ATLANTIS PRESS
Advances in Economics, Business and Management Research, volume 86
2nd International Conference on Banking, Accounting, Management and Economics (ICOBAME 2018)

Determinants of Capital Structure

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***Abstract*—This study analyses the capital structure of manufacturing companies listed on the Indonesia Stock Exchange. Capital structure is an important part of the company, because it relates to the composition of the company's debt. Investors need to know the problems of the company's capital structure, as one of the considerations in determining their investment policy. The study uses secondary data, with independent variables of profitability (Return on Equity), sales growth, asset structure, liquidity (Current Ratio), tax and business risk. As an independent variable is the capital structure (Debt to Equity Ratio). Data analysis used multiple regression analysis, while sampling was done by purposive sampling method. The results showed that liquidity (Current Ratio) had a negative effect on the significance of less than 1%. While profitability (Return on Equity), sales growth, asset structure, tax and business risk do not affect the capital structure.**

Keywords—profitability; sales growth; asset structure; liquidity; tax; business risk; capital structure

I. INTRODUCTION

Capital structure is a comparison between debt and equity, and is indicated by the proportion of the debt used for the company's operations. Debt used can be in the form of short-term debt, which is used as the company's working capital and long-term debt used to finance investment in long-term assets. To achieve an optimal capital structure, companies can do a combination of the proportion of debt usage with their own capital (stock).

Modern capital structure theory was first developed by Modigliani and Miller through the propositions he made in 1958 [1].

A. Modigliani and Miller Theory without Taxes

1) Proposition 1: First, this procedure assumes that the capital market is in perfect condition and there is no tax, this condition results in the value of the company using debt and not using debt is the same. Second with taxes, this proposition assumes that capital markets are in perfect condition and there are taxes, and the implications of this proposition benefit companies that use debt in their capital structure. With the tax, the value of companies that use debt is higher than the value of companies that do not use debt. Proposition 1 of Modigliani and Miller has weaknesses in the basic assumption itself, wherein the assumption states that the level of debt is not related to the company's cash flow.

2) Proposition 2: In this proposition, it is stated that the expected value of return on capital will increase with increasing use of debt (financial risk). The expectation of an increase in return on returns (ROE) is a result of increased risk caused by the use of debt by the company. The implications of proposition 2 are Modigliani and Miller.

B. Modigliani's and Miller's Theory with Taxes

Modigliani's and Miller's theory without tax was considered not realistic, so Modigliani and Miller incorporated tax factors into his theory. With the tax paid to the government, it means there is a cash outflow, in this case debt can be used to save taxes, because interest can be used as a tax deduction. So, companies that use debt will pay less tax than companies that do not use debt.

This Modigliani and Miller theory with tax also has two propositions, namely proposition 1 and proposition 2 as follows:

1) Proposition 1: In this proposition the value of a company that uses debt is equal to the value of a company that does not use debt plus a tax savings from debt interest payments. The implication of this proposition 1 is that the use of debt greatly benefits the company, because it can save tax payments.

2) Proposition 2: In this proposition it is stated that the cost of own capital (shares) will increase with the increasing use of debt, but the increase in the cost of own capital (shares) will not be greater than the savings in paying taxes. The implication of this proposition 2 is that greater use of debt will reduce the cost of the weighted average of capital, because the cost of debt is lower than the cost of own capital (shares), which is due to tax savings from paying interest on debt.

Modigliani and Miller's theory is very controversial, because it can lead to the perception that companies should use as much debt as possible. But in reality, this practice does not have a company that uses debt as much as possible, because the use of debt will create bankruptcy costs. The greater the use of debt, the more likely the company will experience bankruptcy. Therefore, in subsequent developments the capital structure theory literature has been expanded with other theories, namely Trade off Theory, Pecking Order Theory and Market Timing Theory.

The trade off theory holds that there is an optimal target capital structure, where in that position there will be a balance between the benefits of tax savings and the risk of bankruptcy. As long as the tax savings are still greater than the cost of bankruptcy, the use of debt is still justified. The company will strive to balance the tax savings with the costs incurred due to the use of debt, namely at the position of the optimal capital structure [2-4].

The pecking order is an alternative theory offered by Myers [5]. Pecking orders occur when the cost of issuing shares risks closing the costs and benefits proposed by the trade-off model. The cost of issuing shares risks creating a pecking order, where the company funds new investments by using low-cost capital priorities. The first is filled with retained earnings, then filled with debt that is not risky, then filled with risky debt, and finally with outside equity.

Next is the market timing theory [6], where this theory states that companies make the right timing for securities issuance and repurchase activities based on the overvaluation period (undervaluation) of their shares. According to this theory, companies would prefer to issue equity when the stock market value is of higher fundamental value, and choose to buy back shares or issue debt when the market value of the company's shares is lower than its fundamental value.

Several research results regarding capital structure have been carried out [7-13]. Ren and Liu conducted a study of listed IT companies in China. The results show that profitability and liquidity have a negative effect, while Size and tangible have a positive effect on capital structure [10]. Reznokova, Suoboda, and Polednakova conducted research in Slovakia, found that profitability and firm size had a positive effect, while growth opportunities, non-debt tax shields, and liquidity had a negative effect on capital structure [11]. There are differences in findings that are contrary to the research of Ren and Liu namely on profitability.

Other research was conducted on the Portugal Stock Exchange by Vergas, Cerqueira, and Brandao, found that profitability had a negative effect, and tangible had a positive effect on capital structure. While Size, Growth, and non-debt tax shields have no effect on capital structure [12]. Zang, and Mirza, conducted research in China, which was divided into before period 2003-2007 and after the financial crisis period 2008-2012. The result, profitability, growth, and non-debt tax shields have a negative effect, while size and liquidity have a positive effect on capital structure, both before and after the crisis period. Tangible had a positive effect on capital structure before the financial crisis, and did not affect the capital structure after the financial crisis. Likewise, Tax has a negative effect on the capital structure before the financial crisis, and does not affect the capital structure after the financial crisis [13].

Nasimi conducted a study of 15 companies listed on the S and P 500 index, the New York Stock Exchange. The results found that profitability, size, growth, non-debt tax shields, and cost of financial distress did not affect the capital structure, and only tangible had an effect on capital structure, which had a positive effect [9]. While Mohsin, A conducts research on large Norwegian companies, which are divided into domestic companies, foreign companies and combined. The results show that the tangible and liquidity for the three categories are the same, which is a positive effect on the capital structure. Firm size, the result has a negative effect on the capital structure for the domestic category, while the combined and foreign categories do not affect the capital structure. Growth and tax shield does not affect the capital structure in domestic, foreign or combined categories. For current profitability it has a negative effect on the domestic and combined company categories, while in the foreign category there is no effect [8].

Based on the description of the observation of the phenomenon, the problem in this study is that there are still differences in the factors that determine the capital structure. Therefore, it is necessary to conduct further research on the factors that influence capital structure in different time periods.

II. METHOD

This research is a quantitative research that will examine the factors that determine the capital structure. In this study will explain the relationship between variables by analyzing numerical data, using statistical methods through testing hypotheses.

The type of data used in this study is secondary data, where the data comes from the financial statements of manufacturing companies listed on the Indonesia Stock Exchange. The researcher took the required data in the form of financial ratios from ICMD, in each manufacturing company that was the object of research.

The population used in this study is a manufacturing company listed on the Indonesia Stock Exchange in the 2014-2016 period. The sampling in this study uses non-probability sampling method, namely purposive sampling.

Capital structure is the balance or comparison between debt (long term) and own capital. Debt to Equity Ratio (DER) is an indicator of the proportion of the company's debt to shareholder investment. Debt to equity ratio reflects the company's financial risk placed on shareholders as a result of its financial leverage.

The trade-off theory is an extension of the capital structure theory of Modigliani and Miller (proposition II). The main idea behind this theory is to make a trade-off between the benefits and weaknesses of using debt to finance business. Companies determine their capital structure in the best form through evaluating what they can generate from using debt to what might harm them in the future. In other words, this theory ensures that there are benefits from leveraged financing such as benefits resulting from tax savings and agency benefits.

The company must determine the best source of funds or capital structure for company funding [4]. Pecking order theory states that companies tend to use internal funds and if the company needs external funds to meet its operational activities, the company will use the lowest debt.

III. Results and Discussion

A. Model Testing

Model testing is conducted to determine the extent to which the model used meets the goodness of fit requirements, so the model can be used to analyze. Model testing is carried out, namely the coefficient of determination, which is indicated by the adjusted R-Square value. Testing of this model can determine the effect of the independent variables used to influence the dependent variable.

TABLE I. Coefficient Determination

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.732[a]	.535	.516	.268026

[a.] Predictors: (Constant), RB, CR, Tax, Growth, SA, ROE

[b.] Dependent Variable: DER

In table 1 shows the value of Adjusted R Square is 0.516. Thus, the 51.6% capital structure is influenced by ROE, Growth, Asset Structure (SA), Liquidity (CA), Tax, Business Risk (RB). While the rest, 48.4% of the capital structure is explained by other variables outside the model.

Testing other models is testing the significance value F (F test). This test is to find out whether the regression model meets the requirements of goodness of fit as stated in Ordinary Least Square (OLS).

TABLE II. F Test

Model	Sum of Squares	df	Mean Square	F	Sig
Regression	11.841	6	1.973	27.471	.000[b]
Residual	10.273	143	.072		
Total	22.114	149			

[a.] Dependent Variable: DER

[b.] Predictors: (Constant), RB, CR, Tax, Growth, SA, ROE

From table 2, it can be seen that the calculated F value is 27,471 with a significance value of F (sig-F) is 0,000. This means business risk (RB), liquidity (CR), tax, sales growth (growth), asset structure (SA), and profitability (ROE) affect the capital structure (DER). The regression model also meets the requirements of the Goodness of Fit, so that analysis can be carried out, and regression models can be used to predict [14].

B. Hypothesis Testing

To examine the effect of business risk (RB), liquidity (CR), tax, sales growth (growth), asset structure (SA), and profitability (ROE) on the capital structure (DER), is done by t test. Statistical test t shows how far the independent variables are in explaining dependent variable [15].

TABLE III. T Test

Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig.
	B	*Std. Error*	*Beta*		
(Constant)	1.428	.114		12.530	.000
ROE	-.124	.238	-.034	-.521	.603
Growth	.074	.156	.028	.474	.636
SA	-.163	.139	-.070	-1.176	.242
CR	-.230	.020	-.733	-11.675	.000
Tax	-.369	.300	-.074	-1.230	.221

Dependent Variable: Capital Structure (DER).

Based on the results of the t test in table 3, the regression equation can be written as follows:

$$DER = 1.428 – 0,124ROE + 0,074Growth – 0,163SA – 0,230CR – 0,369Tax – 0,027RB + e$$

The results of this study found that profitability, sales growth, asset structure, tax, and business risk were not statistically significant to the capital structure. Profitability, asset structure, tax, and business risk tend to have a negative effect, while sales growth tends to have a positive effect. Only liquidity has a statistically significant effect on the capital structure, at a significance level of less than 1%.

The companies that have a high level of profitability means that the company has enough funds to finance the company's operational activities, because with high profits the company can withstand greater profits as an internal source of funds. Thus, the test results using profitability variables are not in accordance with the trade-off theory, and tend to be in accordance with the pecking order theory [5].

Sales growth does not affect the capital structure. The results of this study are in accordance with research from Vergas, et al, who found that growth does not affect the capital structure. However, the results of this study are not in accordance with the research of Ren and Liu [10] and Reznokova, et al. [11], who found that growth had a negative effect on capital structure. The influence of sales growth on capital structure shows that companies that have sales growth and sales decline do not affect the company in determining debt policy as a source of corporate funding. Companies with high or stable sales growth have a high opportunity to meet funding policies by using debt, because it can produce a higher rate of return than the cost of capital. Therefore, theoretically sales growth has a positive effect on debt use policies. Thus, the results of testing using the sales growth variable are not in accordance with the trade-off theory, and tend to be in accordance with the pecking order theory [5].

Asset structure does not affect the capital structure. The results of this study are in accordance with research from Vergas, et al. [12], Mohsin [8] and Nasimi [9]. However, the results of this study are not in accordance with the research of Ren and Liu [10], Reznokova, et al. [11], and Zang and Mirza [13], who found that growth had a negative effect towards capital structure. The effect of asset structure on capital structure shows that the size of the asset structure does not affect the use of debt policy as a source of corporate funding. Companies with high asset structures have large fixed assets, such as production machinery, so that they have greater

opportunities to generate profits. Profit from products sold is considered to be able to meet capital requirements from within the company as a source of funding. Although it is not statistically significant, the direction coefficient shows a negative effect, so the test results using asset structure variables tend to match the pecking order theory [5].

Liquidity has a negative effect on capital structure. Companies with high liquidity have large internal funds, the company can use its internal funds first as a source of funding before using sources of funds from outside the company, especially debt. The results of this study are consistent with the research of Ren and Liu [10] and Reznokova, et al. [11]. But the results of this study are not in accordance with the research of Mohsin and Zang [8] and Mirza [13], who found that liquidity had a positive effect on capital structure, and was not in accordance with the results of research from Nasimi who found that liquidity did not affect the capital structure. The test results using variable liquidity support or in accordance with the pecking order theory concept [5].

Taxes do not affect the capital structure. In accordance with the theory of capital structure concepts that companies that use debt will pay lower taxes than companies that do not use debt. Thus, there is a tax deductible for companies that use debt. The results of this study are in accordance with the results of research from Zang and Mirza [13], who found that taxes did not affect the capital structure in the conditions prior to the financial crisis in the 2003-2007 period. Whereas in the conditions after the financial crisis in the 2008-2012 period, taxes have a negative effect on capital structure. The test results using this variable are not in accordance with the Trade-off Theory which explains if the benefits obtained by the company in using debt are greater than the sacrifice, so the company should fund funding from debt [5].

Business risk does not affect the capital structure. But the direction coefficient shows a negative direction, so there is a tendency for companies with high business risk not to use debt as a source of financing. Companies that have large and small business risks will continue to make debt regardless of the business risks borne by the company. The decline in investor and bank confidence in providing debt will not be a barrier for companies to continue to get loans as a source of funding [2,16].

IV. Conclusion

- Sales growth and profitability do not affect the capital structure, because the company's profit is considered sufficient as a source of corporate funding, so the company does not need to use debt as a source of corporate funds.
- Asset structure does not affect capital structure, because assets owned such as production machines can produce products in large quantities. The profit from selling the product is considered to be able to meet the company's funding needs, so the company does not use debt as a source of financing.
- Liquidity has a negative effect on the capital structure, because the company with a high level of liquidity has the ability to meet the company's funding needs, so the company does not need to use debt.
- Tax does not affect the capital structure, because the company does not use debt as a source of funds, so the company does not obtain tax savings derived from interest expense.
- Business risk does not affect the capital structure, because companies do not use debt as a source of funds, thereby reducing the occurrence of business risks.

Acknowledgment

Writing this article is supported by my friends, especially Sigit Nugroho, Yeye Susilawati, Elen Puspitasari, and Ida Nurhayati, thank you for supporting the input data, analysis and conclusions.

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