

Original Research Article

THE ROLE OF CAPITAL STRUCTURE AS MEDIATOR IN THE INFLUENCE OF FIRM CHARACTERISTICS AND MATURITY ON FINANCIAL PERFORMANCE

ABSTRACT

This study aims to determine the variables that can affect the financial performance of manufacturing firms listed on the Indonesia Stock Exchange (IDX) for the 2015-2019 period. A total of 59 firms were obtained using a non-probability approach with purposive sampling technique. The data was collected through an annual report and then analyzed using the Regression analysis tool and measured using a financial scale. The variables used in this study are: firm size, business risk, firm age, assets structure, growth rate, capital structure, and financial performance. Based on the results of data analysis and discussions that have been carried out in this study, it can be concluded that capital structure is able to influence the relationship between firm size and firm age on financial performance. However, capital structure cannot give a significant influence on the relationship between business risk, asset structure and growth rate on financial performance. In addition, this study can also prove that firm size, firm age, asset structure, growth rate and capital structure have a significant direct influence on financial performance.

Keywords: firm size, business risk, firm age, assets structure, growth rate, capital structure, and financial performance.

1. INTRODUCTION

A firm has a goal to maximize its financial performance in order to maintain their survival in the long term. In addition, the firm also wants to maximize profits effectively and efficiently to increase firm growth. So there needs to be an evaluation to find out the firm's achievements during a certain period, which aims to determine future plans in line with firm goals. To assess the operational effectiveness of the firm in achieving its objectives, certain measurement methods are needed, one of which is using a performance measurement tool, namely Return on Equity (ROE). ROE is a measure of the efficiency of the use of own capital which is operationalized in the firm. The greater the ROE, the greater the firm's ability to generate profits for shareholders. This measurement is used in most firms, especially firms listed on the stock exchange. Firms that go public have an obligation to provide a written description of their financial position on the Indonesia Stock Exchange (IDX). IDX has several sectoral indexes which are classified into nine predefined sectors. For example, the basic and chemical industrial sectors, the consumer goods industry, and various industries which are further categorized in this study as the manufacturing industry. The manufacturing industry is considered as one of the main indicators in analyzing the economy of a country. As a fairly large sector, this

industry is also not free from problems. One of them is a decrease in the firm's financial performance indicators.

The decline in performance in the manufacturing industry can be influenced by several factors, such as the determination of the capital structure. In improving its financial performance, firms will often be faced with decisions in determining the use of internal and external capital. This can be done through debt and equity, whose composition of use is reflected in the capital structure. Ramli, et al (2019) explain that there are several factors that affect the capital structure including asset structure, growth rate, firm size and business risk. The asset structure is considered as collateral to external parties when the firm uses funding sources that come from debt. Asset structure or asset structure is a comparison between fixed assets and total assets (Mateev, et al., 2013). Firms that have large amounts of fixed assets can use large amounts of debt as well. The amount of fixed assets can be used as collateral that makes it easier for firms to obtain funding sources other than their own capital, so that there is a positive relationship between asset structure and capital structure. This is reinforced by the results of research by Bandyopadhyay and Barua (2016) which states that asset structure has a positive effect on capital structure.

The firm's growth rate, which is described by asset growth, is a description of the business development carried out in the current period compared to the previous period. This is considered important as the basis for capital structure policies. The growth rate indicates that firms that have faster growth should rely more on external capital. Asset growth has a positive effect on the debt equity ratio (Le and Pan, 2017; Ramli, et al., 2019). Firm size reflects the size of the firm based on total assets. The larger the size of a firm, the tendency to use external capital is also greater because large firms require large funds to support their operational activities. One alternative to fulfill it is with external capital when the own capital is insufficient (Matias, et al., 2017). Firms with a larger size will find it easier to obtain funds from external parties. This is because the firm is considered competitive through operational activities supported by large current assets and has the ease of obtaining debt because it has collateral based on fixed assets, so it is predicted that there will be a positive relationship between asset size and capital structure. This is reinforced by the results of research Yildirim, et al. (2018) which states that firm size has a positive effect on capital structure.

Business risk is related to the uncertainty of the rate of return on a firm's assets in the future. Modigliani and Miller consider that bankruptcy risk, transaction costs and tax protection benefits are potential factors that increase capital structure decisions (Myers, 2001). Firms that consider bankruptcy risk use less debt in their capital structure as risk increases (Le and Pan, 2017). This illustrates that the increased risk of bankruptcy causes the firm to be more careful and will reduce the use of the proportion of debt in the composition of its capital structure. In addition, this is in line with the trade-off theory, namely that firms with greater business risk will have a lower probability of obtaining debt (Ramli, et al., 2019). Furthermore, the results of his research show that there is a negative relationship between business risk and capital structure.

Ahmed, et al. (2019) stated that the age of the firm is also one of the factors that affect the capital structure. The age of the firm is considered to reflect the credibility and profitability of the firm. Firms that have just started their operations (start up) are considered not to have sufficient internal funding to fund their own investments and have asymmetric information, so they have limited access to financing with share capital (Bandyopadhyay and Barua, 2016). Thus, younger firms will tend to rely on more debt than older firms (Li et al., 2019). In contrast, mature firms that already have profits tend to have more internal funds available to fund their operations. They reduce their dependence on debt, although the cost of financing using external debt will decrease over time (Matias and Serrasqueiro, 2017). Therefore, the age of the firm will negatively affect the debt ratio.

The combination of capital structure selection is an important thing that must be considered by firm management. This will affect the cost of capital issued by the firm, so that the composition of the capital structure is one part that is of concern to management in order to improve the firm's financial performance. Although many studies have been carried out in other countries, there are only a few in-depth studies in Indonesia regarding the relationship between these two variables. In addition, some empirical evidence shows contradictory and inconsistent results, thus illustrating that this relationship is highly dependent on certain conditions.

Ramli, et al. (2019) found that firm size, which is one indicator of capital structure, is significantly positively related to the firm's financial performance. Bandyopadhyay and Barua (2016) found that if the capital structure increases along with the development of the firm and is balanced with an increase in operational activities, it will result in an increase in profit that reflects the firm's performance. On the other hand, Li et al. (2019) and Ahmed, et al. (2019) found that capital structure has a negative and significant effect on firm performance, especially in firms that have high business risk. Capital structure indicators such as asset structure and growth rate also have a significant negative relationship with the firm's financial performance (Ramli, et al., 2019).

The theory of capital structure and its relationship to firm performance has become an important issue in the corporate finance literature since the research conducted by Modigliani and Miller (1958). The results of this study state that a perfect capital market is free from taxes, transaction costs and other frictions, capital structure is irrelevant in determining firm value. This shows that the choice between debt and equity financing does not have a material effect on firm value, so management does not need to worry about the proportion of debt and equity that is part of the firm's capital structure. This has led to a large number of studies taking up the topic to examine the robustness of the Modigliani and Miller model.

There are several subsequent studies, such as agency cost theory by Jensen and Meckling (1976), which started from the idea that the interests of firm managers and shareholders are not in line. The conflict between managers and shareholders is due to the separation between ownership and control, so managers tend to maximize their own utility rather than being concerned with firm value. Kraus and Litzenger (1973) relaxed tax assumptions and proposed a trade-off theory, which suggests that firms determine their capital structure by striking a balance between the benefits of a tax shield and the bankruptcy costs associated with debt financing. On the other hand, Myers and Majluf (1984) propose pecking-order theory, which is an alternative theory to agency theory of capital structure, which states that the firm's first choice in financing is to use internal funds through retained earnings; the second preference is through debt, and equity is the last choice among the firm's options for funding sources (Li, et al., 2019).

This research is based on the results of previous studies on the effect of firm characteristics (firm size, business risk and firm age) and maturity (asset structure and growth rate) on capital structure, where in other studies it is stated that capital structure has a direct relationship with firm performance. This study aims to determine the size of the firm, business risk, firm age, asset structure and growth rate have an influence on firm performance, either directly or through the mediation of the capital structure.

2. METHODOLOGY

This explanatory research is to provide empirical evidence on the role of capital structure as a mediator in the influence of firm characteristics and maturity on firm performance. Based on the data, this research is a quantitative research. The population in this study were all manufacturing firms listed on the Indonesia Stock Exchange (IDX) for the 2015-2019 period. The sample studied was 59 firms. The sampling technique is purposive sampling. This study uses secondary data. Secondary data is obtained from the firm's annual financial statements. The influence between variables was analyzed using multiple linear analysis and path analysis models. The results of the analysis are significant if the probability value is less than 0.05. Finally, the Sobel test was conducted to determine the significance of the mediating variable

3. RESULTS

3.1 Descriptive Statistics Results

Table 1. Descriptive statistics results

Variable	Minimum	Maximum	Mean	Std Dev
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Firm Size	5.14	8.55	6.4416	.70223
Business Risk	211.81	11856555.16	525085.1681	1507376.42200
Firm Age	6.00	114.00	40.7288	17.81789
Asset Structure	.03	1.19	.3741	.18669
Growth Rate	-.50	.86	.0736	.16329
ROA	-4.42	30.02	6.4085	5.50594
ROE	-13.98	38.46	10.5738	8.00154
Capital Structure	.09	.84	.4096	.17884

Company size variable has a maximum value of 8.55 and a minimum value of 5.14. The average value (mean) is 6.4416 which means that most manufacturing companies are large companies because they have high company sizes. The standard deviation value is 0.70223, which is smaller than the mean, which means that the company age data is homogeneous. The business risk variable shows a maximum value of 11,856,555 and a minimum value of 211.81. The average value (mean) is 525,085.17 and the standard deviation value is 1,507,376.42. The maximum value of the firm age variable is 114 and the minimum value is 6. The average value (mean) is 40.7288 and the standard deviation value is 17.81789, which is smaller than the mean, which means the firm age data is homogeneous. The asset structure variable shows a maximum value of 1.19 and a minimum value of 0.03. The average value (mean) is 0.3741 and the standard deviation value is 0.18669, which is smaller than the average, which means that the company age data is homogeneous. The maximum value of the growth rate variable is 0.86 and the minimum value is -0.50. The average value (mean) is 0.0736 and the standard deviation value is 0.16329. Company performance variables were measured using Return on Assets (ROA) and Return on Equity (ROE). ROA shows a maximum value of 30.02 and a minimum value of -4.42. The average value (mean) is 6.4085 and the standard deviation value is 5.50594. While the ROE shows a maximum value of 38.46 and a minimum value of -13.98. The average value (mean) is 10.5738 and the standard deviation value is 8.00154, which is smaller than the average which means that the company age data is homogeneous. Finally, the capital structure variable shows a maximum value of 0.84 and a minimum value of 0.09. The average value (mean) is 0.4096 and the standard deviation value is 0.17884 which is smaller than the mean so it can be concluded that the growth rate data is homogeneous.

3.2 Classic Assumption Results

Based on the results of the Kolmogorov – Smirnov test, it shows that the significance of each independent variable is seen from Asymp. Sig. (2-tailed) is greater than 0.05. So it can be concluded that the data of each independent variable used for the regression model is normally distributed.

Based on the results of the multicollinearity test, it shows that each independent variable has a VIF value 10 and a tolerance value higher than 0.1. So it can be concluded that all independent variables are free from multicollinearity problems.

The autocorrelation test was carried out using the Durbin-Watson method. The decision making criteria for the autocorrelation test is if the DW score is between du and 4-du, the correlation coefficient = 0, meaning that there is no positive or negative correlation. After processing the data, the results show that for each variable it shows that the DW score is between du and 4-du, so there is no autocorrelation.

Based on the heteroscedasticity test with Scatterplot, it shows that the points spread above and below the number 0 on the Y axis and do not form a certain pattern. So it can be concluded that in the regression model there is no heteroscedasticity.

3.3 Coefficient of Determination Results

R^2 of the first equation is 0.085, the second equation is 0.496 and the third equation is 0.360. The results of the calculation of R^2_m indicate the diversity of the data that can be explained by the model. For the equation with Y_1 the ROA is 0.539, which means that 53.9% of the information can be explained by models 1 and 2, and the remaining 46.1% by other variables. And for the equation with

Y_2 the ROE is 0.414, which means 41.4% of the information can be explained by models 1 and 3, and the remaining 58.6% by other variables.

3.4 F Statistical Results

The F statistical test aims to determine the simultaneous effect of the independent variable on the dependent variable. If the significant value is less than the significance level (p-value) of 0.05, then there is a simultaneous influence between the independent variables on the dependent variable. The first equation has a calculated F value of 5.339 with a p-value of 0.000. Because the p-value is smaller than ($0.000 < 0.050$), it can be concluded from this equation that the independent variable has a significant effect on the dependent variable Z. The second equation has a calculated F value of 47.276 with a p-value of 0.000. Because the p-value is smaller than ($0.000 < 0.050$), it can be concluded from this equation that the independent variable has a significant effect on the dependent variable Y_1 . The third equation has a calculated F value of 27.058 with a p-value of 0.000. Because the p-value is smaller than ($0.000 < 0.050$), it can be concluded from this equation that the independent variable has a significant effect on the dependent variable Y_2 .

3.5 Regression Analysis Results

The first regression analysis was to determine the strength of the relationship of the independent variable to the mediating variable, with the regression line equation as follows:

$$Z = \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \epsilon_i$$

Table 2. First model regressuin results

Variable	Beta	t	Sig.	Result
Firm Size	0.275	3.523	0.000	Significant (+)
Business Risk	-0.161	-1.981	0.049	Significant (-)
Firm Age	-0.145	-2.361	0.019	Significant (-)
Assets Structure	0.032	0.535	0.593	Not Significant
Growth Rate	0.111	1.963	0.051	Not Significant

In table 2 it can be seen the results of the regression for model 1, where there are two variables that do not significantly affect the capital structure. For the other three variables significantly affect the capital structure with a positive relationship for firm size and negative relationship for business risk and firm age.

The second regression analysis was to determine the strength of the relationship of the independent variable to the dependent variable (ROA), with the regression line equation as follows:

$$Y_1 = \beta_6 X_1 + \beta_7 X_2 + \beta_8 X_3 + \beta_9 X_4 + \beta_{10} X_5 + \beta_{11} Z + \epsilon_i$$

Table 3. Second model regression results

Variable	Beta	t	Sig.	Result
Firm Size	0.327	5.526	0.000	Significant (+)
Business Risk	0.012	0.196	0.845	Not Significant
Firm Age	0.280	6.072	0.000	Significant (+)
Assets Structure	-0.238	-5.319	0.000	Significant (-)
Growth Rate	0.102	2.405	0.017	Significant (+)
Capital Structure	-0.401	-9.177	0.000	Significant (-)

In table 3 it can be seen the results of the regression for model 2, where there is only one variable that does not significantly affect ROA. For the other five variables significantly affect ROA

with a positive relationship for firm size, firm age, growth rate and negative for asset structure and capital structure.

The third regression analysis was to determine the strength of the relationship of the independent variable to the dependent variable (ROE), with the regression line equation as follows:

$$Y_2 = \beta_{12} X_1 + \beta_{13} X_2 + \beta_{14} X_3 + \beta_{15} X_4 + \beta_{16} X_5 + \beta_{17} Z + \epsilon_i$$

Table 4. Third model regression results

Variable	Beta	t	Sig.	Result
Firm Size	0.351	5.256	0.000	Significant (+)
Business Risk	0.007	0.096	0.923	Not Significant
Firm Age	0.231	4.436	0.000	Significant (+)
Assets Structure	-0.280	-5.554	0.000	Significant (-)
Growth Rate	0.177	3.721	0.000	Significant (+)
Capital Structure	-0.099	-2.008	0.046	Significant (-)

In table 4 it can be seen the results of the regression for model 2, where there is only one variable that does not significantly affect ROE. For the other five variables significantly affect ROE with a positive relationship for firm size, firm age, growth rate and negative for asset structure and capital structure.

3.6 Sobel Results

Table 5. Sobel results

Variable	ROA	Result	ROE	Result
Firm Size	3.288	Significant (+)	1.744	Not Significant
Business Risk	1.936	Not Significant	1.410	Not Significant
Firm Age	2.286	Significant (+)	1.529	Not Significant
Assets Structure	0.534	Not Significant	0.517	Not Significant
Growth Rate	1.919	Not Significant	1.404	Not Significant

Table 5 shows the results of Sobel for all models, where there are only two variables that significantly affect ROA through capital structure and all of them have a significant positive effect. As for the independent variables that affect ROE through capital structure, none of them have an effect.

4. DISCUSSION

4.1 The Influence of Firm Size on Financial Performance

Hypothesis 1a states that firm size has a positive effect on financial performance. This statement is in accordance with the results of hypothesis testing 1a which shows that there is a positive and significant effect between firm size on financial performance as measured by ROA and ROE. This means that the larger the size of the firm, the higher its financial performance. Firm size is proxied by the logarithm of total assets, so the size of the firm is seen through total assets. This causes firms that have high assets, will have a better value in the consideration of shareholders' investment. That way, the firm will have wider access to parties who can contribute in improving its performance. In addition, the results of this study are in line with Ramli, et al., (2019) which states that larger firms are considered to have better performance and production value because they can generate higher return on assets and sales.

4.2 The Influence of Business Risk on Financial Performance

Hypothesis 1b states that business risk has a negative effect on financial performance. This statement is not in accordance with the results of hypothesis testing 1b which shows that business risk has no effect on financial performance, both as measured by ROA and ROE. Business risk is proxied by the standard deviation of EBIT, so the higher the value of the standard deviation, the higher the business risk in the firm. However, firms with high business risk do not necessarily have poor financial performance. So the results of this study are in line with Ramli, et al., (2019) who found that business risk has no effect on the firm's financial performance.

4.3 The Influence of Firm Age on Financial Performance

Hypothesis 1c states that firm age has a positive effect on financial performance. This statement is in accordance with the results of hypothesis testing 1c which shows that there is a positive and significant effect between firm age on financial performance as measured by ROA and ROE. This means that the more mature the firm is, the better the firm's performance will be. The age of the firm is proxied by the natural logarithm of the data sample year with the year of firm establishment. Firms that have been around for a long time generally have more stable profitability than firms that have just been established or those that have a short lifespan. The results of this study support the findings of Ally, et al., (2015) which states that as the firm ages, it will tend to understand the industry it is in, thereby increasing the firm's experience in managing management more effectively and efficiently, and in the end it will certainly improve the firm's performance.

4.4 The Influence of Asset Structure on Financial Performance

Hypothesis 2a states that asset structure has a positive effect on financial performance. This statement is in accordance with the results of hypothesis testing 2a which shows that there is a negative and significant effect between asset structure on financial performance as measured by ROA and ROE. This means that the higher the asset structure, the lower the level of performance of the firm. The asset structure is proxied by the tangibility asset ratio, namely the percentage of fixed assets divided by total assets, so that the size of the asset structure can be seen from the size of the total fixed assets owned by a firm. Firms with large levels of tangible assets tend to be less profitable because at any level of sales, the costs incurred will remain the same so that it will reduce firm profits if these fixed assets are not used optimally. This can reflect that high fixed asset ownership cannot guarantee maximum asset returns. The results of this study are supported by research by Ramli, et al. (2019) which found a negative relationship between asset structure and financial performance.

4.5 The Influence of Growth Rate on Financial Performance

Hypothesis 2b states that the growth rate has a positive effect on financial performance. This statement is in accordance with the results of hypothesis testing 2b which shows that there is a positive and significant effect between the growth rate on financial performance as measured by ROA and ROE. This means that the higher the growth rate, the higher the firm's performance. The growth rate is proxied by the percentage change in sales from year to year. In accordance with the pecking order theory which states that the higher the firm's growth rate, the greater the possibility of the firm in utilizing internal sources of funds to fulfill its investment spending. With a high growth rate, it is considered to be able to reduce the possibility of withdrawing loan funds in fulfilling investments so that it will improve firm performance. In addition, an increase in the growth rate is a positive signal for investors, because the firm's growth is read as the success of management in managing the firm properly and correctly. The results of this study are in line with Le & Phan (2017) who found a positive relationship between growth rates and financial performance.

4.6 The Influence of Firm Size on Financial Performance Through Capital Structure

Hypothesis 3a states that firm size has a positive effect on financial performance through capital structure. This statement is not in accordance with the results of hypothesis testing 3a which shows the results of the Sobel test with a t-count value of 3.288 with the independent variable ROA, greater than t-table with a value of 1.96 but a coefficient of -0.110 so it can be concluded that the capital structure is able to weaken the relationship between firm size and financial performance. In

accordance with the trade-off theory, the larger the size of the firm, the easier it is to take advantage of opportunities in financing from debt to a certain level, where the firm gets a tax shield from additional debt. However, not all management in large firms can carry out good management of these debts, such as overinvestment in unprofitable projects that can reduce financial performance. The results of this study are in line with Fudianti & Wijayanto (2019) who found a mediating effect of capital structure on the relationship between firm size and financial performance.

4.7 The Influence of Business Risk on Financial Performance Through Capital Structure

Hypothesis 3b states that business risk has a negative effect on financial performance through capital structure. This statement is not in accordance with the results of hypothesis testing 3b which shows that the capital structure is not able to mediate the effect of business risk on financial performance. This means that the high and low performance of the firm is not influenced by business risk with the mediation of the capital structure. The results of this study are in line with Ramli, et al., (2019) who found that capital structure does not affect the relationship between business risk and the firm's financial performance.

4.8 The Influence of Firm Age on Financial Performance Through Capital Structure

Hypothesis 3c states that firm age has a positive effect on financial performance through capital structure. This statement is in accordance with the results of hypothesis testing 3c which shows the results of the Sobel test with a t-count value of 2.286 with the independent variable ROA, greater than t-table with a value of 1.96 so that it can be concluded that capital structure is able to mediate the effect of firm age on financial performance. The results of this study are in accordance with the pecking order theory which describes the funding sequence in which the firm will choose to use debt rather than issue equity. Growing firms will prefer financing from debt rather than issuing shares. This is because mature firms will avoid agency conflicts between management and shareholders that can reduce financial performance.

4.9 The Influence of Asset Structure on Financial Performance Through Capital Structure

Hypothesis 4a states that asset structure has a positive effect on financial performance through capital structure. This statement is not in accordance with the results of hypothesis testing 4a which shows that capital structure is not able to mediate the effect of asset structure on financial performance. This means that the high and low performance of the firm is not influenced by the asset structure with the mediation of the capital structure. The results of this study are not in line with research by Ramli, et.al (2016) who found that capital structure mediates the relationship between asset structure and financial performance.

4.10 The Influence of Growth Rate on Financial Performance Through Capital Structure

Hypothesis 4b states that the growth rate has a positive effect on financial performance through capital structure. This statement is not in accordance with the results of hypothesis testing 4b which shows that the capital structure is not able to mediate the effect of growth rates on financial performance, according to the results of research by Fudianti & Wijayanto (2019). This means that the high and low performance of the firm is not influenced by the growth rate with the mediation of the capital structure.

5. CONCLUSION

This study aims to examine the role of capital structure as a mediator in the relationship between firm size, business risk, firm age, asset structure and growth rate on financial performance. Based on an analysis that has been carried out on 59 manufacturing companies listed on the Indonesia Stock Exchange (IDX) from 2016-2019. Based on the results of data analysis and discussions that have been carried out in this study, it can be concluded that capital structure is able to influence the relationship between firm size and firm age on financial performance. However, capital structure cannot give a significant influence on the relationship between business risk, asset structure and

Comment [1]: Study limitation?
Further research?

growth rate on financial performance. In addition, this study can also prove that firm size, firm age, asset structure, growth rate and capital structure have a significant direct influence on financial performance.

COMPETING INTERESTS DISCLAIMER:

Authors have declared that no competing interests exist. The products used for this research are commonly and predominantly use products in our area of research and country. There is absolutely no conflict of interest between the authors and producers of the products because we do not intend to use these products as an avenue for any litigation but for the advancement of knowledge. Also, the research was not funded by the producing company rather it was funded by personal efforts of the authors.

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