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CÁC NHÂN TỐ ẢNH HƯỞNG ĐẾN CẤU TRÚC VỐN CỦA CÁC DOANH NGHIỆP DƯỢC PHẨM - Y TẾ NIÊM YẾT TRÊN CÁC SÀN CHỨNG KHOÁN VIỆT NAM

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Tóm tắt

Nghiên cứu xem xét các yếu tố ảnh hưởng đến cấu trúc vốn của các công ty dược - y tế niêm yết trên Sở Giao dịch Chứng khoán Hà Nội (HNX) và Sở Giao dịch Chứng khoán Thành phố Hồ Chí Minh (HOSE) trong giai đoạn 2016 - 2020. Nghiên cứu dựa trên nền tảng của cấu trúc vốn truyền thống (lý thuyết cấu trúc vốn của Modigliani và Miller, lý thuyết đánh đổi, lý thuyết trật tự phân hạng và lý thuyết chi phí đại diện). Nghiên cứu này sử dụng dữ liệu bảng thu thập được từ báo cáo tài chính của 23 công ty dược - y tế niêm yết trên các sàn giao dịch chứng khoán HOSE và HNX trong giai đoạn 2016 - 2020. Nghiên cứu sử dụng mô hình OLS gộp, mô hình hiệu ứng cố định (FEM), mô hình hiệu ứng ngẫu nhiên (REM) và mô hình bình phương tối thiểu tổng quát khả thi (FGLS) để đưa ra kết quả cuối cùng. Kết quả thực nghiệm chỉ ra rằng các yếu tố ảnh hưởng đến cấu trúc vốn là khả năng sinh lời (-), tài sản hữu hình (-), quy mô doanh nghiệp (-), cơ hội tăng trưởng (+), tính thanh khoản (-). Nhân tố tuổi của công ty và sự kiêm nhiệm của giám đốc điều hành không có ý nghĩa thống kê. Bên cạnh đó, kết quả nghiên cứu còn mang nhiều ý nghĩa quan trọng đối với hoạt động đầu tư và hoạch định chính sách của doanh nghiệp, đặc biệt trong bối cảnh đại dịch COVID-19.

Từ khóa: Cấu trúc vốn, tỷ lệ nợ, công ty dược phẩm - y tế niêm yết, sàn giao dịch chứng khoán.

DETERMINANTS OF CAPITAL STRUCTURE OF THE PHARMACEUTICAL - MEDICAL COMPANIES LISTED ON VIETNAM'S STOCK EXCHANGES

Abstract

The study examines the factors affecting the capital structure of pharmaceutical - medical companies listed on the Hanoi Stock Exchange (HNX) and Ho Chi Minh Stock Exchange (HOSE) in the period 2016 - 2020. The study is based on the foundation of traditional capital structure theories (Modigliani and Miller's capital structure theory, trade-off theory, pecking-

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order theory, and agency cost theory). This study uses panel data collected from financial statements of 23 pharmaceutical - medical companies listed on HOSE and HNX in 2016 - 2020. Pooled OLS Model, Fixed Effects Model (FEM), Random Effects Model (REM) and Feasible Generalized Least Square Model (FGLS) are used to give the final results. The empirical results indicate that the factors affecting capital structure are profitability (-), tangible assets (-), firm size (-), growth opportunities (+), liquidity (-). Firm age and pluralist executives do not have statistical meaning. Besides, the research results also carry many important implications for investment activities and corporate policymaking, especially in the context of COVID-19 pandemic.

Key words: Capital structure, debt ratio, pharmaceutical-medical listed firms, stock exchanges.

1. Introduction

Whether there is an optimal financial structure for every business and if so, how it affects the value of the business has been the subject of debate in the financial community for decades. Modigliani and Miller (1958) published their study "The cost of capital, corporation finance and theory of investment" in the American Economic Review. They found that under perfect capital market conditions with no taxes, no transaction costs, no asymmetric information, and homogeneous market expectations, firm value is independent of capital structure. The above work has contributed to the formation of modern capital structure theory.

The capital structure changes depending on the characteristics of each enterprise, the area in which it operates, and the impact of macroeconomic volatility of the economy, culture, and religion. From the relationship between the determinants affecting the use of the financial leverage and the capital structure, we can assess whether the decision to use the loan or the business's equity is appropriate or not, then propose solutions to enhance the efficiency of using financial leverage, maximizing asset value for businesses.

Vietnam's economic context in recent years has had many changes, especially when the COVID-19 pandemic has been complicated, leading to a great influence on the capital structures of firms in the pharmaceutical - medical sector. The economy has been growing recently, citizens' incomes are becoming better. However, the Vietnamese population is getting older, and health problems arise from the environment and industrialization, especially from the COVID-19 pandemic. It results in an increased willingness to pay for medical services, therefore, leading to the inevitable development of Vietnam's pharmaceutical industry.

Therefore, this study is carried out on the topic "**Determinants of capital structure of the pharmaceutical - medical companies listed on Vietnam's stock exchanges**" to examine which factors and their affecting level to the capital structure of pharmaceutical, medical listed firms in the Vietnamese stock market, thereby helping financial planners, as well as firms, have a suitable view on opting for the optimal capital structure.

2. Literature review

2.1. Theories of Capital Structure

Capital structure theory of Modigliani & Miller

The initial study for modern capital structure studies was introduced by Modigliani & Miller (1958). Modigliani and Miller studied the case in which firms operating in a tax-free environment.

They assumed that the capital market was perfect, the firm's value is not dependent on the capital structure because the value of a firm must depend on the present value of its operations. In 1963, Modigliani and Miller produced a follow-up study that eliminated the hypothesis of corporate income tax. In this case, the higher the use of debt, the greater the value of the business and the maximum increase when the company is financed 100% of its debt. The assumptions of Modigliani and Miller's theory: No corporate income tax, no transaction costs, bankruptcy costs and financial hardship costs, individuals and institutions can borrow money equally, the capital market is perfect, and no single investor has a significant influence on the price of a security.

Trade-off theory

Based on the theory of Modigliani and Miller, Kraus and Litzenberger (1973) developed the trade-off theory of capital structure. The trade-off theory refers to the idea that a firm will choose how much debt and how much equity to finance in order to balance costs and benefits. According to this theory, managers believe they will find an optimal capital structure that maximizes firm value. The target capital structure is the point at which the benefits from increasing debt are offset by the additional costs of financial distress. In most cases, financial distress leads to bankruptcy. Therefore, businesses should only borrow to the extent that the tax benefit from an additional dollar of borrowed capital equals the additional financial distress costs from borrowing the capital.

The trade-off theory assumes that the target debt ratio can be different among firms. Companies that have certain tangible assets and high profitability have higher debt ratios and vice versa. Thus, this theory shows that tangible fixed assets ratio, profitability, tax shield, and financial risk impact capital structure.

Pecking-order theory

According to Donaldson (1961), instead of issuing more shares, the use of retained earnings of the enterprise will be a major channel to increase the capital of the enterprise. Agreeing with the same view, Myers and Majluf (1984) continued to develop Donaldson's research and the pecking order theory was born. It is hypothesized that management based on asymmetric information affects the investment and financing decisions of the firm.

This theory helps to explain why more profitable firms tend to have low debt ratios (which the trade-off theory cannot present), and less fortunate firms issue debt because they do not have enough capital to fund projects and because debt ranks first in the pecking order of external financing.

Agency theory

Agency theory (Jensen & Meckling, 1976) recognizes the existence of an optimal capital structure for the firm, because of the presence of agency costs. Agency costs incurred when the agent acts or makes decisions on behalf of the principal. Agency costs often arise during core inefficiencies, discontent and business disruptions, such as conflicts of interest between shareholders and managers. Agency costs are divided into two categories: Agency costs arising from conflicts between shareholders and bondholders (agency costs of debt); and agency costs arise conflicts between shareholders and managers (agency costs of equity). For example, shareholders may want management to run the company in a way that maximizes shareholder value. Conversely, corporate executives may want to develop the company in other ways that may be contrary to the best interests of shareholders.

2.2. Previous studies

Titman and Wessels (1988) studied the factors affecting the choice of capital structure of 469 companies listed on the US stock exchange from 1974 to 1982, using estimation methods. Research results show that short-term debt ratio has a negative correlation with firm size, profitability has a negative correlation with debt ratio measured at market prices. Small businesses tend to use more short-term debt than large companies, reflecting the high costs that small firms face when issuing long-term financial instruments. The business characteristics have a negative relationship with the debt ratio. The remaining factors such as tangible assets, non-debt tax shield, business risk, growth opportunities, industry dummy do not correlate with debt ratio.

Huang and Song (2002) Study the determinants of capital structure of more than 1000 Chinese companies from 1994 to 2000. Research results are as follows: Firm size, non-debt tax shield, and tangible assets increase in the same direction as leverage; Leverage increases inversely with profitability and has a relationship with the industry; Equity structure affects leverage.

In Vietnam, the number of research works mainly focus on the factors affecting the capital structure of state-owned enterprises and enterprises listed on the stock exchange. The results of these studies have made significant contributions in explaining the theoretical model of capital structure in enterprises in Vietnam and identifying the factors affecting the capital structure of enterprises. Specifically, some typical research results in the past period are as follows:

Tran (2006) discovered significant factors in explaining the capital structure of state-owned enterprises in 2001- 2005, including loan interest, the proportion of fixed asset investment in total assets, the rate of return on total assets, industry factors.

Research by Doan (2010) was carried out using the path analysis method based on data from financial statements for three years (2007 - 2009) of 428 listed companies on the stock market to identify the factors that affect the economic structure and financial performance. The research results show that the firm size factor has a positive relationship (+) with the financial system. In contrast, the factors such as business efficiency, business risk, and asset structure have a negative association (-) for financial structure.

Research from Vo (2017) used sample from listed firms' data on Ho Chi Minh City stock exchange from 2006 to 2015. The explanatory variables include growth, tangible assets, profitability, firm size and liquidity. This research found that the growth opportunity has positive relationship but not significant for long-term and short-term leverage. Tangible assets have a positive and significant influence on long-term debt ratio but are negative in explaining short-term leverage. Firm size is positive and significant when used to explain long-term debt, while has opposite relationship with short-term debt.

However, these studies have inconsistent conclusions. Therefore, more research is needed to supplement the theory of the capital structure of enterprises in different fields in the Vietnam market in general and in the pharmaceutical industry in particular.

3. Hypotheses, research methodology and regression model

3.1. Hypotheses

Based on the theories of capital structure and from previous researches, the study synthesizes and proposes hypotheses to clarify the impact of the relationship between independent variables and debt ratio. Specifically:

H1: Profitability (PROF) has a negative relationship (-) with the debt ratio

Profitability is reflected in billion return on total assets (ROA). Profitability has both a positive effect when analyzed according to the trade-off theory and an opposite effect when analyzed according to the pecking theory. Experimental studies also give different results, however, most studies show that ROA has a negative relationship with the debt ratio of enterprises. The empirical researches supported this opinion, including Titman and Wessels (1988); Wald (1999); Booth *et al.* (2001); Chen (2004); Viviani (2008); Jong *et al.* (2008); Sheikh and Wang (2011); Saeed *et al.* (2014).

H2: Tangible assets (TANG) has a positive relationship (+) with the debt ratio.

Tangible asset is a variable reflecting the structure of assets of the enterprise, determined by the ratio of fixed assets to total assets of the enterprise. Based on the theory of agency costs and trade-off costs, owning a lot of fixed assets can help businesses get loans more easily because they have collateral. Most research results show a positive relationship between tangible assets and capital structure, including Titman and Wessels (1988), Frank and Goyal (2009), Doan (2010), Saeed *et al.* (2014), Huang and Song (2006).

H3: The size of firms (SIZE) has a positive relationship (+) with debt ratio.

The size of the firm is measured by the natural logarithm of the total assets of the enterprise. Typically, the larger the company, the more debt it will be able to borrow, since large companies often diversify their business lines and asymmetric information risk is lower than small companies. According to agency cost theory, large firms tend to use more debt, this relationship is explained by the information asymmetry between shareholders and managers, when managers take control of the business over which shareholders have no control. It was supported by plenty of empirical studies in the world, including Tran and Ramachandran (2006) Abor (2007), Sheikh and Wang (2011), Saeed *et al.* (2014).

H4: Growth opportunity (GRO) has a positive relationship (+) with debt ratio

This indicator is calculated by dividing the difference in net sales between the following year and the previous year by the previous year's net sales. When the business is in the growth stage, investors' confidence in the business will be high, so the ability to access capital from outside is greater, while the business needs funding for its assets. According to the pecking order theory, good business growth means that there is a large demand for loans, when retained earnings are not enough to meet operations, they will prioritize the choice of loans to increase the debt ratio. The empirical studies that supported this opinion include Vo (2017), Pham and Nguyen (2015), Tran and Ramachandran (2006).

H5: Liquidity (LIQ) has a negative relationship (-) with debt ratio

For enterprises, the role of short-term solvency is very important in creating the value of enterprises. However, if the business continues to improve its short-term solvency, it may have too many short-term assets and it may not be able to improve profitability; or even profits decline and it will reduce the value of the business. Vo (2017) pointed out that liquidity is one of the

important issues determining the success of Vietnamese enterprises. The study shows an inverse relationship between liquidity and short-term leverage of enterprises.

H6: Firm age (AGE) have a negative relationship (-) with debt ratio

Typically, when a business has a high number of years of listing, the reputation of that business is built more firmly if the business operation is effective. This creates a solidity in the process of trading and consuming products. Therefore, the older an enterprise is, the more trustworthy information about the business on the market, because this will create favorable conditions for investors to easily access capital sources rather than borrow on the market. On the other hand, the life of an enterprise usually has four stages, the old enterprise will be in the saturation stage, this stage has grown to the peak, the shortage of capital will put less pressure on the managers and firms tend to borrow less. Researches from Hall *et al.* (2000); Kieschnick & Moussawi (2018) supported this idea.

H7: Pluralist executives have a negative influence (-) on debt ratio

According to agency theory, when the CEO and the chairman are independent, the managers can run the company in the most objective way, but it can affect the interests of shareholders. On the other hand, if the CEO is the chairman, the decision of the CEO duality will have a direct influence on the company's loan decision. Firms often use less debt to avoid the risk of bankruptcy.

3.2. Research data and methodology

The data used in this study is panel data collected from audited financial statements for 5 years from 2016 to 2020 of 23 medical pharmaceutical companies listed on HOSE, HNX (including 115 observations).

Research data

There are 23 pharmaceutical - medical firms listed on Vietnam's stock exchanges, of which 13 pharmaceutical companies are listed on the Ho Chi Minh City Stock Exchange and 10 pharmaceutical companies are listed on the Hanoi Stock Exchange. The data was collected from financial statements these companies during the five-year period from 2016 to 2020. The author used Excel to collect data including total asset, total debt, fixed asset, current asset current liability, EBIT and calculate the necessary ratios. To analyze and test the regression model, the paper used the STATA 13.0 software to analyze the data.

Table 1. Dependent variable and independent variables

	Variables	Measurement	References
Dependent variable	TD: Debt ratio	Total debt/ Total assets	Saeed et al., (2014); Chen (2004); Ahmed Sheikh & Wang, (2011)
Independent variables	PROF: Profitability	EBIT/ Total assets	Chen (2004); Sinha & Samanta, (2014)
	TANG: Tangible assets	Fixed assets/ Total assets	Sinha & Samanta, (2014); Chen (2004);

Variables	Measurement	References
		Kayo & Kimura (2011)
SIZE: Firm size	Logarithm of total assets	Chen (2004); Vo (2017)
GRO: Growth opportunity	Change of percentage of total assets	Titman and Wessels, (1998); Saeed et al., (2014)
LIQ: Liquidity	Current assets/ Current liabilities	Sinha & Samanta, (2014); Ahmed Sheikh & Wang, (2011)
AGE: Firm age	The number of years = present year – year of listing	Filatotchev and Wright, (2006); Chen & Strange, (2005)
PLU: Pluralist Executives	1 if the CEO is the chairman of the Board of Directors; 0 if the CEO is not the chairman of the Board of Directors.	Saeed <i>et al.</i> , (2014); Boyd (1995)

Source: Author's compilation

Research methodology

There are 3 steps in the research process: Developing indicators reflecting capital structure and factors affecting capital structure of enterprises; Determine the correlation relationship between the variables by calculating the partial correlation coefficient; Analyze regression model to determine the influence of the explanatory variables on the debt ratio of listed companies.

This study uses panel data which is a data set that includes both space and time dimensions. Hence, in order to suit the research model as well as the data collected, three commonly used methods are: Pooled OLS Model, Fixed Effects Model (FEM) Random Effects Model (REM). The authors will use quantitative methods to overcome the defects of the model selected as the result for the study. Finally, Feasible Generalized Least Square (FGLS) method is chosen to propose final regression model.

3.3. Regression model

This research will select and analyze a number of determinants affecting capital structure: profitability, tangible assets, firm size, firm age, growth opportunities, liquidity, pluralist executives.

The detailed model is as follows:

$$TD = \alpha + \beta_1 PROF_t + \beta_2 TANG_t + \beta_3 SIZE_t + \beta_4 GRO_t + \beta_5 LIQ_t + \beta_6 AGE_t + \beta_7 PLU_t + \varepsilon$$

In which:

TD: Dependent variable

PROF, TANG, SIZE, GRO, LIQ, AGE, PLU: Independent variables

α : Intercept

ε : random errors

4. Results of data analysis

4.1. Descriptive statistics of variables

Table 2. Descriptive statistics of variables

Variables	Obs	Mean	Std. Dev	Min	Max
TD	115	0.3942	0.2168	0.0484	0.9651
PROF	115	0.1001	0.0894	-0.1318	0.4245
TANG	115	0.2286	0.1612	0.0059	0.6622
SIZE	115	27.29455	1.1743	23.7398	30.4708
GRO	115	0.3457	1.9777	-0.8948	19.3362
LIQ	115	2.5849	1.7302	0.8866	13.3278
AGE	115	7.6435	3.8552	0	14
PLU	115	0.3478	0.4784	0	1

Source: Authors' calculation from the STATA 13.0 software

Descriptive statistics show that the ratio of debt to total assets accounts for 39.42% of studied enterprises. In which, the minimum value of debt ratio (TD) is 0.0484 and the maximum value is 0.9651. The profitability (PROF) of pharmaceutical - medical enterprises in the research period had an average value of 10.01%, with the lowest value being -13.18% and the largest being 42.45%. The ratio of fixed assets to total assets (TANG) of pharmaceutical - medical firms in the sample has the largest value of 66.22% while the lowest is 0.59%. The mean of fixed asset ratio of the sample is 22.86% with a standard deviation of 0.1612. The firm size (SIZE) is the logarithm of the average total assets, which is 27.29455 units, the highest is 30.4708 units, and the lowest is 23.7398 units which illustrate that the size of the enterprise is very diverse. The average revenue growth rate of pharmaceutical - medical enterprises in the sample is 34.57%. The lowest growth opportunities rate (GRO) of -89.48% shows that enterprises operate at a loss while the highest revenue growth rate is 1933.62%. Current assets over current liabilities (LIQ) averaged 258.49%, the highest is 1332.78%, and the lowest is 88.66%. The liquidity of these listed firms is significantly increased, which means these firms have an appropriate ratio between current assets and current liabilities. The firm age (AGE) averaged 7.6 years. Firms with the highest years of operation have been listed for 14 years.

4.2. Correlation matrix

Table 3. Correlation matrix of research variables

	TD	PROF	TANG	SIZE	GRO	LIQ	AGE	PLU
TD	1							
PROF	-0.4837	1						
TANG	-0.1128	-0.1246	1					
SIZE	-0.0245	0.0443	-0.4705	1				
GRO	-0.1499	-0.0251	-0.1754	0.0689	1			
LIQ	-0.6664	0.3883	-0.2631	0.1492	0.5609	1		
AGE	-0.1318	-0.0542	0.0328	0.1264	0.0320	0.1500	1	
PLU	-0.1067	0.1440	0.0207	-0.1855	0.1608	0.1608	-0.3698	1

Source: Authors' calculation from the STATA 13.0 software

According to table 3, the debt ratio was negatively correlated with all 7 independent variables. It indicates that firms with higher profitability, tangible asset, size, growth opportunity, liquidity, age are less interested to use more debt as part of their capital structure. Among the independent variables, the correlation coefficient ranges from 0.025 to 0.67, so in general with the significance level of 5%, there is a relationship between the independent variables and dependent variables. TD and LIQ have the strongest correlation with each other because the absolute value of the correlation coefficient is 0.67. To ensure the effectiveness of the research, the author carried out the multicollinearity test by examining the VIF. VIF value is from 1.35 to 1.07 which is smaller than 10. According to Gujarati & Porter (2012), the regression model does not have multicollinearity.

4.3. Empirical results

Table 4. Result of regression models

	Pooled OLS	FEM	REM	FGLS
PROF	-0.507**	-0.2598*	-0.4216***	-0.4619***
TANG	-0.4568***	0.1243	-0.0979	-0.0433***
SIZE	-0.013	-0.0364	-0.0281	-0.0298***
GRO	0.0259	0.0069	0.0091	0.0335***
LIQ	-0.0996***	-0.0299***	-0.0468***	-0.0977***
AGE	-0.0006	-0.0022	-0.0037	0.0035
PLU	0.0012	-0.0331	-0.0295	0.0155
Cons	1.1594**	1.489**	1.3844***	1.5625***

Source: Authors' calculation extracted from STATA 13.0 software

(Note: * p<0.01, ** p<0.05, *** p<0.1)

The regression results of Table 3 show that, with the dependent variable TD, R² of 3 models Pooled OLS, FEM, REM are 63.69%, 27.91% and 23.34%. This shows that the variables in the research model can explain 63.69%, 27.91% and 23.34% of TD dependent variables.

However, when estimating according to the Pooled OLS model, the model does not reflect the characteristics of each enterprise. Therefore, the study conducted a test to select FEM or REM models as suitable models. Hausman test gives p-value: $\text{Prob} > \chi^2 = 0.000 < \alpha = 0.05$, therefore, the author rejects H_0 and apply Fixed Effects Model.

Table 5. Hausman test result

Chi ²	25.96
Prob > Chi ²	0.0005

Source: Authors' calculation extracted from STATA 13.0 software

To test autocorrelation, the author uses Wooldridge test to test hypothesis H_0 : there is no first - order autocorrelation. With significance level 5%, $\text{Prob} = 0.1524 > 0.05$, accept H_0 . Therefore, in this model, serial autocorrelation phenomenon does not exist.

To test heterokedasticity, the author uses Wald test. The result is that p-value = $0.000 < 0.05$, this model has unrestricted heterokedasticity. To overcome this phenomenon, this study carried out Feasible Generalized Least Squares method (FGLS).

Regression results from the FGLS model in Table 3 show that PROF, TANG, SIZE, LIQ factors have a negative influence on the capital structure of listed pharmaceutical - medical enterprises and the factors GRO has a positive influence on the debt-to-total asset ratio. Firm age (AGE) and pluralist executives (PLU) do not have statistical meaning, in other word, do not affect the capital structure.

The detailed regression model is written as follow:

$$\text{TD} = 1.5625 - 0.4619*\text{PROF} - 0.00433*\text{TANG} - 0.0298*\text{SIZE} + 0.0335*\text{GRO} - 0.0977*\text{LIQ} + \varepsilon$$

4.4. Discussion

The beta coefficient of profitability (PROF) is -0.4619 which shows that profitability has a negative impact on financial leverage. This coefficient illustrates that when profit in the pharmaceutical industry increases 1 unit, the funding from debt decreases 0.4619 units. This is also the factor that has the strongest influence on the capital structure of enterprises. The negative relationship between profitability and debt ratio can be explained based on pecking order theory. When enterprises operate effectively, priority will be given to internal capital from retained earnings instead of borrowing to finance investment and production activities. In other words, the order of capital that enterprises prefer to use will be retained earnings, debt and finally the issuance of new shares. This result is consistent with hypothesis H1.

The beta coefficient of tangible assets is -0.0298 which means that there is a negative impact of tangible assets on the financial leverage. If the fixed asset ratio of the enterprise increases to 1%, the debt/total assets ratio of the enterprise will decrease by 2.98% when other factors are constant. According to the trade-off theory, firms with more fixed assets will find it easier to borrow because they use fixed assets as collateral. This will help creditors assess the risk of businesses lower and lend at a more affordable cost than without collateral. Therefore, when there are more fixed assets, enterprises also have more opportunities to use debt. This result is consistent with the research results of Booth et al. (2001); Sayilgan et al. (2006); Tran and Ramachandran (2006); Ahmed Sheikh and Wang (2011); Imtiaz, Mahmud & Mallik (2016). However, it is not supported by hypothesis H2.

The beta coefficient of the size of the firms (SIZE) is -0.000393 which means that the size of the companies has a negative associated with total debt. This result is suitable with the pecking order theory, the study of Titman and Wessel (1988); Chen (2004) which showed that asymmetric information in large - sized companies is less than the small – sized ones because the big enterprises usually have the tendency to provide information for external investors. Therefore, they usually prefer using equity to debt. However, this result is not supported by hypothesis H3.

Enterprises whose revenue growth rate increases to 1%, the debt/total assets ratio will increase to 3.35%, respectively, when other factors are constant. Although this correlation is consistent with the pecking-order theory. When businesses have many growth opportunities but internal capital from retained earnings is not enough to meet capital needs, enterprises will prioritize using debt instead of issuing new shares. Therefore, the higher the growth rate of the enterprise, the higher the debt ratio of the enterprise will be. The results of this study are consistent with the results of the study of Sayilgan et al. (2006); Tran and Ramachandran (2006); Pham and Nguyen (2015); Vo (2017). This result is supported by hypothesis H4.

The coefficient of the liquidity ratio in the regression result is -0.0977, which points out that liquidity has the opposite impact on debt ratio. This correlation supports the predictions of pecking order theory that when looking for capital, firms usually do a favour of internal funding by retained earnings rather than using external funding. This result is supported by the study results of Saeedi and Mahmoodi (2011), Saeed et al. (2014). Hypothesis H5 also supported for this result.

5. Conclusion and recommendations.

5.1. Conclusion

This study identified the determinants affecting the capital structure of 23 listed pharmaceutical medical enterprises on Hanoi Stock Exchange and Ho Chi Minh City Stock Exchange by using the Pooled OLS, FEM, REM and FGLS regression method. Data is collected from financial statements and annual reports of listed pharmaceutical medical firms during the period from 2016 to 2020. The regression model is used to test the effect of seven explanatory variables like profitability, tangible asset, firm size, growth opportunities, liquidity, firm age and pluralist executives to the ratio of total debt to total assets. Research results show that profitability, tangible assets, firm size and liquidity have a negative correlation with capital structure. In contrast, growth opportunities, firm age and pluralist executives have a positive relationship with capital structure. Generally, the results are most consistent with previous studies on capital structure.

From the quantitative result, the author gave recommendations for listed pharmaceutical medical firms to have appropriate strategy for capital structure in order to maximize their value and profit.

5.2. Recommendations

Recommendations for the pharmaceutical – medical listed companies in Vietnam

Firstly, the listed enterprises need to proactively set up a department in charge of capital management.

Capital management is an extremely important activity for businesses in the process before and after building the target capital structure. However, most enterprises have not yet established a specialized department in this field. The responsibility for planning the capital structure of a business is often delegated to the board of directors. Therefore, to be able to build and manage

an effective capital structure, enterprises should set up a dedicated department to manage capital which is responsible for recommending changes to the operational plans if there is inconsistency or conflict between the ability to raise capital and the business's development plan and strategy.

Secondly, forms of capital mobilization need to be diversified.

One of the important forms of capital mobilization that businesses should exploit is corporate bonds. The issuance of bonds by enterprises should be conducted widely and publicly, not limited to just a few ordinary investors. In particular, businesses should pay attention to introduce bonds to foreign investors. Many foreign investors, especially large, risk-tolerant investors, are very fond of corporate bonds of developing countries like Vietnam because the growth potential is still quite high and interest rates are low which also more attractive than developed countries.

For medical and pharmaceutical enterprises involved in import and export, it is necessary to take advantage of the forms of international trade financing such as discounting commercial papers, pledging valuable papers, letters of credit (L/C), factoring, etc. It should be noted that with the development scale of the import-export industry of medicine and pharmaceuticals in Vietnam and the speed of globalization in the field of import and export in general, the use of these financing vehicles will be an inevitable trend.

For businesses operating in the field of manufacturing medical equipment or pharmaceuticals that have a great need for investment in fixed assets, renting an asset will be an appropriate choice. In essence, leasing is also a form of credit with assets. The expertise of property leasing companies in the field of property investment will help businesses save time and costs when they want to borrow capital to increase fixed assets.

Thirdly, completing the accounting work, making financial statements and disclosing information of listed enterprises.

To improve access to external capital sources, enterprises need to improve accounting work, financial reporting process, disclosure of financial statement information, and ensure that information reaches the public and investors in a timely and reliable manner. In addition to the information on the financial statements according to the form prescribed by the Ministry of Finance, enterprises should more fully disclose a number of sensitive criteria in the notes to the financial statements which have been omitted in financial statements such as the Balance Sheet and Income Statement. Through this further information, enterprises will more fully meet the transparency in the financial statements, helping investors have more useful information in making decisions.

Fourthly, improve the quality of corporate governance.

To improve governance, businesses need to raise further awareness of the importance of appropriate governance, pay more attention to protecting the rights of shareholders and stakeholders, and increase public transparency, ensuring the responsibility of the Board of Directors in risk monitoring.

Strong role of the supervisory board and internal audit department is a tool to help detect and improve weaknesses in the enterprise's management system. Members of the Supervisory Board must be independent members with appropriate qualities. Strengthening the role of chief financial officer (CFO) in corporate governance is vital. The CFO needs to make strategic recommendations to the board based on financial analysis and forecasts. The accounting department is required to provide an integrated information system to store, monitor, and report

the performance and financial position, and an internal control system to ensure the effective governance and fraud prevention.

Recommendations for banks and credit institutions

Banks should balance their capital sources, save operating costs to both restructure debts, exempt or reduce loan interest and payment fees while considering new loans to serve the production and business of enterprises and conductor; regularly monitor and evaluate the situation of loan customers to promptly and effectively deploy support measures; stabilize deposit and lending interest rates; timely response to the payment needs of the businesses.

In order to support businesses affected by the COVID-19 pandemic, banks should lower lending rates according to the general policy of the Government and the State Bank. However, the new decrease is around less than 1%, very few banks reduce at 2% as announced. It is urgent that banks should continue to lower lending interest rates for production and business as well as to have debt rescheduling and debt freezing policies for loans that have been invested in production but have not yet been recovered to create favorable conditions for businesses to recover after a difficult time due to the pandemic.

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