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Does free cash flow moderate the effect of profitability and capital structure on company value?

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ABSTRACT

This study aims to obtain empirical evidence about the effect of profitability and capital structure moderated by free cash flow on firm value. The research object is a company included in the classification of the raw material industry sector which is listed on the Indonesia Stock Exchange. The variables used as proxies for profitability return on assets (ROA) and return on equity (ROE); the capital structure variable is proxied by the debt to assets ratio (DAR) and the debt to equity ratio (DER), and the firm value is proxied by the price to book value (PBV). While the moderating variable uses free cash flow (FCF). Data analysis used multiple regression with the least squares method, and the sample selection method used purposive sampling. Based on the best model produced in this study, it is proven that free cash flow can significantly strengthen the effect of company profitability proxied by return on assets ROA and return on equity (ROE); the effect of capital structure proxied by DAR on firm value, but not as good as the direct effect of the moderated variables. The study reveals that profitability and capital structure significantly impact firm value, with free cash flow moderated by ROA. However, the model does not outperform direct effects, suggesting improved ROE, DAR management, and effective free cash flow management.

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INTRODUCTION

In public corporations, managers and employees work on behalf of the shareholders who own the business, and therefore they should pursue policies that promote stockholder value (Brigham & Ehrhardt, 2020a). In achieving this goal of course managers have a responsibility to behave ethically, meaning that, when seeking to maximize value, they must adhere to such limitations as not polluting the environment, not engaging in unfair labor practices, not violating antitrust laws, and like. To achieve this goal, the financial manager carries out the main financial function, namely determining how many assets to acquire, how to raise funds to purchase the assets needed, and how to run the company to produce profitable operations. The implementation of these two main functions will appear in the company's investment and financing decisions. This is following what Gitman and Zutter stated that in a business context, finance involves the same types of decisions: how firms raise money from investors, how firms invest money in an attempt to earn a profit, and how they decide whether to reinvest profits in the business or distribute them back to investors (Zutter & Smart, 2019a).

A good investment decision, of course, will result in company profits as a source of cash flow, which can be seen from the increase in company profitability. while the right funding decision will result in a healthy capital structure, which can increase the company's investment return at a certain level of risk, to increase the value of the company. From an investor's point of view (both stock and debt) the expected free cash flow from the company's operations is more important than profitability. Free cash flows (FCFs) are the cash flows available for distribution to all of a firm’s investors (shareholders and creditors) after the firm has paid all expenses (including taxes) and has made the required investments in operations to support growth (Brigham & Ehrhardt, 2020b). Thus the profitability of the company may not necessarily have a direct effect on its value of the company.

Management performance in achieving company goals can be seen in the financial statements. Through the analysis of financial statements will be obtained measurements of the effectiveness of decisions in the field of investment and financing in generating profits. In the Indonesia Stock Exchange, profitability measures are expressed by return on assets (ROA) and return on equity (ROE), while the capital structure is expressed by debt to assets ratio (DAR) and Debt to Equity ratio (DER). In the category of market ratios, it states that market-to-book value or often referred to as price-to-book value (PBV) is a measure of the assessment of common stockholders on the company's performance. The market/book (M/B) ratio provides an assessment of how investors view the firm's performance by comparing the market price of the firm's common stock (i.e., what investors are willing to pay for the stock) to the book value of the common stock (i.e., the value shown on the balance sheet) (Zutter & Smart, 2019b).

In general, company goals can be grouped into two categories. The first relates to profitability. Goals involving sales, market share, and cost control all relate, at least potentially, in different ways to gain or increase profits. The second group, which involves bankruptcy avoidance, stability, and security, is to some extent related to risk control (Ross et al., 2019). The first category of objectives relates to investment decisions and asset management, while the second category relates to funding decisions or more specifically capital structure. both investment decisions and capital structure are ultimately aimed at maximizing firm value.

Without profit, the company cannot attract capital from outside. Owners, creditors, and management are very concerned about increasing profits because the market is very concerned with returns. Thus the company's profitability is a very important indicator for the market valuation of the company's shares (Gitman & Zutter, 2017a). More important is the principle that a company cannot truly increase shareholders' wealth by accelerating its revenue growth without also improving profitability (Fridson & Alvarez, 2020).

Profitability ratios are a group of ratios that show the combined effect of liquidity, asset management, and debt management on the company's operating results. If the ratios: liquidity, asset management, debt management, and profitability are all good, and if investors predict that these ratios will continue to be so in the future, then the company's market ratios will be high, and the stock market price will be high. will be as high as the price expected by investors, and management is judged to have done a good job (Brigham & Houston, 2019). There are many tools to measure the company's profitability as a proxy to assess its effect on the value of the company. On the Indonesia Stock Exchange, the profitability performance of listed companies is measured by return on assets (ROA), return on equity (ROE), gross profit margin (GPM), operating profit margin (OPM), and net profit margin (NPM) (Besley & Brigham, 2019). In this study, profitability will be proxied by return on assets (ROA) and Return on equity (ROE).

Research on the Indonesia Stock Exchange shows that profitability has affected the firm value because the value is positive on the achievement of profit to justify the payment of dividends, so the stock price will increase. After all, the company showed a positive signal to pay dividends (Almahadin & Oroud, 2020).

Capital structure The mix of long-term debt and equity maintained by a firm (Besley & Brigham, 2019). In the theory of capital structure, there are different views on whether or not capital structure affects firm value. The modern theory of capital structure began in 1958 when Professors Franco Modigliani and Merton Miller (MM) through their very famous article proved that capital structure did not affect firm value(Brigham & Daves, 2019). This theory became known as the MM Irrelevant theory, which uses assumptions about a perfect capital market. In reality, in the world, it is difficult to find or even no perfect capital market. So new theories emerge that try to loosen the assumptions of this irrelevant capital structure. Trade-Off Theory, for example, states that the company's capital structure decision is a trade-off between the tax benefits of debt funding and the problems caused by potential bankruptcy(Zutter & Smart, 2019b). Other capital structure theories based on the assumption of imperfect capital markets generally show that management decisions about capital structure affect firm value (Barclay & Smith, 2020). Empirical studies on the Nigerian Stock Exchange (NSE) reveal that in a new economy like Nigeria, equity capital as a capital structure is irrelevant to firm value, while long-term debt is found to be the main determinant of firm value (Ogbulu & Emeni, 2012). The findings of research by Nguyen et al. (2020) on the food and beverage industry in Vietnam prove that capital structure is positively related to firm value

In this study, capital structure is proxied by debt to assets ratio (DAR) and debt to equity ratio (DER). The Debt to Asset Ratio often referred to as the debt ratio, is calculated by dividing the total debt (liabilities) by the total assets related to financial leverage. Financial leverage, or borrowing, affects the expected rate of return realized by stockholders for two reasons. First, the interest on debt is tax deductible, whereas dividends are not, so paying interest lowers the firm's tax bill, everything else being equal. Second, if the firm has healthy operations, it typically invests the funds it borrows at a rate of return that is greater than the interest rate on its debt (Besley & Brigham, 2019). The debt-to-equity ratio measures the relative proportion of total liabilities to common stock equity used to finance the firm's assets. As with debt ratio, a higher debt-to-equity ratio means that the firm uses more financial leverage (Zutter & Smart, 2022).

Michelle Doorasamy's (2021) research implies that firms can increase their value by reducing their leverage level. Moreover, the study found that managerial ownership had an inverse and significant impact on

the relationship between leverage and firm value. Almomani et al. (2022) in their research found that debt in the capital structure has an insignificant impact on firm value, while the results demonstrate that profitability and firm size, each of which, play a moderating effect role in the effect relationship of debt in the capital structure, on firm market value.

The firm's free cash flow (FCF) represents the cash available to investors—the providers of debt (creditors) and equity (owners)—after the firm has met all operating needs and paid for net investments in fixed assets and current assets(Brealey et al., 2017a). Free cash flow has become the company's valuation model. Free cash flow valuation model A model that determines the value of an entire company as the present value of its expected free cash flows discounted at the firm's weighted average cost of capital, which is its expected average future cost of funds over the long run (Zutter & Smart, 2019b).

Price to book value in some literature is written as market/book ratio. The market/book (M/B) ratio provides an assessment of how investors view the firm's performance by comparing the market price of the firm's common stock (i.e., what investors are willing to pay for the stock) to the book value of a common stock (i.e., the value shown on the balance sheet) (Zutter & Smart, 2019b). The ratio of a stock's market price to its book value gives another indication of how investors regard the company. Companies with relatively high rates of return on equity generally sell at higher multiples of book value than those with low returns (Brigham & Ehrhardt, 2020b). Based on this view, this ratio is used as a proxy for firm value in this study.

As the title suggests, this study aims to answer the question of whether free cash flow significantly moderates the effect of profitability and capital structure on firm value. To answer this research question, a study was conducted on companies that are included in the basic materials sector on the Indonesia Stock Exchange. Profitability is proxied by return on assets (ROA) and return in equity (ROE), capital structure is proxies by debt to assets ratio (DAR) and debt to equity ratio (DER), firm value is proxies by price to book value (PBV), which moderating variable free cash flows (FCF). The results of this study are expected to provide empirical evidence that the influence of profitability and capital structure on firm value is strengthened or not by the free cash flow generated by the company so that it can contribute to the development of management knowledge, especially financial management.

Based on the theoretical review as described in the previous section, a hypothetical framework can be described as shown in the following figure.

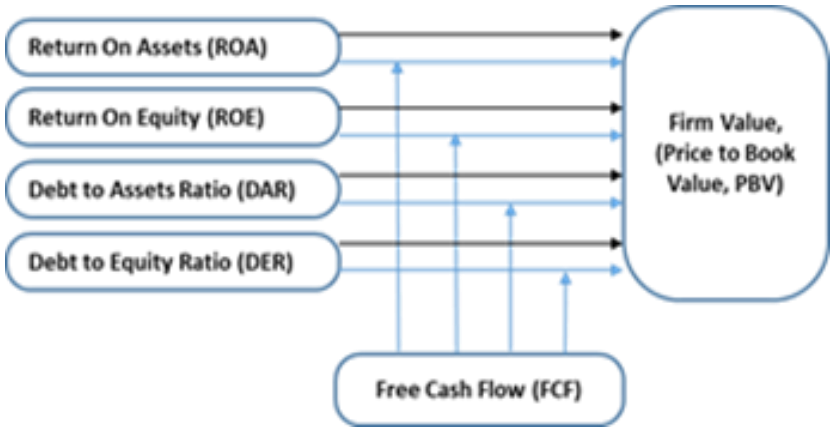


Figure 1. Hypothesis Framework

According to the purpose of this study, namely to analyze the influence of profitability and capital structure on firm value, the following hypothesis can be formulated:

H1. Profitability proxied by return on assets (ROA) and return on equity (ROE) has a significant effect on firm value proxied by price to book value (PBV).
H2. Capital structure as proxied by debt to assets ratio (DAR) and debt to equity ratio (DER) significantly influences firm value as proxied by Price to earnings ratio (PBV).
H3. Free cash flows (FCF) significantly moderate the effect of profitability proxied by return on assets (ROA) and return on equity (ROE) on firm value proxied by price to book value (PBV).
H4. Free cash flows (FCF) significantly moderate the effect of capital structure proxied by debt to assets (DAR) and debt to equity ratio (DER) on firm value as proxied by price to book value (PBV).

METHOD

The population of this study is companies that are included in the classification of the basic materials sector on the Indonesia Stock Exchange. The total population of companies in this sector is 93 companies, using the purposive sampling method, 10 companies meet the requirements as a sample. The observation period is 5 years (2016-2021).

Operational Variable

Independent variables in this study are profitability as proxied by return on assets (ROA), and return on equity (ROE); Capital structure proxied by debt to asset ratio (DAR) or total debt to total assets, and debt to equity ratio (DER) or total debt to total equity. The moderating variable is the free cash flow (FCF) ratio, while the independent variable is the firm value proxied by price to book value (PBV).

The return on total assets (ROA), one of several ratios that are sometimes called the *return on investment (ROI)*, measures the overall effectiveness of management in generating profits with its available assets(Wahlen et al., 2015; Zutter & Smart, 2019b). The return on total assets is calculated as:

ROA = Earnings available for common stockholders: Total assets.

The return on equity (ROE) ratio is similar to ROA, except that it focuses on the earnings that a company generates relative to the equity invested in the firm rather than the assets invested (Gitman & Zutter, 2017b). The equation for ROE is:

ROE=Earnings available for common stockholders: Common stock equity

The debt ratio measures the proportion of total assets financed by the firm's creditors. A higher debt ratio means that a firm is using a larger amount of other people's money to finance its operations, or equivalently, the firm is using greater financial leverage (Gitman & Zutter, 2017b). The formula for the debt ratio is:

Debt-to-Assets ratio (DAR) = Total liabilities :Total assets

The debt-to-equity ratio measures the relative proportion of total liabilities to common stock equity used to finance the firm's assets. As with debt ratio, a higher debt-to-equity ratio means that the firm uses more financial leverage (Brealey et al., 2017b; Gitman & Zutter, 2017b). The debt-to-equity ratio is calculated as:

The debt-to-equity ratio (DER) = Total liabilities: Common stock equity

The firm's free cash flow (FCF) represents the cash available to investors—the providers of debt (creditors) and equity (owners)—after the firm has met all operating needs and paid for net investments in fixed assets and current assets (Gitman & Zutter, 2017b). Can be calculated by the following formula:

FCF = Operating Cash Flow (OCF) - Net fixed asset investment (NFAI) - Net current asset investment (NCAI)

FCF Ratio = Free Cash Flow (FCF): Total Assets

Data Analysis Method

The data analysis method uses multiple linear regression with two models, namely:

Multiple linear regression without moderating variables, by including all independent variables as follows:

$PBV = \alpha + \beta 1ROA + \beta 2ROE + \beta 3DAR + \beta 4DER + \varepsilon$

Multiple linear regression with moderating variables FCF, by including all independent variables as follows:

$PBV = \alpha + \beta 1ROA_FCF + \beta 2ROE_FCF + \beta 3DAR_FCF + \beta 4DER_FCF + \varepsilon$

RESULTS AND DISCUSSION

Descriptive statistics

The results of the descriptive statistical analysis regarding the values of the research variables are presented in table 1 below.

Table 1. Descriptive Statistics

Variables	N	Min.	Max.	Mean	Std. Dev.
ROA	60	.002	.158	.054	.035
ROE	60	.003	.328	.097	.060
DAR	60	.109	.703	.430	.177
DER	60	.122	2.370	.934	.603
PBV	60	.200	11.000	1.763	1.979
FCF	60	-.002	.484	.133	.088
Valid N (listwise)	60				

Classic Assumption Test

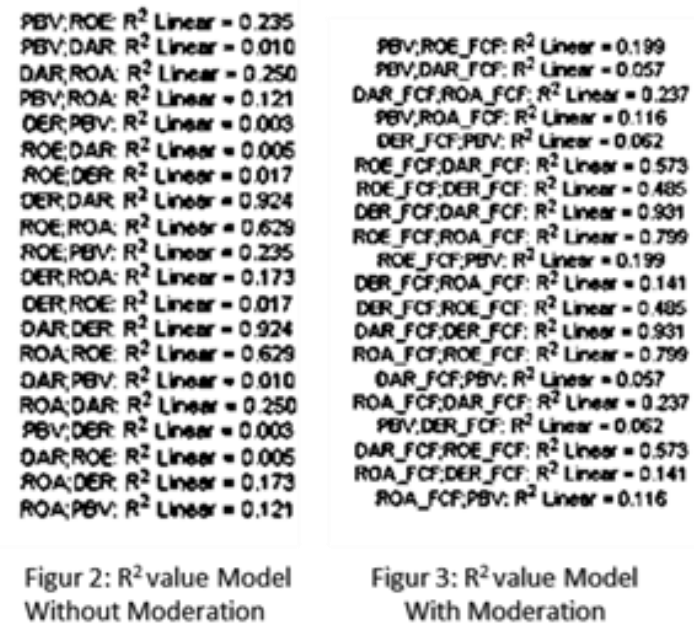
One of the requirements for applying the regression model is that the sample data is taken from a normally distributed population (Gujarati, 2003). To meet these requirements, in this study a normality test was performed using the Kolmogorov-Smirnov Test. To find out why the sample data is not normally distributed, casewise diagnostic outlier detection is used. Based on case-wise diagnostics testing, it was found that there were 4 outlier data. By removing the outlier data, it is found that the data sample is normally distributed where the value of the one-sample Kolmogorov-Smirnov Test shows a P-Value that is greater than 0.05. So from the 60 data that were originally included in the sample data (n = 60), only 56 sample data were stated to be taken from a normally distributed population.

The second classic assumption test is the linearity test. Intended to determine whether the tested variables significantly have a linear relationship or not (Paolella, 2019). The method used is the Scatter-Plot Linearity Test. Linearity is met if the graph forms a linear line and the value of $R^2 > 0$ otherwise is not met. The model tested is a regression model without a moderating variable and a regression model with a moderating variable. The two models are presented below.

$PBV = \alpha + \beta 1ROA + \beta 2ROE + \beta 3DAR + \beta 4DER + e$

$PBV = \alpha + \beta 1ROA.FCF + \beta 2ROE.FCF + B3DAR.FCF + B4DER.FCF + e$

The test results are shown in Figures 2 and 3 below. (In the figure only the R^2 value for the two regression models tested is presented).



Figur 2: R^2 value Model Without Moderation

Figur 3: R^2 value Model With Moderation

Figure 2. R^2 Value Model with and without Moderation

In the figures, the regression model without moderating variables or with moderation fulfills the linearity requirements.

Regression Analysis

Effect of Profitability and Capital Structure Without Moderation of Free Cash Flow

Based on the classical assumption test that has been carried out, it appears that the data in this study are normally distributed and the model used meets the linearity requirements. Furthermore, the model was tested with the F statistic test and the t statistic test. The following is a regression model without moderating variables.

$PBV = \alpha + \beta 1ROA + \beta 2ROE + \beta 3DAR + \beta 4DER + e$ …… (1)

Based on the SPSS output in the ANOVA table, $F_{statstic}$ = 10,486 sig. 0.000, meaning that the predictors of ROA, ROE, DAR, and DER were significant and could explain changes in the value of the PBV variable, so the model was feasible to be applied. The next test is to use the t-test. The results obtained are presented in table 2 below.

Tabel 2. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	*Std. Error*	*Beta*		
1	(Constant)	4.193	.934		4.488	.000
	ROA	-56.500	13.158	-1.787	-4.294	.000
	ROE	37.034	6.779	1.958	5.463	.000
	DAR	-9.041	3.048	-1.420	-2.966	.005
	DER	.581	.736	.309	.789	.434

a. Dependent Variable: PBV

The resulting regression equation is:

PBV=4,193–56,500ROA+37,034ROE–9,041DAR+0,581DER

Using a significance level of 5% (α=0.05) one independent variable was found to be insignificant as a predictor, namely the debt to equity ratio (DER) with a value of t=0.789 sig. 0.434 > 0.05 which means it has no significant effect on the price-to-book value (PBV). By removing the DER variable from the equation, the following multiple regression models are obtained:

$PBV = \alpha + \beta 1ROA + \beta 2ROE + \beta 3DAR + e$ ……(2)

After conducting the F test again in model 2, the significance value (sig.) F in the ANOVA table is 0.000, while the results of the t-test show that the t values of the ROA, ROE, and DAR variables are significant at 0.000 (see table 3).

Table 3. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	*Std. Error*	*Beta*		
2	(Constant)	3.808	.794		4.795	.000
	ROA	-55.035	12.979	-1.741	-4.240	.000
	ROE	36.690	6.741	1.940	5.443	.000
	DAR	-6.993	1.594	-1.099	-4.387	.000

a. Dependent Variable: PBV

The resulting regression equation is:

PBV = 3,808 – 55,035 ROA + 36,690 ROE – 6,993 DAR.

Effect of Profitability and Capital Structure moderated by Free Cash Flow

By entering the Free Cash Flow (FCF) moderating variable in model 1, a new equation is obtained as follows.

PBV=a+β1ROA.FCF+β2ROE.FCF+B3DAR.FCF+B4DER.FCF +e…(3)

Before the model is applied, the F-test and t-test are carried out. Based on the SPSS output of the ANOVA table, the results obtained are F = 5,801 Sig. 0.001, which means the model is feasible to use to estimate the regression model. Then a partial test or t-test was carried out with the results as presented in table 4 below.

Tabel 4. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	*Std. Error*	*Beta*		
3	(Constant)	1.535	.271		5.674	.000
	ROA_FCF	-112.941	50.785	-.943	-2.224	.031
	ROE_FCF	109.488	32.599	1.772	3.359	.001
	DAR_FCF	-13.303	13.620	-.506	-.977	.033
	DER_FCF	-1.362	5.325	-.144	-.256	.799

a. Dependent Variable: PBV

From table 4, the regression equation can be formulated as follows.

PBV=1,535–112,941ROA_FCF+109,488ROE_FCF-13,303DAR_FCF-1,362DER_FCF

By eliminating DER_FCF, because the significance level of the t value at 0.799 is far above 0.05, the following model 4 is obtained.

$PBV = a + \beta 1ROA_FCF + \beta 2ROE_FCF + \beta 3DAR_FCF + e$ ….. (4)

In model 4, the F test was carried out again, and the results obtained were F = 7.854, significant at 0.000. Followed by the t-test, the results obtained are as presented in table 5.

Table 5. Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	***Std. Error***	***Beta***		
4	(Constant)	1.542	.267		5.781	.000
	ROA_FCF	-105.190	40.387	-.878	-2.605	.012
	ROE_FCF	105.269	27.864	1.703	3.778	.000
	DAR_FCF	-16.412	6.086	-.624	-2.697	.009
a. Dependent Variable: PBV						

In table 5 it could be seen that the significance level of all variable's t values is below 0.05 so partially all independent variables ROA, ROE, and DAR moderated by FCF are feasible to explain changes in PBV values. The resulting model is:

PBV=1,542 -105,190ROA_FCF+105,269ROE_FCF – 16.412 DAR_FCF

Model Selection

There are four regression models generated in this study, namely:

(1). PBV= 4,193 – 56,500ROA + 37,034ROE – 9,041DAR + 0,581DER
(2). PBV = 3,808 – 55,035 ROA + 36,690 ROE – 6,993 DAR
(3). PBV=1,535–112,941ROA_FCF+109,488ROE_FCF-13,303DAR_FCF-1,362DER_FCF
(4). PBV=1,542-105,190ROA_FCF+105,269ROE_FCF –16.412 DAR_FCF

Of the 4 models that resulted in this study, two models are feasible to choose in finding the estimation model of the firm value regression equation, namely model 2 and model 4. These two models will be selected as the best, using the criteria value of Std. error of the estimate (SE), Akaike Information Criterion (AIC), Schwarz Bayesian Criterion (SBC), Mallows' Prediction Criterion (Cp Mallow's), and Press. The SPSS output summary with the intended selection criteria is presented in Table 6 below.

Table 6. Summary of Model Selection Criteria Values

Model	R- Square	Adj. R-Square	Std.Error of Estimate	AIC	SBC	Cp Mallow's	PRESS
2	0,445	0,413	0,87991	-10,479	-2,378	4	46,64
4	0,312	0,272	0,97943	1,522	9,623	4	56,47

On table 6 it can be seen that: The highest R-Square is 0.445 in model 2 and The highest Adj. R-Square is 0.413 found in model 2, the smallest SE is 0.87991 found in model 2, Cp Mallow's parameter is fulfilled both in model 2 and 4, the smallest AIC is -10,479 found in model 2, the smallest SBC is -2,378 found in model 2, the smallest PRESS is 46.64 is found in model 2. The conclusion is that model 2 better meets the criteria used. Thus the selected model is:

PBV = 3,808 – 55,035 ROA + 36,690 ROE – 6,993 DAR

Discussion

The results of data analysis show that the effect of profitability proxied by ROA and ROE, capital structure proxied by DAR significantly influences firm value proxied by PBV. The best model obtained is the model without free cash flow (FCF) moderation. So it can be expressed in the equation: PBV = 3.808 – 55,035 ROA + 36,690 ROE – 6,993 DAR.

In the best model obtained, the debt-to-equity ratio (DER) variable was removed from the model because it did not significantly affect the firm value as proxied by price-to-book value (PBV).

Profitability proxied by Return on Assets (ROA) has a negative effect on firm value because the average ROA achieved by companies in the Basic Materials Sector on the Indonesia Stock Exchange is 0.054 or 5.40%, which is still considered too low by investors, especially debt investors.

Profitability proxied by return on equity (ROE), has a significant positive effect on firm value as proxied by price to book value (PBV), mainly due to the average ROE achieved by companies in the Basic Materials Sector on the Indonesia Stock Exchange. considered high enough that the average was 0.097 or 9.70%.

Debt to asset ratio (DAR) has a negative effect on firm value because the use of debt in the company's capital structure is high enough to reach an average of 43% even though the maximum value has reached 70% more, so it is quite risky for debt investors (lenders). Poor operating performance and high financial leverage are one of the causes of company's financial distress (Altman et al., 2019).

CONCLUSION

The study reveals that profitability and capital structure, moderated by free cash flow, significantly impact firm value. However, the model doesn't outperform the direct effects of profitability and capital structure. Profitability, represented by ROA, has a negative effect on firm value, while return on equity (ROE) has a positive effect. The debt-to-asset ratio (DAR) is a significant factor in explaining changes in firm value, while the debt-to-equity ratio (DER) does not. The study recommends enhancing ROE, managing DAR for optimal capital structure, and maintaining effective free cash flow management. It also suggests reassessing the relevance of debt metrics like DER in determining firm value.

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