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Vietnamese Firms' Possibility of Obtaining Credit and Capital Structure

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Abstract: Employing World Bank Enterprise Survey in 2005, the multinomial logit and OLS model are implied to understand the possibility of four loan statuses and similarities and differences capital structure of firms without bank loan and firms with bank loan. Testing Pecking Order Theory also gives different conclusion for each type of firms. Firms without bank loans have too high ratio of debt to total capital, therefore they mobilize capital by means of issuing equity. Investigation of the non-debt tax shield indicates that Vietnamese tax system is in favour of firms with bank loans than firms without bank loans and issuing equity. Northern Central is considered a better region for credit supply. From the findings, our study suggests that more research be focused on this area in order to have deeper understanding of the factors that facilitate bank loans which can be applied for businesses in other areas.

Keywords: Capital structure; credit access; firm characteristics; financial characteristics; POH theory

INTRODUCTION

Access to loans is a consideration not only for firms in Vietnam but also for those in advanced and industrialized economies. From the analysis of access to bank loan, do firms with bank loan or without bank loan have different characteristics of capital structure? The characteristics of firms and finance must be used in analysing firms' capitals. This is an opportunity to test Pecking Order Theory (POT).

The number of enterprises each year continues to grow during the last 10 years. In 2000, there were 14,453 newly established enterprises; this number was

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estimated to be more than seven times higher in 2010. Until December 2010, the total number of enterprises in Vietnam was about 520,000. According to the surveys in 2002 and 2005, shortage of capital was the most serious problem. Rand et al (2009) finds that access to credit in 2005 is more constrained than in 2002. It can be said that, firms' access of credit depends on the capacity of banking industry. On the other hand, if firms do not grow steadily and efficiently, it will be difficult for bank branches to be opened here. The amount of credit and deposits has constantly increased, and the total assets have grown annually, about 25 percent on average during the period of 2000-05 (Zavatta, 2008). The banking sector is currently undergoing large changes. According to the evaluation of World Bank, Vietnam ranks 21 of 183 countries in terms of credit obtainment in 2011 (World Bank, 2011).

Capital structure has long been controversial for many researches. Degryse et al. (2012) conclude that short-term debt is influenced by profit, whereas long-term debt is affected by asset growth. Moreover, long-term debt ratio is positively related with asset structure, and there is a negative correlation between short-term debt and asset structure (Sogorb-Mira, 2005). Bhaird and Lucey's (2010) analysis of a sample of 299 Irish small and medium-sized enterprises concludes that firms increase their use of internal equity when they develop over time, and Paul et al. (2007) find that small firms prefer equity to debt when external funds are required, which is contrary to POT theory.

The study complements previous studies on the capital structure of Vietnamese firms. An empirical study on Vietnamese firms' capital structure investigated 116 listed companies in the stock market, mostly with big companies (Nguyen et al., 2012). They applied theories of capital structure and analyzed SMEs in the context of financial development. Nguyen and Ramachandran (2006) investigated determinants of capital structure in Vietnamese small and medium enterprises with the number of employees fewer than 300 and/or a registered capital of less than 10 billion Vietnam dongs excluding foreign-owned or joint-venture SMEs and financial firms. For our study, we used data from World Bank Enterprise Survey in 2005 for productivity and investment climate. The main purpose of our research is to examine the probability of firms in obtaining bank loans and to investigate the similarities and differences of capital structure of firms with bank loans and those without bank loans. A look into the body of literature shows that few researches have been conducted to investigate the multiple borrowing statuses and hardly any comparison of capital structure has been done between firms with bank loans and firms without bank loans.

This paper is divided into five sections. Section 2 presents the major applied financial theories and reviews the empirical results which support or contradict these financial theories. Section 3 describes data and research methodology, and gives definitions of independent and dependent variables. Section 4 relates to the possibility of firms' capital access and capital structure of two different groups. Section 5 sums up these finding and gives suggestions.

There is a difference in status of firm borrowing. This status can be divided into four categories: (1) firms that did not apply for loans; (2) firms whose last application for loan was turned down; (3) firms whose application for loan is still

pending; (4) firm that has a bank loan. It is necessary to consider the characteristics of different levels in obtaining bank loans; this may help to identify the most vulnerable and the better chance for acquiring bank loans. Not to specify into four categories, we just consider two categories which are firms with bank loans and firms without bank loans. It is believed that examining the capital structure of each group will highlight the differences and similarities of financing patterns. Therefore, this study will firstly identify the different determinants of obtaining bank loans of each kind of borrowing status. Secondly the similarities and differences that determine short, long-term loans and equity of firms with bank loans and firms without bank loans will be analyzed.

The following sections discuss the relevant literatures to postulate hypotheses. Methodology and results follow. A conclusion has been drawn based on the findings.

REVIEW OF LITERATURES AND HYPOTHESES POSTULATION

Firm characteristics

Size of business is an important factor for all researches on management, financing, labor, etc. So we need to put size variable into the model. Theories and empirical evidences have shown the dichotomous outcome. Theory of Modiglianni and Miller (1958) implies that size does not influence a firm's capital structure. However, other studies reveal the relationship between size and financial structure which have used agency theory (Berger and Udell, 2004, Chittenden, Hall and Hutchinson, 1996). Previous studies conclude that there are positive relationship between firm size and leverage. However, Gill et al (2009) conclude that firm size is not significantly related with leverage. Short-term debts for SMEs are relatively constituted high proportion of total debt of Ghanaian (Abor and Biekpe, 2007) and statistically negatively related to firm size (Garcia-Teruel and Martinez-Solano, 2007). On the contrary, large firms may take advantage of economies of scale in attracting more debt, especially long-term debt (Sogorb-Mira, 2005). Based on these assertions, we can raise the following hypotheses.

H_{1a} : Firm size is positively related with volume of debt
H_{1b} : Firm size is negatively related with short-term debt
H_{1c} : Firm size is positively related with long-term debt and equity
H_{1d} : Firm size is significant related with probability of obtaining bank loans

Even though Vietnamese private enterprises contributed more than 40 percent of GDP, they only got 13 percent of the lending capital due to prolix lending procedures, corruption distorting policy, lack of capital, actual interest rate higher than real interest rate. The discrepancy between contribution of private sector and the amount of credit results that government and banking sector are in favour of state-owned firms. Moreover, China, Japan, Korea and Southeast Asia including

Vietnam recognize social relations in creating a strong degree of interpersonal trust (Yeung and Tung, 1996). Based on this argument, we hypothesize that:

H_2: Firms that previously have been owned by the government are associated positively with probability of obtaining bank loans.

Opposite to MM theory, Jensen and Meckling (1976) point out the different financial motivations of different groups of shareholders. Firms with high share of one shareholder may take entrenchment, so they lose efficient monitoring and control on managerial discretion. Entrenchment high chief executive officers create multiple agency costs of managerial direction resulting lower leverage (Lee et al (2010) and Chen et al (2005)). Thus our next hypothesis is:

H_3: Higher share of sole owner has less possibility of access to bank loans.

Businesses that have audit report, international quality certificate and export activities have proof for sustainability and growth for business prospects. Okura (2009) using the World Bank Enterprise Survey in China gives conclusion that the use of bank loan is more likely for firms with export rights, international quality certificate and export activity. The standard and stringent regulation and operation applied by banks are in favour of businesses with less information constrained. So, audit report, international quality certificate and export activities are the factors that support performance-based lending. Thus, our next hypothesises are:

H_{4a}: The higher the percent of domestic sale, the lower probability the business obtain.
H_{4b}: Firms not having audit report and international quality certificate are more likely to have limited access to bank finance.

Financial characteristics

Financial leverage calculated by ratio of bank debt to total assets is expected to have direct influence on the probability of firms' ability to access funds. There may be two ways to explain why a highly indebted firm may or may not face problems in obtaining additional bank loans. Firstly, the higher financial leverage, the larger volume of collateral are pledged, so the possibility to access funds is reduced wholly because of less collateral availability. In addition, businesses with higher financial leverage exert a low possibility of future payment. Thus, firms with high financial leverage are highly constrained in fund financing. Secondly, firms with high leverage ratio imply long and close relationship with banks, so those that moderately understand bank's requirements may have a long good history of borrowing. In this case, credit rationing for these businesses is less than firms with low financial leverage. Therefore, we propose the next hypotheses to test the correlation between financial leverage and ability to access funds in the case of Vietnam:

H_5: Firms with higher financial leverage are more likely to have limited access to an additional bank loan.

Tangible assets are as a proxy to solve the problem of information asymmetries between lenders and borrowers and to reduce the financial risk for lenders (Berger and Udell, 2004). Tangible assets or collateral significantly contribute to the solvency of firms, and give them high capacity of obtaining loans meaning that a positive relationship between collateral and probability of obtaining bank loans. However, the finding of Newman et al (2010) which is not consistent with both static trade-off and pecking-order theory, empirically conclude more or less fixed assets of Chinese small and medium enterprises not affecting finance operation. In addition, Chen's (2005) research about financial structure of Chinese listed companies also conclude that enterprise with higher proportion of intangible asset tend to hold more debt, though the effect was not statistically significant. Therefore, we propose the hypothesis:
H6. Firms with lower tangible assets are more likely to have limited access to bank finance.

There exists positive and negative relation between leverage and cash holding. Based on Pecking Order Theory, businesses deplete owned cash. When outside fund is necessary, businesses prefer debt to equity. Therefore if businesses borrow money from financial sources, there will be a negative relation between cash and long- term and short- term debt. But if businesses issue equity the sign of long/short term debt and cash will change. Consistent with POT, we propose the hypotheses:

H_{7a}: Long term debt will be positively related to cash holding
H_{7b}: Short term debt will be positively related to cash holding
H_{7c}: Equity will be positively related to cash holding

The empirical evidence and theory proposed various relations between NDTS and leverage. Sogorb-Mira (2005) researching SMEs in developed economies and Huang and Song (2006) researching larger Chinese firms conclude that firms with large non-debt tax shields have relatively low debts. Otherwise, other alternative model of Gill et al (2009) and Titman et al (1988) found no relationship between non-debt tax shield and leverage. However, Rajagopal (2010) shows negative and significant relationship between NDTS and long-term debt but spurious relationship between NDTS and short- term debt. Based on the pecking order theory, we therefore postulate the next hypotheses:

H_8: There is significant negative relationship between NDTS and leverage

Pecking order theory (POT) states that firms have a preferred hierarchy for financing decisions. Firm prefers to use internal financing (retained earnings and the effects of depreciation) than external funds because internal funds don't lose flotation cost and financial information of owned businesses which could affect

the competitive position. When outside funds are necessary, firms prefer debt to equity because of low information cost associated with debt issues, while equity is rarely issued. However, other empirical researches show somewhat differences. Huchinson (2003) conclude only the existence of strongly negative relationship between profit and short-term debt but no significant relationship between profit and long-term debt. Nguyen et al (2006) identify insignificant impact of profitability on capital structure of Vietnamese SMEs. In our research we use proxy earnings before interest and taxes (EBIT) and ratio of business profit to interest payment (RPRIN) to measure the effect of profit on leverage. Therefore we examine the relationship of whole Vietnamese businesses and find the differentiated aspect of each group.

H_{9a}: Long-term debt, short-term debt and equity are negatively related to EBIT and RPRIN.
H_{9b}: RPRIN is positively related to the firm's ability to access bank finance.

Region and Industry

Each region or each industry has private characteristics that can affect firms' possibility of attaining bank loan as well as determinants of firms' capital structure.

Firstly, firms within a particular region, facing similar financial institutions tend to adopt an analogous financing procedure. Despite government's promulgation of similar decree or financial support, the quality information channel and procedure for implication of each region are different. Financial gap exits due to inherent agency and asymmetric information problems (Peterson and Shulman, 1987). Petersen and Rajan (2002) observe that small firms are more likely to easily access capital in developed financial sector. Otherwise, firms' credit availabilities are determined by factors of demand and supply on many fronts. In case region presents new source of capital or high new bank branches, firms' credit availability is easier than other regions. So the capital structure of firms in each region largely varies. Accordingly, the following hypothesis is proposed:

H_{10a}: Propensity of access to finance in each region is more likely to differ.

Secondly, capital structure of each industry is influenced by tangibility asset, growth opportunity, business risk so firms in a given industry tend to have similar capital structure (Hatfield, 1994). This suggests that industry may have a different target capital structure. Balakrishman and Fox (1993) find that firms' effect and inter-industry differences influenced 52 per cent and 11 per cent of the capital structure variation respectively (Degryse et al, 2012). In addition, Balakrishnan and Fox (1993) discover that industry specific effects are less likely to influence capital structure than firms' specific effects (Mac an Bhaird, 2010). Banks may be in favour of industry sectors that are either growing or are supported by the government or have secured tangible assets. Byiers et al (2010)

find that food processing sector has significantly higher credit access than meta-mechanic and wood-furniture sectors. Consistent with the theoretical literature and empirical research, we postulate the next hypotheses:

H_{10b}: Firms with capital intensive are more likely to access capital than those with labour intensive.

METHODOLOGY

The analysis utilized data from World Bank Enterprise Survey whose objectives are to understand the investment climate in Vietnam and how it affects businesses' performance. Our study focuses on firms' capital access and capital structure of various borrowing statuses. The prominent point of these data is to provide information on firms' financial statements that were rarely surveyed in Vietnam. This survey covers 1150 firms of all sizes from 20 sectors across 5 regions in Vietnam. The advantage of World Bank Enterprise Survey 2005 is to supply net book value; therefore we can deeply analyze financial characteristics of various financial sources.

Our analysis included two stages. First we predicted the possibilities of firms' bank loan access in multinomial logit analysis, then we used ordinary least square (OLS) to test the similarities and differences of capital structure of firms with bank loans, firms without bank loans and firms in general. We analysed to what extent variables affect the probability of firms in obtaining bank loans. In general, most previous studies researching the ability of firms' bank loan access applied logistic or probit model with two kinds of firms: those having a bank loan and those not having a bank loan. In order to study specific firms' borrowing status that explained four possible outcomes, we applied multi-nominal logistic model to distinguish and derive simultaneous comparisons among the different borrowing status. The dependent variable is discrete and can take one of four values: (1) firms which did not apply for loans, (2) firms whose last application was turned down, (3) firms whose application was still pending, and (4) firms which have bank loans. The benefit of a multinomial regression is that we can have multiple interpretations for an independent variable in relation to different pairs of groups such as firms without credit request, firms whose last credit request was turned down, firms whose credit request was still pending and firms with bank loans. To understand the coefficient of each type of loan status, we use relative risk ratio is calculated according to the following equations:

$$\frac{P(y_i = j)}{P(y_i = 1)} = \frac{p_{ij}}{p_{i1}} = \exp\left(\beta_{1j} + \beta_{2j} x_i\right) \quad j = 2, 3, 4$$

$$\frac{\partial\left(p_{ij} / p_{i1}\right)}{\partial x_i} = \beta_{2j} \exp\left(\beta_{1j} + \beta_{2j} x_i\right) \quad j = 2, 3, 4$$

Secondly, to investigate the capital structure, we apply OLS to access whether and how the volume of long and short-term debt and equity changes with variations in the characteristics of firms and finance as well as different regions and industries. The choice of running separate regressions for firms with bank loans, firms without bank loans and firm in general must be specific, as it indicates which type of funding sources are mostly used and what explanatory variables mainly influence capital structure. Moreover, running separate regression shows the similarities and differences of capital structure of each type of borrowing ability.

A detailed profile of dependent and independent variables goes together with their definition, number of observation, mean, standard deviation, min and max which are provided in table 1. We categorize independent variables into four groups as firm and financial characteristics, region and industry.

Firms with credit availability accounts for 701 of the total of 1,150 observations, about 32 percent of firms without bank loans and five per cent of firms whose loan application was turned down, and very few firms whose loan applications were still pending. Firstly, firm characteristics (categorised into seven variables which are EMPLO or LNEM, GOV, DOMES, SHARE, IQC and AUDIT. LNEM, GOV, SHARE, DOMES, IQC and AUDIT) are included into multi-nominal logit regression to check significance. Instead of LNEM, EMPLO is applied in OLS model to test firms' characteristics related to capital structure. Secondly, INDEBT, TANG, RPRIN, CASH, NDTS and EBIT are included in financial characteristics. INDEBT, TANG and RPRIN are used to check the relation with the possibility of firms' access of credit. CASH, NDTS and EBIT, RPRIN are used in the OLS model to test the significance and volume of influence on long, short- term loan and equity.

Table 1 : Definitions and summary of statistics of variables

Var.	Symbol	Definition	Mean	Std.Dev
Dependent variables	GRADE	1: did not apply for loan 2: last application was turned down 3: the application is still pending 4: have a bank loan	2.91	1.40
	LTD	Long term liabilities	13,588.2	74078.7
	STD	Short term liabilities	23,204.1	96470.7
	EQUITY	Share capital and retained earnings	24,760.7	105685.4
	TLD	Total liabilities	61,359.2	229168.5
Firm characteristics	EMPLO	Number of employees	354.7	864.8
	LNEM	Log of employees	4.77	1.46
	GOV	1: previously owned by the government; 0: otherwise	0.25	0.43
	SHARE	Percent of single largest shareholder or owner	64.88	31.02
	DOMES	Percent of sold domestically	67.93	41.62

Table 1 continues.....

Var.	Symbol	Definition	Mean	Std.Dev
	IQC	1: if have international quality certificate; 0: otherwise	0.803	0.878
	AUDIT	1: have certified by third party; 0: otherwise	0.31	0.46
Financial characteristics	INDEBT	Ratio of long and short term loan to total assets	0.47	0.28
	TANG	Fixed assets and inventory to total asset	1.03	10.23
	RPRIN	Ratio of business profit to interest payment	146.1	2689.9
	CASH	Cash	2384.0	10753.9
	NDTS	Net Debt Tax shield including tax and depreciation	4516.8	17641
	EBIT	Earnings before interest and taxes	21499.9	351689
Region	REGION	1: Red River Delta 2:Southern Central Costal 3: South East 4: Mekong River Delta 5: Northern Central	2.63	1.34
Industry	INDU	1: Food & Beverage 2: Textiles, apparel, leather products, wood & wood prod, incl. furniture, paper 3: chemical & chemical products, rubber & plastic products 4: non-metallic mineral products, basic metals, metals products, machinery and equipment, electrical machinery, electronics 5: construction materials, vehicles and other transport equipment 6: other	2.98	1.54

Note: Appendix A reveals more information

RESULTS AND DISCUSSION

Possibility of firms' access to capital

If multinomial logit model has k group, then we could estimate k-1 models. The relative risk is a ratio of the probability of an event in the exposed group versus a non-exposed group. Those, which can be obtained by exponentiating the multi-nominal logit coefficient $e^{coef.}$, are easier to interpret. All of the subsequent tables report the relative risk ratio.

Table 2: Multinomial logit results with grade = 1 as the base category

Variables	Grade=2		Grade=3		Grade=4	
	RRR	Std.Error	RRR	Std.Error	RRR	Std.Error
LNEM	1.076	0.293	0.638	0.259	1.523***	0.177
GOV	3.172	2.389	1.152	1.177	1.716	0.576
SHARE	1.016	0.110	0.982	0.015	1.007	0.005
DOMES	1.001	0.008	0.998	0.012	1.004	0.003
IQC						
1	1.405	0.932	0.547	0.674	1.769**	0.517
0	1.649	0.438	3.189	2.987	1.194	0.369
AUDIT	0.680	0.427	1.855	1.680	0.679	0.188
INDEBT	7.208**	7.145	0.398	0.619	8.323***	3.833
TANG	13.044*	20.392	3.354	6.707	2.252	1.388
RPRIN	0.999	0.004	0.998	0.006	1.000	0.000
INDU						
2	0.374	0.322	1.135	1.561	0.601	0.215
3	1.281	1.097	4.165	6.122	0.642	0.274
4	1.267	1.009	1.15e-06	0.000	0.693	0.262
5	1.195	1.260	17.626	24.838	0.999	0.534
6	0.485	0.554	2.110	3.922	0.431*	0.218
REGION						
2	0.757	0.861	2.66e-06	0.002	1.767	0.729
3	1.107	0.605	0.208*	0.199	0.708	0.181
4	0.378	0.440	1.108	1.546	0.279***	0.125
5	1.756	1.558	0.476	0.715	3.693***	1.421
p predicted value	0.043		0.020		0.609	

Note: a) *** significant at 1% level, ** significant at 5% level, * significant at 10% level and b) No of obs= 540, LRchi2 =138.90, Prob>chi2=0.000, Log likelihood = -406.424 Pseudo R2=0.1459

Table 3: Multinomial logit results with grade = 4 as the base category

Variables	Grade=1		Grade=2		Grade=3	
	RRR	Std.Error	RRR	Std.Error	RRR	Std.Error
LNEM	0.657***	0.076	0.706	0.187	0.419**	0.169
GOV	0.583*	0.196	1.849	1.342	0.672	0.678
SHARE	0.993	0.004	1.009	0.011	0.975*	0.015
DOMES	0.996	0.003	0.998	0.008	0.994	0.012
IQC						
1	0.565*	0.165	0.794	0.508	0.309	0.379
0	0.837	0.259	1.381	0.850	2.670	2.481
INDEBT	0.120***	0.055	0.866	0.827	0.048**	0.074
TANG	0.444	0.274	5.791	8.848	1.489	0.074
RPRIN	0.999	0.000	0.998	0.004	1.489	2.958
AUDIT	1.471	0.408	1.000	0.609	2.730	2.454

Table 3 continues.....

Variables	Grade=1		Grade=2		Grade=3	
	RRR	Std.Error	RRR	Std.Error	RRR	Std.Error
INDU						
2	1.663	0.594	0.621	0.518	1.887	2.599
3	1.557	0.665	1.995	1.636	6.486	9.518
4	1.444	0.546	1.829	1.398	1.67e-06	0.001
5	1.001	0.536	1.197	1.193	17.649**	24.574
6	1.001	0.536	1.123	1.239	4.894	9.092
REGION						
2	0.565	0.234	0.428	0.474	1.50e-06	0.001
3	1.412	0.361	1.563	0.829	0.294	0.281
4	3.579***	1.605	1.351	1.575	3.967	5.579
5	0.271***	0.104	0.475	0.406	0.129	0.193
p predicted value	0.328		0.043		0.020	

Note: a) *** significant at 1% level, ** significant at 5% level and * significant at 10% level.
b) No of obs= 540, LRchi2=138.90, Prob>chi2=0.000, Loglikelih=-406.424, Pseudo R2=0.1459

Table 2 and 3 present the result of multinomial logistic regression with grade 1 and grade 4 as the base category respectively. With respect to the firm characteristics, the multinomial logit model has five variables. Firms which last application were turned downed and are still pending have extremely low probability to obtain credit, while the probabilities of firms without bank loan have relatively high (0.328). To acknowledge the reasons that firms did not apply for loan, up to 60 percent of firms do not need loans; 17 percent of firms affirm application procedures for loan are too burdensome; about 11 percent of firms consider strict collateral requirements of loans.

Firstly, each increasing point in log value of labor improves the odd value of firms without bank loans (grade 1) 52 percent compared with firms with bank loans (grade 4) and 7.6 percent compared with firms with last application denied (grade 2) The result of this regression is consistent with H1d which means that firm size is a significant determinant of getting credit. Secondly, firms which were previously owned by the government are more likely to request a loan than firms which are privately owned. Moreover, firms which were previously owned by the government increase the odds of a grade 3 by 15 percent and grade 4 by large change 71.6 percent compared to grade 1. However, most of the relationships between the possibility of bank loan access and government relation in table 2 and 3 are less likely to be at significant level. Therefore, the findings could not confirm the valid of H_2.

Similar to H_2, the coefficient of SHARE in Table 2 and 3 support the negative relationship between share of sole owner and possibility of obtaining bank loans (H_3), there is however no statistically significant relationship. Next, with respect to DOMES, the regression result shows that small deviation from grade 1 to grade 2, grade 3 and grade 4 or grade 4 to the other groups fluctuates from 0.001

up to 0.006. The coefficients of these groups are nearly 1 that is null to explain the H4a. Finally, as predicted with H_{4b}, IQC is more likely to contribute to the success of acquiring bank loans and statistically significant at 5% level. Lager deviations from having an international quality certificate are more clearly found in grade 1 than in grade 4 by 77%. In conclusion, among five variables explaining firm characteristics were two variables LNEM and IQC which are statistically significant related to the possibility of bank loan access and consistent with our H_{1d} and H_{4b}.

Financial characteristics are key information for bank to decide whether to grant a loan or not. Taking advantages of multinomial logit, we could find the discriminated influence of each group on the possibility of acquiring funds. Firstly, each increase in ratio of total liabilities to total assets (INDEBT) extremely contribute to the success of obtaining funds for firms with denied loan application (grade 2) and for firms with a bank loan (grade 4) than for firms whose last application is still pending (grade 3). This suggests that each increase in INDEBT of firms belonging to grade 2 and grade 4 is more likely to access additional loan than firms of grade 1 and grade 3. So, firms having high INDEBT are not limited in access to additional loan that contradicts with H5. Especially, firms whose application is still pending have much less possibility of obtaining additional bank loans. So an increase level of bank debt is associated with an increase in the possibility of bank loan access. Subsequently, interaction between the ratio of fixed assets and inventory to total assets (TANG) and propensity of getting credit in table 2 and 3 shows that each increasing point in TANG heightens the odds of grade 2 to grade 1 by 13 and to grade 4 by 5.8. So firms with last application denied have sufficient tangibility asset but they still could not access any more fund. Therefore the results are partly and inversely related to H6, and also support the contradiction with H5 that have just been mentioned.

The last two variables are not statistically significant; however, the relative risk ratio of each groups of firm reveals some interesting interaction between these variables in order to understand the possibility of bank loan access. With respect to ratio of business profit to interest payment (RPRIN), the relative risk ratios for a one unit increase for grade 2, grade 3 and grade 4 relative to grade 1 by 0.999 and 0.998 and 1 respectively (Table 2). In addition, the relative risk ratios for a one unit increase for grade 1 and grade 2 relative to grade 4 in table 3 are wholly similar to relative risk ratios in Table 2. Contrary to what we expected (H_{9b}), the relative risk ratio of RPRIN does not create the discrimination between each group of firms, which explain that RPRIN is neutral with firms' ability to access bank loans. Nevertheless, the result is in line with Nguyen et al (2006).

Lastly, when we consider the influence of financial statement audited by a third party (AUDIT) (H_{4b}), this variable does not show statistical significant effect. For firms audited by a third party relative to firms not having audited financial statement, the relative risk ratio for grade 2 to grade 4 would be expected to be equal 1. Comparing the relative risk ratio of AUDIT, we can conclude that AUDIT influences the possibility of bank loan access higher for grade 3 than the other grades. This result is also unexpected but it is likely that firms whose application is still pending lack information so if firms' financial

statement is certified by a third party that reduces the asymmetric information then the possibility of bank loan access is increased.

There is large deviation for firms of different industry in terms of getting credit, especially industry with dummy 5 (construction materials, vehicles and other transport equipment) is largely different from other industries. The only two ratios which are odd of grade 4 to odd of grade 1 of industry 6 (Table 2) and odd of grade 3 to odd of grade 4 of industry 5 (Table 3) are significant at 10 percent and 5 percent respectively. Firms which operate in construction materials, vehicles and other transport equipment and whose applications are still pending have higher possibility to obtain bank loans and lower possibility of denied bank loans. In other words, , we can say that firms dealing in construction materials, vehicles and other transport equipments are less likely to limit capital than other industries that are more specified than H_{10c}.

As for regional dummy, Table 2 and 3 show that propensity of access to finance in each region is more likely to differ (H10a). Not all of the relative risk ratios are statistically significant; it is actually interesting to find that probability ratios of region 4 and region 5 are partly significant. Based on base categories combining with comparing relative probability ratios, we can conclude that firms in Northern Central (region 5) with sufficient financial information tend to obtain high possibility to acquire bank loans, whereas firms in Mekong River Delta (region 4) without sufficient financial information tend to have limited chances of obtaining bank loans. The financing patterns in period 2005 are partly consistent to the findings of Le (2012) who uses the 2009 World Bank Enterprise Survey. The result is also analogue with findings of Vietnam Development Report (2006) stated that probability of survival in Ha Tay and Long An was higher than HoChiMinh City because HoChiMinh City is relatively high competitive.

Capital Structure

Table 4, 5 and 6 presents the results of OLS explaining the capital structure of firms in general, firms with bank loans and firms without bank loans respectively. Firms whose last application was turned down or is still pending did not regress due to the small number of observations. Each table tests the correlation between independent variables which are firm size, capital structure, region and industry and dependent variables which are long- term debt, short-term debt, and equity and total liabilities.

Table 4: Structure of liabilities for all firms

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
EMPLO	29.24***	54.64***	-15.25	68.54***
CASH	-0.28	-0.12	3.36	2.89
NDTS	1.50***	0.27	2.48	4.26**

Table 4 continues.....

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
EBIT	0.56***	0.88***	0.36	1.81***
RPRIN	-0.58***	-0.88**	-0.40	-1.86***
REGION				
2	-2,819.0	-11,018.7*	12,235.7	-2,622.4
3	-	-11,247.7**	-1,258.1	-27,394.3***
4	-13,286.0**	573.3	10,013.7	-2,465.6
5	263.2	603.6	-1,374.0	-555.5
INDU				
2	-4,039.55	-10,727.1*	23,787.3**	9,720.2
3	223.93	8,220.2	16,836.1	25,599.8*
4	472.78	12,643.5*	17,041.6*	30,728.5**
5	14,141.55*	17,788.2	65,634.4*	96,171**
6	-2,620.45	-3,172.2	15,371.4*	9,894
Cons	-2,142	-1,886.7	-12,194.6	-16,547.9
Obs	721	720	721	722
Prob>F	0.000	0.000	0.000	0.000
R-squared	0.7719	0.7588	0.4577	0.7842

Note: *** singnificant at 1% level **singnificant at 5% level *singnificant at 10% level

Table 5: Structure of liabilities for firms having a bank loan (grade=4)

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
EMPLO	19.20***	51.64***	-39.86	31.11
CASH	1.46**	0.35	7.18	8.81**
NDTS	1.71***	-0.17	2.85	4.40
EBIT	0.68***	1.26***	0.25	2.20***
RPRIN	-0.74***	-1.26***	-0.40	-2.41***
REGION				
2	-6,196.1	-15,625.3*	12,022.1	-11,353.6
3	-16,939.1***	-14,501.6**	-200.4	-31,162.9**
4	-17,234.4	31,544.5	16,219.0	30,708.8
5	2,098.3	556.4	318.4	2,727.1

Table 5 continues.....

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
INDU				
2	4,425.8	-7661.5	45,857.9**	43,439.2*
3	2,878.3	11,883.0	27,640.3	42,531.2*
4	4,833.3	12,941.0	30,502.6	48,918.7**
5	28,065.6***	27,090.2*	105,410.1**	157,794.7***
6	6,841.2	-1,867.2	35,944.3**	41,237.0**
Cons	-10,134.6*	-2,802.7	-28,692.1	-41,757.3**
Obs	454	452	453	454
Prob>F	0.000	0.000	0.000	0.000
R-squared	0.8637	0.8334	0.4868	0.8358

Note: *** singnificant at 1% level **singnificant at 5% level *singnificant at 10% level

Table 6: Structure of liabilities for firms which did not apply for loans (grade=1)

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
EMPLO	22.75	14.71	27.78***	65.23**
CASH	0.46	0.44	2.72***	3.63***
NDTS	-1.35*	-0.27	-0.45	-2.07*
EBIT	0.51***	0.50***	0.72***	1.73***
RPRIN	-3.64	-2.18	5.16*	-0.67
REGION				
2	-4,540.7	-5,219.2**	-3,309.2	-13,062.9**
3	-10,821.8	-5,400.1	-5,123.9	-21,309.1*
4	-12,325.7	-3,076.4	-11,115.5**	-26,518.4*
5	-3,549.7	-3,300.0*	-4,301.9*	-11,142.2**
INDU				
2	-1,484.7	-1,189.3	-3,806.1	-6,486.5
3	-1,113.8	2,175.8	3,889.9	5,013.0
4	-3,040.2	1,443.1	942.4	-654.0
5	619.2	3,744.1	-846.8	3,830.9
6	451.5	895.0	-142.0	1,206.1
Cons	5,762.4	4891.7	6,276.3*	16,918.5*

Table 6 continues.....

Independent variables	Long-term debt (LTD)	Short-term debt (STD)	Equity (EQUITY)	Total liabilities (TLD)
Obs	223	224	224	224
Prob>F	0.000	0.000	0.000	0.000
R-squared	0.7325	0.851	0.8516	0.8188

Note: *** singnificant at 1% level, ** singnificant at 5% level, * singnificant at 10% level

Regarding firm size, EMPLO is statistically significant in total liabilities for all firms (Table 4) and for firms without bank loan (Table 6) (H_{1a}), however is not statistically significant for firms with bank loans (Table 5). In addition, comparing the magnitudes of the regression coefficients, we conclude that firms with bank loans have lower financial leverage than firms in general and firms without bank loans. Short-term debt and long term debt are positively related with firm size that is contrary to the predictions of H1b but consistent with the H1c. Firms increase the use of short and long term debt despite their size if possible. Interestingly, negative and significant relation between firm size and equity for firms without bank loans is partly consistent with H1c. In other words, firms which did not apply for bank loan could not acquire any more bank loans; therefore equity is more likely to be used for larger firms. Our results indicate that the relation between short-term debt, long-term debt or equity could not be wholly explained by theory but depends on each condition of firms' operation following to theory or not.

The long-term debt, short-term debt and equity for both firms in general and firms with bank loans are statistically insignificant related at 5% level with cash, but each increase on unit of cash for firms without bank loans results in 2.72 units of equity, ceteris-paribus. The results indicate that cash of firms in general and firms with bank loans are vaguely sourced of owned cash or loan, so the results do not support H7a and H_{7b}, whereas firms without bank loans at the point of time are more likely to increase cash associated with an increase in equity that supports partly to the H_{7c}.

As regards to the NDTS, the coefficients are statistically and positively related to long-term debt for all types of capabilities on bank loan access but vaguely related to short-term debt as well as equity. Interestingly, the sign and magnitudes of the NDTS coefficients are various in each group, which explains the behaviour of firms in adjusting the optimal capital to obtain the balance of the benefit and cost. For firms in general and for firms with bank loans, the positive sign of coefficient indicates that firms with high NDTS are inclined to use long-term debt rather than short-term debt and equity. It is unexpected but not unexplained for firms with bank loans that take full benefit of tax and depreciation up to smaller benefit than the financial distress and agency cost. Inversely, there are remarkable differences in magnitude and significance of the impact of NDTS and equity for firms without bank loans. The results might also be explained that the Vietnamese tax system is in favour with firms with bank

loans rather than with other funds because interest payment is deducted into the company income tax, while common dividend is not deducted. In addition, cost of each stock issuance accounts up to 8-10 per cent of the total capital mobilization. Therefore, the findings are partly consistent with H8 for firms without bank loans in terms of total liabilities, and are contrary to the prediction H8 for firms in general and firms without bank loans in terms of long-term debt and total liabilities.

The coefficients of EBIT for firms in general and for firms with bank loans are statistically and positively related to across long-term debt, short-term debt and total liabilities that contradict H9a. The magnitudes of the effect of EBIT on short-term debt and on long-term debt reveal that Vietnamese firms prefer short-term debt to long-term debt, which is consistent with POT. Firms without bank loans affirm the use of retained earning as much as possible, then to mobilize external funds (H_{9a}). This research proves a significant point: Vietnamese firms want to take as much advantage of loans as possible, therefore they have high rate of investment.

The negative associations of the ratio of profit to interest payment (RPRIN) to long-term debt, short-term debt as well as total liabilities for all firms except firms without bank loans are significant with H9a. Especially firms without bank loan increase use of equity to mobilize capital associated with RPRIN but the relation is just significant at 10 percent level. The result again reveals that firms without bank loans have private- owned financial characteristics distinguishing from firms in general.

Not all regions are statistically determinants for capital structure of Vietnamese firms. As comparison the coefficient of region in Table 4, 5 and 6, the data reveals that firms in the Northern Central (region 5) have relatively more great funds financing to long-term debt, short-term debt and total liabilities. The OLS result reaffirms the findings of the multinomial logit model. Northern Central is not the most developed region; however, the financial market here is not highly competitive so firms in this region have more available financial support rather than those in other regions.

The reference industry for these regressions is Food and Beverage (industry 1), the results of table 4, 5 and 6 show that capital structures of firms in this industry are difference in types of funds. Firstly as reference to firms with bank loan, industry dummy is positively and statistically correlated with total liabilities and equity. Interestingly, of which construction, material, vehicles, other transport equipments (industry 5) as being capital intensive actually need a highest volume of capital in terms of long term debt even to short term debt and total liabilities compared with other industries that is significant to H10b. On the other hand, this result also support the H6 which states that firms with higher tangible assets are more likely to borrow. Otherwise, the use of equity is most prominent among firms in textiles, apparel and leather industries. Next, for firms without bank loans there is insignificant relation between industry dummy and sources of finance employed. Finally, industry dummies characterized by firms in general are less significant related to sources of funds than those of firms with bank loans.

CONCLUSION

The propensity of getting credit is mostly determined by financial characteristics rather than firm characteristics, industry and region. This study does not aim at giving a conclusion about what characteristics of businesses affect the trend of loan borrowing, or vice versa, or whether they have mutual effect. Instead, this study focuses on the elements that affect the possibility of firms' loan borrowing.

Firms without bank loan have extremely higher possibility to access credit than the firms which last application were turned down and are still pending. Our results contradict previous research that firms with high indebtedness are less limited to access additional loans than firms without bank loans. More than 60% of firms without bank loan do not get bank loan because they do not need. Actually, they have higher financial leverage than firms with bank loans. So they have no choice to mobilize short and long term debt partly because they may have more financial distress and agency cost than benefit therefore they could not obtain any additional loan, and then issue equity is the good financial instrument to mobilize capital. In addition, the firms without bank loan with high ratio of business profit to interest payment (RPRIN) increase their use of equity. Through to the non debt tax shields, we find that Vietnamese tax system is in favour with firms with bank loans and firms in general than firms without bank loans. Moreover, firms without bank loans but obtaining international quality certificate have high possibility to access credit. In addition, they are more likely to increase cash associated with an increase in equity.

Firms in general and firms with bank loans have lower financial leverage than firms without bank loans so firms in general and firms with bank loans increase their use of short-term debt and long-term debt despite size of firms. Bank systems basically respond to needs of short-term capital. With medium and long-term capital serving investment, firms need to look for it in the capital market via stock and bond issuance. Due to Vietnam's underdeveloped capital market, only large-scaled firms are able to mobilize capital from this market. Vietnamese firms try to obtain as much profits from loans as possible in order to benefit from tax reduction and depreciation until these profits are approximately equal to financial distress and agency cost. Our result is partly contradict to and partly consistent with POH, which implies that firms in general and firms with bank loans mostly prefer short-term debt.

Interestingly, firms with denied loan application did not mostly rely on tangible assets as collateral to acquire bank loans; firms whose application is still pending but have international quality certificate have much more possibility of getting credit than other firms. These results did, however, show that firms which were previously owned by the government or have shares as the single largest shareholder are relatively weak and insignificant in their attempts to obtain capital. Ratio of business profit to interest payment is neutral with firms' ability to access bank loans.

Propensity of access to finance in each industry and each region is more likely to differ. Construction, material, vehicles and other transport equipments are less likely to limit in accessing capital than other industries. Specifically, Northern

Central is considered a better region for credit supply. It seems logical that the more capital intensive industries the easier to getting financial support from bank. It could be recognized that the more capital intensive, the stronger economically, the higher reputation and the more trustworthiness.

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Appendix A

Descriptive statistics of the studied variables

Var.	Symbol	Definition	No.Obs.	Mean	Std.Dev	Min	Max
Dependent variables	GRADE		1,150	2.91	1.40	1	4
		1: did not apply for loan	372				
		2: last application was turned down	58				
		3: the application is still pending	19				
		4: have a bank loan	701				
	LTD	Long term liabilities	1,130	13,588.2	74078.7	0	1764646
	STD	Short term liabilities	1,138	23,204.1	96470.7	0	2651335
	EQUITY	Share capital and retained earnings	1,143	24,760.7	105685.4	-94267	2298880
	TLD	Total liabilities	1,147	61,359.2	229168.5	77	4813375
Firm characteristics	EMPLO	Number of employees	1,149	354.7	864.8	2	19047
	LNEM	Log of employees	1,149	4.77	1.46	0.69	9.85
	GOV	1: previously owned by the government; 0: otherwise	917	0.25	0.43	0	1
	SHARE	Percent of single largest shareholder or owner	899	64.88	31.02	1	100
	DOMES	Percent of sold domestically	1,142	67.93	41.62	0	100
	IQC	1: if have international quality certificate; 0: otherwise	1,144	0.803	0.878	0	2
	AUDIT	1: have certified by third party; 0: otherwise	1,149	0.31	0.46	0	1
Financial characteristics	INDEBT	Ratio of long and short term loan to total assets	1,123	0.47	0.28	0	2.36
	TANG	Fixed assets and inventory to total asset	1,139	1.03	10.23	0	346
	RPRIN	Ratio of business profit to interest payment	724	146.1	2689.9	-1674.6	71817
	CASH	Cash	1,147	2384.0	10753.9	0	257480
	NDTS	Net Debt Tax shield including tax and depreciation	1,080	4516.8	17641	-594	278000
	EBIT	Earnings before interest and taxes	913	21499.9	351689	-284340	1.05e+07
Region	REGION		1,150	2.63	1.34	1	5
		1: Red River Delta	344				
		2:Southern Central Costal	152				
		3: South East	392				
		4: Mekong River Delta	115				
		5: Northern Central	147				

Industry	INDU		1,150	2.98	1.54	1	6
		1: Food & Beverage	192				
		2: Textiles, apparel, leather products, wood & wood prod, incl. furniture, paper	390				
		3: chemical & chemical products, rubber & plastic products	135				
		4: non-metallic mineral products, basic metals, metals products, machinery and equipment, electrical machinery, electronics	212				
		5: construction materials, vehicles and other transport equipment	126				
		6: other	95				