding is in line with the tradeoff theory since firms having relatively severe volatile earnings are assumed to make less use of debt in their financing.

This table presents regression results of leverage on firm-specific variables for 109 Vietnamese listed construction firms using data of 2007 – 2013 estimated from equation (1): $LEV_i = \beta_0 + \beta_1 TANG_i + \beta_2 RISK_i + \beta_3 SIZE_i + \beta_4 TAX_i + \beta_5 GROWTH_i + \beta_6 PROFIT_i + \beta_7 LIQUID_i + \varepsilon_i$ where i denotes an individual firm. All variables are defined in Table 4.1. P-values are reported in parentheses. The significant coefficients are printed in bold. Obs. is the number of observations in the regressions. Adj-R^2 is the value of adjusted-R^2 for the regression.

About tax, we observe that the impact of corporate taxation on leverage choice of firms yield statistically insignificant coefficients. In contrast to hypothesis H2, Mackie-Mason (1990) notes that the reason why most studies fail to find plausible or significant tax effects on financing behavior is that the debt-to-equity ratios are the cumulative results of years of separate decisions and tax shields have a negligible effect on the marginal tax rate for most firms. To specify, tax is negatively related to book and market of total debt and long-term debt ratios with the average of nearly 0.003 whereas it impacts positively on short debt ratios with 0.001 and 0.003 for book value

Table 6: Impact of firm-specific variables on leverage in Vietnamese listed construction companies.

PANEL A: POOLED OLS MODEL												
	BTD		***BLD***		***BSD***		***MTD***		***MLD***		***MSD***	
	Coefficient	*P-value*	*Coefficient*	*P-value*	*Coefficient*	*P-value*	*Coefficient*	*P-value*	*Coefficient*	*P-value*	*Coefficient*	*P-value*
Intercept	**0.699**[a]	(0.000)	**-0.443**[a]	(0.000)	**1.151**[a]	(0.000)	**1.267**[a]	(0.000)	**-0.423**[a]	(0.000)	**1.688**[a]	(0.000)
RISK	**-1.8**[a]	(0.000)	**-0.949**[a]	(0.000)	**-0.878**[a]	(0.000)	**-1.694**[a]	(0.000)	**-1.106**[a]	(0.000)	**-0.592**[a]	(0.003)
TAX	-0.003	(0.886)	-0.004	(0.875)	0.001	(0.955)	0.002	(0.917)	-0.003	(0.917)	0.003	(0.905)
SIZE	**0.008**[b]	(0.027)	**0.012**[a]	(0.001)	-0.005	(0.169)	0.005	(0.160)	**0.012**[a]	(0.001)	**-0.007**[b]	(0.046)
LIQ	**-0.170**[a]	(0.000)	**0.067**[a]	(0.000)	**-0.24**[a]	(0.000)	**-0.149**[a]	(0.000)	**0.081**[a]	(0.000)	**-0.229**[a]	(0.000)
TANG	**-0.078**[a]	(0.002)	**0.453**[a]	(0.0 00)	**-0.520**[a]	(0.000)	**-0.114**[a]	(0.000)	**0.489**[a]	(0.000)	**-0.600**[a]	(0.000)
PROFIT	**-0.580**[a]	(0.000)	**-0.322**[a]	(0.000)	**-0.250**[a]	(0.001)	**-0.582**[a]	(0.000)	**-0.352**[a]	(0.000)	**-0.227**[a]	(0.004)
GROWTH	**0.134**[a]	(0.000)	**0.115**[a]	(0.000)	0.019	(0.469)	**-0.340**[a]	(0.000)	**0.080**[a]	(0.005)	**-0.424**[a]	(0.000)
Obs.	676	676	676	676	676	676	676	676	676	676	676	676
Adj. R^2	0.49		0.37		0.64		0.54		0.38		0.66	
F-statistic	94.36		57.25		170.13		114.67		60.16		189.63	

Note: The superscripts a, b, and c indicate statistical significance at 1%, 5%, and 10% level, respectively.

This table presents regression results of leverage on firm-specific variables for 109 Vietnamese listed construction firms using data of 2007 – 2013 estimated from equation (1): LEVi = β0 + β1TANGi + β2RISKi + β3SIZEi + β4TAXi + β5GROWTHi + β6PROFITi + β7LIQUIDi + εi where i denotes an individual firm. All variables are defined in Table 4.1. P-values are reported in parentheses. The significant coefficients are printed in bold. Obs. is the number of observations in the regressions. Adj-R2 is the value of adjusted-R2 for the regression.

Panel B: Fix-year effect						
	BTD	*BLD*	*BSD*	*MTD*	*MLD*	*MSD*
RISK	**0.676**[a]	**-1.013**[a]	-0.789[a]	**-1.658**[a]	**-1.175**[a]	**--0.491**[b]
	(-9.361)	(-5.660)	(-4.674)	(-9.162)	(-6.226)	(-2.806)
TAX	0.002	-0.008	0.010	0.007	-0.008	0.012
	(0.77)	(-.333)	(0.476)	(0.299)	(-0.317)	(0.535)
SIZE	**0.007**[b]	**0.012**[a]	-0.005	**0.004**	0.012[b]	**-0.008**[b]
	(2.074)	(3.512)	(-1.561)	(1.060)	(3.310)	(-2.414)
LIQ	**-0.172**[a]	**0.069**[a]	**-0.243**[a]	**-0.151**[a]	**0.083**[a]	**-0.234**[a]
	(18.397)	(7.850)	(-29.203)	(-16.948)	(8.948)	(-27.116)
TANG	**-0.097**[a]	**0.567**[a]	**-0.650**[a]	**-0.151**[a]	**0.610**[a]	**-0.757**[a]
	(-3.521)	(21.750)	(-26.458)	(-5.716)	(22.205)	(29.707)
PROFIT	**-.633**[a]	**-.334**[a]	-0.296[a]	**-0.647**[a]	**-0.365**[a]	-0.278[a]
	(8.203)	(-4.580)	(-4.303)	(-8.769)	(-4.742)	(-3.896)
GROWTH	**0.140**[a]	**0.03**[a]	0.024	-0.329[a]	0.083[b]	**-0.417**[a]
	(5.247)	(0.51)	(1.005)	(-12.925)	(3.129)	(-16.956)
Fixed Year Effect	Yes	Yes	Yes	Yes	Yes	Yes
Adj-R^2	0.497	0.448	0.70	0.557	0.461	0.737

and market value respectively. P-values, most of which are more than 0.8, are extremely.

About size, another insignificant relationship with debt-to-capital ratio has been observed. We find that size is positively related to leverage except for short term debt ratios. This results illustrate that the bigger the company in terms of sales, the larger amount of long-term debt and the lower short-term debt it has in its capital structure whereas smaller firms tend to employ more short-term debt rather than long-term debt. The positive correlation between size and debt ratios confirms hypothesis H3 and is in line with the trade-off theory. Findings showed that larger firms face lower bankruptcy costs and thus these firms tend to attain more debt. This was because large firms usually have sufficient resources or capabilities to overcome financial distress. Also, large firms typically employ external finance for greater investments in the future expansions since internal finance would limit the investments. Besides, larger firms may have advantage of accessing credit markets over smaller firms. This may be probably because larger firms especially, which are more established usually gains more trust from the creditors. To be more specific, the beta coefficients of size effect on long-term debt ratios are similar at 0.012 and p-values for size are quite small of 0.001, which explains a fairly significant relationship. Nevertheless, the opposite is true of book value short term debt ratio with the figure being almost -0.0047. In other words, when size climbs 1%, for example, the book value short term debt ratio falls by 0.0047%.

About liquidity, only in long term debt ratios is the positive relationship observed. By contrast, both total debt and short debt enjoy a negative impact, which supports hypothesis H4. This inverse relation indicated that in general, Vietnamese construction firms finance their investments following partly the financing pattern implied by the pecking order theory. In other words, the more liquid a firm is, the lesser it borrows short-term debt. The firms with high liquidity maintain a relatively high amount of current assets and also generate high cash inflows. Consequently, firms use the cash inflows to finance their investments and activities with less reliance on external short-term finance since the firms have sufficient liquid assets. However, the negative association between long-term debt proportions and liquidity rejects our hypothesis H7. The reasoning for this finding might be that the more liquid firms are easier to assess the external long-term resource. The coefficient estimates for book value long term debt and market value long term debt ratio are 0.067, 0.08 respectively while those for short term debt ratios are approximately -0.24, -0.23. That means a 1% increase in liquidity will sink, for instance, market value short term debt ratio by about 0. 23%.In addition, p-values of liquidity are totally small (close to 0), which suggests the statistically significant relationship.

About tangibility, tangibility's effect on debt ratios is the same as liquidity's in terms of sign and the significant level. Tangibility has statistically positive and significant impact on long-term debt. This positive association between tangibility and long-term debt-to-capital ratios is consistent with implication of trade-off theory and hypothesis H5. The average coefficient of 0.47 suggests that a 1% growth in this variable brings about a jump by 0.47% in long-term debt-to-assets ratios.

By comparison, tangibility has significantly negative relationship with short-term debt

ratios. The beta coefficient of -0.5 on average reveals that for a 1% rise in tangibility, the short-term debt ratios are curbed by 0.5%. The negative relationship showed that construction firms in Vietnam, at the same time when tangible assets are used as collateral to seek external long-term funding, tend to use their tangible assets to generate internal funds for working capital. These firms generally opt for internal financing rather external short-term borrowings and thus in line with the pecking order theory and the negative coefficient values of tangibility rejects hypothesis H5.

About profit, the regression results of model have shown that profitability is negatively related to all types of leverage and it is one of the most significant variables for leverage ratios. Thus our findings are consistent with hypothesis *H6* and profitable companies do not prefer higher ratio of debt, even the potential bankruptcy risk becomes lower with the high profit figures. This study supports the pecking order theory that higher profit firms use internal financing while low profit firms use more debt because their internal funds are not adequate. Furthermore, profit seems to be one of the most dominant determinants of debt ratios of Vietnamese construction firms as it generally has quite high beta coefficients and small P-value. Specifically, the coefficient estimates of an average total debt and long term debt ratio are approximately -0.6, -0.3 respectively, followed by the short-term debt ratio of -0.2. For instance, -0.2 implies that, for a 1% rise in the profitability, the market short-term debt-to-assets ratio will drop by about 0.2%.

About growth, this variable is positively related to book value debt ratios while the opposite is true of market value short term debt proportion. In other words, Vietnamese construction firms seem to employ long-term debt to finance their growth. The beta coefficient values of growth for book value long term debt ratio and market value long term debt ratio are approximately 0.11, 0.08 respectively. For example, 0.08 implies that 1% change in growth opportunities leads to 0.8 % change in market value long debt-to-assets ratio. This relationship is in contradiction with what the trade-off theory and hypothesis H7 predict while it supports pecking order theory. Growth opportunities yield negative and significant coefficients for market short term and total debt ratios. This negative relationship between growth opportunities and corporate leverage tends to support hypothesis H7. The firms with potential growth opportunities in the future prefer to keep leverage low so they will not give up profitable investments because of the wealth transfer from shareholders to creditors. The relationship between leverage and growth is found to be consistent with the predictions of trade-off theory. The coefficient estimates of -0.42 for short-term debt-to-capital ratio suggests that a 1% increase in growth opportunity decreases the short-term debt ratio by 0.42%. P-value, which is close to 0, reveals the significantly negative association for this dependent variable.

To summarize, we have:

The pooled OLS regression for market value long-term debt ratio:

$$MLD = -0.42 - 1.1RISK - 0.0026TAX + 0.012SIZE + 0.081LIQ + 0.49TANG - 0.35PROFIT + 0.08GROWTH \quad (2)$$

The pooled OLS regression for market value short-term debt ratio:

$$MSD = 1.69 - 0.59RISK + 0.00298TAX - 0.0073SIZE - 0.229LIQ - 0.6TANG - 0.27PROFIT - 0.42GROWTH$$

4.4. Robustness tests

In this part, we run robustness check over the determinants of leverage. We run many other regressions with different combinations of explanatory variables, none of the results are found to be conflicting. Therefore, we will present the most crucial combinations in Table 7. We drop PROFIT, GROWTH one by one, from the initial model because of PROFIT's and GROWTH's fairly high correlations of 0.205. Also, we drop SIZE and TAX due to their insignificant impact on the model. Overall, with adjusted R-squared and F-statistic values being still large, the models without each of those above variables are still ensured to be valid. In addition, dropping highly correlated variables, PROFIT, GROWTH and SIZE does not yield any significant changes to the model as we still arrive at the similar results.

As for the model without growth opportunity (GROWTH), the coefficients of explanatory variables, except TAX and SIZE, have the same signs and significant levels as those in the model with growth opportunity at statistically significant levels (see Table 1). Only small inconsistence is the inverse signs in the tax impact on book value short-term debt and size impact on market value total debt ratios with the former being -0.00021 and the latter -0.00556. However, in general, tax and size are still statistically insignificant related to leverage ratios.

Similarity, as regard the model without profitability (PROFIT), the signs for tax witnessed changes in its coefficients for book value short-term debt, market value total debt and long-term debt ratios. However, like the model without growth, in this model,

Table 7: Robustness checks by dropping GROWTH, PROFIT, SIZE, and TAX

	Without growth						*Without profit*					
	BTD	BLD	BSD	MTD	MLD	MSD	BTD	BLD	BSD	MTD	MLD	MSD
RISK	**-1.736**[a]	**-0.894**[a]	**-0.869**[a]	**-1.855**[a]	**-1.069**[a]	**-0.795**[a]	**-2.003**[a]	**-1.062**[a]	**-0.966**[a]	**-1.898**	**-1.230**[a]	**-0.672**[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
TAX	-0.014	-0.013	0.000	0.030	-0.009	0.038	-0.011	-0.008	-0.002	-0.005	-0.007	0.000
	(0.553)	(0.587)	(0.993)	(0.243)	(0.719)	(0.191)	(0.655)	(0.741)	(0.932)	(0.825)	(0.775)	(0.999)
SIZE	**0.012**[a]	**0.016**[a]	-0.004	-0.006	**0.015**[a]	**-0.020**[a]	**0.008**[b]	**0.012**[a]	-0.005	0.005	**0.012**[a]	**-0.007**[b]
	(0.001)	(0.000)	(0.213)	(0.136)	(0.000)	(0.000)	(0.030)	(0.001)	(0.178)	(0.166)	(0.001)	(0.049)
LIQ	**-0.172**[a]	**0.066**[a]	**-0.240**[a]	**-0.145**[a]	**0.080**[a]	**-0.225**[a]	**-0.178**[a]	**0.063**[a]	**-0.243**[a]	**-0.156**[a]	**0.077**[a]	**-0.232**[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TANG	**-0.085**[a]	**0.447**[a]	**-0.521**[a]	**-0.097**[a]	**0.485**[a]	**-0.578**[a]	**-0.091**[a]	**0.445**[a]	**-0.526**[a]	**-0.127**[a]	**0.481**[a]	**-0.605**[a]
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PROFIT	**-0.502**[a]	**-0.256**[a]	**-0.239**[a]	**-0.779**[a]	**-0.306**[a]	**-0.473**[a]						
	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)	(0.000)						
GROWTH							**0.092**[a]	**0.092**[a]	0.001	**-0.381**[a]	**0.054**[b]	**-0.441**[a]
							(0.001)	(0.001)	(0.975)	(0.000)	(0.051)	(0.000)
Obs.	676	676	676	676	676	676	676	676	676	676	676	676
Adj. R^2	0.47	0.35	0.64	0.42	0.37	0.54	0.45	0.35	0.63	0.50	0.36	0.66
F-Statistic	102.04	62.04	198.54	82.67	68.14	134.20	92.16	62.19	193.50	112.61	65.18	217.46

	Without size						*Without tax*					
	BTD	BLD	BSD	MTD	MLD	MSD	BTD	BLD	BSD	MTD	MLD	MSD
RISK	**-1.851**[a]	**-1.030**[a]	**-0.846**[a]	**-1.725**[a]	**-1.188**[a]	**-0.544**[a]	**-1.789**[a]	**-1.014**[a]	**-0.804**[a]	**-1.676**[a]	**-1.177**[a]	**-0.505**[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.004)
TAX	0.000	0.001	-0.001	0.004	0.003	0.000						
	(0.996)	(0.954)	(0.977)	(0.849)	(0.921)	(0.997)						
SIZE							**0.008**[b]	**0.012**[a]	-0.005	0.005	**0.013**[a]	**-0.008**[b]
							(0.027)	(0.000)	(0.112)	(0.162)	(0.000)	(0.019)
LIQ	**-0.173**[a]	**0.063**[a]	**-0.238**[a]	**-0.150**[a]	**0.077**[a]	**-0.227**[a]	**-0.171**[a]	**0.070**[a]	**-0.244**[a]	**-0.150**[a]	**0.085**[a]	**-0.234**[a]
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
TANG	**-0.081**[a]	**0.449**[a]	**-0.519**[a]	**-0.116**[a]	**0.485**[a]	**-0.597**[a]	**-0.093**[a]	**0.566**[a]	**-0.646**[a]	**-0.146**[a]	**0.610**[a]	**-0.752**[a]
	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
PROFIT	**-0.581**[a]	**-0.324**[a]	**-0.249**[a]	**-0.583**[a]	**-0.354**[a]	**-0.226**[a]	**-0.582**[a]	**-0.316**[a]	**-0.258**[a]	**-0.583**[a]	**-0.345**[a]	**-0.235**[a]
	(0.000)	(0.000)	(0.001)	(0.000)	(0.000)	(0.004)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.001)
GROWTH	**0.147**[a]	**0.136**[a]	0.011	**-0.331**[a]	**0.101**[a]	**-0.437**[a]	**0.135**[a]	**0.113**[a]	0.022	**-0.339**[A]	**0.077**[a]	**-0.421**[a]
	(0.000)	(0.000)	(0.675)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.354)	(0.000)	(0.003)	(0.000)
Obs.	676	676	676	676	676	676	676	676	676	676	676	676
Adj. R^2	0.49	0.36	0.64	0.54	0.37	0.66	0.49	0.45	0.70	0.55	0.46	0.73
F-Statistic	108.62	63.75	197.91	133.25	67.37	219.58	110.73	93.00	260.98	136.69	97.62	312.50

The table presents the results of four pooled OLS regressions one of which is determined by dropping GROWTH, PROFIT, SIZE, and TAX one by one. All variable definitions are discussed in Table 4.1. P-values are reported in parentheses. The significant coefficients are printed in bold. The superscripts a, b, and c indicate statistical significance at the 1%, 5%, and 10% level.

the tax impact on debt-to-capital ratios is negligible. By comparison, the risk impact is raised by roughly 1.1 times while coefficient estimates of growth are curbed by 1.4 times. The reason for the considerable drop in the growth coefficient might be the fairly positive correlation mentioned above between growth and profitability. Therefore, since there is no profitability variable in the model, the growth impact on leverage declines.

As for the model without SIZE and TAX, we come up with the results similar to those of the initial mode, there are no variables that have signs contrary at statistically significant levels to the results presented in Table 5.3. In spite of the quite significant correlation between size and growth, there is no dramatic change in the beta estimates of growth on debt-to-assets ratios in the model without size.

5. Conclusion

Capital structure has attracted intense debate in the financial management arena for nearly half-century. The basic question of whether a unique combination of debt and equity capital maximizes firm value, and if so, what factors determine a firm's optimal capital structure have been the subject of frequent debate in the capital structure literature. The sample contains 109 listed construction companies with seven consecutive years of data for the period from 2007 to. In this study, seven independent variables is used to determine leverage of listed construction companies

2013 using three models, pooled OLS model, fixed effect model and cross-sectional model. Researchers have identified several firm-specific determinants of a firm's leverage, based on three most accepted theoretical models of capital structure, i.e. the static trade-off theory, the agency theory and the pecking order theory. We find that the impact of several firm-specific factors like tangibility, firm size, risk, growth and profitability is significant and consistent with the prediction of conventional capital structure theories. However, this study gains some more contributions.

The first is that besides liquidity and profit, this study points out that business risk, tangibility and growth also considerably impact on debt-to-capital ratio while size and tax are insignificantly associated with capital structure. Listed construction companies, furthermore, employ relatively high debt ratio, which matches with the characteristics of Vietnamese construction sector. The averages for total debt, long-term debt and short-term debt ratios are 69%, 12% and 58% respectively. Short-term debt ratios are nearly five times higher than long-term debt ratios on average. Secondly, with panel data used and three regression models applied, we obtain the reliable findings as well as the detailed analysis for factors' impact on different debt-to-asset ratios. The results of pooled OLS regressions show that the explanatory power of independent variables is higher for short-term debt ratios than long term debt ratios as revealed by adjusted R-squared and F-statistic values. In addition, our results also uncover that the market value debt ratios are explained better by independent variables than book value debt ratios. As respect to independent variables, only in risk and profit can we observe the same negative impact for all debt ratios. Liquidity, tangibility and growth all positively affect the long-term debt ratios while the opposite is true of the short-term debt ratios.

Another contribution is that our robustness tests dropping each of highly correlated variables yield non-contrary results with the original models. The most noticeable point finding the inconsistent results is in the model without profit. Risk's effect on leverage slightly rises whereas growth's decreases considerably due to high correlation between growth and profit.❑

References

1. Antonios Antoniou, Yilmaz Guney, Krishna Paudyal, 2002, The Determinants of Corporate Debt Maturity Structure, EFA 2003 Annual Conference Paper No. 802; EFMA 2003 Helsinki Meetings
2. Baskin, J. (1989). An Empirical Investigation of the Pecking Order Hypothesis, Financial Management, 1(1), 26-35.
3. Bevan, A.A., and Danbolt, J. (2002) *Capital structure and its determinants in the United Kingdom – a decompositional analysis.* Applied Financial Economics, 12 (3). pp. 159-170. ISSN 0960-3107
4. Bradley, M., Jarrell, G. A. and Kim, E. H. (1984). On the Existence of Optimal capital Structure Theory and Evidence, Journal of Finance, 39 (July), 857-878

5. Castanias, R. (1983), «Bankruptcy Risk and Optimal Capital Structure», Journal of Finance, 38, 1617-1635.
6. De Angelo, H. and Masulis, R.W., 1980. Optimal capital structure under corporate and personal taxation. Journal of Financial Economics, 8, pp.3-29.
7. de Jong, A., Kabir, R., Nguyen T.T., 2008. Capital structure around the world: The roles of firm and country-specific determinants. Journal of Banking and Finance, 32, pp.1954-69.
8. Friend, I. and Lang, L.H.P. (1988). An Empirical Test of the Impact of Managerial Self-interest on Corporate Capital Structure. Journal of Finance, 47, 271-281.
9. Huang, G., Song, F.M., 2006. The determinants of capital structure: evidence from China. China Economic Review, 17, pp.14-36.
10. Jensen, M.C. and Meckling, W.H. (1976). Theory of the Firm: Managerial Behavior, Agency Costs and Capital Structures. Journal of Financial Economics, 3, 305-360.
11. Kayo, k. E. and Kimura, H., "Hierarchical determinants of capital structure", Journal of Banking & Finance, Vol. 35, 2011
12. La Porta, R., Lopez-de-Silanes, F., Shleifer, A. and Vishny R., 1998. Law and finance. Journal of Political Economy, 106, pp.1113-55.
13. Michaelas, N., Chittenden, F. and Poutziouris, P. (1999). Financial Policy and Capital Structure Choice in U. K. SMEs: Empirical Evidence from Company Panel Data, Small Business Economics, 12, 113-130.
14. Modigliani, F., Miller, M.H., 1963. Corporate income taxes and the cost of capital: a correction. American Economic Review, 53, pp.433-43.
15. Myers S.C., 1977. Determinants of capital borrowing. Journal of Finance Economics, 5, pp.5147-75.
16. Myers, S.C., Majluf, N., 1984. Corporate financing and investment decisions when firms have information those investors do not have. Journal of Financial Economics, 13, pp.187-221.
17. Nguyen T.T, 2008. Capital structure, strategic competition, and governance. ERIM PhD Series, Haveka Publishing House.
18. Pandey, I.M., Chotigeat, T. and Ranjit, M.K., 2000. Capital structure choices in an emerging capital market: the case of Thailand. Management and Change, 4, pp.1-14.
19. Rajan, R. and Zingales, L., "What do we know about capital structure? Some evidence from international data", Journal of Finance, Vol. 50, 1995, pp. 1421-60.
20. Shah, A. and T. Hijazi. 2004. "The determinants of capital structure of stock exchange-listed non-financial firms in Pakistan, Pakistan Development Review", Vol. 43, pp. 605-618.
21. Sogorb-Mira, F. (2005). How SME uniqueness affects capital structure: Evidence from a 1994–1998 Spanish data panel. Small Business Economics, 25, 447–457.
22. Thies, C. F. and Klock, M. S. (1992). Determinants of Capital Structure, Review of Financial Economics, 1(2), 40-53.
23. Titman, S. and Wessels, R., 1988. The determinants of capital structure choice. Journal of Finance, 43, pp.1-19.
24. Van der Wijst, N. and Thurik, R. (1993). Determinants of Small Firm Debt Ratios: An Analysis of Retail Panel Data, Small Business Economics, 5, 55-65.