

The effect of financial structure on business performance of industrial enterprises listed in Vietnam

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ABSTRACT

The article analyzes the impact of financial structure on the performance of 70 industry listed enterprises in the period 2009-2019. The research results show that the business performance of the industrial enterprises listed on the Vietnamese stock market had a negative correlation with the capital structure, asset structure, inventory structure, receivable structure, firm age and positively correlated with firm size, sales growth rate. These results help business administrators make appropriate financial decisions to improve the efficiency of business performance.

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1. Introduction

Financial structure refers to the firm's financial framework which consists of the debt and assets used to finance the firm. The financial structure is one of the popular topics among the scholars in finance field. The ability of companies to carry out their stakeholders' needs is tightly related to financial structure. The firm's performance plays vital role in running businesses and, measuring performance helps to identify firms' position in a given time. Firm can optimize its capability through understanding the determinant factors of its performance. The linkage between financial structure and performance has attracted a lot of debates and academic attention across scholars globally (e.g., Modigliani & Miller, 1958; Abor, 2005; Zeitun & Gang Tian, 2007; Gill et al., 2011; San & Heng, 2011; Chinaemerem & Anthony, 2012; Le Phuong Dung and Dang Thi Hong Giang, 2013; Rajhans, 2013; Phan & Nguyen, 2014; Udriyah et al., 2019; Galdeano et al., 2019). There are studies showing that financial structure is positively related to firm performance, while others believe that former is negatively related to the latter. There are empirical studies concluded that there is no significant relationship between these two factors. In the context of international economic integration and market-driven operation, economic sectors, especially industries such as industry, have access to more capital to expand their operations. However, in addition to development opportunities, industrial enterprises in Vietnam also face many difficulties. The negative effects of economic crises, the constant fluctuations of interest rates and inflation, as well as the State's management policies have directly affected industrial enterprises. The industrial enterprises have a lower proportion of working capital, the speed of working capital is also slower than that of commercial and service enterprises. In industrial enterprises, fixed capital usually accounts for a higher proportion, and the payback time is also slower. These issues have caused industrial enterprises in Vietnam to pay more attention to corporate governance, focusing on setting up suitable financial structures for their businesses. Therefore, this topic requires more researches with additional empirical evidences, especially from Vietnamese industrial listed companies, to create insights. This study examines the relationship between financial structure and performance

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of the Vietnam industrial firms. The literature cites a number of variables that are potentially associated with the profitability of firms. In this study, the selection of exploratory variables is based on the alternative financial structure, profitability theories and previous empirical work. The choice can be limited, however, due to data limitations. As a result, the set of variables includes seven factors: capital structure, property structure, inventory structure, receivable structure and, in addition, sales growth, firm size, firm age and performance (measured by return on equity and return on assets). This study is organized as follows: First research objectives and importance are shown, and then the literature for the relevant theoretical and empirical work on financial structure and its effect on profitability are reviewed. After that, the methodology and framework which includes sample and the variables used in the empirical analysis is presented. After words, separate section portrays and discusses the data analysis, discussion and statistical results. Finally the conclusion and recommendations are presented.

2. Theoretical basis and Literature Review

2.1. Theoretical basis

The relationship of the financial structure decisions with the firm performance was highlighted by a number of theories mainly, Modigliani and Miller theory, pecking order theory and the trade off theory, market timing theory. Modigliani and Miller theory: Modigliani and Miller (1958) have a theory of “capital structure irrelevance” where argue that financial leverage does not affect the firm’s market value with assumptions related to homogenous expectations, perfect capital markets and no taxes. Modigliani and Miller (1958) stating that the decision about company’s capital structure is immaterial to the value of the firm in the absence of taxes, asymmetric information, bankruptcy costs, transactions cost and in an efficient markets with homogeneous expectations. Under these strict assumptions, the type of financing used does not affect the firm value. As the real world markets do not operate on these assumptions and new research work was conducted to test the relationship between capital structure theories with firm performance.

Pecking order theory: The theory of pecking order (Myers & Majluf, 1984) again pointed out the negative impact between financial investment and enterprise value through research results that companies with high profitability will use less capital than capable firms. low profitability.

Trade off theory: Myers (1977) holds that the decision of a firm about the use of debt finance or equity finance is based on the costs and benefits associated with each source of funds. Like the use of debt can have tax saving benefits but can also have bankruptcy costs, so the company must balance the costs and benefits with each source in deciding about the optimal capital structure. Then an improved version of this theory was capital signaling theory mentioning that all investors are not rational and neither every investor have all amount of information or equal level of information compared to the owners and managers also called insiders of the company. When expected future performance of the company based on the expected future cash flows and earnings will look good, insiders will opt for debt financing with low level of interest and default risk thus reducing the flow of large gains to more shareholders. Whereas in opposite case when expected future performance outlook seems bad, insiders opt for equity financing thus shifting the flow of losses to shareholders, which in case of debt financing would have lead to bankruptcy.

Market timing theory: Baker and Wurgler (2002) concluded the market timing theory best explains the capital structure of enterprises and shows that the volatility of stock prices will significantly affect the capital structure. The authors deny the existence of an optimal capital structure and consider the formation of capital structure as the result of decisions that change the capital structure at the time of business valuation by market value.

2.2. Literature Review and Research Hypotheses

Thus, it can be seen that the financial structure is an important factor affecting the operational efficiency of enterprises. However, the direction and level of impact between these factors is different between enterprises, between groups of enterprises under specific conditions. To find the impact of capital structure on firms’ performance, Abor (2005) found that the ratio of short-term debt to total assets has a significantly positive relation between the ratio of short-term debt to total assets and ROE. On the other hand, a negative relationship between the ratio of long-term debt to total assets and ROE was found. Zeitun & Gang Tian (2007) found that ownership structure has significant effects on the accounting measure of performance return on assets (ROE. Gill et al. (2011) extend Abor’s (2005) found the impact of capital structure on profitability of the American service and manufacturing firms. The authors found a positive relationship between short-term debt to total assets and total debt to total assets and profitability in the service industry. The difference in this study compared to Abor (2005) is that long-term debt has a positive impact on ROE for manufacturing enterprises, but it is not statistically significant for the service industry. San & Heng (2011) focuses on construction companies which are listed in Main Board of Bursa Malaysia from 2005 to 2008. The authors showed that there is relationship between capital structure and corporate performance. The study of these findings, indicate consistency with prior empirical studies Shubita and Alsawalhah (2012) in Jordan, indicates in contrast with studies Khan (2012) in Pakistan, Salim and Yadav (2012) in Malaysia. Chinaemerem and Anthony (2012) examined the impact of capital structure on financial performance of Nigerian firms using a sample of thirty non-financial firms listed on the Nigerian Stock Exchange during the seven year period, 2004 – 2010. The authors found that a firm’s capital structure surrogated by Debt Ratio had a significantly

negative impact on the firm's financial measures. The study of these findings, indicate consistency with prior empirical studies (Ahmad et al., 2012; Khan, 2012; Le Thi Phuong Vy, 2015). In contrast, other studies exist, showing a negative correlation (Chinaemerem & Anthony,2012; Shubita & Alsawalhah, 2012), no correlation (Saeedi & Mahmoodi (2011) between these factors. In the case of industrial firms listed on Vietnam's stock market, how is profitability and financial structure related? the following hypotheses is presented

H₁: There is a positive relationship between the capital structure and performance of industrial companies listed in Vietnam.

The property structure is measured by the ratio of fixed assets to total assets. To study the effect of assets structure on firms' performance, Rajhans (2013) identified the determinants that impacts the value of 8 companies from energy industry. The companies selected are Reliance industry, GAIL, Power grid corps, BPCL, IOC, HPCL, ONGC, and NTPC. from 2014 to 2018. The author found that fixed assets had a positive effect on the value of firm. The study of these findings, indicate consistency with prior empirical studies Zeitun & Gang Tian (2007); San &Heng (2011); Choi et al. (2014); Hoque et al. (2014). In the context of Vietnam, in order to determine the relationship between property structure to business performance, the following hypotheses are presented:

H₂: There is a positive relationship between the property structure and performance of industrial companies listed in Vietnam.

To review the impact of inventory structure and receivable structure on firms' performance, Le Thi Nhu (2017) exams the effect of financial structure on the profitability of the construction firms listed on the stock market, has proposed to include the inventory structure and the receivable structure assets into the research model to evaluate more comprehensively the impact of assets in terms of assets on the operating efficiency of the construction enterprises. the author has confirmed that the inventory structure and the receivable structure have a negative and statistically significant impact on ROA, but the impact is not significant. The inventory structure and the receivable structure are an important indicator in the assets of the industrial enterprises. How is profitability and inventory structure, receivable structure related? The hypothesis is set it follows:

H₃: There is a negative relationship between the inventory structure and performance of industrial companies listed in Vietnam.

H₄: There is a negative relationship between the receivable structure and performance of industrial companies listed in Vietnam.

In Vietnam, there are many studies on financial structure in many specific industries such as seafood (Le Phuong Dung & Dang Thi Hong Giang, 2013), construction industry (Phan Hong Mai, 2011), (Le Thi Nhu, 2017); food (Phan and Nguyen, 2014). At the same time, many authors consider the impact of financial structure on the value of enterprises such as: Tran Hung Son (2008); Doan Vinh Thang (2016); Vo Minh Long (2017). However, research on financial structure in industrial firms is not available. Based on the literature review, there are studies showing that financial structure is completely associated with firm performance, while others believe that former is negatively associated with the latter. There are empirical studies concluded that there is no significant relationship between these two factors. Research on the financial structure in companies listed on the stock market in Vietnam has only started in recent years and the number of researches in industrial companies is still very small. Therefore, additional analysis on this issue is required for industrial companies listed on the Vietnam stock market to feature empirical evidence on the impact of financial structure and firm's performance.

3. Model and research method

3.1. Research model

The concept of analyzing the impact of financial structure on firm's performance is explained by Fig. 1:

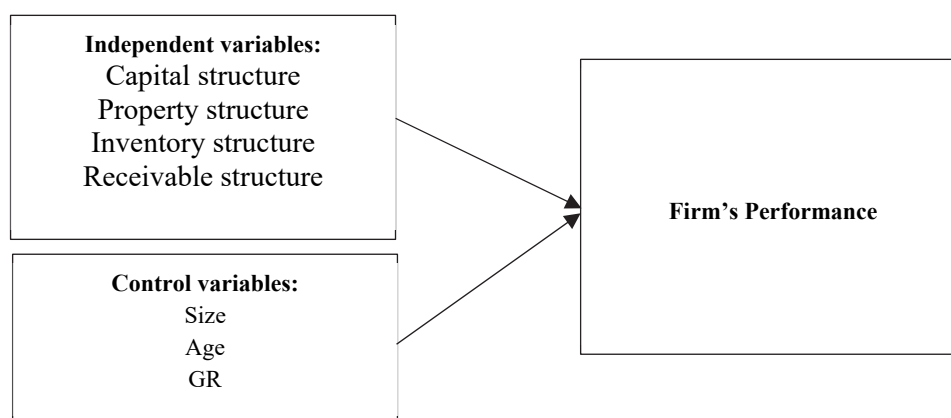


Fig. 1. Research model of impact of financial structure on firm's performance

The relationship of financial structure and firm's performance is shown in the following two models:

$$\text{ROA Models: } ROA_{i,t} = \alpha_0 + \alpha_1 CS_{i,t} + \alpha_2 PS_{i,t} + \alpha_3 IS_{i,t} + \alpha_4 RS_{i,t} + \alpha_5 SZ_{i,t} + \alpha_6 AGE_{i,t} + \alpha_7 GR_{i,t} + \varepsilon_{it} \quad (1)$$

$$\text{ROE Models: } ROE_{i,t} = \beta_0 + \beta_1 CS_{i,t} + \beta_2 PS_{i,t} + \beta_3 IS_{i,t} + \beta_4 RSe_{i,t} + \beta_5 SZ_{i,t} + \beta_6 AGE_{i,t} + \beta_7 GR_{i,t} + \varepsilon_{it} \quad (2)$$

The details of the variables are shown in Table 1

Table 1

Definition of model variables

Variable name	Code	Measurement	Hypothesized sign
Return on asset	ROA	Net income/total asset	
Return on equity	ROE	Net income/ Stockholders' Equity	
Capital structure	CS	Total debt / total assets	+
Property structure	PS	Fixed assets/ total assets	+
Inventory structure	IS	Inventory/ total assets	-
Receivable structure	RS	Receivable/ total assets	-
Size	SZ	Ln (Total assets)	+
Age	AGE	Firm's age	+
Sales Growth	GR	(Current period net sales – previous period net sales)/ previous period net sales	+

(Source: Compiled by the author)

3.2. Research data

The study used panel data collected from 70 industrial enterprises listed on Vietnam Stock Market over an eleven years period, from 2009 to 2019, provided by FiiinGroup JSC. Research data is extracted from the audited financial statements of these enterprises.

3.3. Research method

The baseline analysis was first performed to screen the sample, to eliminate observations that were too large, too small, or too different from the sample size. This basic analysis step helps to check the suitability of the sample before performing regression analysis OLS, FEM, REM, to ensure the reliability of quantitative research results. Specifically, the author group conduct statistical description analysis, correlation analysis to eliminate multi-collinear phenomena between independent variables. After selecting the appropriate method to run the model, the author examined the variance of variance, multicollinearity, autocorrelation, endogeneity of the model. In case the model has a defect, the author will use the GLS (Generalized least squares) method to overcome.

4. Empirical Results

The empirical results of the impact of financial structure on firm's performance with ROA model are shown in Table 2. We compare and choose which model is suitable (i.e. FEM or REM). To consider and select the appropriate model between the two regression methods, the author uses the Hausman test.

Table 2

Regression results of ROA model

Variable	VIF	Regression coefficients		
		POLS	FEM	REM
CS	1.69	-0.132***	-0.0957***	-0.107***
PS	1.62	-0.0861***	0.0353*	0.0110
IS	1.51	-0.0733***	-0.00783	-0.0378
RS	2.04	-0.106***	0.0594***	0.0171
SZ	1.45	0.00328	0.00003	0.000876
AGE	1.02	-0.0009**	-0.0041***	-0.00295***
GR	1.04	0.00057	0.000114	0.000278
Cons		0.121*	0.152	0.140
N		776	776	776
Significance		F (7, 768) = 39.57	F(7,672) = 10.40	Wald chi2(7) = 85.31
White test		Chi2 (35) = 103.12	Prob > Chi2 = 0.0000	
Wooldridge test		F (1, 96) = 41.402	Prob>F = 0.001	
Hausman test		Chi2 (7) = 44.81	Prob>chi2 = 0.0000	
LM test		Chi2 (97) = 1.3e+05	Prob > chi2 = 0.0000	

Note: (*), (**), (***) represent for the significant level at 1%, 5% and 10%, respectively

Source: Results of data processing of the author

Multicollinearity test results show that the magnification coefficient of VIF variance are <10, the model has no multicollinearity phenomenon. The mean VIF is 1.48, which indicates the possibility of multicollinearity is not significant. The White test indicates that the model has heterogeneity (p-value <5%) and the Breusch and Pagan Lagrangian Multiplier test for random

effects results (Table 2) rejected the null hypothesis that the Pooled OLS model was appropriate. Following the results from the Hausman test (P-value= 0.0000 <0.05), selecting the appropriate model is FEM, the author proceeds to overcome the discovered defects of the model by GLS method.

Table 3

Regression results of ROE model

Variable	VIF	Regression coefficients		
		POLS	FEM	REM
CS	1.69	-0.0409	-0.00184	-0.0140
PS	1.62	-0.155***	0.0235	-0.0304
IS	1.51	-0.128***	-0.0505	-0.0997**
RS	2.04	-0.178***	0.0701	-0.0256
SZ	1.45	0.00638	-0.00535	-0.00196
AGE	1.02	-0.000982	-0.0077***	-0.00441***
GR	1.04	0.00118	0.000788	0.00106
Cons		0.0992	0.369	0.283*
N		776	776	776
Significance		F (7, 768) = 12.55	F(7,672) = 6.16	Wald chi2(7) = 27.48
White test			Chi2 (35) = 80.80	Prob > Chi2 = 0.0000
Wooldridge test			F (1, 96) = 25.325	Prob>F = 0.001
Hausman test			Chi2 (7) = 42.17	Prob>chi2 = 0.0000
LM test			Chi2 (97) = 57519.21	Prob > chi2 = 0.0000

Note: (*), (**), (***) represent for the significant level at 1%, 5% and 10%, respectively

Source: Results of data processing of the author

The empirical results of the impact of financial structure on firm's performance with ROE model are shown in Table 3. As the results of regression analysis show the value of VIF coefficient is less than 10, there is a multi-collinear phenomenon. The maximum VIF is 2.04, which indicates the possibility of multicollinearity is not significant. The White test indicates that the model has heterogeneity (p-value <5%) and the Breusch and Pagan Lagrangian Multiplier test for random effects results (Table 3) rejected the null hypothesis and the Pooled OLS model was appropriate. Following the results from the Hausman test (P-value= 0.0000 < 0.05), selecting the appropriate model is FEM, the author proceeds to overcome the discovered defects of the model by GLS method.

Table 4

GLS regression results of model

Variable	ROA model	ROE model
CS	-0.122***	-0.0190
PS	-0.0247***	-0.0720***
IS	-0.0493***	-0.119***
RS	-0.0157*	-0.0504**
SZ	0.00793*	0.0119***
AGE	-0.000649***	-0.00151***
GR	0.000648	0.00121**
Cons	-0.0640	-0.119

Note: (*), (**), (***) represent for the significant level at 1%, 5% and 10%, respectively

Source: Results of data processing of the author

GLS model results show:

With the dependent variable ROA, capital structure, asset structure, inventory structure and industrial enterprises age have negative impacts on business performance with statistical significance of 1% and level different impact levels. When the capital structure, property structure, inventory structure, and firm age increased 1%, the business efficiency of industrial enterprises decreased by 12.2%, 2.47%, 4.93%, and 0.649%, respectively. With the statistical significance of 10%, when the receivable structure increases by 1%, the business efficiency decreases by 1.57%, the enterprise size increases by 1% and the business efficiency increases by 0.793%. The sales growth rate positively affects the business performance of industrial enterprises, but it is not statistically significant. Thus, the impact of capital structure on the business performance of industrial enterprises is the greatest. With the dependent variable ROE, asset structure, inventory structure, firm size, and firm age have negative impacts on business performance with the statistical significance of 1% and the level of different impact. When the asset structure, inventory structure, firm size and firm age increased 1%, the business efficiency of industrial enterprises decreases by 7.2%, 11.9%, 1.19%, 0.15%, respectively. With the statistical significance of 5%, when the receivable structure increases by 1%, the business efficiency decreases by 5.04%, the sales growth rate increases 1% and the business efficiency increases 0.12%. Capital structure has a negative impact on the business performance of industrial enterprises but has no statistical significance. Thus, the impact of asset structure on business performance of industrial enterprises is the greatest.

5. Discussion

Firstly, the capital structure has had a negative correlation with firm's performance as measured by ROA at the 1% significance level, but it did not have any statistically significant with the ROE. This shows that the more capital structure, the more business efficiency. This result is on the contrary to the study of Berger and Di Patti (2006) and Tran Hung Son (2008) when we see that total debt has a positive relationship with firm's performance, but in accordance with the representation theory of Jensen and Meckling (1976) and Jensen (1986), which argues that if a firm uses high level of debt the benefit of debt will disappear including the agency cost of debt and financial risk, which can lead to a negative impact on firm's performance. Second, asset structure has a negative impact on business performance as measured by ROA and ROE with significance level of 1%. The results of this study show that: If the enterprise reduces the proportion of fixed assets, it will help businesses improve business efficiency. This conclusion is consistent with research results of Rajhans (2013) and Le Thi Nhu (2017) but it is on the contrary to the views of Zeitun and Gang Tian (2007); San and Heng (2011) and Choi et al (2014). This can be explained that: when businesses reduce investment in fixed assets, it will create conditions for improving business efficiency of the business as well as the value of the business. in production is essential. This research results require that managers choose the right type of fixed assets to invest in to improve business efficiency of the business, it is a very important foundation to help businesses improve their value and long-term business performance.

Third, Inventory structure has a negative impact on ROA and ROE with the significance of 1%. This is completely consistent with the expectations of the author. For industrial enterprises, the higher the value of inventories, the more capital stagnant in the business, the increased financial risks and low capital efficiency. Therefore, businesses need to take measures to minimize inventory to improve business efficiency of businesses.

Fourth, the receivable structure has a negative and statistically significant impact on the ROA and ROE. This result supports research by Le Thi Nhu (2017). This proves in industrial enterprises; bad debt collection will adversely affect the efficiency of asset use. Therefore, businesses need to offer a reasonable sale policy for each type of customer to improve the efficiency of debt collection, thereby contributing to improve business efficiency of the business.

Fifth, Firm size has a positive impact on both ROA and ROE variables at the significance level of 10% and 1%. This experimental result shows that its impact trend is similar to that of Carpentier's experimental study (2006). The results of this study show that: If the business increases in size through increasing assets, it will help businesses improve business efficiency. This can be explained that large enterprises often have brand names and reputation in the market, so they often face low agency costs, but the competitiveness of enterprises in the market is high, so it will be easy to implement. Mobilizing capital contributes to improve business efficiency as well as enhance the value of the business. In addition, these enterprises often take advantage of organizational advantages, in terms of competition and meet the requirements of technological innovation, and can therefore achieve a larger production level. On the other hand, for large enterprises, it is often easier to access resources due to the advantages of capital, assets to mortgage, so there are enough resources to maintain and develop the business.

Sixth, the age of the business has the opposite effect with the variables ROA, ROE with the significance level of 1% but not much impact. This conclusion is supported by Le Thi Nhu (2017), but it is on the contrary to the research results of Hoque et al. (2014). This shows that the enterprises in the production and business industry for a long time are very inertia.

Seventh, the sales growth rate has a positive impact with a very small impact on the business performance but only statistically significant at 5% with the ROE model. Normally, if the revenue increases, the business efficiency of the business will also increase. Because, for businesses, all efforts made by the business to achieve are often expressed through revenue growth, thereby affecting the business performance of the business. Normally, higher revenue growth rate of the business can contribute to increase the profitability and also increase the business efficiency of the business.

6. Conclusion

The study has shown some empirical evidence on the impact of financial structure on the performance of industrial firms listed on the Vietnam stock market. Research results have shown that capital structure, asset structure, inventory structure, receivable structure and firm age were inversely correlated with business performance; firm size and sales growth are positively correlated with business performance. Therefore, administrators of industrial enterprises need to focus on adjusting the appropriate financial structure to improve firm's performance.

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