Factors Affecting the Financial Structure of Manufacturers Listed in Hochiminh Stock Exchange

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ABSTRACT

Corporate financial structure and its influential factors have attracted attention of numerous researchers and chief financial officers. The paper identifies these factors and introduces a model for measuring their influential level. The research was empirically conducted in 55 enterprises of the manufacturing industry (hereinafter referred to as manufacturers) in Vietnam in the period 2007-2011. The results show that manufacturers have a tendency to take out huge short-term loans and use them to finance fixed assets. The corporate size, the liquidity ratio, and an increment of fixed assets positively affect the debt ratio, whereas the business performance has negative effects. Therefore, the government and the SBV should develop facilitative policies to enable manufacturers, especially small and medium-sized ones with good performance, to mobilize capital on the stock market, and access medium and long-term loans of commercial banks.

Keywords: corporate financial structure, manufacturers, influential factors

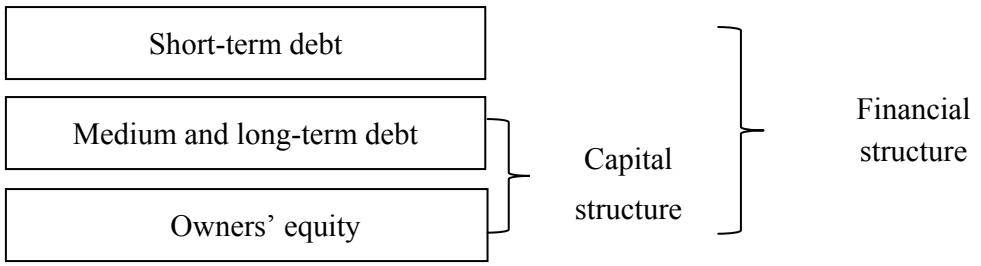
1. PROBLEM

A reasonable financial structure is very crucial in that it not only assures the sufficient liquidity but also utilizes positive impacts of the financial leverage to enhance the enterprise's value.

In the past decade, there have been numerous researches on the financial structure and related influential factors. Specifically, Nguyễn Ngọc Vũ (2003) focuses on listed enterprises; Trần Đình Khôi Nguyên and Ramachandram (2006) researched the case of small and medium-sized enterprises. Yet, empirical results are usually inconsistent depending on the scope of study and ways of estimating variabales. In this paper, the authors continue to analyze empirically factors affecting the financial structure of manufacturers listed in Hochiminh Stock Exchange (HoSE), which constitute a large percentage and hold the highest capitalization in the economy, as classified by HoSE.

2. THEORETICAL BASIS AND METHODOLOGY

a. Corporate Financial Structure and Determination of an Optimal Financial Structure:



Corporate financial structure is the combination of debts and equity within the gross capital source which an enterprise can mobilize to finance its operations.

Theoretically, due to the fact that the interest on the loan is exempt from tax, enterprises using debts can gain a better business performance than the utilization of equity by making the best use of debts as tax shelter. Yet, to a certain extent, an increment in debt can put an enterprise at risk and exposes it to other costs such as bankruptcy cost, and increased weight average cost of capital due to higher risks, etc. Consequently, the enterprise may become insolvent and teeter on the brink of bankruptcy. Building an optimal financial structure is to determine an appropriate

ratio of debts to owners' equity, optimize the enterprise's value, minimize the weight average cost of capital, and assure the enterprise's solvency.

An optimal financial structure depends on various factors, especially the following three groups of factors. The first group includes business size, business performance, assets structure, and the enterprise's growth pace. The second group concentrates on common features of the industry and specific characteristics of an enterprise. For instance, the manufacturing industry may bear a higher debt ratio; or for those with high business risk and rapidly-renovated products like the IT industry, to maintain a low debt ratio will keep its business safe and sound. Moreover, the enterprise's distinctive characteristics also have profound effects on formulation of an optimal financial structure. In this paper, the authors focus on identifying factors affecting the capital structure through an empirical research conducted in some enterprises of the manufacturing industry, and then recommend some issues to be considered before opting for a capital structure.

b. Factors Affecting the Corporate Financial Structure:

Theories of capital structure and several empirical researches allow us to put forward the following factors that affect the corporate financial structure:

- Business size: According to Modigliani and Miller (1958), the business size has a positive relationship with the debt because large-sized enterprises are rarely in danger of bankruptcy; and their bankruptcy cost, if any, is quite low. Additionally, compared to small-sized enterprises, large-sized ones possess low costs of debt and manipulation; suffer less asymmetric information and upheavals in their cash flows; and above all, they can easily access capital sources and use more debts to benefit from the tax shield.

- Business performance: The business performance is often evaluated on the ROA and ROE values. Even though there have been plenty of theoretical models to be developed after the research by Modigliani and Miller (1958), scientists involved have not reached an agreement about relationship between profitability and financial leverage.

- Asset structure: The asset structure is measured by the ratio of the gross fixed tangible assets to the gross assets. With regard to the relationship between the gross fixed tangible assets and the capital structure, many theories show that the fixed tangible assets have a positive effect on the debt leverage; and this can be explained by the theory of financial cost of bankruptcy. An enterprise with tangible assets of high

values utilizes more debts than those with high-value intangibles due to the fact that the former, in case of bankruptcy, bears a lower bankruptcy cost than the latter. Intangibles will become valueless when the bankruptcy really occurs.

- Growth pace: A high growth pace can boost the enterprise's use of debts. Yet, it also poses a lot of potential risks to the enterprise.

- Liquidity: The enterprise's liquidity ratio is measured by the ratio of current assets to the total current liabilities. The liquidity has both positive (+) and negative (-) effects on the capital structure. Enterprises with high liquidity ratio can employ more debts because they can repay loans on due date; and thus the liquidity has a positive relationship with debts. By contrast, enterprises owning plenty of liquid assets can use such assets to finance their investments; and hence the liquidity has a negative impact with the financial leverage.

It is possible to summarize the aforementioned influential factors in the following table.

Table 1: Factors Affecting the Capital Structure

Independent variables	**Dependent variables**		
	The ratio of total debt to gross assets	**The ratio of current liabilities to gross assets**	**The ratio of long-term liabilities to gross assets**
Business size Revenue Gross assets Owners' equity	(+)	(+)	(+)
Business performance ROA ROE Ratio of returns to gross revenue	?	?	?
Asset structure Ratio of fixed assets to gross assets	+	+	+

Liquidity			
Ratio of current assets to gross current liabilities	+/-	+/-	+/-
Growth pace			
Growth pace of gross assets	+	+	+

c. Research Data:

Data is collated from the financial statements of 55 manufacturers listed on HoSE in the period 2007-2011.

d. Research Model:

Due to a fact that each enterprise is a separate entity, its financial structure is affected by its distinctive features along with general factors. With assumption that each entity has its own distinctive features that can affect independent variables, the fixed effect model (FEM) will be estimated to analyze the relationship between residuals of each entity and the independent variables, and then to check and separate effects of such distinctive features (which remain stationary over time) from independent variables in order to measure net effects of independent variables on the dependent one. The random effect model (REM) is built on the hypothesis that the distinctive features of entities are random.

We have the following equation:

$Y_{it} = C_i + \beta_1 X_{1it} + \ldots + \beta_n X_{nit} + u_{it}$ (1)

where Y_{it} is the value of the dependent variable (debt ratio of the enterprise i at the time t); $X_{1it}, .. X_{nit}$ are the values of independent variables (factors affecting the financial structure of the enterprise i at the time t). C_i is the intercept of the enterprise i and it varies according to enterprise features or management policies and operations.

If C_i is constant, the equation (1) is of FEM. If $C_i = C + \varepsilon_i$ (with ε_i being the random error which has mean equaling zero and variance being σ_ϵ^2), the equation (1) is of REM

In order to select the best model, the Hausman test is employed.

3. DISTINCTIVE FEATURES OF THE FINANCIAL STRUCTURE OF VIETNAMESE MANUFACTURERS

a. Distinctive Features of Vietnamese Manufacturers:

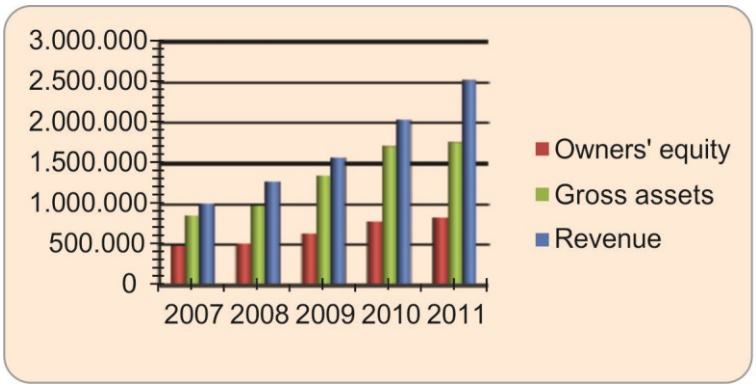
The manufacturing industry is affected by many external factors, especially technology and market share. Although Vietnam's economy in the period 2007-2011 encountered plenty of difficulties, the consumer goods market remained stable and facilitated the operation of manufacturing industry. In this period, the average growth of revenue of the manufacturing industry was prettily high, around 24.58% per annum.

Table 2: The Average Growth Pace of some Industries in the Period 2007-2011

Industries	The average growth pace of revenue	The average growth pace of owners' equity	The average growth pace of gross assets
Construction	16.05%	8.40%	15.48%
Transportation	32.20%	20.64%	35.65%
Agro-forestry and fishery	21.12%	16.61%	11.43%
Manufacturing	24.58%	17.18%	24.93%

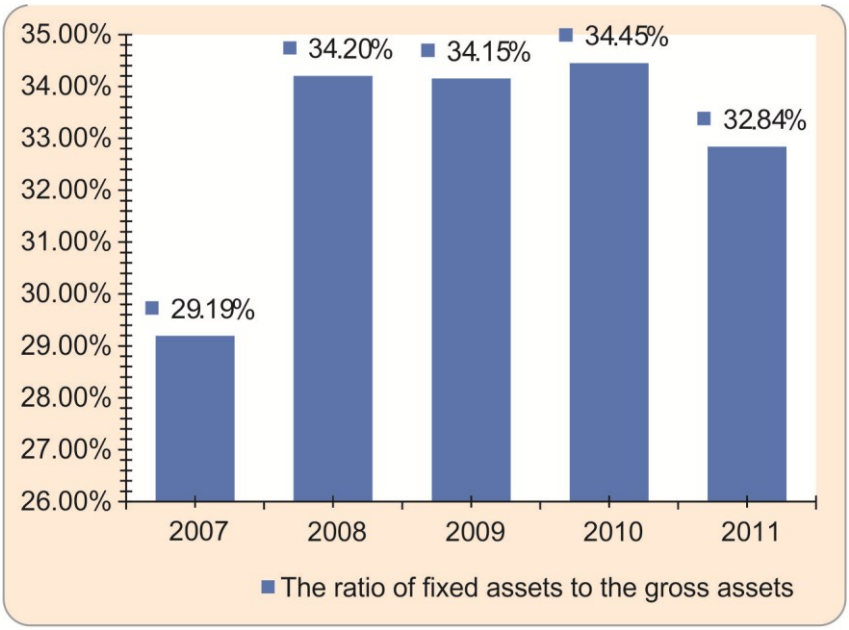
Source: Author's calculations based on data from surveyed manufacturers listed on HoSE

In terms of business size, the average business size of surveyed enterprises has ascended over years.



Source: Author's calculations based on financial statements of 55 surveyed manufacturers

Figure 1: The Average Business Size of Surveyed Manufacturers (VND million)



Source: Author's calculations based on financial statements of 55 surveyed manufacturers

Figure 2: The Average Ratio of Fixed Assets of Surveyed Manufacturers

Figure 2 shows that the average ratio of fixed assets of surveyed manufacturers as of 2008 ranged between 30% and 40%.

Table 3: The Ratio of Fixed Assets by Industries

Industries	The average ratio of fixed assets (%)
Manufacturing	34.45
Construction	19.26
Transportation	67.28
Agro-forestry and fishery	26.69

Source: Author's calculations based on data from surveyed manufacturers listed on HoSE

The above table renders that the ratio of fixed assets of surveyed manufacturers is pretty high, just behind the construction industry.

Table 4: Ratio of Fixed Assets to the Owners' Equity

Years	2007	2008	2009	2010	2011
Ratio of fixed assets to owners' equity	51.78%	65.23%	72.36%	74.40%	64.08%

Source: Author's calculations based on financial statements of 55 surveyed manufacturers

The ratio of fixed assets to owners' equity of surveyed enterprises is quite high (Table 4). Thus, in order to purchase fixed assets, enterprises must, besides owners' equity, resort to debts.

In brief, the size of Vietnam's manufacturers is quite large; the growth pace remains stable; and the ratio of fixed assets is high. This is to say, such enterprises can easily access loan capital, most of which are used for acquiring fixed assets.

b. Financial Structure and Debt trend of Vietnamese Manufacturers:

The average debt ratio of Vietnamese manufacturers is 40.35%. The ratio of short-term liabilities accounts for 90%, and the long-term one is low.

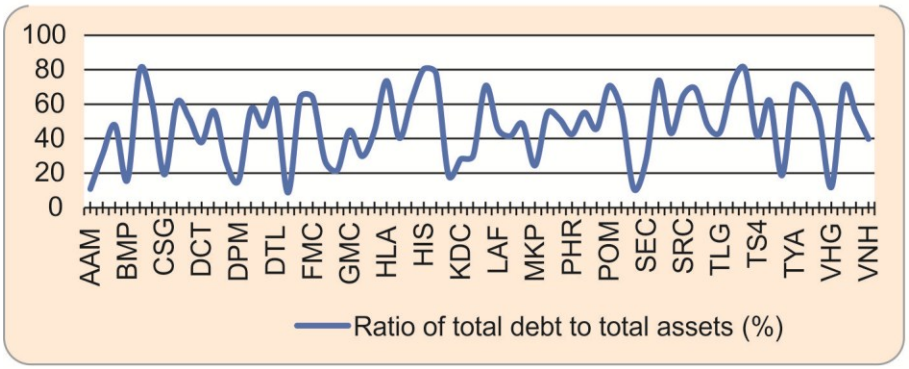


Figure 3: The Average Debt Ratio of Manufacturers in the Period 2007-2011

N.B.: The enterprise' name is its stock code.

Of 55 surveyed enterprises, 35 have the average ratio of total debt to total assets smaller than 50%. Of which, DTT, a small-sized enterprise with low ROA and ROE, and SBT, a large-sized enterprise with high revenue and good business performance, just have a debt ratio of 10%. Enterprises of this group mainly use the owners' equity to finance their operations. The remainder holds high debt ratios, varying from 50% to 80%, such as HIS and TRI with a debt ratio of 80%. They are two medium-sized enterprises with low profitability; and thus they have to resort to debts. In the

manufacturing industry, the difference between the debt ratio and the standard deviation reaches 20.01%. During the survey time, some enterprises such as BMP and RDP even adopted a stable policy on borrowing; others like CSG and VNH constantly altered their policies. This fact may affect operation and performance of enterprises until administrators work out an optimal financial structure.

The average ratio of total debt to owners' equity of surveyed manufacturers is 123%, reflecting a fact that these enterprises might bear a high pressure of payables and liquidity risk. In general, the ratio of total debt to owners' equity of most manufacturers is smaller than 100%. Yet for few enterprises, this ratio is even over 200%, such as HIS (410%) and POM (240%). This exorbitant ratio may expose enterprises to a high insolvency risk, and put them in the danger of bankruptcy.

However, if the ratio of total debt to owners' equity is too low as seen in the cases of DTT (9.5%) and SBT (12%), it can reduce the positive effects of the debt-to-equity ratio. Therefore, administrators should introduce an appropriate borrowing policy to enhance the business performance.

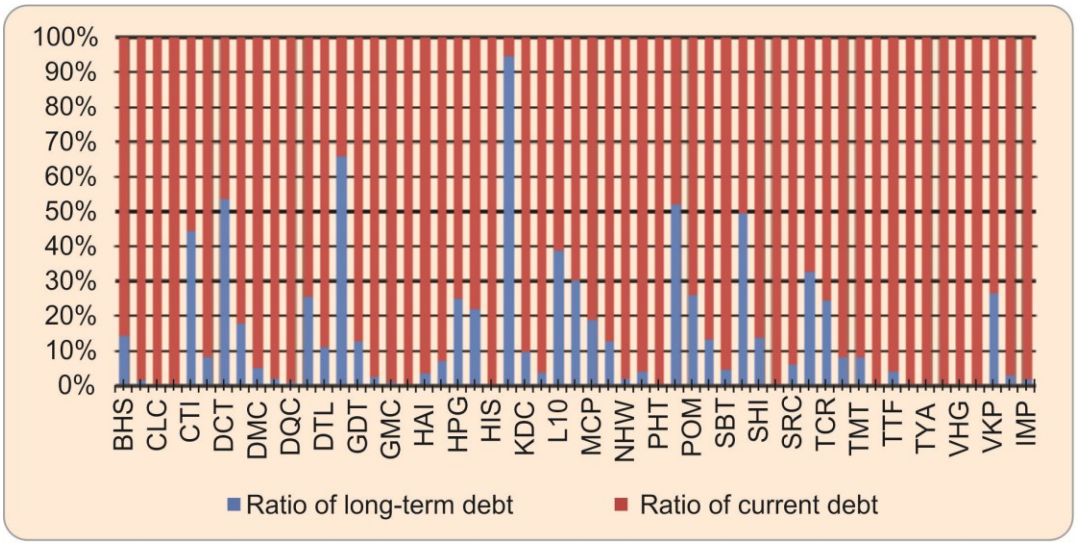


Figure 4: The Average Debt Structure of Manufacturers

Figure 4 shows that majority of Vietnam's manufacturers have recourse to short-term debts. The average ratio of long-term debt is quite low (around 8%), whereas the ratio of fixed assets is rather high. This implies that most manufacturers have used current debts to purchase fixed assets. Maybe, such enterprises have difficulty

accessing medium and long-term loans; yet, using short-term debts to acquire fixed assets may pose liquidity risk to them.

4. RESEARCH RESULTS

The statistical results show the larger the business size, the higher the debt-financed acquisition of fixed assets (see Table 5); and the poorer the business performance, the higher the debt-financed acquisition of fixed assets

Table 5: Summary of Factors Affecting the Financial Structures of Manufacturers

Variables	Trend of debt ratio in ascending order		
Business size	Under VND500bn	From VND500bn to VND1,000bn	Over VND1,000bn
Business performance (ROA)	Over 10%	From 5% to 10%	Under 5%
Asset structure (Ratio of fixed assets to total assets)	From 20% to 40%	Over 40%	Under 20%
Liquidity (Ratio of current assets to total current debt)	Under 0.5	From 0.5 to 1	Over 1

Source: Author's calculations based on surveyed enterprises' financial statements

Impacts of the ratio of fixed assets to total assets on the use of debts do not follow any rule. Manufacturers with the fixed assets ratio under 20% has the highest debt ratio while manufacturers with the fixed assets ratio above 40% has lower debt ratio than the former. Those with the fixed assets ratio ranging between 20% and 40% tend to have the lowest debt ratio. Vietnam's manufacturers in the past few years have faced numerous difficulties in accessing long-term loans. Manufacturers with high ratio of fixed assets tend to use owners' equity to purchase fixed assets; and thus their fixed assets ratio has negative effects on the debt ratio. Meanwhile, those with medium or low ratio of fixed assets tend to use short-term loans to acquire fixed assets, so the impacts of fixed assets ratio on debt ratio are positive.

In order to have a close look at how factors affect the corporate financial structure, Equation (1) will be used for determining whether it is FEM or REM. After dealing

with multicollinearity, autocorrelation, heteroskedasticity, and insignificant variables, the Hausman test is performed to opt for whether FEM or REM. The results show that FEM suits enterprises of the manufacturing industry.

Table 6: Results of FEM

Dependent variables / Independent variables	Ratio of debts	Ratio of current debt	Ratio of long-term debt
Business size log (Revenue [VND million])	+11.192* (4.123)	+5.239** (2.522)	+5.955** (2.355)
Business performance (ROA) (%)	-0.308* (0.090)	-0.227** (0.056)	-0.125*** (0.073)
Asset structure (Ratio of fixed assets to total assets) (%)		-0.415* (0.039)	+0.343* (0.049)
Liquidity (Ratio of current assets to the total short-term debt) (%)	+23.64* (2.340)	+26.35* (2.008)	
Growth pace (The growth pace of assets) (%)	0.932** (0.477)		1.236* (0.382)

N.B.: The parenthesized numbers are the standard deviation of parameters

*, **, *** respectively represent the statistical significance at 0.1%, 0.5% and 10%.

The results show that the debt ratio of surveyed enterprises, both current and long-term debts, is positively affected by the business size. A large-sized enterprise, in contrary to small-sized ones, enjoy stable capital flows, high liquidity ratios, efficient use of capital, and high prestige; and thus easily negotiates loan contracts, terms of settlement, interest rate, etc. In other words, such enterprises have more opportunities to access bank loans and other credit sources.

The debt ratio of surveyed manufacturers is not affected by the ratio of fixed assets. As shown in Table 5, the effect of fixed assets ratio on the debt ratio is various at different values. In other words, this effect is non-linear while the employed model is

linear. The model results prove that the ratio of fixed assets has a positive relationship with long-term debt and a negative relationship with short-term one. This is in line with the fact that the use of short-term loans to acquire fixed assets can result in liquidity risks. Meanwhile, enterprises with huge fixed assets can take out more medium and long-term loans because most of Vietnam's enterprises are merely able to access such loans of commercial banks which require mortgaged property before extending a long- or medium-term loan.

The business performance has negative effects on the debt ratio, including both current and long-term loan. This supports the pecking order theory, that is, an enterprise with good performance will have a great deal of retained capital to finance its business and resort to less bank loans. Furthermore, the results reveal that manufacturers are greatly affected by the business size, implying that medium and small-sized enterprises with stable profitability may also face difficulty in accessing bank loans.

The liquidity ratio has positive effects on the debt ratio and the current liabilities ratio but no effect on the long-term ones. The result is in line with the reality. Enterprises with high liquidity ratio own a higher debt ratio, mainly current liabilities ratio, than others due to a fact that they can meet the requirement for short-term repayment, an important matter of concern to banking organizations to assure the due repayment. Yet, the short-term liquidity has no relationship with the long-term debt ratio.

The growth rate has impacts on the long-term debt ratio but not on current ones. In fact, many of Vietnamese manufacturers can only secure long-term capital from commercial banks but not from the stock market; yet a bank loan, either a medium-term or a long-term one, requires a mortgaged asset. Hence, the long-term debt ratio is positively affected by the growth pace of assets.

5. CONCLUSION AND POLICY IMPLICATIONS

The paper has extended an explanation for the financing policy of Vietnamese manufacturers and simultaneously identified factors affecting such policies so as to pave the way for making an optimal capital structure.

The paper shows that although surveyed manufacturers have rather high ratios of fixed assets to owners' equity, they have faced difficulties in accessing medium- and long-term capital sources. The current liabilities ratio is high, yet they keep using

current liabilities to purchase fixed assets; and thus financial imbalance may be inevitable. Therefore, in the future, manufacturers should actively alternate their debt structure and boost regular capital sources including owners' equity and long-term liabilities in order to improve the financial autonomy and the liquidity. They can increase long-term financial plans such as financial lease, issuance of corporate bonds, etc. In order to help manufacturers gain access to long-term loans on the stock market, the government and the SBV should improve the stock markets and enable enterprises to mobilize capital from the stock markets by issuing capital-raising and debt instruments.

The results show the business size has positive impacts on the debt ratio whereas the business performance does not. This implies that small and medium-sized manufacturers with good performance may face difficulties in seeking capital to cover extant debts (i.e. loans extended by commercial banks which request mortgaged property). In March 2011, the Vietnamese PM issued the Decision 03/2011/QĐ-TTg on sponsoring small and medium-sized enterprises to obtain bank loans. Accordingly, the Vietnam Development Bank (VDB) can finance at most 85% of the project value after appraising the project and considering the financial competence of each party. This has enabled small and medium-sized manufacturers with good business performance to access bank loans. Yet in fact, such manufacturers hardly ask for the sponsorship of VDB. Hence, it is necessary to strengthen such sponsorship.

The empirical results show the business size, the growth rate and the liquidity ratio have positive effects on the financial structure while the business performance and the asset structure produce negative ones. Such effects can be partly explained by the pecking order theory, the static theory of capital structure by Modigliani and Miller, and theory of representative costs.

Due to the fact that the research is limited to manufacturers listed in HoSE, the representativeness is not high. Further researches can extend to other industries listed in other stock exchanges■

References

Financial statements of surveyed enterprises in the period 2007-2011, available at www.cophieu68.com.

Modigliani, F. & M.H. Miller (1958), "The Cost of Capital, Corporate Finance, and the Theory of Investment", *American Economic Review*, 48, pp.261-297.

Nguyễn Ngọc Vũ (2003), *Determinants of Capital Structure for Listed Firms in the Vietnam Stock Exchange Market*, Đà Nẵng University Press.

Nguyễn Trần Đình Khôi & N. Ramachandran (2006), "Capital Structure in Small and Medium-Sized Enteprises: The Case of Vietnam", *ASEAN Economic Bulletin,* Vol.23, No.2, pp.192-211.