Capital Structure and Banruptcy Risk Of Firms Listed On The Ha Noi Stock Exchange Of Vietnam

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Abstract: *This paper investigates the effect of the capital structure to the bankruptcy risk of the firms in Ha Noi Stock Exchange (HNX), using the data obtained from the financial statements of 246 listed of firms on the Ha Noi Stock Exchange during the years 2012 - 2015. The research applies Logit model for the evaluation and uses multiple regression with the data panel for the specified mirror prefix effect to the capital structure of the firms in HNX. The findings showed that the bankruptcy risk of the companies is correlated with the capital structure. Furthermore, there are three other elements affecting the bankruptcy risk: (1) Total Debt/Total Assets, (2) Return On Asset, (3) (Total Debt/Total Assets)^2, (4) sub-sector firms. Research results also show that the financing leverage is correlated with EPS, fixed assets /total asset, cost of goods sold/net revenue, sub-sector enterprises, but is inversely correlated with return on assets with statistics being 1%. Regrading to the findings, possible solutions to minimize the risk of bankruptcy for the firms listed on HNX are likely suggested.*

Key Words: *Capital structure, Bankruptcy risk, Logit model, Ha Noi Stock Exchange*

1. INTRODUCTION:

The capital structure is referred as the combination of debt and equity used to finance a firm's investment oppurtunities. Such combination can be a mix of debt and equity. Equity may be generated from the internally equity and new issue equity. However, what the best combination is still a debatable question for many researchers and practioners mind?

Pratheepkanth (2011) suggested that the relationship between captial structure and financial performance are one that established significant attention in the finance literature. In addition, the capital structure is a complex set of decision making choice for any firm (Myers, 1984) which is a significant tool where the firms have to maintain the control of its profit and loss through the possible combination of debt and equity of capital structure (Derayat, 2012). Firm's performance is another important issue which are concerned by the shareholders and creditors of the firms, particularly in the purpose of financial decision making leads to increase the value of shareholders of the firms (Bradley et al., 1984).

It is widely accepted that it is difficult for the firms to define the proportion of the equity and the debt in the optimal capital structure to maximize the profit, minimize the risk and the weight of cost of capital. It is significant that the optimal combination of equity and debt capital play a crucial role in obtaining goals of investors of the firm, and it has become meaningful for the firms to measure the effect of capital structure on performance which affects their capital structure decision making to achieve the firm objectives. The firms are geared to maximize business value. To achieve this goal, the firms must make several measures including the choice of a reasonable capital structure that is one of the critical measures and necessary. The capital structure is optimal capital structure in which the firm is the largest value, or in other words, the cost of capital is low and therefore also do maximize the value of your business. On the contrary, an unreasonable capital structure will negatively influence the activity of the enterprise, causing the difficulties and can lead to bancruptcy risk for the firms. In business, success can be repeated, and mistakes cannot be made. Thus, the analysis of capital structure and the relationship between capital structure and the risk of bankruptcy is urgently needed.

This paper is constructed into 5 parts. First part is the introduction. Second part illustrates the literature reviews on the capital structure studies. Methodology is presented in the third part. Fourth part shows the findings. Conclusion and recommendations regarding to the capital structure and other factors affecting on the performance of firms will be on the last part.

2. MATERIALS:

2.1. Capital structure theories

2.1.1. Trade off theory

This theory stated that a company chooses its capital structure by balancing the costs and benefits of equity and debt. Traditionally, Kraus and Litzenbeger (1973) suggested that there should be a balance between the dead

weighted cost of bancruptcy and the tax saving benefits of the debt. Agency cost can also be considered as a part of it. The theory also illustrates the fact that there is an advantage of using debt as source of financing in the form of tax benefit and there is a cost of financing capital structure with debt, there is the cost of financial distress in the form of bankcruptcy cost of debt and non-bankcruptcy costs. As debt increases the marginal cost of debt increases while the marginal benefits of debt declines, therefore the firm, which is optimizing its overall value, should concern this trade-off when chosing between debt and equity as a source of finance.

2.1.2. Pecking order theory

This theory was proposed by Donaldson in 1961 and was modified by Meyers and Nicolas in 1984. This theory suggested that a company should prioritize its source of financing first from internal financing and then moving on the equity, considering the cost of financing raising money from equity shold be company's last option. Therefore, internal funds should be used first and when it is not sufficient the debt should be issued. After issuing the debt if a company needs more fund and if its not a sensible to issue more debt the equity should be issued. Managers have known very well about the company prospects, its risk and value than its investors. This leads to the asymmetric information problem, affecting the choice between internal and external source of financing. This validates the existence of pecking order theory while choosing the source of financing. As a company issues debt over equity it implies that board is condifent that the investment project is profitable and this will impact favorably on its share price. Nethertheless, issuing equity presents that the board is not confident enough for the project and it can affect negatively on the current stock price of the company. As a result, the investors think that managers want to take the advantage of the overvaluation of their shares, hence placing a lower value for the new shares. However, this theory has some exceptions, for instance, I does not apply to high technology industries where the board prefers to issue equity because of the high cost of debt.

2.1.3 . Market timings theory

The market timings theory suggests that the firms issue new stock as the stock price is overvalued and buy back their shares in times of undervaluation. Therefore, the stock prices can influence the firm's capital structure. It is widely accepted that the capital structure dynamics can be driven by two versions of equity market timings. Firstly, it considers the economics agents to be rational. Normally, the firms issue equity directly over positive information this reduces the asymmetry conflict between the management and stockholders. As decrease in information asymmetry coincides with an increase in stock price the firms generate their own oppurtunities. Secondly, it assumes economic agents to be irrational (Baker and Wurgler, 2002). Base on this theory, a time-varying mispricing of stock of the company arises due to the irrational behavior. The presence of an irrationally low cost results managers to issue equity and on the other hand the presence of irrationally high costs leads to repurchase of equity.

2.2. Literature Reviews

There are a number of previous studies of capital structure and profitability. Among others, Derayat (2012) investigated the relationship between capital structure and profitability of 135 companies listed in Tehran Stock Exchange for a period from 2006 to 2010. The findings stated that there is a positively significant relationship between capital structure and profitability of the companies. Moreover, Nimalathasan and Brabete (2010) studied the impact of capital structure in profitability in randomly selected thirteen lested Manufacturing companies in CSE of Sri Lanka for period of 05 years from 2003 to 2007. He found that capital structure measured by debt to equity is positively and strongly associated with profitability in terms of gross profit margin, operating profit margin and not profit margin. In constract to above study, Prahalathan and Ranjani (2011) examined the impact of capital structure on firm's performance in Sri Lanka. Data were collected from 65 list Sri Lanka companies listed on CSE for the period from 2003 to 2007. The findings showed that capital structure found to have significant negative influence gross profit margin. Similarly, Pratheepkanth (2011) suggested that the relationship between capital structure and financial performance is negative. Contracdicting to Derayat (2012), Olufunso et al (2010) revealed that the usage of debt in small and meidum enterprises of manufacturing industry in the Buffalo City Municipality of South Africa has a signifcantly negative effect on their profitability when he investigated the impact of usage of debt on the profitability of 45 small and medium enterprises (SMEs) in the given location and the data were collected over the period from 2005 to 2006. Gill, et al., (2011) sought to extend Abor's (2005) findings regarding the effect of capital structure on profitability by examining the effect of capital structure on profitability of the American service and manufacturing firms. The empirical results of the study show a positive relationship between short-term debt to total assets and profitability and between total debt to total assets and profitability in the service industry.

Furthermore, Makunyi (2011) did a study on the relationship between working capital investment policy and profitability of manufacturing firms in Kenya and concluded that no relationship exists between the working capital investment policy and profitability. Another study of Mose (2011) on the relationship between capital structure and financial performance of microfinance institutions in Kenya found that outreach and portfolio size had a positive effect on financial performance of MFIs in Kenya. In addition, Kweri (2011) investigated the relationship between working capital management and profitability of manufacturing firms listed at the Nairobi Stock Exchange and concluded that working capital management affects profitability of the company and if the firm can effectively

manage its working capital, it can lead to increasing profitability. In the same year 2011, Caffaso in her study on the relationship between working capital management financing policy and profitability among manufacturing firms in Kenya concluded that there was negative relationship between ROA and financing working capital policy. Peviously, Zulqar & Mustafa (2007) examine the relation between capital structure and performance of firm. Result shows that there is a relationship between capital structure and firm performance. Furthermore, Tapanjeh (2006) examined the relationship between firm's structure and profitability by using data from 48 Jordanianlisted industrial companies at Amman Stock Exchange for a period of one decade, from 1995-2004. His findings showed that total debt to asset ratio proxy for capital structure has a positive significant ralation with return on equity whereas firm size illustrated significant negative relation with ROE thus stated that capital structure is a useful issue affecting on firm performance. FakherBuferna, KenbataBangassa and Lynn Hodgkinson (2005) investigated the determinants of capital structure of the firms Evidence from Lybia and provided empirical evidence for theories of capital structure. Independent variables which can explain for the capital structure were financial leverage report and explanatory variables were firm size, firm growth opportunities, and debt ratio of firm assets and profitability of the firm. The sample of this research was based on 5 years by treating the data from 1995 to 1999 for 55 companies. Selection of sample companies included in the framework of public and private companies. The sample included 32 public companies and 22 private companies. To test the relationship between debt level explanatory variables to those used econometric methods to the amount of small squares. Results showed that private companies have tended to rate the highest average growth and more assets than public companies. Otherwises, the findings indiated that private companies have higher levels of short-term debt than public companies, which means that private companies had the highest rate debt than the average public company.

3. METHODOLOGY:

Logit analysis, which is a widely used technique in the situation of the probability of a dichotomous outcome, is based on a cumulative probability function, provides the conditional probability of an observation belonging to a certain class without requires independent variables to be normal, and it considers all the perspective factors in a problem solved simultaneously. The feature of this type model is that it does not assume multivariate normality and equal covariance matrices as discriminant analysis do (Chi and Tang, 2006).

The Logit Loglinear Analysis procedure analyzes the relationship between dependent (or response) variables and independent (or explanatory) variables. The dependent variables are always categorical, while the independent variables can be categorical (factors). The weighted covariate mean for a cell is applied to that cell. The logarithm of the odds of the dependent variables is expressed as a linear combination of parameters. A multinomial distribution is automatically assumed; these models are sometimes called multinomial logit models. This procedure estimates parameters of logit loglinear models using the Newton-Raphson algorithm.

The selection of predictors for bankruptcy prediction model is the most burdensome aspect due to financial theory does not indicate which invariable should be involved in (Theodossiou, 1991). According to Hair et al (1998), the forward stepwise procedure, the most popular search method for development of bankruptcy prediction model, is useful when researcher attempts to consider a relationship between large numbers of independent variables for inclusion in the function. In this procedure, the significance of the score statistics and the probability of a likelihood-ratio statistic based on the maximum partial likelihood estimates are used to determine which variables to enter or drop from the model in SPSS software.

Logit analysis with forward stepwise regression in employed to construct predictive models in this study. In application of bankruptcy prediction, the dependent variable status has two outputs: 0 is denoted as bankrupt firms, 1 is denoted as healthy firms (Liao, 1994). Thus, a Logit model used for bankruptcy prediction is related to a set of potential predictor variables in the form below (Hosmer and Lemeshow, 1989; Pampel, 2000):

$$Log\left|\frac{P(E)}{1-P(E)}\right| = \beta_0 + \beta_1 X_{1i} + \beta_2 X_{2i} + ... + \beta_n X_{ni} \qquad \textbf{(1)}$$

Where: P(E) probability of nonbankruptcy in the ith firm; β_0 is the intercept; X_{in} are the input variable; β_i are the coefficients of the nth input variables.

Thus, when expressed in Logit form, odds ratios of bankruptcy are defined as:

$$\frac{P(E)}{(1-P(E))}$$

Where P(E) is the probability of healthy (nonbankruptcy)

By solving P(E) through equation (1), the predicted probability of healthy firms can be described as:

$$P(E) = \frac{e^y}{1+e^y} \qquad (2)$$

Where: e is the base of nature logarithm.

To classify sample firms into two subgroups, the logit(y) value of each firm can be computed based on the estimate model and then apply to the probability function (2).

4. FINDINGS AND DISCUSSIONS:

The content of this section will explore the influence of the capital structure for the risk of bankruptcy. In the logit model, this topic is used to identify the factors that influence the risk of bankruptcy of enterprises listed on the HNX. Results of Logit model to determine the effect of capital structure for the bankruptcy risk showed in table 1.

Table 1. The effect of capital structure on the bankruptcy risk of firms listed on the HNX

Variables	Coefficients	P-value
Total debt/Total assets	33.412	0.012
Fixed asset/Total assets	0.101	0.331
Net profit/Total assets	-20.785	0.020
(Total debt/Total assets)^2	-24.750	0.016
Sub-groups of firms	13.219	0.089
Constant	-24.965	0.031
Observations		400
LR chi squared (5)		-59.872
Prob>Chi2		0.001
Pseudo R2		0.52

Source: Calculation from the Author

Based on the estimates of the variables in the model, the influence of the variables can be interpreted as follows. First, the total liabilities/total assets have statistical significance at the 5% level. The variable of D/A has a positive correlation with the risk of bankruptcy. The results confirm for the reality and economic theory that D/A ratio so high imply no business financial strength which mainly go to venture capital. This also implies the level of risk of bankruptcy of the business. This result is consistent with the study by Tran Hung Son (2008). Second, the capital structure did not have statistical significance issues affecting on the bankruptcy risk of the firms While the third variable, the net profit/total assets, are inversely correlated with the risk of bankruptcy with 5% significant level. This implies that an efficient business enterprises (in particular female the number of net profit/total assets), the probability of risk occurrence of this business can be decreased. The correct analysis results with the fact that any efficient business operations can make more profits, then the very least likely bankruptcy. This result is consistent with the study by Tran Hung Son (2008). Third, the debt ratio squared is negatively statistical significance at the 5% level correlated with the risk of bankruptcy. This means that when the debt ratio squared rising then the probability of risk occurrence of bankruptcy of enterprises decreased. Fourth, the variable sub-group has statistical significance at the 10% level. This shows that the financial industry, the business risk of insolvency is higher than non financial industry. The results of this study match research by Huang and Song (2002).

In summary, in the Logit model, there are three independent variables influence the risk of bankruptcy of enterprises at the 5% significance level that is: (1) Total liabilities/total assets, (2) net profit/total assets debt ratio and (3) Total debt to total assets squared. The other variables are not significant effect on the bankruptcy risk of firms listed on the HNX.

5. CONCLUSIONS AND RECOMMENDATIONS:

5.1 Conclusions

The paper investigates the effect of the capital structure to the bankruptcy risk of the firms in Ha Noi Stock Exchange (HNX), using the data obtained from the financial statements of 246 listed of firms on the Ha Noi Stock Exchange during the years 2012 - 2015. The research applies Logit model for the evaluation and uses multiple regression with the data panel for the specified mirror prefix effect to the capital structure of the firms in HNX. The findings showed that the bankruptcy risk of the companies is correlated with the capital structure. Furthermore, there are three other elements affecting the bankruptcy risk: (1) Total Debt/Total Assets, (2) Return On Asset, (3) (Total Debt/Total Assets)^2, (4) sub-sector firms. Research results also show that the financing leverage is correlated with EPS, fixed assets /total asset, cost of goods sold/net revenue, sub-sector enterprises, but is inversely correlated with return on assets with statistics being 1%. Regrading to the findings, possible solutions to minimize the risk of bankruptcy for the firms listed on HNX are likely suggested.

5.2. Recommendations

Besides, the macroeconomics factors also highly affect on the capital structure planning of the construction firms listed on the Hanoi Stock Exchange. Following are possible implications to mitigate the macro effects.

First, it is significant For the Vietnamese government to focus on the management to secure the macroeconomics policy in order to attract the national and international investors to invest in the economic

development such as Enhance the relationship between monetary and financing policies; Stable development within macroeconomics flourist, control inflation, secure the national financial issues; finalized the taxation and fees policies.

Second, it is widely accepted on the improvement of capital market. The limitation of capital market results of the restructuring firms of Viet Nam. In reality, bank credit can be best choice for the construction firms and issues the enterprises bond or rent the financial tools are less preferred by the construction firms. Therefore, the capital market should be developed by the modern ways with ideally structure including the stock market, bond market, derivatives market.

Third, it is significant to improve the the trading activities, merger and acquisition firms in order to restructuring the capital structure. To solve that, twofor issues need to be considered such as finalize the legal to provoke the international investors for example limit the foreign ownership, stock price transperancy, stock exchange times, the currencies. Moreover, improvement the trading skills, merger and acquisition knowledge for the CEO by the short training courses, seminars as well as establishment the consulting groups, brokers on merger and acquisitions.

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