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The Impact of Capital Structure on Effectiveness of Business Activities of the Listed Cement Companies in Vietnam

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ABSTRACT:- This study was conducted to understand the impact of capital structure on the performance of enterprises in the cement industry listed on the stock market in Vietnam. The study uses table data of 17 cement enterprises listed on Vietnam's stock market over a period of 9 years, from 2010 to 2018. The study has compared and selected the basic method as the method. using quantitative regression model with the help of software stata 12 to determine regression coefficients. On that basis, the research has built an equation to evaluate the impact of capital structure on business performance of the cement industry. Based on the results obtained, the study offers some policy suggestions to improve the performance of businesses in the cement industry listed on Vietnam's stock market.

Keywords:- capital structure, performance, business activities, Vietnam

I. INTRODUCTION

The decision on capital structure is important for business managers because it affects the ability of shareholders to maximize profits, thereby maximizing business value. Therefore, the impact of capital structure on business performance is of great concern to business managers, shareholders as well as investors. Besides, efficiency is the core issue in production and business activities.It is a long-term goal covering all businesses in general and the cement industry in particular. The business performance of an enterprise is assessed by its profitability and achievement ratios based on book value and market value. The construction of capital structure also plays a very important role for financial managers as it contributes to a direct impact on corporate value and it has the ability to amplify the income stream for the company owner. Enterprises often mobilize capital from various sources (issuing stocks, bonds, taking bank loans or loans from credit institutions). The choice of which source of capital and the proportion of it greatly affects the business performance of the enterprise. Therefore, the relationship between business performance and capital structure of enterprises is considered an important and significant concern.

Many studies on the impact of capital structure on performance are conducted in many different countries and take into account the specific influencing factors. But most are done in developed countries. In recent years, much empirical evidence has been carried out in developing countries with transitioning economies. Some empirical evidence shows a positive relationship between capital structure and performance such as Detthamrong et al (2017), Nasimi (2016), Derayat, M. (2012), while Azeez et al. (2015), Tailab (2014), Soumadi and Hayajneh (2012) support the opposite relationship. Thus, the empirical evidence on this relationship gives different results, and whether the positive or opposite relationship, it depends on the data sample collected from many industries in different countries and territories.

In early 2010, the world and Vietnam witnessed the European public debt crisis (2009-2014) and were negatively affected in terms of economic development. While Vietnam is adopting a policy of tightening public investment; the real estate market is cooling down. Foreign investment has fallen, capital for domestic investment has been difficult to reach, bank interest rates have skyrocketed, a series of projects have come to the maturity of debt repayments from foreign banks, etc. Cement industry in particular and construction materials industry in general are in a difficult situation during the period of 2010-2013. The situation of full inventory is common for cement businesses across the country. Enterprises producing cement in particular and producing construction materials in general have made efforts to overcome difficulties. To survive and develop, all business units had to find all measures to reduce costs and increase competitiveness. Arrangements for renovation of equitization (privatization) of state-owned enterprises and merger and acquisition deals have been successful done during this time. After equitization, businesses still have many shortcomings in financial management, especially the unreasonable capital structure that not only affects business performance but also poses many potential risks.

Based on theory of capital structure and related studies on the relationship between capital structure and business performance of enterprises, this paper analyzes and assesses the impact of capital structure on business performance of the listed enterprises of the cement industry. On that basis, we propose a number of policy recommendations and appropriate solutions to build a reasonable capital structure to improve the business performance of cement enterprises listed on Vietnam's stock market. The object of the study is the impact of the capital structure on business performance of cement companies listed on Vietnam's stock market. The scope of content embraces the influence of capital structure on business performance of enterprises. The research scope includes spatial scope and time range. In terms of spatial scope secondary data are collected from financial statements of 17 cement enterprises listed on Vietnam's stock market. In terms of time range we selected the period of data collection spanning from 2013 to 2017.

To study the topic, the author has compared and selected the basic research method as a quantitative method and used the linear regression model with the help of stata 12 software to determine the regression coefficient. On that basis, the author built a research equation affecting the capital structure on business performance of the cement industry. From there, the author examines the relationship model between business performance and capital structure on the dataset. When the verification process is completed, the author analyzes the results and makes some recommendations suitable for the cement industry.

II. THEORETICAL FRAMEWORK

2.1.Capital structure

The concept of capital structure is widely defined by many researchers in the world. Capital structure is the choice between debt, equity or hybrid securities to finance the business of the enterprise (Myers, 1984). According to Abor (2005), capital structure is a combination of different securities. The capital structure is a combination of the amount of regular short-term debt, long-term debt, preferred shares, and equity capital that is often used to finance an enterprise's investment decision (Tran Ngoc Tho et al., 2007). Gill et al. (2011) stated that capital structure is a combination of debt and equity capital that enterprises use in business activities. Meanwhile, Nirajini and Priya (2013) argue that capital structure is a combination of long-term capital (ordinary shares, preferred shares, bank loans) and short-term debt (overdraft and trade payables). Usually the capital structure of a business enterprise is reflected in the indicators:

Debt rate = Total Debts/Total Assets

This ratio shows how much of the company's assets are financed by loans. This coefficient is used to determine the solvency of enterprises. The lower the debt ratio, the more guaranteed the debt is guaranteed in case of bankruptcy. Conversely, the higher this coefficient is, the more likely the enterprise is insolvent. Usually, if the debt ratio is high, it means that the company often adopts debt to fund its operations. If a company is heavily indebted to finance its high operating costs, it may be more profitable than issuing shares. And if the company's profits are much higher than its borrowing costs, its shareholders will also benefit. However, the profits gained from investment and business activities from the borrowed money may not be able to offset the borrowing costs, leading to the bankruptcy of the company. Therefore, borrowing or issuing more shares is a difficult problem for businesses.

Short-term Debt rate = Short-term Debts/Total Assets

This index reflects, in the total debt of the enterprise, the short-term debt accounts for a percentage of total assets. Thereby, clearly showing the situation of borrowing and short-term debt easily leading to insolvency of the business is high or low. From there, it is possible to assess the sustainability of the financial situation in the business.

Long-term Debt rate = Long-term Debts/Total Assets

This index reflects, in the total debts of the enterprise, the percentage of long-term debt accounts for a percentage of total assets. Because the payment term is longer than short-term debt, this is not a concern for businesses like short-term debt.

2.2.Business performance

There are many different interpretations of the concept of business performance. Some executives reiterate that business performance is determined by the ratio of results achieved and the costs spent to achieve them. Manfred Kuhn said that efficiency is determined by taking the result of the unit of value divided by business costs. According to Adam Smith, the efficiency is the result achieved in economic activities, is the revenue of goods consumption. Thus, efficiency is synonymous with the target reflecting business results, possibly due to increased costs of expanding production resources. If the same result has two different cost levels, then in this view the business is also effective. From the above points of view, it can be generally understood that business efficiency is an economic category, showing economic development in depth, it reflects the level of exploitation and use of resources in the process of reproduction to achieve business goals, with the least cost and highest efficiency. Usually, business performance of enterprises is reflected in the

following indicators:

✓ **Return On Equity: ROE =** *Net Income/Total Equity * 100%*

This index shows that on average, an equity capital is invested in investment, then after the course of production and business activities, the owner will get how many profits. This is a common index used by the simplicity, comprehensiveness, and comparability between enterprises in the same economic sector with different sizes or between businesses in different economic sectors or between many different investment activities such as savings deposits, real estate, securities, gold, foreign currencies and business projects. Therefore, it will help investors to make financing decisions quickly. However, the biggest disadvantage of ROE is that it is easily distorted by the financial strategies of business executives. For example, the manager can predict for some reason that the profitability of the business is likely to be affected and declined so the business will increase its investment in outstanding loans or repurchase stocks from the accumulated money resources. These activities will help business significantly improve its ROE.

✓ **Return on total assets: ROA** = *Net Income/Total Assets * 100%*

This index shows that on average, after the course of production and business activities, how much profit the enterprise will collect from a dollar of assets invested in investment. This is a measure of avoiding possible distortions created by financial strategies like the ROE. The ROA takes into account the amount of assets used to support business activities. This index determines that the company can generate a sufficiently large net profit margin on its assets.

✓ **Tobin's Q rate**

Tobin's Q is a measure of market value

Tobin's Q = (market capitalization + book value of debt) / Book value of total assets (Tobin, 1969), where market capitalization = closing price of shares x number amount of outstanding shares.

Tobin defines q as the market value of a firm on its capital replacement cost. If the q ratio is high, the company will invest more because it is cheaper to raise more capital because its market price is quite high compared to the cost of raising additional capital. Conversely, if the q-factor is low, the company will not increase its investment because the cost of raising additional capital is quite expensive.

2.3.Literature overview

Detthamrong et al (2017) relied on data collected from a sample of 493 non-financial enterprises in Thailand between 2001 and 2014 and used the OLS regression model to find out the relationship between financial leverage and performance. The leverage variable is measured by TDTA; the dependent variables are ROA and ROE. The research results support a positive relationship between financial leverage and performance in these businesses.

Nasimi (2016) studied the effect of capital structure on the performance of 30 selected enterprises from the FTSE-100 index of London Stock Exchange for 10 years from 2005 to 2014. This study uses capital structure measurement criteria: Debt to equity ratio and loan interest ratio. Indicators to measure business performance: ROA, ROE, ROIC (return on investment). The FEM and REM models are used to understand the relationship between capital structure and performance. The results show that capital structure has a positive effect on the performance of firms in the sample.

Zuraidah Ahmad et al. (2012) studied the impact of capital structure on the performance of unlisted public companies in Malaysia. The sample consists of two main components of the Malaysian stock market: consumers and industries. The sample consists of 58 enterprises in the period from 2005 to 2010. The dependent variables include return on assets (ROA) and return on equity (ROE) and capital structure represented by short-term debt (STD), long-term debt (Limited) and total debt (TD). Observed variables include asset size, revenue growth and efficiency. The study results show that the short-term debt index and the total debt ratio have a positive relationship with ROA, ROE.

Derayat, M. (2012) conducted a study on the impact of capital structure on the performance of 135 companies listed on the Tehran Stock Exchange between 2006 and 2010. This study is based on five industries, including base metals, machinery and equipment, food and beverage, non-metals and minerals, materials and chemistry. Research results have shown that capital structure has a positive impact on the performance of businesses.

Azeez et al. (2015) studied the effect of financial leverage on performance in the period before (2003 - 2006), in (2007 - 2008) and after the crisis period (2009-2012) with the data sample from 200 businesses listed on the US stock exchange over the 10 years, from 2003 to 2012. The study found an inverse relationship between financial leverage (debt to equity ratio) and ROA for the period before the economic crisis (2003 - 2006) and after the economic crisis (2009-2012). Specifically, when the debt to equity ratio increased by 1%, the ROE decreased by 0.362% (before the economic crisis) and by 1.13% (after the economic crisis).

Soumadi and Hayajneh (2012) conducted a study on the effect of capital structure on the performance of public companies listed on the stock market of Amman, Jordan. The study uses the least squares model (OLS) to

examine the impact of capital structure on performance. The sample consists of 76 enterprises (53 industrial enterprises and 23 enterprises) in the period 2001- 2006.The variables include two dependent variables, namely ROE and Tobin's Q.Independent variables include financial leverage,fixed assets, firm size and growth rates to explain the return on equity between high growth and low growth companies. The research results show that financial leverage has a negative impact on company efficiency.

Mohammad Fawzi Shubita and Jaafer Maroof alsawalhah (2012) studied the effect of capital structure on the profits of companies listed on the stock exchange Amman. The data was collected from 39 companies in the listed industry between 2004 and 2009. The results show a negative relationship between the ratio of short-term debt to total assets and ROE but the have a positive relationship with the scale variable and revenue growth. The study also shows that ROE has a negative relationship with the ratio of long-term debt to total assets and total debt to total assets. The result is that if the debt ratio increases, the company's profits will decrease. This is explained in practice, the cost of debt is always higher than the cost of equity of the research firm. This shows that the profitable companies depend heavily on equity which is also their capital structure choice. However, the recommendations based on the findings provided for improvement are to consider the use of an optimal capital structure and general investigation beyond the manufacturing sector.

Khan, AG (2012) conducted a study based on the data of 36 companies operating in technical fields listed on Karachi stock market of Pakistan from 2003 to 2009. The results show that the ratio of short-term debt to total assets (STDTA) and the ratio of total debt to total assets (TDTA) have a negative impact on ROA, while the ratio of long-term debt to total debt (LTDTA) has no significance for with ROA and ROE. TDTA has a negative impact on ROE at the 5% significance level. When measuring performance of Tobin's Q, STDTA and TDTA have a negative impact on Tobin's Q while LTDTA has a positive impact on Tobin's Q. The results show that long-term debt has an impact on market price increase of the analyzed businesses.

Tailab (2014) conducted a study based on data of 30 energy enterprises in the US for 9 years from 2005 to 2013 with the purpose of studying the impact of capital structure on performance. The study used multivariate regressions, with dependent variables: ROA, ROE and independent variables: SDR, LDTA, TDR, debt to equity ratio and business size variable. Accordingly, there is an inverse relationship between capital structure (TDR) and performance, while SDR is directly proportional to ROE.

Toraman et al. (2013) studied the effect of capital structure on profitability of 28 manufacturing companies operating in Borsa, Turkey. The data is taken from the financial statements of manufacturing companies from 2005 to 2011. The results show that short-term liabilities over total assets and long-term liabilities over total assets have a negative relationship with ROA index. There is a positive relationship between operating income for financial expenditures and financial activity, there is no relationship between total debt and equity and ROA.

Sheikh and Wang (2013) conducted a study with a data set of 240 non-financial enterprises in Pakistan, which are listed on the Karachi Stock Exchange and classified into eight different industries. Using the regression model Pool OLS, FEM, REM and Hausman test to choose between FEM and REM models, the results confirm the inverse relationship between capital structure (TDR, LDTA and SDR) and business performance (ROA), LDTA is correlated positively with business performance (measured by the market price-to-book ratio –Torbin Q).

Salim, M. and Yadav, R. (2012) conducted a study on the capital structure's impact on the performance of 237 listed companies in Malaysia from 1995 to 2011. This study uses the ROA, ROE, EPS and Tobin Q variables as dependent variables; long-term debt, short-term debt, total debt and growth as independent variables; scale as control variable. The sample was divided into separate sectors such as consumption, construction, agriculture, industry, finance, and trade in services. Research results show that capital structure (especially total debt and short-term debt) negatively affects ROE. Long-term liabilities; Short-term debt has a negative effect on ROA, capital structure also has a negative impact in some cases in sub-sectors, particularly in agriculture, total debt has a positive effect on ROE, however the majority of The results show no statistical significance. The capital structure also has a negative impact on EPS except that the results are not statistically significant. Long-term debt, Short-term debt has a positive effect on Tobin's Q. Except for the financial sector of long-term debt that has a negative effect. In contrast, the ratio of total debt has a negative effect on Tobin's Q in all industries.

Prahalathan and Ranjani (2011) studied the impact of capital structure on firm's profitability based on the empirical case study for companies listed on the Colombo Stock Exchange (Srilanka) with a sample of 65 firms operating in the 2003-2007 period.The results indicated that the ratio of short-term debt, long-term debt and total debt did not make sense for ROE and ROA.

According to empirical studies from the Vietnamese economy and the world, there are many different conclusions about the impact of capital structure on the performance of the company. There are studies that suggest that capital structure has a positive effect on a company's performance, there are studies that suggest that capital structure has a negative effect on a company's performance, and there are also studies that put The

conclusions have the same direction, opposite direction and no overlapping impact in the same study when changing the measure of capital structure and firm performance. Therefore the issues raised about this relationship are still being studied to provide more empirical evidence.

Empirical evidence on the relationship between capital structure and performance has heterogeneous results between developed and developing or transitional economies. In particular, most theories related to capital structure and empirical evidence made in developed countries show a positive relationship. Specifically, Nasimi (2016) when studying enterprises on the London stock exchange thinks that there is a positive relationship between capital structure and firm performance. That is, the more debt an enterprise uses, the greater the benefit of the tax shield it receives. Therefore, the optimal capital structure will be maintained by managers to achieve business performance goals. However, Azeez et al. (2015), Tailab (2014), Sheikh and Wang (2013) have found the opposite effect of leverage on performance. They argue that underestimating the cost of bankruptcy can make businesses have more debt than they need, so high leverage will reduce corporate performance. Based on the empirical results of previous studies on the effect of capital structure on the performance of listed companies on Vietnam's stock market by Nguyen Van Duy et al (2014), Le Thi Phuong Vy and Phung Duc Nam (2013), the author proposed the **research hypothesis** that should be tested as follows: "*The capital structure has a negative effect on the performance of listed cement enterprises in Vietnam stock market*".

III. RESEARCH METHODOLOGY (2-3)

3.1.Research model

Based on the theoretical basis of the influence of capital structure on the performance of enterprises, combining with a review of the experimental research models that the author has presented above, the author applies the model. Research model of Abdul Ghafoor Khan (2012) because of the similarity of studying an economic sector in a developing country. The research model on the effect of capital structure on the performance of cement enterprises listed on Vietnam's stock market has the following general form:

$$\mathbf{Y_{it} = \alpha_i + \beta_i X_{i,t} + \gamma_i X_{i,t} + \varepsilon_{i,t}}$$

Specific models to be deployed include:

(1) $\mathbf{ROAit = \alpha 0 + \beta 1 STDTAit +} \gamma 1SIZEit + \gamma 2GROWTHit + \gamma 3TANGit + \gamma 4LIQit + \varepsilon it$

(2) $\mathbf{ROEit = \alpha 0 + \beta 1 LTDTAit +} \gamma 1SIZEit + \gamma 2GROWTHit + \gamma 3TANGit + \gamma 4LIQit + \varepsilon it$

(3) $\mathbf{TQit = \alpha 0 + \beta 1 TDTAit +} \gamma 1SIZEit + \gamma 2GROWTHit + \gamma 3TANGit + \gamma 4LIQit + \varepsilon it$

$SIZE_{it}$:Total assets of the company i in year t.

$GROWTH_{it}$: Total asset growth of the company i in year t

$TANG_{it}$: Net tangible fixed assets over total assets of the company i in year t

LIQ_{it}: Liquidity rateof the company i in year t

ε_{it}: Error.

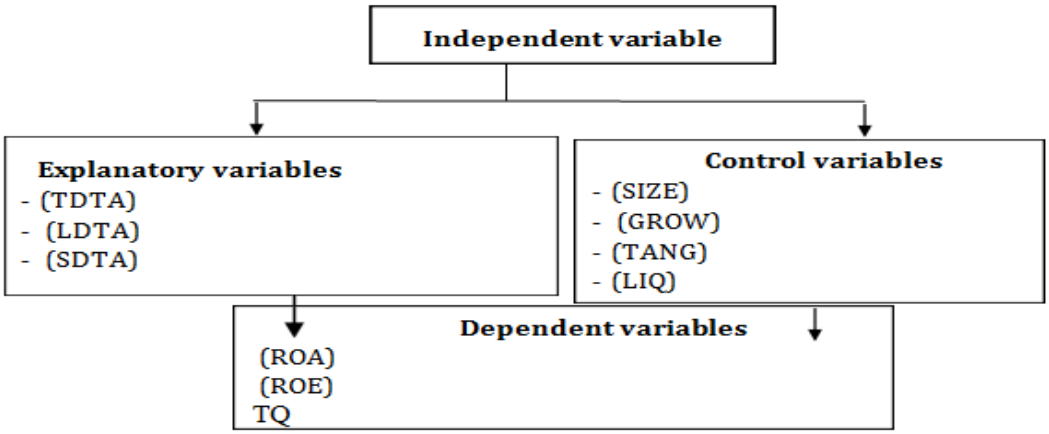
Table 2.1: Calculation of variables

Variables	Calculation
Dependent variables	
(ROA)	**Net income / total assets**
(ROE)	**Net income / total equity**
Tobin'Q	**[Market value of equity plus total book value of debt] / total book value of assets**
Explanatory variables	
(TDTA)	**Total debt / total assets**
(LDTA)	**Long-term debt / total assets**
(SDTA)	**Short-term debt / total assets**
Control variables	
(SIZE)	**Natural logarithm of total assets**
(GROW)	**Growth rate of total assets**
(TANG)	**Tangible fixed assets / total assets**
(LIQ)	**Short-term assets / short-term liabilities**

Source: Authors'

From the content discussed above, the author presents the analytical framework of the topic as follows:

Figure 2.1: Research framework



Source: Authors'

3.2.Research methodology

Descriptive statistical analysis

General information about number of observations, mean value, maximum value, minimum value andstandard deviation of variables in addition, the author summarizes and makes general observations based on this statistical result.

Matrix correlation coefficient analysis

Analyze the correlation coefficient matrix to see whether there is multi-collinear phenomenon between the variables in the model or not. Observing the results in the correlation coefficient matrix, if the correlation coefficient of variables is less than about 0.8, there may be no correlation between the variables in the model. However, this method sometimes does not give accurate results in case of small correlation coefficients but still exists multicollinearity. To be more effective, use a differential magnification factor (VIF).

Regression data table

Baltagi (2005) gives a general form of table data regression, presented as follows:

$$Y_{it} = \alpha + \beta_{it}X_{it} + + u_{it}$$

Yit: The dependent variable of the ith enterprise at time t;
Xit: The value of X for enterprise i at time t;
βit: slope;
uit: The random error of enterprise i at time t.
Gujarati (2011) offers many regression models of table data, the models used in this study: Pool OLS, FEM, REM.

Pool OLS model

Pool OLS model is a simple regression model, without considering the time and space factors of the data, only estimating conventional OLS regression. Therefore, the coefficients in the model do not change over time and by enterprise. However, the limitation of this model is that the autocorrelation phenomenon often occurs because the Durbin Watson coefficient is quite low (Gujarati and Porter, 2009).

$Y_{it} = \alpha + \beta 2\ X2it + \beta 3X3it + u_{it}$

u_{it}: random error.

Model of fixed effects (FEM)

In the model of fixed effects, we assume that the slope of the coefficient varies from firm to firm and the slope is constant. Note, the bounce can vary from one business to another, but the original launch doesn't change over time. Differences in the origin of each enterprise may be due to the characteristics of each enterprise such as management style (Gujarati and Porter, 2009; Gujarati, 2011).

The FEM model is presented as follows:

$Y_{it} = \beta 1i + \beta 2\ X2it + \beta 3\ X3it + u_{it}$

Model of random effects (REM)

In this model, assume β1i is a random variable with an average value of β1. The difference of each enterprise is expressed in random errors (Gujarati, 2011).

The REM model is as follows:

$$Y_{it} = \beta 1i + \beta 2\ X2it + \beta 3\ X3it + u_{it}$$

$\beta 1i = \beta 1 + \varepsilon i$

εi random noise class with 0 as average and là σ^2as variance. We have:

$$Y_{it} = \beta_1 + \beta_2 X_{2it} + \beta_3 X_{3it} + u_{it} + \varepsilon_i$$

εi: error component of the unit;
uit: error component of the unit with time series.

Tests for selecting and overcoming model defects

Testing multi-collinear phenomenon

Gujarati and Porter (2009) used variance-in fl ating factor (VIF) to detect multicollinearity.If the correlation coefficient is closer to 1, the bigger the VIF, the collinearity phenomenon occurs. In the absence of multicollinearity between variables, VIF = 1.

Test of variance change

Gujarati (2011) states that "The variance of each interfering factor, depending on the selected value of the explanatory variables, is a constant number" which is the assumption of homoscedasticity. Some tests are often used to check for variance change: White test, Wald test, LM test (Breusch and Pagan Lagrangian). The two hypotheses are:

H0: Variance does not change;
H1: Variance of changes.

If p - value <significance level, reject hypothesis H0, if p - value> significance level, accept hypothesis H0, conclude there is no change of variance phenomenon.

Self-correlation test

Gujarati (2011) proposed two hypotheses when testing the autocorrelation:

H0: There is no autocorrelation phenomenon;
H1: There is a self-correlation phenomenon.

The author uses Wooldridge test to check for self-object. If p - value <significance level, reject hypothesis H0, if p - value> significance level, accept hypothesis H0, conclude there is no autocorrelation phenomenon.

Hausman test

Gujarati and Porter (2009) performed the Hausman test to choose between FEM and REM models. Two hypotheses are given:

H0: There is no correlation between the error component of the crossover unit and the explanatory variable;
H1: There is a correlation between the error component of the cross unit and the explanatory variable.

If p - value <significance level, reject hypothesis H0, FEM model matches. If p - value> significant level, accept hypothesis H0, suitable REM model.

Robust test

When a variance change occurs, the OLS estimation for the results of the coefficients is still an unbiased estimate, but the variance, covariance between the estimated coefficients derived from the OLS regression is biased. Therefore, White (1980) proposed a robust standard error method while maintaining the estimated coefficients from the OLS method, but the variance of the estimated coefficients was re-estimated. After performing this test, there is no longer any variance change (heteroskedasticity).

IV. FINDINGS ANALYSIS (5)

4.1.Statistical descriptive analysis of the research variables

The results of statistical descriptive analysis for data of research variables are presented in Table 4.1 below.

Table 4.1: Statistic description for variables in the sample

Variables	Observations	Average	Standard deviation	Min	Max
ROA	162	0,0572	0,1050	-1,7787	**0,7836**
ROE	162	0,0913	0,3285	-8,0841	**1,0007**
TQ	162	0,9938	1,1473	0,1408	**31,6689**
TDTA	162	0,4957	0,2140	0,00198	**0,9705**
LDTA	162	0,1369	0,1558	0,0000	**0,6839**
SDTA	162	0,3587	0,2056	0,0019	**0,9618**
SIZE	162	27,4615	1,4461	22,0448	**32,1235**
LIQ	162	2,7441	7,6499	0,1434	**229,7793**
TANG	162	0,2600	0,2189	0,0000	**0,9661**
GROW	**162**	**0,0111**	**0,1153**	**-2,2971**	**0,7330**

Source: Authors'

The statistical descriptive analysis results in Table 4.1 show:

The average ROA of cement enterprises listed on Vietnam's stock market in the period 2010-2018 fluctuates

around 0.057, of which the lowest value is about -1.77 and the highest value is about 0.78, showing ROA different between companies.
For ROE, the average value is about 0.09, the maximum value is 1 and the minimum value is -8, this result shows that many businesses in the period of 2010-2018 suffered from losses and difficulties. , the sample dispersion is relatively high with a standard deviation of about 0.3.
For the Tobin'Q ratio (TQ), the lowest and highest value ranges are 0.14 to 31.66 and the standard deviation is about 1.14, indicating a high level of dispersion of the sample.
Total debt to total assets (TDTA) variable shows that on average, in the 2010-2018 period 49.57% each asset was formedby debt financing.At the same time, descriptive statistics ofthe two variables of short-term debt on total assets (SDTA) and long-term debt on total assets (LDTA) also reflect that enterprises in the cement industry in the period of 2010-2018 tend to use more short-term debt than Long-term debt. Specifically, with the average total debt ratio of 49.57%, the short-term debt ratio is about 35.87% and about 13.70% is long-term debt.
For tangible asset variables (TANG), the average value is about 0.26, the lowest and highest value ranges are: 0 - 0.96, standard deviation of about 0.21, showing the value of TANG of this sample revolves around the mean with a relatively wide dispersion.
The lowest and highest value range of the growth variable (GROW) ranges from -2.29 to 0.73 and the average value is about 0.01, indicating that the growth of enterprises in the observed sample is not uniform. are.
For enterprise size variable (SIZE), the lowest value is about 22.04, the highest value is about 32.12 and the average value is about 27.46. Firms in the sample size of assets mainly revolve around the average value.
The liquidity variable (LIQ) has an average of 2.74, the lowest value is 0.14 and the highest is 229.77.

4.2.Correlation analysis among research variables

Table 4.2: Matrix of correlation between research variables

Variables	TDTA	LDTA	SDR	SIZE	TANG	LIQ	GROW
TDTA	1,00						
LDTA	0,41	1,00,					
SDR	0,72	-0,32	1,00				
SIZE	0,33	0,03	0,32	1,00			
TANG	-0,06	0,35	-0,33	0,005	1,00		
LIQ	-0,26	-0,05	-0,23	-0,16	-0,07	1,00	
GROW	**0,05**	**0,11**	**-0,03**	**0,03**	**0,21**	**-0,01**	**1,00**

Source: Authors'

The results of correlation analysis between the independent variables in the model presented in Table 4.2 show that there is no serious multicollinearity phenomenon in the independent variables, the correlation coefficient ranges from -0.3 to 0.8. The results in Table 4.2 show the suitability of these variables in the model.

4.3.Regression analysis results

Regression results between TDTA variable and performance

Table 4.3 below presents the regression results in turn between the variable total debt to total assets (TDTA) and the dependent variable, respectively, are the measurement indicators for the performance of cement enterprises, including: ROA, ROE and TQ

Table 4.3: Regression results between TDTA variables and performance

Variables	Independent variables								
	ROA			ROE			TQ		
	Pool OLS (1)	FEM (2)	REM (3)	Pool OLS (4)	FEM (5)	REM (6)	Pool OLS (7)	FEM (8)	REM (9)
TDTA	-0,221*** (-17,52)	-0,208*** (-7,72)	-0,225*** (-13,75)	-0,385*** (-9,11)	-0,54*** (-5,23)	-0,397*** (-8,61)	-0,578*** (-3,87)	1,125*** (3,49)	**-0,194 (-1,01)**
SIZE	0,021*** (11,82)	0,041*** (8,88)	0,025*** (10,29)	0,054*** (8,93)	0,106*** (5,90)	0,006*** (8,43)	0,207*** (9,64)	0,123** (2,20)	**0,183*** (6,34)**
TANG	-0,022*** (-1,97)	-0,122*** (-4,31)	-0,044*** (-2,83)	-0,05 (-1,31)	-0,256*** (-2,37)	-0,061 (-1,43)	-0,09 (-0,66)	-0,588* (-1,75)	**-1,084 (-0,59)**
LIQ	-0,000 (-0,48)	-0,000 (-0,59)	-0,000 (-0,32)	-0,000 (-0,41)	-0,000 (-0,75)	-0,000 (-0,42)	0,003 (0,85)	0,002 (0,55)	**0,002 (0,67)**
GROW	0,084*** (3,84)	0,088*** (4,09)	0,077*** (3,8)0	0,206*** (2,81)	0,221*** (2,68)	0,199*** (2,71)	0,712** (2,75)	0,256 (1,00)	**0,422* (1,74)**
_Cons	-0,417*** (-8,59)	-0,958*** (-7,43)	-0,519*** (-7,82)	-1,19*** (-7,36)	-2,495*** (-5,07)	-1,250*** (-6,96)	-4,400*** (-7,66)	-2,813** (-1,83)	**-3,94*** (-5,06)**
N(observations)	162	162	162	162	162	162	162	162	**162**
R^2 (with in)		0,118	0,104		0,053	0,04		0,018	**0,004**
Model selection test									
F test	Prob > F = 0,000			Prob > F = 0,000			Prob > F = 0,000		
Hausman test		34,26			19,04			**35,22**	
Prob > Chi2		0,000			0,001			**0,000**	
Wald and Wooldridge test									
Wald test		3,4e+06			1,3e+07			2,2e+07	
Prob > Chi2		0,000			0,000			0,000	
Wooldridge test		0,000			0,132			3,256	
Prob > F		0,983			0,716			0,072	

*Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively. Value inparentheses are the t - statistic index.*

Source: Authors'

Table 4.3 shows the regression results between capital structure (TDTA) and performance (ROA, ROE and China). Columns (1), (2), (3) show the impact of capital structure (TDTA) on ROA, similarly, columns (4), (5), (6) show the impact of capital structure on ROE and the remaining 3 columns show impacts on China, all of which are implemented in turn according to the models of Pool OLS, FEM, REM. The control variables used in the model are: SIZE, TANG, LIQ and GROW.

Based on the results of F test, the Prob> F value is less than 5% (significance level), the conclusion rejects the hypothesis H0. The FEM model is more suitable than the Pool OLS model.

Between FEM and REM models, based on the results of the Hausman test, the conclusion rejects the hypothesis H0. The FEM model is more appropriate than the REM model.

Perform Wald tests and Wooldridge tests to check for variance change and autocorrelation. Based on the results in Table 4.3, there is a variance change phenomenon and autocorrelation. To fix this model's flaw, the author re-ran the FEM model with the Robust option.

Table 4.4: Regression results between TDTA variables and performance with FEM models (option Robust)

Variables	Dependent variables					
	ROA		**ROE**		TQ	
TDTA	-0,209*** (-5,63)		-0,541** (-3,07)		1,126 (1,47)	
SIZE	0,041** (2,66)	0,037* (2,44)	0,106*** (3,44)	0,092** (3,32)	0,124 (1,07)	**0,161 (1,59)**
TANG	-0,122* (2,10)	-0,116* (-2,01)	-0.256* (-2,25)	-0,282* (-2,35)	-0,589* (-2,20)	**-0,106 (-0,45)**
LIQ	-0,000 (-0,88)	-0,00 (-1,25)	-0,000 (-1,39)	-0,000 (-1,80)	0,000 (1,59)	**-0,000 (1,24)**
GROW	0,088 (1,78)	0,0770 1,57	0,221 (1,86)	0,193 (1,72)	0,257* (2,00)	**0,299 1,93**
_Cons	-0,959* (-2,26)	-0,843* (-2,04)	-2,495** (-3,16)	-2,248** (-2,96)	-2,814 (-0,98)	**-2,789 (-1,03)**
N	162	162	162	162	162	**162**
Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively. Value inparentheses are the t - statistic index.						

Source: Authors'

The regression results in Table 4.4 show that, TDTA variable has the opposite effect of performance (representative variable ROA, ROE) with high reliability (99%, 95%), the coefficients are statistically significant (P - value <0.05). In the context of other factors unchanged, when TDTA increases by 1%, ROA, ROE decrease respectively: 0.209%, 0.541%, the impact level of TDTA on ROE is greater than ROA. The variable SIZE has a positive relationship with firm performance in the model with dependent variables ROA, ROE, the coefficients are statistically significant. The variable TANG has the opposite effect on the performance at the 10% significance level, the LIQ and GROW variables have not shown a clear impact, the coefficients are not statistically significant.

Regression results between LDTA variable and performance

Table 4.5: Regression results between LDTA variables and performance

Variables	Dependent variables								
	ROA			**ROE**			**TQ**		
	Pool OLS(1)	**FEM (2)**	**REM (3)**	**Pool OLS (4)**	**FEM (5)**	**REM (6)**	**Pool OLS (7)**	**FEM (8)**	REM (9)
LDTA	-0,136*** (-7,46)	-0,175*** (-5,17)	-0,147*** (-6,12)	-0,062 (-1,07)	-0,0667 (-0,52)	-0,0607 (-0,92)	-0,419* (-2,08)	-0,0403 (-0,1)	**-0,319 (-1,24)**
SIZE	0,0120*** (6,41)	0,0385*** (8,12)	0,0180*** (6,75)	0,037*** (6,27)	0,0924*** (5,11)	0,0399*** (5,83)	0,182*** (8,90)	0,155** (2,77)	**0,177*** (6,31)**
TANG	0,0310* (2,33)	-0,115*** (-3,88)	-0,0112 (-0,61)	-0,000 (-0,01)	-0,333** (-2,96)	-0,0217 (-0,45)	0,0654 (0,45)	-0.385 (-1,10)	**-0,0248 (-0,13)**
LIQ	0,001** (3,28)	0,000 (0,51)	0,000* (1,96)	0,0019 (1,69)	-0,000 (-0,07)	0,0015 (1,36)	0,006 (1,75)	0,000 (0,10)	**0,0032 (0.86)**
GROW	0,069** (2,93)	0,088*** (4,03)	0,0655** (3,10)	0,171* (2,26)	0,199* (2,38)	0,160* (2,12)	0,677** (2,60)	0,313 (1,20)	**0,418 (1,73)**
_Cons	-0,265*** (-5,13)	-0,948*** (-7,25)	-0.417*** (-5,66)	-0,933*** (-5,66)	-2,352*** (-4,72)	-0,996*** (-5,27)	-4,002*** (-7,06)	-3,165* (-2,05)	**-3,825*** (-1,94)**
N(observations)	162	162	162	162	162	162	162	162	**162**
R^2(with in)		0,095	0,077		0,032	0,019		0,008	**0,007**
Model selection test									
F test	Prob > F = 0,000			Prob > F = 0,000			Prob > F = 0,000		
Hausman test		68,58			26,49			**11,37**	
Prob > Chi2		0,000			0,000			**0,0446**	
Wald and Wooldridge test									
Wald test		1,8e+06			4,2e+07			3,3e+07	
Prob > Chi2		0,000			0,000			0,000	
Wooldridge test		0,000			0,407			4,699	
Prob > F		0,997			0,52			0,03	
*Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively. Value inparentheses are the t - statistic index.*									

Source: Authors'

Table 4.5 presents the regression results between capital structure (LDTA) and performance (ROA, ROE and TQ). Columns (1), (2), (3) show the impact of LDTA on ROA, similarly, columns (4), (5), (6) show the impact of LDTA on ROE and the remaining 3 columns can. The impact of LDTA on China, all are done in turn according to the models of Pool OLS, FEM, REM. The four control variables in the model are: SIZE, TANG, LIQ and GROW.

Based on the test result F, Prob> F = 0.000 <5% (significance level), the conclusion rejects the hypothesis H0. The FEM model is more suitable than the Pool OLS model.

To choose between FEM and REM models, based on the results of the Hausman test, the conclusion rejected the H0 hypothesis. The FEM model is more appropriate.

We perform Wald tests and Wooldridge tests to check for variance change and autocorrelation. Based on the results of Table 4.5, the models with defects are variance change. To overcome this defect, the author re-ran the FEM model with the Robust option.

Table 4.6: Regression results between LDTA variables and performance with FEM models (option Robust)

Variables	Dependent variables					
	ROA		**ROE**		TQ	
LDTA	-0,175** (-3,29)		-0,066** (-0,63)		-0,04 (-0,12)	
SIZE	0,0385* (2,43)	0,036* (2,38)	0,092** (3,26)	0,091** (3,24)	0,155 (1,61)	**0,157 (1,59)**
TANG	-0,115* (2,11)	-0,112* (-2,00)	-0,33** (-2,76)	-0,328** (-2,66)	-0,385 (-1,54)	**-0,192 (-0,75)**
LIQ	0,000 (0,99)	0,00 (0,76)	-0,000 (-0,35)	-0,000 (-0,43)	0,000 (0,42)	**0,000 (0,42)**
GROW	0,0886 (1,84)	0,085 (1,80)	0,199 (1,81)	0,199 (1,83)	0,313* (2,07)	**0,34* (2,22)**
_Cons	-0,948* (-2,19)	-0,901* (-2,14)	-2,352** (-3,05)	-2,335** (-3,04)	-3,165 (-1,19)	**-3,174 (-1,16)**
N	162	162	162	162	162	**162**

Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively.
Value inparentheses are the t - statistic index.

Source: Authors'

The LDTA variable has a negative impact on the performance (representative variable ROA, ROE) with high reliability (95%), the coefficients are statistically significant (P - value <0.05). In the context of other factors constant, when LDTA increases by 1%, ROA, ROE decrease respectively: 0.175%, 0.066%, the degree of impact of LDTA on ROA is greater than ROE. The SIZE variable has a positive relationship, the TANG variable has a negative relationship with the firm's performance in the dependent variable model of ROA, ROE and the coefficients are statistically significant. The variables LIQ and GROW have not shown a clear impact, the coefficients are not statistically significant.

Regression results between SDTA variable and performance

Table 4.7: Regression results between LDTA variables and performance

Variables	Dependent variables								
	ROA			**ROE**			TQ		
	Pool OLS (1)	**FEM (2)**	**REM (3)**	**Pool OLS (4)**	**FEM (5)**	**REM (6)**	**Pool OLS (7)**	**FEM (8)**	REM (9)
SDTA	-0,179*** (-12,20)	-0,108*** (-3,66)	-0,171*** (-8,97)	-0,432*** (-9,20)	-0,571*** (-5,15)	-0,445*** (-8,71)	-0,425* (-2,56)	1,324*** (3,83)	**-0,004 (-0,02)**
SIZE	0,019*** (9,99)	0,037*** (7,90)	0,022*** (8,67)	0,066*** (9,04)	0,099*** (5,57)	0,057*** (8,51)	0,199*** (9,21)	0,136* (2,44)	**0,175*** (6,02)**
TANG	-0,063*** (-4,85)	-0,166*** (-5,82)	-0,088*** (-5,08)	-0,016*** (-3,88)	-0,392*** (-3,67)	-0,175*** (-3,83)	-0,182 (-1,23))	-0,296 (-0,89)	**-0,105 (-1,54)**
LIQ	0,000 (0,46)	-0,000 (-0,18)	0,000 (0,23)	-0,000 (-0,52)	-0,001 (-0,89)	-0,000 (-0,55)	0,004 (1,12)	0,002 (0,07)	**0,003 (0,84)**
GROW	0,069** (3,04)	0,077*** (3,53)	0,062** (3,01)	0,187* (2,55)	0,190* (2,30)	0,179* (2,44)	0,673** (2,59)	0,323 (1,26)	**0,401 (1,66)**
_Cons	-0,387*** (-7,58)	-0,896*** (-6,83)	-0,489*** (-6,85)	-1,230*** (-7,53)	-2,335*** (-4,75)	-1,277*** (-7,09)	-4,293*** (-7,43)	-3,148* (-2,06)	**-3,81*** (-4,86)**
N (observations)	162	162	162	162	162	162	162	162	**162**
R^2 (within)		0,085	0,067		0,053	0,049		0,02	**0,007**
Model selection test									
F test	Prob > F = 0,000			Prob > F = 0,000			Prob > F = 0,000		
Hausman test		37,84			15,97			**33,59**	
Prob > Chi2		0,000			0,006			**0,000**	
Wald and Wooldridge test									
Wald test		3,0e+06			1,1e+07			1,2e+08	
Prob > Chi2		0,000			0,000			0,000	
Wooldridge test		0,002			0,199			2,615	
Prob > F		0,962			0,655			0,107	

Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively. Value inparentheses are the t - statistic index.

Table 4.7 presents the regression results between capital structure (SDTA) and performance (ROA, ROE and TQ). Columns (1), (2), (3) show the impact of SDTA on ROA, similarly, columns (4), (5), (6) show the impact of SDTA on ROE and the remaining 3 columns can The impacts of SDTA on China are all implemented in turn according to the models of Pool OLS, FEM, REM. The four control variables in the model are: SIZE, TANG, LIQ and GROW.

Based on the test result F, Prob> F = 0.000 <5% (significance level), the conclusion rejects the hypothesis H0. The FEM model is more suitable than the Pool OLS model.

To choose between FEM and REM models, based on the results of the Hausman test, the conclusion rejected the H0 hypothesis. The FEM model is more appropriate.

Perform Wald tests and Wooldridge tests to check for variance change and autocorrelation. Based on the results of Table 4.7, the models with defects are variance change. To overcome this defect, the author re-ran the FEM model with the Robust option.

Table 4.8: Regression results between SDTA variables and performance with FEM models (option Robust)

Variables	Dependent variables					
	ROA		**ROE**		TQ	
SDTA	-0,108*** (-3,45)		-0,571* (-2,44)		1,324 (1,26)	
SIZE	0,037* (2,45)	0,036* (2,36)	0,099*** (3,33)	0,092** (3,27)	0,135 (1,22)	**0,156 (1,57)**
TANG	-0,166** (-3,06)	-0,162** (-2,97)	-0,392** (-3,04)	-0,36** (-3,12)	-0,296 (-1,22)	**-0,431 (-1,91)**
LIQ	-0,00 (-3,06)	-0,00 (-0,61)	-0,000 (-1,37)	-0,000 (-1,60)	0,002 (1,34)	**-0,000 (-0,97)**
GROW	0,077 (1,61)	0,072 (1,49)	0,190 (1,65)	0,181 (1,60)	0,323* (2,32)	**0,258 (1,72)**
_Cons	-0,896* (-2,11)	-0,857* (-2,00)	-2,335** (-3,05)	-2,232** (-2,92)	-3,148 (-1,16)	**-2,803 (-1,06)**
N	162	162	162	162	162	**162**

Note: *, **, *** correspond to the reliability: 90%, 95%, 99% respectively.
Value inparentheses are the t - statistic index.

Source: Authors'

The SDTA variable has a negative impact on the performance (representative variable ROA, ROE) with high reliability (99%, 90%), the coefficients are statistically significant (P - value <0.1). In the context of other factors unchanged, when SDTA increased by 1%, ROA, ROE decreased respectively: 0,108%, 0,571%, the impact level of SDTA on ROE is greater than ROEA. The SIZE variable has a positive relationship, the TANG variable has a negative relationship with the firm's performance in the dependent variable model of ROA, ROE andthe coefficients are statistically significant. The variables LIQ and GROW have not shown a clear impact, the coefficients are not statistically significant.

4.4.Impact of independent variable on firm performance

In order to clarify the impact of the independent variable on the performance of the enterprise, the author divided into two groups: explanatory variables and control variables.

Explanatory variables group

Explanatory variables include variables representing the firm's capital structure (TDTA, LDTA and SDTA).

Table 4.9: Summary of regression results between capital structure and performance

Variables	Performance		
	ROA	**ROE**	TQ
TDTA	-0,209***	-0,541***	
LDTA	-0,175**	-0,066**	
SDTA	**-0,108*** **	**-0,571***	

Source: Authors'

The aggregate results in Table 4.9 show the inverse relationship between capital structure and firm performance. This can be explained by several reasons as follows. Firstly, according to the representative cost theory, borrowing will reduce the agency cost between the owner and the manager, the creditor plays the role of supervising the business in the use of capital. However, in Vietnam, this role of creditors has not been well implemented, so the borrowing does not reduce the agency costs between the owner and the manager (Le and Phan, 2017). Secondly, compared with the stock market, the growth of the debt market in Vietnam is still slow, so listed cement enterprises often raise capital from issuing shares instead of issuing debt. If businesses raise funds from outside sources, loans from banks are often used, so they do not take advantage of the tax shield from debt issuance (Tianyu, 2013; Le and Phan, 2017).

In addition, this study shows that for external sources such as debt, short-term debt is preferred over long-term debt. Specifically, in this study, the average debt ratio of cement enterprises accounts for about 49.57%, the short-term debt ratio is about 35.87% and about 13.70% is long-term debt, the more used short-term debt may be due to the fact that the cost of using the short-term debt is lower than the long-term debt or the long-term debt usually requires collateral compared to the short-term debt. Therefore, this finding is considered as additional empirical evidence for Myers' classification theory (1984). Empirical evidence on the impact of

capital structure on performance is heterogeneous when done in developed and developing countries. Most studies conducted in developed countries, the relationship between capital structure and firm performance is positive, and vice versa, for developing countries such as Vietnam. Studies in developing countries such as Salim and Yadav (2012); Tianyu (2013); Le and Phan (2017) also agree with this result.

Control variables

Table 4.10:Summary of regression results between control variables and performance

Variables	Performance			Results
	ROA	ROE	TQ	
SIZE	+	+	+	Positive
TANG	-	-		Negative
LIQ				No evidence
GROW				No evidence

Source: Authors'

Firm size (SIZE): Scale has a positive impact on business performance in the cement industry. This result is consistent with the trade-off theory that larger firms are more likely to borrow because they have the potential to diversify risks, so they can take advantage of tax shield benefits from the best loan interest, thereby improving business performance (Sheikh and Wang, 2013). This result is similar to the research results of Salim and Yadav (2012); Soumadi and Hayajneh (2012); Amin and Jamil (2015); Le and Phan (2017). Large-scale cement enterprises have favorable access to advanced technology and diversification compared to other small-scale peers, therefore, are less risky and less likely to suffer from more bankrupt. In addition, large-scale businesses often have brands and reputations in the market, so it is easier to access capital from outside as well as make sales easier.

Tangible assets (TANG): Tangible assets have a negative impact on the performance of enterprises. Enterprises in the sample had a proportion of tangible fixed assets accounting for 49.57%, the lowest and highest value ranges from 0 - 97%. Enterprises with many tangible fixed assets during difficult economic times will cause difficulties for production and business activities of enterprises, leading to reduced business efficiency.

Liquidity (LIQ) and growth (GROW): There is no clear statistical evidence to conclude the relationship between these two variables and firm performance in the sample.

V. CONCLUSIONS AND IMPLICATIONS

Section 5 concludes the research results obtained in section 4 on the impact of capital structure on the performance of enterprises in the cement industry listed on Vietnam's stock market. On that basis, the author proposes a number of policy suggestions to improve the performance of enterprises in the cement industry listed on Vietnam's stock market. In addition, in this section, the author also mentioned some limitations of the topic and suggested the future development direction of future research.

5.1.Conclusions

This study was conducted to understand the impact of capital structure on the performance of enterprises in the cement industry listed on the stock market in Vietnam. The study uses table data of 17 cement enterprises listed on Vietnam's stock market over a period of 9 years, from 2010 to 2018. The research results show that capital structure has a negative impact on business performance. In addition, the impact of a number of control variables on performance such as: SIZE, TANG, LIQ, GROW. The SIZE variable is positively related to performance in all models with very high reliability. In contrast, the variable TANG is negatively correlated. There is no clear conclusion about the impact of the variables GROW and LIQ on business performance.

5.2.Policy implications

Based on the research results, the next section will present some policy suggestions to improve the performance of enterprises in the cement industry listed on Vietnam's stock market. Specifically:

First, businesses in the cement industry should consider following things when using leverage. When using leverage, businesses face the cost of financial exhaustion as well as the benefit of the tax shield from interest, so businesses consider using financial leverage as well as finding debt threshold to take advantage of financial leverage to improve the business performance. In addition, the study recommends investors to consider the debt ratio of businesses in the cement industry before making investment decisions.

Second, the size of the business in the cement industry has a positive effect on the performance. Therefore, in order to increase the operational efficiency of cement listed companies, it is necessary to increase

the size of the business, namely the increase of total assets of the business.
Third, tangible assets have a negative effect on the performance of businesses in the cement industry. Therefore, to increase its operating efficiency, listed companies in the cement industry need to reduce their tangible assets.
Finally, the government should develop a balance between the bond market and the stock market to provide businesses in the industry with additional channels of capital mobilization, especially from the bond market. Normally, enterprises in the cement industry often mobilize long-term capital in the bond market, however, the bond market in Vietnam has not been developed, so it is difficult for enterprises to raise capital on this channel. Therefore, businesses depend mainly on loans from banks, while interest rates from this channel are quite high.

5.3.Limitations and recommendations for further researches

Research still has some limitations, namely:

Firstly, the research data of the project was collected from 17 enterprises in the cement industry listed on Vietnam's stock market, period 2010-2018. The sample size is limited to 162 observations for table data, so the results of the study do not guarantee high generalization for businesses operating in other industries. Therefore, the next research direction should expand the sample size for other industries; expand the research period to further improve the generalization ability of the research results.

Second, this study only uses 4 control variables (SIZE, TANG, LIQ, GROW). However, in real terms, there are many factors that affect the performance of enterprises, including factors that are specific to the economy that affect the performance of enterprises such as inflation, interest rates, economic growth ... Therefore, the next research direction will expand towards adding control factors belonging to the characteristics of the economy such as: economic growth rate, interest rates, inflation to increase the relevance of the model and sustainability of the research results.

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