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DETERMINANTS OF CAPITAL STRUCTURE: AN EMPIRICAL STUDY ON VIETNAMESE LISTED FIRMS

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Abstract

This paper aims to explore the capital structure of listed Vietnamese companies in an updated context of financial development (the recent situation of domestic equity and debt capital market). By applying Random Effect model for panel data, we analyze 05 firm-specific and 01 country-specific determinants of capital structure based on the data set of 228 firms listed on Ho Chi Minh Stock Exchange during the period 2010 – 2014. The results indicated that The Pecking Order theory better explains the financing behaviors of Vietnamese listed firms. Accordingly, although in recent years, Vietnam's equity market and corporate debt capital market have evolved considerably, the capital structure of Vietnamese companies are still dominated by the use of short-term financing sources. High-growth firms or large-sized firms still rely heavily on external debt rather than equity issuance while State-owned enterprises (SOE) are reported to have positive association with the use of long-term financing sources. This study proposed some recommendations to the policymakers in two dimensions: improving the efficiency and role of capital markets to mitigate the reliance on short-term funds and ensuring that bank finance is allocated on a commercial basis.

Keywords: Vietnam, capital structure, capital structure theories, random effect model

1. INTRODUCTION

Building capital structure is still an open issue since many managers do not put as much effort and concern as they should have done. "Managerial theory" as posited by Myers (1984) suggests that managers might follow some financing patterns which have no material impact on firm's operation or firm value. But this theory is not able to explain all financing behaviors and the relationship between capital structure and firm values.

The need for insight into the capital

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structure of Vietnamese companies is apparent; however, the extant literature is lacking in any substantive studies addressing this issue. Previous researches on the capital structure of Vietnamese enterprises are limited to some country specific studies such as Nguyen and Ramachandran (2006), Okuda and Lai (2012) and Nguyen et al, (2014). However, the first paper scrutinized the capital structure of unlisted companies in the period 1998 – 2003 while the other 02 papers only examined the period up to 2010. Thus, currently, there are no studies of Vietnamese companies with updated data which considers post-financial crisis period and takes into consideration the impact of Equitization scheme of State-owned enterprises initiated by the Government since 2011.

Table 1 summarizes some Vietnamese indicators of the equity market. The data suggests that equity capital has become an important channel for financing of Vietnamese firms. From the very modest beginning of 5 enterprises with a total market capitalization of 3 billion VND, there are now 670 firms listed on 2 Stock Exchange (Hanoi and Ho Chi Minh) with the market value of 1,121 billion VND making up 28.5% of GDP as of December 2014. However, the Vietnamese equity market has features of a new and underdeveloped market such as high volatility, herding behaviors and the issue of information transparency. The equity market thrived rapidly in the number of listed firms, from 41 firms in 2005 to 193 firms in 2006 and to 253 firms with capital capitalization constituting 43% GDP in 2007. Nevertheless, the impact of the global crisis on Vietnam became apparent as the market lost half of its value while the number of listed firms increased in 2008.

The bond market, meanwhile, is at a more primitive stage of development in comparison to the equity market. Commercial banks (providing bank loans) are still an efficient and preferred source for debt, especially middle-sized enterprises and SME. In 2013, institutional customers occupied 66% of bank credits and of the 300,000 middle and small-sized enterprises surveyed, bank loans constituted 80% (ViettinbankSc 2013). Regarding bond issuance, the overwhelming majority of outstanding bonds are issued by the Government while corporate bond accounts for a very modest portion. To be illustrated in Table 2, at the end of the second quarter of 2014, outstanding corporate bonds were 0.6 US$ billion, accounting for 1.6% of outstanding bonds and equivalent to 0.3% of GDP. It is noteworthy that in Vietnam the proportion of corporate bond issuance to total bond issuance is well-below the average proportion of other countries in Southeast region (Asian Development Bank, 2014).

In detail, this paper will answer the

Table 1.Vietnamese indicators of equity market

	2005	**2006**	**2007**	**2008**	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**
Listed firms	41	193	253	338	453	642	694	704	678	670
Market capitalization (billion VND)	3	221	495	205	621	723	538	765	949	1121
Market capitalization /GDP (%)	0.4	22.7	43.2	13.9	37.5	36.5	21.2	23.6	26.5	28.5

Source: Number of listed firms and market capitalization on HSX and HNX;
GDP from General Statistic Office of Vietnam

Table 2. Size and composition of local-currency-denominated bond

	2Q13			1Q14			2Q14		
	Outstanding amount (USD bn)	Share in outstanding amount (%)	Outstanding amount/GDP (%)	Outstanding amount (USD bn)	Share in outstanding amount (%)	Outstanding amount/GDP (%)	Outstanding amount (USD bn)	Share in outstanding amount (%)	Outstanding amount/GDP (%)
Total	27	100.0%	16.5%	35.6	100.0%	20.4%	36.6	100.0%	21.1%
Government	26	96.3%	16.0%	35	98.3%	20.0%	36	98.4%	20.8%
Corporate	1	3.7%	0.5%	0.6	1.7%	0.4%	0.6	1.6%	0.3%

Source: Asia Bond Monitor, September 2014

following research questions:

(1): Which determinants affect capital structure and financing pattern of Vietnamese listed firms?

(2): Do universally observed determinants of capital structure have effect on Vietnam firms' financing behaviors?

(3): Does country-specific factors (OWNERSHIP) affect leverage of SOEs?

(4): Which capital structure theory (The Static Tradeoff Theory and The Pecking Order Theory) better explains the leverage in case of Vietnam?

2. LITERATURE REVIEW

2.1. Capital structure theories

2.1.1. Modigliani and Miller capital structure theory (MM theory)

In 1958, two famous Nobel laureates, Franco Modigliani and Merton Miller, set the background for later researchers by the introduction of the Miller-Modigliani irrelevance model (hereafter known as M&M theory) – (Modigliani & Miller, 1958).

Basically, the authors argued that given some specific assumptions, a firm's financing choice has nothing to do with its value. This ideal is illustrated as a pie model, no matter how it is sliced; the size of the pie is unchanged. The value of the levered and unlevered firm is denoted as V_L and V_U, respectively, so the irrelevance theory comes up with an equation: $V_L = V_U$.

In 1963, Modigliani and Miller published a second paper that explored the effects of corporate taxes, a modification from the original paper (Modigliani & Miller, 1963).

With respect to corporate taxes, the authors concluded that leverage would increase a firms' value. This occurs because interest is a tax-deductible expense; hence more of a levered firm's operating income goes to investors. Assume TC stands for the corporate tax rate and D is the amount of debt. The equation for the "corrected" M&M theory considers the tax benefit of interest: $V_L = V_U + T_C \times D$. As shown in the equation, the inclusion of taxes changes the conclusions from their original paper and indeed, taxes do have effect on the capital structure of firms. Ironically, the optimal capital structure is solely from debt.

2.1.2. The static theory of capital structure (The Static tradeoff theory)

The static tradeoff theory incorporates financial distress costs and agency costs into the M&M model with corporate taxes

(Jensen & Meckling, 1976; Jensen, 1986).

A static tradeoff theory argues that a firm may set a target debt-to-value ratio where the tax benefit from an extra dollar in debt is exactly equal to the cost from the increased probability of financial distress, and the firm can move gradually to that target. Or in other words, a firm trades off the benefits of debt financing (favorable corporate tax treatment) against higher interest rates, financial distress related costs and agency costs.

Bankruptcy costs (either direct or indirect bankruptcy costs) discourage firms from borrowing excessive level of debt. Direct bankruptcy costs include legal and administrative expenses and indirect bankruptcy costs include the costs of avoiding a bankruptcy filing, the loss of confidence by customers, suppliers and employees and the more stringent inspection and supervision of competent authorities. It is notable that the threat of bankruptcy causes many of the same problems and these costs are large enough to erode the firm's value even if the bankruptcy is avoided or has not come yet.

Apart from the tradeoff of tax benefits against bankruptcy-related costs, the firm has to choose the tradeoff of other costs and benefits relating to agency conflict or agency costs arisen if managers and shareholders have different objectives. For instance, the Free cash flow theory of Jensen (1986) states that if a firm generates too much free cash flow then the managers may misuse or waste money for personal purposes and other useless expenditures which are not beneficial for the firm and the shareholders' rights. Under such circumstances, the firm can reduce excess cash flow by either paying higher dividends or stock repurchases or acquiring more debt in their capital structure. The "control hypothesis" (Jensen, 1986) stated that debt creation can mitigate the agency conflicts since debt obligations will bond the promise to pay out future cash flow and force managers to be more disciplined and careful otherwise the firm may face the threat of bankruptcy.

2.1.3. The Pecking Order Theory

The Pecking order theory includes transaction costs and asymmetric information with a view to explaining firms' financing behaviors. The Pecking order theory argues that firms set no target capital structure, instead, it explains why firms strongly favored internal funds, and then when they use up all internal funds, they may seek external funds such as debt instruments or new stock issuance.

Myers (1984) first mentioned the simple asymmetric information model which was explained in detail later on in the joint paper between Myers and Majluf (1984). Since managers know internal information, the announcement of equity or debt instrument issuance may signal information about the company's prospect for the investors. That is, stock issuance may be perceived as an indication of overvaluation, so signaling bad news and debt issuance usually conveys managers' prospective outlook about the future of the firm. Therefore, asymmetric information associated with additional stock issuance signalling bad news also creates another potential cost: the possibility that the firm will not have enough cash to finance the project due to the decision on not issuing additional stock and thus turn down a positive- NPV project.

Another cost of new stock issuance is *Transaction costs* including underwriting expenses, expenses on filing and disclosure, under-pricing of the new securities as well as

the possibility of a decline in the existing share price as of the issuance announcement. These costs can be a reason why firms are reluctant to choosing stock issuance.

Combined asymmetric information costs and transaction costs, "modified pecking order" (Myers, 1984) states that:

- Firms prefer internal funds since they do not want to be put into the dilemma of either turning down positive-NPV projects or selling their new stock too cheaply.
- There must be a connection between dividend policy and financial policy so that the normal rates of equity investment can be met by internal funds
- Firms also maintain a safe debt level to (1) avoid material costs of financial distress, (2) reserve borrowing capacity so that debt can be used in case of especially good investment opportunity, thus firms sometimes issue common stock, though they are capable of issuing debt instruments.

2.2. Empirical research

A wide range of empirical research has been carried out to examine the validity of capital structure theories, especially the Static Trade-off Theory and the Pecking Order Theory. In this section, I review past empirical analyses of the capital structure in international cases and Vietnamese cases.

2.2.1. International research

The capital structure studies are often undertaken on the form of international analyses. They examine the impact of firm-specific and country-specific factors on financing patterns of firms in specific countries.

Some firm-specific factors which are regularly taken into account are profitability, earning volatility, growth opportunities, tangibility, corporate tax shield, non-debt tax shield, firm size, industry uniqueness (Titman & Wessels, 1988; Drobetz & Fix, 2005) and some macroeconomic factors such as inflation rate and capital market condition (Homaifar et al., 1994). Some studies examined firm-specific determinants of capital structure in comparison with some other countries (Wald, 1999) while others take into consideration country-specific factors such as the law enforcement, the protection of creditor rights and stockholder rights, the development level of stock market and debt market, either the bank-based or market-based financial system and other macroeconomic factors like GDP growth (de Jong et al., 2007).

Although those studies examined firms' characteristics of financing behaviors in different periods and in different countries, either in developed or developing nations, and used different measurements of factors; they did highlight the impact of firm-specific and country-specific factors on capital structure and the connection between theories and reality. These findings suggest that firms in countries having better legal context, a better-developed bond market and a more stable economy tend to acquire more debt than firms in other countries. Meanwhile, a more developed stock market encourages the use of equity (de Jong et al., 2007).

2.2.2. Vietnam research

Despite the abundant theoretical and empirical literature on capital structure, the shortage of research in the Vietnamese context is obvious. Vietnam is absent in international studies in developing markets. Only some country-specific papers

examining different periods starting from 1998 are available. Nguyen and Ramachandran (2006) explore the capital structure of small- and medium-sized firms for the period 1998-2001 and unlisted enterprises for the period 2002-2003, respectively. These studies provide evidence that Vietnamese firms rely heavily on short-term bank loan rather than equity since equity market in Vietnam just appeared at that time and the sample included unlisted small- and medium-sized firms so they did not have many choices of financing other than bank credit.

Two additional studies, which provide more up-to-date research on capital structure of Vietnamese firms, include papers published by Okuda and Lai (2012) and Nguyen et al (2014). Their findings are consistent with theoretical prediction. Both studies captured the similar time interval when the Vietnamese equity market witnessed its spike, thus yielding a quite similar result. Universally observed determinants are also applied in Vietnamese case, though the sign and magnitude somewhat vary. For example, analyses of Vietnamese case has cemented that profitability, tangibility and liquidity are important determinants of capital structure and their sign is consistent with that of international studies. Namely, profitability and liquidity are negatively associated with debt ratios, whereas tangibility is positively associated with debt ratios (de Jong et al., 2007). Growth opportunities of Vietnamese firms have positive relation with debt ratio, hinting that firms possessing many investment opportunities are likely to finance their capital by borrowings, which is completely incompatible with the international finding. In developed countries, high growth enterprises are inclined to finance their expansion through the equity issuance (Wald, 1999; de Jong et al., 2007).

In addition to prevalent factors, prior studies in Vietnamese case also examine a country-specific factor, represented by State ownership. They consistently show that SOE have more debt than private enterprises. More interestingly, Okuda and Lai (2012) reported that companies listed on Ho Chi Minh Stock Exchange are less dependent on borrowing funds than those listed on Hanoi Stock Exchange.

Some limitations in these prior studies on Vietnam capital structure emphasize the need for further research. First, research by Nguyen and Ramachandran (2006) focused on unlisted and small- and medium-enterprises in the period when the equity market was at the very first stage of development, thus it implied many issues related to the information transparency, market efficiency and legal enforcement. Secondly, although papers by Okuda and Lai (2012) and Nguyen et al (2014) captured a more updated period, when the equity market reached significant improvement, the period from 2006 to 2010 was likely to underlie inherent biases since an explosion of equity market in 2006 – 2007 or a negative shock like the global crisis might influence the equity market, thus indirectly influencing the firms' financing behaviors. Thirdly, in recent years, the Government has motivated the equitization of various State-owned industry-leading corporations, thus the question remains whether the subsequent enhancement of bond/equity market, coupled with the equitization of State-owned enterprises has altered the nature of capital structure in Vietnam.

3. METHODOLOGY AND DATA

3.1. Model specification

3.1.1. Dependent variables

Three measures of leverage ratios are used in this study.

- Total leverage (**TLEV**) equals Total liabilities divided by Total assets.
- Short-term leverage (**SLEV**) equals Current liabilities divided by Total assets. Current liabilities include short-term liabilities matured within 1 year, trade credits, etc. The inclusion of trade credits in short-term liabilities is important because in Vietnam, firms often take advantage of trade credit as a tool of short-term financing while they have to pay just a little or none to use others' capital.
- Long-term leverage (**LLEV**) equal Non-current liabilities divided by Total assets.

3.1.2. Dependent variables

Firms size (**SIZE**): Large firms tend to have many business lines and have diversified cash flows which reduce the possibility of bankruptcy (Titman & Wessels, 1988), and such firms are strictly supervised by competent authorities and the public so based on the Static Tradeoff theory prediction, firm size is positively associated with leverage ratios. However, with regard to the Pecking Order theory, transaction costs of small firms are relatively large compared to the issuance value because small firms tend to be exposed to more serious information asymmetry and lack of bargaining power. These problems make equity issuance more expensive for small firms. Therefore, the Pecking Order theory predicts that small firms have a preference for debt instruments over equity. International and domestic studies yield consistent results, that is firm size is negatively positive with short-term debts (Titman & Wessels, 1988; Homaifar et al., 1994; Nguyen et al., 2014).

Liquidity (**LIQ**) is an indicator of firm's ability to fulfill short-term debt obligations. Two capital structure theories have contrasting predictions of the relationship between liquidity and debt ratios. In particular, the Static Tradeoff theory suggests that firms with good liquidity condition leading to reduced liquidity crisis should take advantage of debt, while the Pecking Order theory emphasizes the internally-generated funds, claiming that firms first draw down their retained earnings, cash balance or marketable portfolio before any external financial instruments, thus liquidity is negatively related to debt ratios. Empirical results support the latter prediction (de Jong et al., 2008; Nguyen et al., 2014).

Growth opportunity (**GROWTH**): The Static tradeoff theory argues that firms with high investment opportunities do not prefer much debt since managers do not want too much intervention from outsiders and risks associated with their opportunities may increase the bankruptcy threats. It is noted that growth opportunities are capital assets that add value to the firms but it is too risky and cannot be collateralized. However, firms with many investment projects often exhaust their internal funds, so they have to acquire debt as a second-preferred financing source. In terms of empirical evidence, studies conducted in developed countries demonstrated a negative relationship between growth opportunities and leverage (Wald, 1999; Homaifar et al., 1994), whereas those conducted in developing countries

yielded a contrasting association (Nguyen & Ramachandran, 2006; Nguyen et al., 2014).

Tangibility (**TANG**): Both theories and empirical studies have confirmed the positive relation between tangibility and the gearing level (Jensen & Meckling, 1976; Wald, 1999; Nguyen & Ramachandran, 2006; Nguyen et al., 2014). Firms with more tangible assets compared to intangibles assets are more accessible to debt financing because they can collateralize tangibles assets to secure the debts, hence, acquire a lower cost of debt. By pledging assets as collateral, firms have fewer incentives to use the funds in wrong purpose; tangibility is believed to mitigate the agency cost and information asymmetry.

Profitability (**PROF**): On one hand, the Static tradeoff theory predicts that profitable firms should borrow more in order to take advantage of interest tax shield and the well-run firms are less vulnerable to bankruptcy threat. Moreover, the "control hypothesis" of debt (Jensen, 1986) may assuage agency conflicts in lucrative firms with generous free cash flow. Conversely, profitable firms have abundant internally-generated cash flow, thus they make it a priority to use these funds before any external funds. As a result, from the Pecking Order point of view, profitable firms are likely to borrow less. Empirical studies provide evidence ratifying the prediction of the Pecking Order theory both in developed countries and in Vietnam (Titman & Wessels, 1988; Wald, 1999; Nguyen et al., 2014; Okuda & Lai, 2012).

The ownership structure (**OWN**): Vietnamese equity market has experienced volatility because of the herding behavior of private investors, the information transparency and disclosure. Bank loans still dominate debt instruments because the bond market remains in the rudimentary stage of development. Under these circumstances, the capital structure may be contingent on the relationship of top managers with competent authorities and banks, as well as on risk taking of managers. Ownership structure is believed to positively associate with leverage ratios. Particularly, State-owned firms may be more easily accessible to bank credits, or can issue bonds and loans which are guaranteed by the State. Moreover, these firms can take the priority order when the Government grants financial supports. Two studies focusing on Vietnamese listed firms

Table 3. Summary of variables

Abbre.	Variable	Measurement	Reference
TLEV	Total leverage	= Total Liabilities/Total Assets	Nguyen et al. (2014)
SLEV	Short-term leverage	= Short-term Liabilities/ Total Assets	Nguyen et al. (2014)
LLEV	Long-term leverage	= Long-term Liabilities/Total Assets	Nguyen et al. (2014)
SIZE	Firm size	= Ln (Total Assets)	Homaifar et al. (1994); Wald (1999)
LIQ	Liquidity condition	= Current Assets/Current Liabilities	Nguyen et al. (2014)
GROWTH	Growth	= Percentage change in Total Assets	Titman and Wessels (1988)
TANG	Tangibility	= Tangible Fixed Assets/ Total Assets	Drebetz and Fix (2005); Nguyen et al. (2014)
PROF	Profitability	= Earnings before Tax/ Total Assets	Nguyen et al. (2014)
OWN	Ownership	1 = State-owned; 0= Not Stated-owned	Nguyen et al. (2014)

Table 4. Testable Hypotheses of Debt ratios

Variables	The Static Tradeoff	The Pecking Order
SIZE	+	-
LIQ	+	-
GROWTH	-	+
TANG	+	+
PROF	+	-
OWN		

by Nguyen et al. (2014) and Okuda and Lai (2012) have confirmed that State ownership does influence the capital structure of firms in terms of total debt ratio and short-term debt ratio. However, these prior studies had been carried out before a considerable change took place (that is the equitization scheme of SOE since 2011 so they might fall behind with the current situation.

3.2. The data set and basic statistic

The data used in this study are collected from audited financial statements from 2010 to 2014 of 228 Vietnamese non-financial companies currently listed on the Ho Chi Minh Stock Exchange (HOSE).

For the dependent variables, Table 5 reports tests for multi-collinearity. Pair-wise correlation coefficients are materially small. The average VIF (= 1.06) is very close to 1 and the tolerance statistic (TOL) for all independent variables is approximately 1.

In Table 6, it is reported that the averaged leverage ratios of Vietnamese firms in the 5-year interval including total leverage (TLEV) and short-term leverage (SLEV) is approximately 48%, and 36.8%, respectively, equivalent to those reported by Nguyen, et al. (2014) for the period from 2007 to 2010 (TLEV = 48% and SLEV = 37%). It is apparent that Vietnamese equity and bond capital markets are relatively underdeveloped; firms still rely heavily on short-term financing rather than long-term debt.

In terms of profitability, liquidity, tangibility and growth rate, during the period from 2010 to 2014, firms have a lower profitability (8.8%), liquidity ratio (2.2x) and growth rate (52.8%), a smaller proportion of fixed assets to assets (18.9%), than the sample used by Nguyen, Rainey, Gregoriou, (2014) covering the period for 2007 – 2010

Table 5. Correlation Coefficients between variables and VIF Coefficient – The TLEV Regression model

	PROF	LIQ	TANG	SIZE	GROWTH	OWN	TOL	VIF
PROF	1						0.951	1.05
LIQ	0.184	1					0.938	1.07
TANG	0.049	-0.130	1				0.910	1.10
SIZE	-0.085	-0.099	-0.037	1			0.972	1.03
GROWTH	-0.012	-0.026	-0.032	-0.005	1		0.998	1.00
OWN	0.077	-0.039	0.259	0.089	-0.018	1	0.918	1.09

Table 6. Basic statistic of the sample

	TLEV	SLEV	LLEV	PROF	LIQ	TANG	SIZE	GROWTH
Mean	0.480	0.368	0.113	0.088	2.197	0.189	20.777	0.528
Median	0.498	0.333	0.048	0.070	1.592	0.134	20.625	0.091
Maximum	0.967	0.962	0.667	0.728	25.879	0.962	25.228	406.312
Minimum	0.003	0.003	0.000	-0.647	0.072	0.000	18.610	-0.700
Std. Dev.	0.208	0.200	0.146	0.090	2.039	0.187	1.197	12.040
n	1140	1140	1140	1140	1140	1140	1140	1140

Table 7. Basic statistic of the State-owned firms

	TLEV	SLEV	LLEV	PROF	LIQ	TANG	SIZE	GROWTH
Mean	0.506	0.342	0.164	0.100	2.056	0.276	20.970	0.134
Median	0.529	0.274	0.088	0.084	1.428	0.187	20.801	0.091
Maximum	0.894	0.833	0.651	0.386	8.369	0.910	24.708	2.858
Minimum	0.088	0.059	0.000	-0.014	0.215	0.001	18.654	-0.700
Std. Dev.	0.214	0.208	0.177	0.081	1.527	0.233	1.272	0.303
n	270	270	270	270	270	270	270	270

(PROF = 10%, LIQ = 2.65x, GROWTH = 40%, TANG = 20%). The firms' growth rate over years is so divergent, implying the instability of the market.

Table 7 summarizes the descriptive statistic of SOE. Namely, SOE acquire higher amount of debt in proportion to total assets, leading to higher gearing ratios according to total leverage, long-term leverage and short-term leverage (TLEV = 50.6%, LLEV = 16.4%, SLEV = 34.2%).

Furthermore, the SOE's average growth rate and liquidity are both lower than those of the total sample (LIQ = 2.1x, GROWTH = 13.4%), yet the tangibility is higher (TANG = 27.6%), which means that SOE hold more fixed tangible assets while non-state owned firms have higher growth rates. This phenomenon is reasonable due to the fact that SOE dominate fixed assets -intensive industries such as construction and construction materials, electricity, natural resources and petroleum whose operation is stable and does not experience such rapid growth as private firms majoring in fast-paced growth industries like electronics and technology, drugs…

3.3. Research methodology

The sample used in this paper is the combination of cross-sectional data and time series data; the author undertook a panel analysis to fully exploit the richness of the data. The panel unit root tests (Im, Pesaran and Shin W-stat versus ADF Fisher Chi-square) considering both individual effects and individual linear trends conclude that the data is stationary at level, so we can apply the static panel data models.

Commonly used estimation methods for panel data are the Pooled Ordinary Least squared regression (Pooled OLS), the Fixed Effect Least-squares Dummy Variable (LSDV) and the Random Effect model (REM).

The LSDV model is the most commonly used method in the study of panel data since it allows for heterogeneity among subjects by allowing each cross section or time series (or both) has its own intercept value. However, there are some problems with respect to LSDV model. First, the LSDV includes dummy variables represented for each cross section (or time series if include the time effect), which may reduce numerous degree of freedom. Second, the LSDV approach may not be able to identify the impact of time-invariant variables. The sample used in this study is 228 companies for a 5-year period and the number of time series is much shorter than the cross sections, and one of the independent variable (OWN) is time-variant. As a consequence, the application of LSDV method in the event of this sample is not suitable.

The remaining two methods used in this paper are Pooled OLS and REM. The Pooled OLS method pools all observations and estimates the regression model on the basis of all observations without the inclusion of heterogeneity effect among cross sections and time series. The Random Effect Model (REM)'s idea is to express the heterogeneity effect into error term instead of intercept value. In order to decide which model is more proper, the author uses the Breusch – Pagan Lagrangian Multiplier test. The Null hypothesis in the Pooled OLS is more proper and the Alternative hypothesis in the REM is more proper. The result rejects the Null Hypothesis so RAM is more proper. The regression function for RAM is as follows:

$$TLEV\ (LLEV, SLEV) = \beta 1 + \beta 2*PROF + \beta 3*LIQ + \beta 4*TANG + \beta 5*GROWTH + \beta 6*SIZE + \beta 7*OWN + w_{it}$$

where $w_{it} = \varepsilon_{it} + u_{it}$; u_{it} is the idiosyncratic component of the error term and ε_{it} is the cross section error component.

4. RESULTS

Table 8 presents the results of the econometric analysis. The models for TLEV and SLEV have relatively high explanatory power (R^2 = 34.04% and 28.33%) compared to that of the model for LLEV which is only

Table 8. Regression results

Method: Panel EGLS (Cross-section random effects)

White period standard errors & covariance (d.f corrected)

Dependent variables	TLEV	LLEV	SLEV
Constant	-0.8567 (0.0000)*	-1.0561 (0.0000)*	0.2218 (0.2407)
PROF	-0.4221 (0.0000)*	-0.1486 (0.0002)*	-0.2793 (0.0000)*
TANG	-0.0127 (0.7478)	0.1757 (0.0001)*	-0.1900 (0.0000)
SIZE	0.0685 (0.0000)*	0.0542 (0.0000)*	0.0133 (0.1335)
GROWTH	0.0002 (0.00524)**	0.0002 (0.0000)*	-0.0001 (0.3134)
LIQ	-0.0232 (0.0007)*	0.0061 (0.0464)	-0.0295 (0.0008)*
OWN	0.0194 (0.4622)	0.0369 (0.0658)**	-0.0170 (0.5039)
R-squared	0.3404 (0.0000)*	0.1826 (0.0000)*	0.2833 (0.0000)*
Breush-Pagan LM	1196.44 (0.0000)*	1308.4 (0.0000)*	1219.37 (0.0000)*
n	1140	1140	1140

Denote: p-values are in parentheses; *,** indicates significance at 5% and 10%, respectively.

18.26%, implying that long-term finance decisions are driven by a boarder range of factors and the determinants affecting LLEV are different from those affecting SLEV.

These results also note that there are differences between three measures of leverage in terms of determinants. TLEV is negatively associated with PROF, LIQ and has positive relation with GROWTH and SIZE. For the LLEV ratio, all five determinants apart from PROF are positively related. LIQ and TANG are the only determinants that are shown to have influence in SLEV.

With respect to the profitability (PROF), three models have claimed a negative relationship with the debt ratios. In the model for TLEV and SLEV, the coefficient magnitude of PROF is the largest, meaning that profitability is the most influential determinant driving financing strategies, especially in short-term financing. This evidence provides the solid background for the prediction of the Pecking Order Theory. All other things being equal, profitable firms would prefer to use their internally-generated funds to finance for investment needs. This finding is also consistent with result from previous studies conducted on developed nations as reported by Titman and Wessels (1988), Drobetz and Fix (2005), Wald (1999) and de Jong et al (2007) or in Vietnamese case reported by Okuda and Lai (2012) and Nguyen et al. (2014).

Tangibility (TANG) is negatively associated with SLEV while positively associated with LLEV. While tangibility exerts the second largest effect on short-term debt ratio, just behind profitability; its impact on long-term debt ratio is the largest, implying it is tangibility that plays the most vital role on long-term financing. This result has fully reflected the reliance of Vietnamese debt instrument market including long-term bank loans and bonds on collateralized assets as a primary credit risk management in the context that the debt instrument market has inherent inefficiency, high information asymmetry and agency costs. The result is completely in line with theoretical prediction and empirical studies in international studies such as paper by Wald (1999) and de Jong et al (2007) and in case of Vietnam as reported by Okuda and Lai (2012) and Nguyen et al. (2014). Indicated in the former study, firms with few tangible fixed assets are likely to prefer short-term liabilities such as trade credit or short-term debt without collateral requirement.

The third determinant is the firm size (SIZE). SIZE is positively related to TLEV and LLEV. This finding has consistently been found by the papers analyzing developed countries (Wald, 1999) and Vietnam. Intuitively, firm size enhances total leverage in general and long-term borrowing as well. Large-sized firms often have diversified cash flows and are put under more stringent supervision and information disclosure regulations, so large firms are less likely to suffer financial distress threats and information asymmetry. In addition, firm size may result in bargaining power and large firms are more reputable and well-recognized by the public, so their bond issuance may be attractive to both individual and institutional investors. Firm size also enhances the long-term borrowing capacity from commercial banks. These reasons are attributable to the positive relation between TLEV and LLEV.

GROWTH is positively related to LLEV and TLEV at either significance level of 1% or 10% while shows no statistical relationship with SLEV because short-term creditors, say banks, are more interested in

liquidity which indicates the ability to meet short-term obligations than long-term prospect (growth opportunities). Additionally, trade credit which is considered to be a prevalent form of short-term financing in frontier markets like Vietnam is more likely to depend on liquidity situation, trading contract terms and the relationship of a firm with its trading partner. This finding is consistent with the result found by Nguyen et al. (2014). Meanwhile, in developed countries GROWTH is negatively associated with leverage (Titman & Wessels, 1988; Drobetz & Fix, 2005; de Jong et al. 2007). In fact, with mature and stable equity market, high growth firms tend to finance their investment needs through the equity issuance because of low level of information asymmetry and lower cost of equity. Thus, regarding the unified finding with prior papers in Vietnamese case (for the period from 2007 to 2010) has demonstrated the fact that over the past 10 years, Vietnam equity market development has been limited.

Regarding liquidity (LIQ), the results generally support the Pecking order Theory. Namely, in the model for TLEV and SLEV, LIQ has a negative relation since liquid firms are inclined to use accumulated cash and liquid assets as the first source to accommodate the investment projects before any external sources. When firms use up their reserved funds, they may obtain needed capital through the second-preferred source of fund which is debt.

With respect to ownership structure (OWN), OWN is positively related to LLEV at 10% level of significance. This finding can be derived from the following reasons:

- Firstly, State-owned firms are firms in capital-intensive industries such as construction and electricity, which possess large collateralized assets so they can acquire more long-term borrowing than other firms.
- Secondly, despite being equitized, these firms are still under dominant control of the State. In some events, the government can act as a tacit or actual debt guarantor, thus guarantees better access to bank credit or successful bond issuance.
- Thirdly, State-owned firms, due to operating in dominant industries, may be more easily accessible to another finance channel through the State's financial subsidy and support that prioritized specific industries.
- Last but not least, generally the banking system of Vietnam is subject to direct and indirect supervision and inspection of the government so listed State-owned firms which maintain good relationship with State-owned commercial banks and with Joint-Stock commercial banks and the government are likely to be prioritized for bank loans granting.

Nevertheless, prior studies by Okuda and Lai (2012) and Nguyen et al. (2014) examine the sample covering firms on both HSX and HNX and suggest the highly significant relationship between the State ownership and leverage (TLEV and SLEV).

5. CONCLUSION

This paper explored the capital structure of listed Vietnamese firms. The authors employed the Random Effect model to analyze the determinants of capital structure according to the sample of 228 non-financial firms listed on the Ho Chi Minh Stock Exchange for the period 2010 – 2014. The dependent variables which are 3 measurements of leverage including total leverage, long-term leverage and short-term leverage are regressed based on the various

firm-specific factors such as profitability, liquidity, tangibility, growth, size and a country-specific factor (state ownership).

Despite the remarkable development of equity and (to a lesser extent) corporate bond capital market, accompanied with the government's efforts to regulate the market transparency, fairness and efficiency in recent years, the capital structure of Vietnamese firms still dominantly rely on short-term borrowing and high growth firms prefer external debt rather than new stock issuance.

The author concludes that all dependent variables are relevant determinants that explain the capital structure. Namely, profitability and liquidity negatively affect leverage while growth and size are positively associated with leverage. The impact of other variables is diverse across different measurements of leverage. Tangibility has positive relationship with long-term leverage while has negative relationship with short-term debt. Ownership is positive and statistically significant with long-term debt at the significance level of 10%. Among all factors, profitability has the largest impact on the leverage ratios in general. Additionally, tangibility and size are important factors of long-term leverage whereas liquidity is more relevant to short-term debt.

As indicated in Table 9, The Pecking Order theory seems to better explain financing decision in Vietnamese firms.

The impact of country-specific factors like state-ownership confirms the importance of institutional factors in understanding capital structure. Further, these results pose some recommendations for the policymakers. First, due to the domination of external financing sources in the capital structure, it is suggested that Vietnam needs to continuously deepen equity market, not to mention the corporate debt capital market. Second, the fact that state-controlled enterprises have better access to debt instruments puts the purposes and efficiency of SOE equitization scheme in question. This scheme is anticipated to enhance the independence, operational efficiency and corporate governance of State-owned corporations through public supervision and disciplines. In other words, policymakers must make sure that bank finance is allocated in a purely commercial basis and that the capital is effectively used with the original purposes, serving the enterprises and generating added value to the society as a whole.

In addition, the relative immaturity of capital markets in Vietnam should be improve since the research on cross-

Table 9. The summary of findings relative to the theoretical predictions

	Predictions		Findings
	Static Tradeoff	Pecking Order	
SIZE	+	-	Positively related to TLEV, LLEV
LIQ	+	-	Negatively related to TLEV, LLEV, SLEV
GROWTH	-	+	Positively related to TLEV, LLEV
TANG	+	+	Negatively related to SLEV Positively related to LLEV
PROF	+	-	Negatively related to TLEV, LLEV, SLEV
OWN			Positively related to LLEV

countries by de Jong et al. (2007) shows that such macroeconomic factors do matter in guiding financial behaviors. Policymakers should reinforce the legal framework and ensure Vietnamese equity market and corporate bond market continues to develop even if the financial systems are bank-based. Such enhancements are likely to reduce asymmetric information, moral hazards and increase market disciplines and transparent information, which facilitates market efficiency and thus outsiders can make a right evaluation. This will not only protect stockholder/creditor rights but also give Vietnamese corporations a greater flexibility in financing by lowering the cost of capital. In other words, enterprises can better govern their capital structure regarding their needs and strategies rather than depend on legacy relationship with the banking system and capital is efficiently allocated and used.

References

Asian Development Bank. (2014). Asia Bond Monitor - September 2014. from http://www.adb.org/publications/asia-bond-monitor-september-2014

de Jong, A.D., Kabir, R., & Nguyen, T.T. (2007). Capital Structure around the World: The Roles of Firm- and Country- Specific Determinants. Journal of Banking and Finance, 32 (9), 1954-1969.

ОДРЕДНИЦЕ СТРУКТУРЕ КАПИТАЛА: ЕМПИРИЈСКА СТУДИЈА ФИРМИ РЕГИСТРОВАНИХ У ВИЈЕТНАМУ

Le Trung Thanh, Do Mai Huong

Извод

Овај рад има за циљ истраживање структуру капитала регистрованих компанија у Вијетнаму, у актуелном контексту финансијског развоја (тренутна ситуација домаћег акционог капитала и капиталног тржишта задужења). Применом модела случајног ефекта, анализиране су детерминанте специфичне за фирме, као и детерминанте специфичне за државу, које се односе на структуру капитала, на узорку од 228 фирми регистрованих на берзи акција у Хо Ши Мин-у, у периоду 2010 - 2014. Добијени резултати су показали да "The Pecking Order" теорија најбоље описује финансијско понашање компанија регистрованих у Вијетнаму. На тај начин, у скорашњем периоду су се тржиште акција као и тржиште корпоративних задужења, значајно развили, при чему су за структуре капитала вијетнамских компанија још увек најдоминантнији краткорочни финансијски извори. Фирме са великим растом, као и велике компаније, још увек се ослањају у највећој мери на иностраном задуживању, пре него на издавању акција; док се предузећа која су у власништву државе према својим извештајима позитивно односе ка употреби дугорочних финансијских извора. Ова студија је предложила неколико предлога доносиоцима прописа, у две димензије: унапређење ефикасности и улоге тржишта капитала како би се смањила зависност према краткорочним фондовима и обезбеђење да су банкарске финансије алоциране на финансијским основама.

Кључне речи: Вијетнам, труктура капитала, теорије стуктуре капитала, модел случајног ефекта

Drobetz, W., & Fix, R. (2005). What are the Determinants of the Capital Structure? Some Evidence for Switzerland. Swiss Journal of Economics and Statistics, 141 (1), 71-133.

Homaifar, G., Zietz, J., & Benkato, O. (1994). An Empirical Model of Capital Structure: Some new Evidence. Journal of Business Finance & Accounting, 21 (1), 1-14.

Jensen, M.C. (1986). Agency costs of Free Cash Flow, Corporate Finance, and Takeovers. American Economic Review, 76 (2), 323-329.

Jensen, M.C., & Meckling, W.H. (1976). Theory of the firm: Menagerial behavior, Agency costs and the ownership structure. Journal of Financial Economics, 3 (4), 305-360.

Modigliani, F., & Miller, M.H. (1958). The cost of capital, corporate finance and the theory of investment. American Economic Review, 48 (3), 261-297.

Modigliani, F., & Miller, M.H. (1963). Corporate Income Tax and the Cost of Capital: A Correction. American Economic Review, 53 (3), 433-443.

Myers, S.C. (1984). The Capital Structure Puzzle. Journal of Finance, 39 (3), 575-592.

Myers, S.C., & Majluf, N.S. (1984). Corporate financing and investment decisions when firms have information that investors do not have. Journal of Financial Economics, 13 (2), 187-221.

Nguyen, D.T.T., Diaz-Rainey, I., & Gregorious, A. (2014). Financial Development and the Determinants of Capital Structure in Vietnam. Journal of Southeast Asian Economies, 31 (3), 412-431.

Nguyen, T.D.K., & Ramachandran, N. (2006). Capital Structure in Small and Medium-sized Enterprises: The case of Vietnam. ASEAN Economic Bulletin, 23 (2), 192-211.

Okuda, H., & Lai, T.P.N. (2012). Capital Structure and Investment Behavior of Listed Companies in Vietnam: An Estimation of the Influence of Government Ownership. International Journal of Business and Information, 7 (2), 137-164.

Titman, S., & Wessels, R. (1988). The Determinants of Capital Structure Choice. Journal of Finance, 43 (1), 1-19.

ViettinBankSc. (2013). Industry Report: Commercial banking in Vietnam. from http://www.vietinbanksc.com.vn/News/2013/11/30/294174.aspx#

Wald, J.K. (1999). How firm characteristics affect capital structure: an international comparison. Journal of Financial Research, 22 (2), 161-187.