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IMPACTS OF CAPITAL STRUCTURE ON BUSINESS PERFORMANCE OF JOINT-STOCK COMPANIES LISTED IN VIETNAM SECURITIES MARKET

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The paper aims to generalize theories on the relationships between capital structure and business performance, then conduct an empirical study on non-financial joint-stock companies listed in Vietnam securities market in the 2011-2015 period. Via the analysis of panel data of 346 companies with the total of 1730 observations, research findings indicate that capital structure has considerable impacts on business value and there exist inverted U-shaped relationships between capital structure and return on equity.

Key words: *capital structure, business performance, listed securities enterprises, stock market*

1. Introduction

Besides long-term investment and short-term financial decisions, financing decisions are one of important parts in financial management. Financing decisions are closely connected with considering which financial sources can be selected to purchase assets: whether equity capital, loan capital or both should be used to finance investment decisions. Financing decisions are therefore expressed via capital structure, or structure of financial resources of each enterprise.

Watson and Head (2007) in "Corporate Finance: Principles and Practice" introduced the definition of capital structure as follows: "The term capital structure in finance reflects the value of debts that enterprises use in comparison with equity capital. Capital structure in enterprises can be measured via financial indicators, including the ratio of debts against equity capital (long-term debts against equity capital or the ratio of long-term liabilities against the total used capital). Besides, the authors also believed that "short-term liabilities and long-term liabilities can be included when determining capital structure, especially when enterprises have overdraft lasting over many consecutive years." The authors hold a view on optimal capital structure as: "If there exists an optimal capital financing ratio where enterprises can earn the highest profits, enterprises should adjust to reach this optimal capital structure point."

Berk et al. (2012) in "Fundamentals of Corporate Finance" presented the concept: "The relative ratio between debts, equity capital and other securities that enterprises mobilize is called capital structure". When enterprises mobilize capital from external sources to finance their projects, they need to decide on the kinds of securities that they will issue and the capital struc-

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ture that they establish. To analyze capital structure, the authors used the indicator of total debts (including both short-term and long-term debts) divided by total equity capital. Their research states that enterprises should determine the debt level needed to optimize enterprise values, where optimal capital structure can be established. The optimal capital structure depends on imperfect factors of the market such as tax, financial trouble, agency costs, asymmetric information.

In another approach, when referring to capital structure, Khan and Jain (1997) in"Financial Management" stated that "Capital structure is the combination between loan capital and equity capital which enterprises use to finance their long-term business operations. Capital is understood as long-term financial sources in enterprises, determined by deducing short-term debts from total assets". Sharing this view, I. M. Pandey (1999) provided a definition in "Financial Management" as "Capital structure is related to the mobilization of long-term capital from shareholders and long-term creditors. Finance managers should decide on the ratio between loan capital (with fixed costs) and equity capital."

Some research in Vietnam such as the research by Bui Van Van et al (2013) in "Corporate Finance Textbook" introduced the concept that capital structure is the ratio of capital sources in the total value of the-capital sources that enterprises mobilize to use in their business operations. Nguyen Thu Thuy (2011) believed that "Capital structure is calculated by the ratio between liabilities (total liabilities, short-term liabilities or long-term liabilities) and equity capital (or total investment capital) of an enterprise.

In short, the concept of capital structure can be approached from different views. Terms such as capital structure, finance leverage or financial structure are often used interchangeably and often referred to as "capital structure", or "capital structure - cau truc von" or "financial leverage". In this research, the authors generalize the concepts as follows:

- Capital structure is the ratio of capital sources in the total value of the capital that enterprises mobilize, used for business operations.

- Optimal capital structure is gained when enterprises combine different capital sources to create the optimal profits for enterprises.

For each form of financing, enterprises will have to incur certain costs to use capital. With loan capital, that is the interests they have to pay, with equity capital; that is the expected profitability rate of shareholders. The choice of capital structure will affect the business decisions that owners make. Therefore, capital structure impacts on values or business performance of enterprises (Nguyen Thu Thuy, 2011).

Farrell (1957) introduced the view "performance is the ability to combine input elements effectively to create an output". When analyzing business performance, it is necessary to base on two indicators: absolute performance and relative performance. Absolute business performance is measured by business results deduced by costs incurred to gain those results. This method can reflect the scale, quantity and profits gained in certain conditions and time but cannot be used to compare business performance between organizations. Relative business performance is measured by the ratio between output and input. This method is considered more convenient as it can compare the business performance between organizations with different scales, locations or at different times.

Later research on business performance approach the concept of business performance in a more specific way. According to Venkatraman et al. (1986), business performance can be assessed firstly by indicators of financial performance to evaluate the economic goals of enterprises such as revenue growth, profitability, earning per share, market value / book value, etc. Besides, operational performance can also be used to evaluate business performance from a larger angle such as market share, new product introduction, product quality, marketing performance, added value in production, etc.

In Vietnam, Nguyen Van Cong (2009) claimed that "Business performance is an economic concept reflecting the abilities of using human, physical, financial resources of enterprises to reach the highest results in business operations at the lowest costs. According to

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Nguyen Thu Thuy (2011), what enterprises need to care about is business performance, which means how much profit a unit of capital can product rather than profit itself. Business performance is expressed in different terms such as efficiency of capital use, operational efficiency or profitability of enterprises.

Upon researching basic views on business performance, the authors agree to use the concept: Business performance is an economic scale expressed by a system of measurement indicators to reflect the ability of using enterprise resources to gain the set-forth goals. In business performance analysis, there are different views on its evaluation such as evaluating via profitability, operational efficiency or added economic value, etc. However, analyzing business performance via financial indicators is seen the simplest and most widely-used method via returns on total assets, return on equity or market-based indicator such as Tobin's Q.

Each source of financing can bring both advantages and disadvantages to enterprises. Therefore, from the viewpoint of business managers, understanding the impacts of capital structure on business performance is of great significance, which helps enterprises to optimize values and benefits for shareholders. This paper aims to generalize theories and build up an empirical model to test the relationships between capital structure and business performance of non-financial joint-stock companies listed in Vietnam securities market in the 2011-2015 period.

2. Previous studies

2.1. Generalization of theories on the impacts of capital structure on business performance of enterprises

The relationships between capital structure and business performance of enterprises have drawn considerable attentions of researchers and business managers. Distinctive theories on these relationships include M&M theory, agency costtheory, trade-off theory, pecking order theory and market timing theory.

M&M Theory

The first research work on capital structure is the one by Modigliani and Miller (1958), which is later referred to as M&M theory (1958). This theory states that the value of one enterprise without debt is equal to the value of an enterprise with debt. Therefore, M&M theory concludes that the values of enterprises do not depend on their debts. However, the conclusions of M&M theory (1958) are based on a set of assumptions made for a perfect market which is hardly possible in practice, especially taxes are not mentioned in the model.

In their later research, Modigliani and Miller (1963) provided new evidence to show that capital costs affect capital structure and therefore affect enterprise values. Using more debts will create a tax shield that reduces loan costs and help to optimize enterprise values.

Agency Cost Theory

Berle and Means (1932) mentioned agency costs in the modern enterprise model. Agency costsof equity capital arise due to the asymmetric information between managers and enterprise owners. This theory was developed by Jensen and Meckling (1976). The two authors believe that agency costs increase due to shareholder - manager conflict and shareholder - debtholder conflict. The shareholder - manager conflict indicates that managers may pursue personal benefits rather than optimize enterprise values. More particularly, managers may tend to choose projects with lower risks, lower profits and lower debt ratio to reduce the chances of bankruptcy.

Therefore, to reduce agency costs, Harris and Raviv (1991) believe that borrowing can be a mechanism to supervise and encourage the activities of Board of Management because of the positive relationships between debt ratio and financial trouble of the enterprises. When the debt ratio increases, Board of Management has to be more cautious in their decisions to use loan capital and manage enterprises more effectively (Jensen, 1986). As such, by reducing agency costs between shareholders and managers, this theory supports the positive relationships between debts and business performance.

However, from the view of shareholder - debtholder conflict, debts can increase agency costs. When debts increase, debtholders tend to ask for higher inter-

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est rates to compensate for risks that they may expose, thereby reducing the values of enterprises (Jensen and Meckling, 1976).

Trade-off theory

Trade-off theory was initiated by Kraus and Litzenberger (1973) and developed by Myers et al (1984). Trade-off theory believes that there exists an optimal capital structure to increase enterprise values by trading off benefits of the enterprises. In other words, enterprises can borrow debts until tax benefits from borrowing are equal to capital costs increased from enterprise financial difficulties (Myers, 1977). At medium debt levels, the chances of financial exhaustion are trivial and the current value of financial exhaustion costs is small, borrowing debts will create advantages for enterprises. However, when enterprises borrow more, the risks of bankruptcy will be higher and the value of enterprises will reduce. The trade-off theory is formulated as follows:

Enterprise values =	Enterprise value totally financed by equity capital	+	Current value of tax benefits	-	Expected bankrupt costs

Source: Kraus and Litzenberger (1973)

There is no optimal capital structure for all enterprises. Enterprises with many tangible fixed assets, high revenue and low risks often have higher optimal debt ratio than enterprises with many business risks (Kraus and Litzenberger, 1973). For example, enterprises doing business in transportation often borrow a lot because their assets are tangible and quite safe while technology enterprises with many intangible assets often use less loan capital.

To recap, the advantages of trade-off theory are it can explain the differences in capital structure of different business models and propose the tendencies to reach optimal capital structure for enterprises depending on their business activities. Trade-off theory has better development than M&M theory when considering capital structure in two aspects of costs and benefits rather than just calculating benefits and assuming that costs do not exist as in M&M theory. However, the drawback of this theory is it cannot explain why some very successful enterprises have lower debt ratio and do not use tax shield although operational revenue of enterprises is high. This drawback creates the prerequisite for the introduction of another capital structure theory - pecking order theory.

Pecking order theory

Pecking order theory was developed by Myers and Majluf (1984), based on the cares that asymmetric information will affect investment and financing decisions of enterprises. Compared with managers of enterprises, external investors do not have sufficient information, so they require a higher level of discount when enterprises issue securities, this leads to higher costs for external financing sources. Therefore, pecking order theory states that enterprises prioritize their own capital rather than external capital sources. Enterprises will firstly use retained earnings for investment, then if they need external financial sources, they will borrow debts, issue bonds, then finally issue stocks. Pecking order theory does not reject the arguments of previous theories on the impacts of tax shields and financial trouble when borrowing, but this theory believes that these factors are not as important as the priority order when choosing financing sources of enterprises. An enterprise with good business performance often borrows less not because it has low optimal capital structure but because it does not need external financing sources. By contrast, an enterprise with bad business performance tends to borrow more because it does not have sufficient internal financing sources for its business projects. The observed debt ratio of each enterprise reflects the need and demand for external financing sources accumulated over the time. Therefore, this theory supports the view that enterprises with higher profitability will have lower debts (Abor, 2005).

Market timing theory or Windows of opportunity

Market timing theory believes that decisions to use financing sources of an enterprise depend on the mar-

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ket value of that enterprise (Baker and Wurgler, 2002). Managers will issue stocks when seeing that stock prices tend to increase or are evaluated higher than the real values. In the opposite situation, enterprises will use loan capital when market prices of stocks tend to reduce. This theory therefore does not present an optimal capital structure for enterprises. Unlike pecking order theory which is based on the assumption of semi-strong form market efficiency to state that stock prices are fully impacted by information published in the past as well as information published recently, market timing theory is not based on this assumption. Researchers in favor of market timing theory also believe that asymmetric information does not affect the decisions to mobilize capital of managers; managers just based on market conditions to make their decisions.

As such, market timing theory affirms that market timing is the first factor to consider when deciding capital structure of enterprises. More particularly, enterprises do not care about using loan or equity capital, they just choose the financing form which at that time can bring the higher values to enterprises.

2.2. Empirical studies on the impacts of capital structure on business performance of enterprises

Besides theories, there is lots of empirical research on the relationships between capital structure and business performance of enterprises. Some typical ones include:

The research on "Capital structure and business performance of enterprises" by Margaritis & Psillaki (2007) used a sample of 12, 240 enterprises in New Zealand to build a regression model between capital structure (determined by the ratio of total liabilities against total assets) and business performance (represented by profits against total assets). Research findings provide empirical evidence on the positive relationships between capital structure and business performance. Besides, the research by Abor (2005) also supports this view.

Seetanah et all (2014) conducted a study on "Capital structure and business performance: empirical evidence from an emerging economy" and indicated that capital structure (determined by total liabilities against total assets) has negative relationships with business performance (represented by ROA and ROE), and enterprises with low debt ratio often have better business performance. Similar results are also found in research by Soumadi & Hayajneh (2012), Zeitun and Haq (2015), Le Thi Phuong Vy (2015).

Research byChenget al (2010) conducted on 650 enterprises in China and research by Feng-Li Lin et al (2011) on 196 enterprises in Taiwan show optimal capital structure for enterprises. Accordingly, the impacts of capital structure on business performance of enterprises will change from positive to negative relationships when the debt ratio of enterprises goes beyond optimal level. This research's findings go in line with the research by Margaritis et al (2010), Berger and Bonaccorsi (2006) which state that capital structure has the inverted U-shaped impacts on business performance.

Although there have been many studies on the relationships between capital structure and business performance, the results of the relationships are not widely agreed on. The research findings can be summarized as follows (Table 1):

Upon generalizing empirical research, the authors decide to select ROA, ROE to reflect the profitability of enterprises and Tobin's Q to reflect the future expectations of investors to represent business performance in this research. The authors also accumulate previous studies when selecting the ratio of total liabilities against total assets to represent capital structure in enterprises (Margaritis and Psillaki, 2010, Abor, 2005 and Le Thi Phuong Vy, 2015).

3. Research methods

The paper aims to investigate the relationships between capital structure and business performance in non-financial joint-stock companies listed in Vietnam securities market. Theories and empirical evidence have provided reliable evidence on the impacts of capital structure on business performance of enterprises. The first research hypothesis is presented as follows:

H1: Capital structure has impacts on business performance of listed joint-stock companies in Vietnam.

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Table 1: *Summary of research findings on the impacts of capital structure on business performance of enterprises*

Views	Variables representing business performance	Distinctive research
Capital structure is not related to business performance	ROE, ROA, Tobin's Q	Modigliani and Miller (1958), Baker and Wurgler (2002), Phillips and Sipahioglu (2004)
Capital structure has positive relationships with business performance	ROE, ROA, Tobin's Q, cost efficiency scores	Modigliani and Miller (1963), Harris and Raviv (1991), Margaritis and Psillaki (2007), Abor (2005), Bui Dan Thanh (2016), Tran Thi Kim Oanh(2016), Vo Minh Long (2017), Le Hoang Vinh (2014)
Capital structure has negative relationships with business performance	ROE, ROA, Tobin's Q	Seetanahet al(2014), Soumadi &Hayajneh (2012),Zeitun and Haq (2015), Le Thi Phuong Vy (2015)
Capital structure has non-linear inverted U-shape relationships with business performance	ROE, EFF (Profit efficiency)	Berger and Bonaccorsi (2006), Skopljal and Luo (2012), Margaritis and Psillaki (2010), Cheng et al (2010), Feng-Li Lin et al (2011), Nguyen Thanh Cuong (2015)

Note: ROE: Return on Equity, ROA: Return on total Asset, Tobin's Q: The ratio of market value against book value of total asset.

Source: collected by the authors

Besides research on linear relationships, some research also indicates the non-linear relationships between capital structure and business performance of enterprises. Therefore, hypothesis H2 is proposed as follows:

H2: Capital structure has non-linear relationships with business performance of listed joint-stock companies in Vietnam.

The research uses data from financial statements of non-financial joint-stock enterprises listed in Vietnam securities market in the 2011 - 2015 period. Listed enterprises do not include commercial banks, insurance companies, securities companies or enterprises operating in other financial fields as capital mobilization methods and capital structure of these enterprises are typical. Based on secondary data collected from database of StoxPuls JSC., the research identified 346 non-financial joint stock enterprises listed in Vietnam securities market in the 2011 - 2015 period, with a total of 1730 observations over the years. The classifications of enterprises in research sample according to ICB1 standard are presented in Table 2.

The classifications of enterprises according to industries show that most of listed enterprises are operating in industry (45.1%), consumer goods (18.5%) and materials (13%). Oil and gas and telecommunications bottom the list with few or no listed enterprises in the securities market.

Upon research on related theoretical grounds and empirical studies, the authors establish research model and measure related variables as follows:

Model to test hypothesis H1:

$ROA_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 Size + \beta_3 Tangibility + \beta_4 Growth_{it} + \beta_{it}$ (1)

ISSN 1859-3666

Table 2: *Classifications of research samples*

No.	Industries	No. of enterprises	Percentage
1	Information Technology	13	3.8%
2	Industry	156	45.1%
3	Oil and gas	4	1.2%
4	Consumption services	31	9.0%
5	Pharmacies and Healthcare	14	4.0%
6	Consumer goods	64	18.5%
7	Materials	45	13.0%
8	Public utilities	19	5.5%
9	Telecommunications	0	0.0%
10	Finance	0	0.0%
	Total	346	100.0%

Source: Collected from database of Stoxplus

$ROE_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 Size + \beta_3 Tangibility + \beta_4 Growth_{it} + \beta_{it}$ (2)

Tobin's $Q_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 Size + \beta_3 Tangibility + \beta_4 Growth_{it} + \beta_{it}$ (3)

Model to test hypothesis H2:

$ROA_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 LEV_{it2} + \beta_3 Size + \beta_4 Tangibility + \beta_5 Growth_{it} + \beta_{it}$ (4)

$ROE_{it} = \beta_0 + \beta_1 LEV_{it} + \beta_2 LEV_{it2} + \beta_2 Size + \beta_3 Tangibility + \beta_4 Growth_{it} + \beta_{it}$ (5)

Tobin's $Q_{it} = \beta 0 + \beta_1 LEV_{it} + \beta_2 LEV_{it2} + \beta_2 Size + \beta_3 Tangibility + \beta_4 Growth_{it} + \beta_{it}$ (6)

Where:

it = Observation variable of enterprise i at time t

i = 1, 2, 3, 4,…, 346 and t = 1, 2, 3…5 (2011 to 2015)

Concepts and measurement methods of variables are presented in Table 3:

Table 3: *Descriptions of measurement variables used in the research*

Variables	Definitions	Measurement methods
Dependent variables		
ROA	Return on Assets	Pre-tax profits divided by total assets of enterprises
ROE	Return on Equity	After-tax profits divided by equity of enterprises.
Tobin's Q	Ratio between market value and book value	Market value of assets divided by book value of assets.
Explanatory variables		
LEV	Financial leverage	Total liabilities divided by total assets
LEV^2		LEV*LEV
Control variables		
Size	Company size	Natural logarithm of total assets
Growth	Net revenue growth (DT)	$\frac{DT_n - DT_{n-1}}{DT_{n-1}}$ X100%
Tangibility	Total fixed asset ratio	Remaining value of total fixed asset divided by total asset
Year	Year	Year dummy variables

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The research model uses panel data, which is the data combined between time series and cross observations. Accordingly, the regression model is run in 3 ways: Pooled OLS, Fixed effect and Random effect.

Pooled OLS is the simplest model as it does not consider the differences between surveyed enterprises. This model is rarely used.

Fixed effect model is further developed from Pooled when it takes into consideration the differences between enterprises and has correlations between the balance of the model and independent variables.

Random effect model is similar to Fixed model in the way it takes into consideration the differences between enterprises but there are no relations between the balance and independent variables of the model.

find the most suitable model among these ones, the authors use Breusch - Pagan Lagrangian Multiplier test to select between Pooled effect and Random effect and use Hausman test to select between Fixed effect and Random effect

4. Research findings

With the empiricalresearch model, the authors estimate descriptive statistics, run regression analysis and test via econometric software Stata.

Descriptive statistics

Fundamental indicators used in descriptive statistics are presented in Table 4

high debt ratios. The ratio of liabilities against total assets is 50%, where max is 97.1% and min is 0.3%. Under the impacts of global financial crisis, return on total assets and return on equity of enterprises are not high, at 5.7% and 10.1% respectively.

Regression results

The regression results of the relationships between capital structure and business performance of joint-stock enterprises listed in Vietnam securities market under models (1) (2) (3) via methods ofPooled OLS, Fixed effect model and Random effect model are presented in Table 5:

Breusch - Pagan Lagrangian Multiplier statistics to test hypothesis Ho shows that variance between entities is 0. Test results reject hypothesis Ho with p-value <0.01, indicating that Pool estimate is not as good as REM estimate. Hausman test with hypothesis Ho shows that estimate of REM model is the same as the estimate of FEM model. Test results confirm the rejection of hypothesis Ho, indicating that FEM model is more appropriate. Therefore, coefficients of FEM model are used to analyze the relationships between capital structure and business performance.

Regression results indicate the inverted relationships (with sig. of 1%) between the ratio of liabilities against total assets and the three indicators to measure business performance: ROA, ROE and Tobin's Q. This

Table 4: *Descriptive statistics of observation variables*

Variables	Mean	Standard deviation	Min	Max
ROA	0.057232	0.083474	-0.64551	0.7837
ROE	0.100895	0.168164	-3.04305	0.98213
Tobin's Q	0.863294	0.337217	0.239355	4.725708
LEV	0.500041	0.221718	0.00294	0.97061
LEV^2	0.299171	0.216024	0.000008	0.942084
Size	26.90801	1.361376	23.28202	31.03718
Tangibility	0.272022	0.208082	0	0.948384
Growth	0.139315	1.274583	-0.99037	40.76368

Source: results of STATA software

The descriptive statistics table shows that enterprises listed in Vietnam securities market have quite

conclusion goes in line with pecking order theory in financing, which means enterprises with good profits

Table 5: *Regression results to test hypothesis H1*

	ROA			ROE			Tobin's Q		
	Pool	Fixed	Random	Pool	Fixed	Random	Pool	Fixed	Random
C	-0.16863 (-3.88***)	**-1.114424 (-6.29***)**	-0.24624 (-4.24***)	-0.4035133 (-4.49***)	**-2.110622 (-5.28***)**	-.5133372 (-4.51***)	-.3108135 (-1.91*)	**-10.30637 (-13.27***)**	-1.118459 (-4.3***)
Lev	-0.19109 (-18.67***)	**-0.28199 (-14.1***)**	-0.21357 (-17.95***)	-0.18438 (-7.43***)	**-.4290215 (-8.91***)**	-.2260374 (-9.06***)	-.0642938 (-1.67*)	**-.2605862 (-2.79***)**	-.0489581 (-0.89)
Size	0.012145 (7.13***)	**0.050422 (7.44***)**	0.016315 (7.3***)	0.022289 (6.3***)	**.0910287 (6***)**	.0273555 (6.26***)	.0452764 (7.23***)	**.4211156 (14.31***)**	.0755546 (7.58***)
Growth	0.00778 (1.43)	**0.010807 (10.1***)**	0.010712 (10.13***)	0.012297 (1.44***)	**.0284718 (10.73**)**	.0241179 (9.12***)	.0101805 (1.62)	**.0008585 (0.17)**	.0079827 (1.53)
Tangibility	-0.02383 (-2.92***)	**-0.09053 (-5.14***)**	-0.04947 (-4.24***)	-0.01787 (-0.96***)	**-.1004379 (-2.41**)**	-.0447825 (-1.84*)	-.0494843 (-1.28)	**-.11592 (-1.43)**	-.102578 (-1.93*)
R^2	0.2437	**0.1692**	0.2489	0.0710	**0.1516**	0.1410	0.0317	**0.1406**	0.1039
N	1730	1730	1730	1730	1730	1730	1730	1730	1730
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breusch &Pagan LM	$Chibar^2$= 806.6***			$Chibar^2$= 432.90 ***			$Chibar^2$= 509.59 ***		
Hausman	Chi^2 = 144.99*** =>Fixed effect model			Chi^2=124.19*** =>Fixed effect model			Chi^2= 168.12*** =>Fixed effect model		

*Note: *, **, *** correspond to sig. 10%, 5%, 1%; Statistics t is presented in brackets.*
Source: Results from STATA software

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Table 6: *Regression results to test hypothesis H2*

	ROA			ROE			Tobin's Q		
	Pool	Fixed	Random	Pool	Fixed	Random	Pool	Fixed	Random
C	-.166261 (-3.82***)	**-.6564066 (-3.79***)**	-.2185913 (3.75***)	-.4442365 (-4.65***)	**-2.962011 (-7.17***)**	-.599698 (-5.15***)	-.2244104 (-0.98)	**-10.38393 (-12.73***)**	-.9827066 (-3.73***)
Lev	-.2041805 (-4.83***)	**-.1877203 (-3.40***)**	-.2056272 (-4.86***)	.040953 (0.43)	**.4028992 (3.06***)**	.1336051 (1.42)	-.5423856 (-2.31**)	**-.1848056 (-0.71)**	-.57614584 (-2.89***)
LEV2	.0138152 (0.36)	**-.0652924 (-1.11)**	-.0008924 (-0.02)	-.2377383 (-2.12**)	**-.9495488 (-6.77***)**	-.3851361 (-3.99***)	.5044128 (2.42**)	**-.0864955 (-0.31)**	.5645984 (2.75***)
Size	.0121455 (7.13***)	**.0313179 (4.84***)**	.0144393 (6.57***)	.0222884 (6.32***)	**.1178379 (7.63***)**	.0282282 (6.42***)	.0452778 (4.89***)	**.4235577 (13.99***)**	.0739416 (7.43***)
Growth	.0077909 (1.43)	**.0111107 (10.13***)**	.0107637 (10.03***)	.012116 (1.41)	**.0273399 (10.45***)**	.0240553 (9.16***)	.0105638 (1.98**)	**.0007554 (0.15)**	.0083243 (1.6)
Tangibility	-.0236654 (-2.93***)	**-.063268 (-3.68***)**	-.0408821 (-3.58***)	-.0207596 (-1.15)	**-.1068868 (-2.6***)**	-.0511269 (-2.09**)	-.0433585 (-1.15)	**-.1165074 (-1.44)**	-.094093 (-1.77*)
R^2	0.2438	**0.2103**	0.2413	0.0758	**0.1789**	0.1583	0.0371	**0.1407**	0.0856
N	1730	1730	1730	1730	1730	1730	1730	1730	1730
Prob>F	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
Breusch &Pagan LM	$Chibar^2$= 776.74***			$Chibar^2$= 439.00***			$Chibar^2$= 507.03***		
Hausman	Chi^2 = 42.04*** =>Fixed effect model			Chi^2= 150.87*** =>Fixed effect model			Chi^2= 162.15*** =>Fixed effect model		

*Note: *, **, *** correspond to sig. 10%, 5%, 1%; Statistics t is presented in brackets.*
Source: Results from STATA software

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will have much retained earnings to finance their activities and use less loan capital.

Besides, the three models show the positive impacts of enterprise sizes and growth rates on business performance of enterprises at high significant level. By contrast, investments in fixed assets have negative impacts on business performance. In the context of high interest rates, enterprises with big investments in fixed assets by loan capital will face more difficulties due to increased interest costs.

Research results of the non-linear impacts of capital structure on business performance of joint-stock enterprises listed in Vietnam securities market are presented in Table 5. Research model indicates that there is a non-linear relationship between capital structure and ROE. Specifically, return on equity will improve when enterprises use debts, however if the ratio of debts against total assets go beyond the optimal level, there will be negative impacts on this indicator. The optimal score of capital structure in this situation can be determined by -b/2a = -0.4028992/(-0.9495488*2) = 21.22%. This finding agrees with trade-off theory which believes that enterprises can borrow until tax benefits from debts equal increased costs from financial difficulties of enterprises. However, research findings do not show the non-linear relationships between capital structure and return on assets, the ratio of market value against book value of enterprises. When choosing ROA and Tobin's Q to represent business performance, the research indicates that capital structure has negative impacts. This relationship supports pecking order theory and research by Seetanah et al (2014), Soumadi and Hayajneh (2012) in some emerging economies.

5. Conclusion

With a sample of 346 joint-stock enterprises listed in Vietnam securities market in the 2011 - 2015 period, this research investigates the relationships between capital structure and business performance of enterprises. Research findings indicate that besides the influences of macro factors in the market, decisions on capital structure in enterprises have considerable impacts on business performance of Vietnam enterprises.Given high local interest rates, especially in late 2011 when interest rates reached 17 - 19% a year, enterprises with high financial leverage and big investments in fixed assets had to suffer higher costs, which resulted in reduced business outcomes. On these bases, the authors make the following recommendations:

Firstly, enterprises should adopt flexible financial policies, prioritize internal capital sources. According to pecking order theory, enterprises should prioritize retained earnings rather than use loan capital and external financing resources. In the context that Vietnam capital market is not yet complete and stable, decisions on capital structure of enterprises should be flexible and appropriate in each period of time.

Secondly, enterprises should diversify financing methods such as issuing convertible bonds, borrowing from investment funds, involving in domestic and foreign joint ventures, issuing stocks with flexible dividend-paying schemes, etc. These methods are widely used in developed capital markets. As for convertible bonds, these bonds have lower interests than the interests of issued bonds and can balance the benefits of bondholders and stockholders - the two groups with benefit disputes as they compete for the retained earnings of enterprises. Methods of mobilizing capital from international investment funds or involving in joint ventures not only create abundant financial sources but also the presence of new investors can help enterprises expand and further develop their business activities. Besides, flexibility in dividend paying methods such as paying dividends by stocks helps enterprises to keep part of after-tax profits to re-invest in production activities. However, besides these advantages, any form of capital mobilization can cause disadvantages when enterprises cannot build up sustainable development strategies in the future.

Thirdly, enterprises should actively establish principles in building optimal capital structure. Factors such as featuresof business, industries, sectors or development periods have considerable impacts on financing decisions of enterprises. For instance, industries with demand for big investments in fixed assets can use more debts than other industries. As such, the optimal ratio of liabilities against total assets proposed in the research of

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21.22% is not a fixed ratio to all enterprises. On this basis, understanding the differences in optimal capital structure in different industries will be the orientations of further research in the future.

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Summary

Bài nghiên cứu nhằm hệ thống hóa các lý thuyết về mối quan hệ giữa cơ cấu vốn và hiệu quả kinh doanh, đồng thời thực hiện nghiên cứu thực nghiệm đối với các công ty cổ phần phi tài chính niêm yết trên thị trường chứng khoán (TTCK) Việt Nam giai đoạn 2011-2015. Thông qua việc phân tích mô hình dữ liệu bảng của 346 công ty niêm yết với tổng số 1730 quan sát, kết quả nghiên cứu cho thấy cơ cấu vốn có ảnh hưởng đáng kể đến giá trị doanh nghiệp và tồn tại mối quan hệ hình chữ U ngược giữa cơ cấu vốn và tỷ suất lợi nhuận trên vốn chủ sở hữu.

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