The Effect of Capital Structure, Profitability on Firm Value with Interest Rates as Moderating Variable

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ABSTRACT

This study aimed to determine whether capital structure and profitability have an influence on firm value with interest rates as a moderating variable in manufacturing companies listed on the Indonesia Stock Exchange. Samples were taken by purposive sampling method and had several predetermined criteria. The number of samples that were successfully taken were 53 manufacturing companies during the 2017-2020 period. The data is processed using multiple regression analysis and E-views 12 software. Based on the results of the research that has been done, it is found that capital structure has no effect on firm value, while return to assets and net profit margin have a significant effect on firm value. The moderating variable of interest rates cannot moderate the relationship between capital structure, return on assets and net profit margin on firm value.

Keywords: *Capital Structure; Profitability; Firm Value; Interest Rates*

1. INTRODUCTION

Factors that can affect the level of company value can come from internal or external companies. One of the internal factors is the capital structure. Based on Modigliani and Miller (1958) [1] who pioneered the theory of capital structure, they concluded that the use of debt will increase firm value if the interest cost on debt is a cost that reduces tax payments (taxable costs).

The company's financial performance as reflected by the profitability ratio is the second internal factor that can affect the value of the company. Profitability ratio is a ratio that can measure the company's ability to generate profits within a certain period. Modigliani and Miller (1958) [1] stated that firm value is determined by firm profitability, which means that higher profits create a greater probability that more dividends will be distributed to investors (shareholders) so as to create high firm value.

Viewed from the perspective of the company, the interest rate is a component of the cost of capital for the company, so the increase in the interest rate is an additional cost burden that must be borne by the company. The interest rate is also an external factor that can affect the value of the company. When interest rates increase, management will respond by adjusting its capital structure to reduce the cost of capital that must be borne.

When interest rates increase, investors tend to divert their investment funds to deposit investment products because they get higher returns than the capital market, causing a decrease in stock prices in the capital market. The decline in stock prices can be interpreted as a decrease in the value of the company.

1.1 Related Work

1.1.1. Stakeholders Theory

According to Deegan (2014) [2] stakeholder theory is a theory which states that all stakeholders have the right to obtain information about company activities/activities that can influence economic decision making. The main purpose of stakeholder theory is to help management or company managers to increase value creation for the company as a result of various activities carried out, as well as to minimize losses that may occur for stakeholders.

Stakeholder theory says that the company is not an entity that only operates to fulfil its own interests but must also be able to provide benefits to its stakeholders.

1.1.2. Signalling Theory

Signal theory states that company executives who have better information about their company will be encouraged to convey this information to potential investors so that the company's stock price increases.

Signal theory explains that signalling is done by managers to reduce information asymmetry. Managers provide information through financial statements that they apply conservatism accounting policies that result in higher quality earnings because this principle prevents companies from exaggerating earnings and helps users of financial statements by presenting profits and assets that are not overstate.

1.1.3. Agency Theory

The agency theory developed by Jensen and Meckling (1976) [3] explains the relationship between shareholders as principals and management as agents. The owner (principal) delegates its power, including in terms of decision making to the management (agent) through a contract which will eventually produce something. Management is contracted for the purpose of doing work for the benefit of the owner and not for his own personal benefit.

Management provides services in the interests of owners and is also involved in decision-making power. However, both owners and management are assumed to be motivated only by self-interest, namely to maximize their subjective interests and also realize their common interests. The management will try their best to fulfil the interests of the owner, one of which is to stabilize profits every period and the owner will get maximum results for the management services, namely good financial reports.

1.1.4. Firm Value

According to Weston and Copeland (2010) [4] measurement of firm value can be done using several financial ratios such as Price Earning Ratio (PER), Price to Book Value (PBV) and Tobin's Q.

1.1.5. Debt to Equity

According to Handono Mardiyanto (2009: 116) [5], capital structure is defined as the composition and proportion of long-term debt and equity (preferred shares and ordinary shares) determined by the company. In this study the measurement of capital structure using the Debt to Equity Ratio (DER). DER is a solvency ratio that describes the extent to which capital owners can cover debts to outsiders and is a ratio that measures the extent to which the company is financed by debt.

1.1.6. Return on Asset

According to Widana and Yasa (2013) [6], profitability is the company's ability to generate profits. The high level of profitability owned by a company means the company has a good performance in generating profits derived from the company's business activities or its own capital. The company's business activities can be demonstrated through the company's sales income.

1.1.7. Interest Rates

The interest rate is the price of the use of investment funds (loanable funds). The interest rate is one indicator in determining whether someone will invest or save (Boediono, 1994:76) [7]. The interest rate is set at the point where the savings representing the supply of new capital is equal to the demand. The Indonesian government in implementing monetary policy, announced the reference interest rate, namely the BI rate.

1.1.8. Debt to Equity related with firm value

The capital structure is a permanent financing in the company which consists of long-term debt, preferred stock and shareholder's capital. DER is included in the debt ratio group where the greater the ratio, the greater the use of debt on the company's equity. Modigliani and Miller (1958) [1] argue that the use of debt will increase firm value if the interest expense on debt is a cost that reduces tax payments. Stakeholders show interest in companies that maximize their invested capital to provide maximum profits and increase company value. This attracts investors to trust and invest in the company. Thus it can be said that the higher the debt, the higher the value of the company.

1.1.9. Return on Asset related with firm value

The investment activity in question is the acquisition and disposal of long-term assets and other investments that do not include cash equivalents (Raja Adri et. al, 2016) [8]. The higher the ROA value, the higher the profit generated by the company. The increase in ROA value indicates an increase in the company's ability to generate profits using the assets owned by the company. The increase in profits earned by the company will have a positive influence in increasing the company's share price in the capital market because based on the statement, company value is the company's performance as reflected by the stock price formed by the demand and supply of the capital market which reflects the public's assessment of the company's performance.

1.1.10. Net Profit Margin related with firm value

NPM can be calculated by dividing net income by sales. Modigliani and Miller (1958) [1] stated that firm value is determined by firm profitability, which means that more profits create a greater probability that more dividends will be distributed to investors or shareholders. The amount of dividends distributed can attract investors to invest in the company so that it can increase the share price per share. An increase in the company's stock price can be interpreted as an increase in the value of the company. In addition, the company's net profit is also an indicator that shows the company's prospects in the future. So it can be concluded that the higher the NPM of the company, the higher the value of the company.

1.1.11. Debt to Equity related with firm value with interest rates as a moderating variable

The choice of company financing by using a loan from a bank will certainly increase interest costs. When interest rates increase, companies will feel reluctant to make loans to banks to avoid increasing the cost of capital. The decrease in the company's debt will cause the DER to decrease because it can be said that the company does not take full

advantage of debt as additional company capital. The savings in taxes and other costs derived from using debt is greater than the sacrifice of paying interest costs. Investors see a good signal from companies that take advantage of debt because it means the company has the ability to pay back its obligations and grow. So a high DER value is the same as a high company value.

1.1.12. Return on Asset related with firm value with interest rates as a moderating variable

The ROA measurement shows the higher the ROA value, the better the company in providing returns to investors, it can be said that a high ROA value will result in high company value. When interest rates increase, the company's net profit will decrease because of the cost of capital that must be paid by the company. A decrease in company profits can cause a decrease in the company's stock price so that it also reduces the value of the company. High interest rates can also cause investors to tend to shift their investment funds to deposit investment products because they get higher returns. A decrease in the demand for shares will cause a decrease in the stock price in the capital market and the value of the company. So it can be concluded that high interest rates can affect the decline in ROA and firm value.

1.1.13. Net Profit Margin related with firm value with interest rates as a a moderating variable

NPM as one of the profitability ratios describes how big the percentage of net profit earned from sales. A high level of profitability ratio indicates the effectiveness and efficiency of the company in managing its operational activities. At a time when interest rates have increased there will be a decrease in profits earned by the company. The decrease in company profits will have an impact on decreasing earnings per share which means reducing the welfare of capital owners. It can be concluded that high interest rates can negatively affect profitability ratios and reduce firm value.
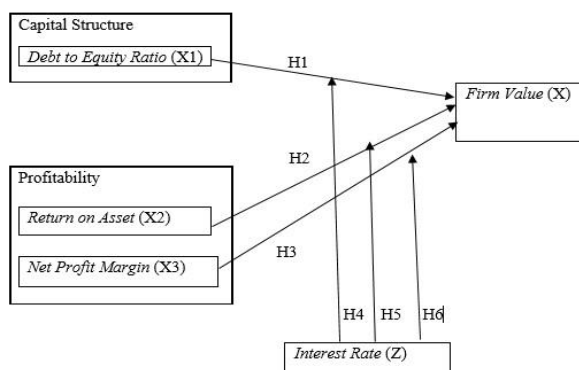
1.1.14. Hypotheses

Figure 1 Framework of Thinking

The hypotheses in this research were formulated as follows:
H1: DER has an effect on firm value
H2: ROA has an effect on firm value
H3: NPM has an effect on firm value
H4: Interest Rates moderate the effect (DER) on firm value
H5: Interest Rates moderate the effect (ROA) on firm value
H6: Interest Rates moderate the effect (NPM) on firm value

1.2 Our Contribution

The purpose of this study was to determine whether capital structure and profitability have an influence on firm value with interest rates as a moderating variable in manufacturing companies listed on the Indonesia Stock Exchange. Samples were taken by purposive sampling method and had several predetermined criteria. The number of samples that were successfully taken were 54 manufacturing companies during the 2017-2020 period. The data is processed using multiple regression analysis and E-views 12 software. Based on the results of the research that has been done, it is found that capital structure has no effect on firm value, while return to assets and net profit margin have a significant effect on firm value. The moderating variable of interest rates cannot moderate the relationship between capital structure, return on assets and net profit margin on firm value.

1.3 Paper Structure

The methodology of this research is quantitative research with secondary data obtained from the Indonesia Stock Exchange in the 2017-2020 period. The sample selection, the method used is purposive sampling, namely manufacturing companies with the criteria of 1) Manufacturing companies listed on the Indonesia Stock Exchange for the period 2017 – 2020. 2) Using the Rupiah currency value in their financial statements. 3) No loss from 2017 – 2020. 4) No Initial Public Offering (IPO), delisting, relisting period 2017-2020. 5) Using the financial year end of December 31. The total number of valid samples is 54 companies and within a period of 4 years, 212 samples are collected.

2. METHODS

In this study using descriptive statistical tests Chow test, Hausman test, classical assumption test and t-Test. Operational variables and measurements used are:

Table 1 Operational and Measurement Variables

No	Variable	Indicator	Measurement Formula	Scale	Source
1	Firm Value	Tobin's Q	$Q = \dfrac{(EMV + D)}{(BMV + D)}$	Rasio	Weston dan Copeland (2010)
2	Capital Structure	*Debt to Equity Ratio*	$DER = \dfrac{Total\ debt}{Total\ equity}$	Rasio	Weygandt (2012)
3	Profitability	*Return on Asset*	$ROA = \dfrac{Net\ income}{Total\ Asset}$	Rasio	Weygandt (2012)
4	Profitability	*Net Profit Margin*	$NPM = \dfrac{Net\ income}{Total\ Sales}$	Rasio	Weygandt (2012)
5	Interest Rate	Interest Rate	BI Rate	Rasio	Bank Indonesia

3. FINDINGS AND DISCUSSIONS

3.1. Descriptive Statistics

Tabel 2 Descriptive Statistics

	DER	ROA	NPM	RATE	Q
Mean	0.681978	0.069364	0.072707	0.048738	1.485173
Median	0.549906	0.056723	0.061662	0.048101	1.123898
Maximum	1.956564	0.227307	0.384235	0.056250	4.931390
Minimum	0.085966	0.000447	0.000156	0.042500	0.359695
Std. Dev.	0.463714	0.049106	0.057017	0.005218	0.973617
Observations	212	212	212	212	212

Source: Data processed with E-views 12 (2021) software

DER has an average value of 0.681978, a median of 0.549906, a maximum value of 1.956564 and a minimum value of 0.085966 with a standard deviation of 0.463714. ROA has an average value of 0.069364, a median of 0.056723, a maximum value of 0.227307 and a minimum value of 0.000447 with a standard deviation of 0.049106. NPM has an average value of 0.072707, a median of 0.061662, a maximum value of 0.384235 and a minimum value of 0.000156 with a standard deviation of 0.057017. Interest Rates have an average value of 0.048738, a median of 0.048101, a maximum value of 0.056250 and a minimum value of 0.042500 with a standard deviation of 0.005218. Firm Value has an average value of 1.485173, a median of 1.123898, a maximum value of 4.931390 and a minimum value of 0.359695 with a standard deviation of 0.973617.

3.2. Chow Test

3.2.1. Chow Test without Moderation

Table 3 Chow Test Results without Moderation

Effects Test	Statistic	d.f.	Prob.
Cross-section F	19.649670	(52,155)	0.0000
Cross-section Chi-square	429.748270	52	0.0000

Source: Data processed with E-views 12 (2021) software

Based on Table 3 above, the value of *Prob. Cross Section Chi-Square* is 0.0000. This shows that the probability value is less than α, which is 0.05. Thus, it can be concluded that the best model from Chow Test without moderation is the *Fixed Effect Model*.

3.2.2. Chow Test with Moderation

Table 4 Chow Test Results with Moderation

Effect Test	Statistic	d.f.	Prob.
Cross-section F	19.703700	(52,152)	0.0000
Cross-section Chi-square	433.857410	52	0.0000

Source: Data processed with E-views 12 (2021) software

Based on Table 4 above, the value of Prob. Cross Section Chi-Square is 0.0000. This shows the probability value is below the value of which is 0.05, so it can be concluded that the best model of the Chow Test with moderation is the Fixed Effect Model.

3.3. Hausman Test

3.3.1. Hausman Test without Moderation

Table 5 Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section Chi-square	30.761677	4	0.0000

Source: Data processed with E-views 12 (2021) software

Based on Table 5 above, the value of Prob. The random cross-section is 0.0005. This figure shows the probability value below the value of which is 0.05 so it can be concluded that the best model of the Hausman test without moderation is the Fixed Effect Model.

3.3.2. Hausman Test with Moderation

Table 6 Hausman Test Results

Test Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section Chi-square	32.251539	7	0.0000

Source: Data processed with E-views 12 (2021) software

Based on Table 6 above, the value of Prob. The random cross-section is 0.0002. This figure shows the probability value below the value of which is 0.05 so it can be concluded that the best model of the Hausman Test with moderation is the Fixed Effect Model.

3.4. t-Test Results

The following are the results of the t-Partial test using the Fixed Effect Mode.

Table 7 t-Test Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
DER	-0.099784	0.511794	-0.194969	0.8457
ROA	18.38694	6.899207	2.665080	0.0085
NPM	-15.85684	5.883257	-2.695249	0.0078
RATE	-4.091667	12.09382	-0.338327	0.7356
M1	1.435837	10.30377	0.139351	0.8894
M2	-199.5837	138.1899	-1.444271	0.1507
M3	220.5743	118.0914	1.867827	0.0637

Source: Data processed with E-views 12 (2021) software

Based on the results of the T test in Table 7, it can be seen that the capital structure regression coefficient (DER) has a probability value of 0.8457 where this value > from 0.05 means that the first hypothesis is rejected and the capital structure has no significant positive effect on firm value. This study is in line with (Purnomo, 201) [9], but not consistent with the results of research (Daniel, 2017) [10], which reveals that capital structure has a significant positive effect on firm value. The results of this study also show different results from research conducted by (Chen and Chen, 2011) [11], which found that capital structure has a significant negative effect on firm value.

The profitability regression coefficient proxied by return on assets (ROA) has a probability value of 0.0085 where this value is < 0.05, meaning that the second hypothesis is accepted and return on assets has a significant positive effect on firm value. This is in line with research conducted by (Marungu and Jagongo, 2014) [12]. In addition, the research conducted by (Halik, 2018) [13] is also not in accordance with the results of this study where based on the results of his research stated that return on assets had no significant effect on firm value.

The profitability regression coefficient is proxied by the probability net profit margin (NPM) which has a value of 0.0078 where this value is < 0.05, this means that the third hypothesis is accepted and the net profit margin has a significant negative effect on firm value. This finding is contrary to previous research that has been done that net

profit margin has no significant effect on firm value (Halik. 2018) [13].

The analysis of the moderating variable of interest rates in influencing the relationship between capital structure (DER) and firm value shows a probability value of 0.8894. This value is > 0.05 which means the fourth hypothesis is rejected and interest rates cannot significantly moderate the effect between capital structure and firm value. Different results are expressed in a study conducted by (Harvey, 2001) [14] which found that issuance of debt securities was generally carried out when interest rates were declining.

Analysis of the moderating variable of interest rates in influencing the relationship between return on assets and firm value shows a probability value of 0.1507. This value is > 0.05 which means the fifth hypothesis is rejected and interest rates cannot significantly moderate the relationship between return on assets and firm value. The results of this study are not in accordance with research conducted by (Lulu Meivinia, 2018) [15] which revealed that interest rates as a moderating variable can strengthen the relationship between return on assets and firm value. In addition, research conducted (Halim, 2013) [16] found that interest rates have a significant negative effect on profitability.

Analysis of the moderating variable of interest rates in influencing the relationship between net profit margin and firm value shows a probability value of 0.0637. This value is > 0.05 which means the sixth hypothesis is rejected and interest rates cannot significantly moderate the relationship between net profit margin and firm value. Interest rates cannot moderate the relationship between net profit margin and firm value. This is in line with (Amperaningrum and Agung, 2011) [17] in their research which reveals that interest rates have no significant effect on stock price movements. Different results are expressed in research conducted by (Wahyu Daniel and I B. Panji Sedana, 2017) [10] that interest rates have a negative and significant effect on profitability. The high level of net profit margin shows the effectiveness and efficiency of the company's management in managing its operational activities.

4. CONCLUSIONS

Based on the results of data testing, it shows that the capital structure variable has an insignificant negative effect on firm value, which means that an increase or decrease in capital structure will not provide a major change to firm value, the profitability variable as proxied by return on assets has a positive and significant effect on firm value. A significant effect indicates that an increase or decrease in return on assets will have a major effect on the value of the company and a positive effect means that every increase in the value of return on assets will increase the value of the company. The net profit margin variable has a significant negative effect on firm value, which means that every increase in net profit margin will have a decreasing effect on firm value. Interest rate moderating variable cannot moderate the relationship between capital structure and net

profit margin with firm value. The results of the study which show that the regression coefficient is positive and insignificant means that interest rates cannot significantly strengthen the relationship between capital structure and net profit margin with firm value. The moderating variable of interest rates has been proven in the study that it cannot moderate the relationship of return on assets to firm value in a negative and significant way. This means that every increase in interest rates cannot moderate the decrease in the return on.

There are several limitations of this study caused by: (1) This study only uses manufacturing companies as the object of research, so the object of research does not cover all types of companies listed on the Indonesia Stock Exchange. (2) This study only uses 3 independent variables on 1 dependent variable which is moderated by 1 moderating variable, namely capital structure, return on assets and net profit margin on firm value with interest rate as a moderating variable.

This research is still far from perfect because it has limitations. Based on these limitations, there are several suggestions that can be given to conduct further research, namely: (1) Expanding the scope of the object of research by adding to other sector companies listed on the Indonesia Stock Exchange. (2) Adding other variables not included in this study that can affect firm value such as firm size, dividend policy or corporate social responsibility (CSR).assets variable to the firm value significantly.

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