International Journal of Current Science Research and Review
ISSN: 2581-8341
Volume 06 Issue 07 July 2023
DOI: 10.47191/ijcsrr/V6-i7-116, Impact Factor: 6.789
IJCSRR @ 2023
www.ijcsrr.org

Determining the Optimal Capital Structure of Coal Company

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ABSTRACT: This study examines stock price decline and coal price uncertainty as business issues. PT Delta Dunia Makmur Tbk has high debtto-equity ratio. High dividend-equity companies pay more interest. Interest costs reduce a company's net profits and cash available for investment or shareholder payout. This may affect shareholder income and corporate growth. To raise net income and firm value for investors and rebuild trust, PT Delta Dunia Makmur Tbk management must estimate a favorable cost of debt and equity. This study employed secondary data. This study uses 2018-2019 DOID financial statements as secondary data. The lowest WACC helps PT. Delta Dunia Makmur Tbk choose the best capital structure. Calculate capital structure debt and equity costs using the debt-toequity ratio. The Damodaran synthetic rating table calculates loan cost using the interest coverage ratio and PT. Dunia Makmur Tbk default spread value. The actual debt ratio is 83.69%, while the optimal debt ratio is 34%. According to Damodaran, the corporation is overlevered since actual optimal (83.69% > 34%). Delta Dunia is currently in the "GREY ZONE" of the Altman Z-score calculation, hence it is not at risk of bankruptcy. Therefore, the corporation can finance new projects with retained earnings or equity, pay off debt with retained earnings, reduce dividends, issue new shares, or pay off debt. From PT Delta Dunia Makmur Tbk's financial statements, the debt ratio is 83.69%, the equity ratio is 16.69% with a cost of equity of 19.75%, the WACC generated is 11.02%, and the firm's value is $965,639,737.72. After simulation, the optimal capital structure for PT Delta Dunia Makmur Tbk was 34% debt, 66% equity, 10.39% cost of equity, and $1,166,687,666.77. According to the Altman Z-score calculation, PT Delta Dunia Makmur Tbk is in the GREY ZONE and not at risk of bankruptcy, so the best way to change the debt ratio is gradually so the company can fund good projects or pay debt with new equity and retained earnings.

KEYWORDS: coal company, cost of debt, cost of capital, optimal capital structure, WACC.

INTRODUCTION

Coal is one of the most significant sources of energy in the world. It is used to generate electricity, manufacture steel, and produce a variety of other products. Based on Figure I.1, the worldwide monthly coal price index averaged around 100 index points in 2018 which means the prices of coal were relatively stable.

Figure 1. Coal price in USD from 2008-2022 (Investing.com, 2022).

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Due to low selling prices, the revenue of coal mining companies will decrease. This could impact the company's profitability and make it more difficult for them to operate their business. Companies may be forced to consider cost-cutting measures, such as reducing employee numbers or shutting down unprofitable facilities. In addition to experiencing a decline in revenue due to low selling prices and deteriorating the company's profitability, low coal prices may result in a decline in investor interest in the industry. This may reduce the coal mining industry's access to capital required to expand operations or increase efficiency.

The company owes obligations to various stakeholders or parties engaged in the company's operation and success. Every company is responsible for generating sustainable and equitable profits for its shareholders. One of the primary goals of establishing a company is to enhance the well-being of its proprietors or shareholders or to maximize shareholder wealth by increasing the company's value (Brigham & Houston, 2006).

PROOBLEM IDENTIFICATION

The business issue in this study is the declining stock price and uncertain coal price, which affect financial performance. One of them is the debt-to-equity ratio, where PT Delta Dunia Makmur Tbk has a higher level of debt than equity. Companies with a high DER typically incur greater interest expenses. Interest expense can reduce a company's net income and the number of funds available for investment or distribution to shareholders. This may limit the growth potential of the company or reduce shareholder profits. In light of the current state of the company's financial performance, PT Delta Dunia Makmur's management must develop a new strategy by projecting an advantageous cost of debt and cost of equity in order to increase net income and also increase company value for the benefit of investors and to regain their trust in the company.

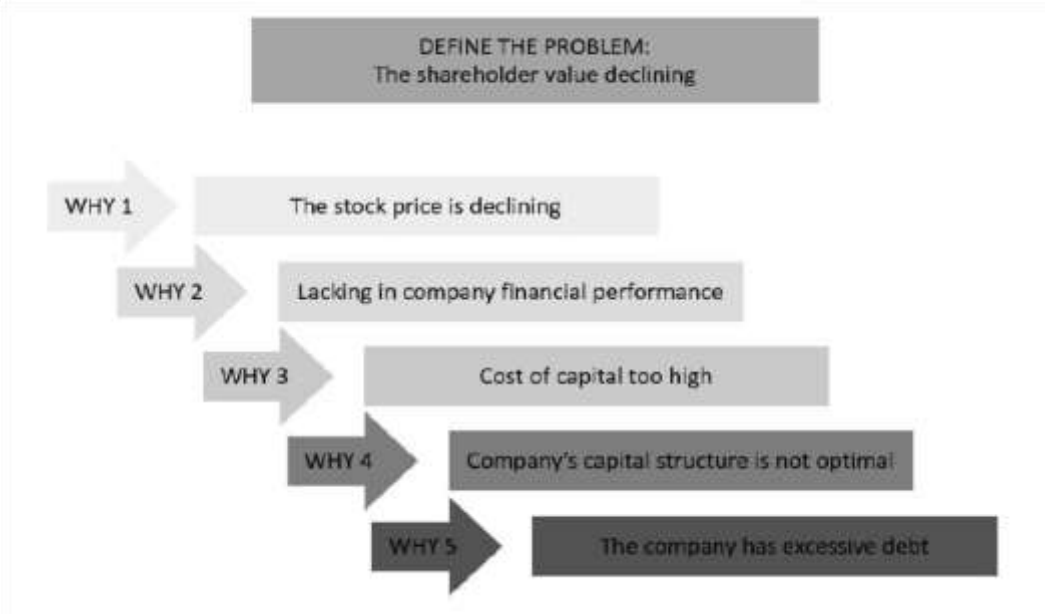

Figure 2. The company's 5 whys.

This study develops financial solutions to raise the firm value and optimize shareholder value. The brief description that was provided above serves as the basis for this research. In line with the company's aim of maintaining an appropriate capital ratio, a capital structure that is well-balanced might help the company to accomplish long-term development and increase its market value.

LITERATURE REVIEW

Capital structure theory attempts to explain the effect of capital composition variations on firm value. Capital structure is the proportion of long-term funding that comes from debt, preferred stock, and common stock. The capital structure theories include the following:

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The capital structure theory by Modigliani and Miller (tax-free) describes in 1958, Professors Franco Modigliani and Merton Miller (henceforth MM) published what has been known as one of the most influential financial articles of all time. Under a very restrictive set of assumptions, MM demonstrated that a firm's capital structure has no effect on its value. In other words, MM's results demonstrate that how a company finances its operations is immaterial, thus capital structure is unimportant. Nonetheless, the MM study is founded on a number of unrealistic assumptions, such as the following:

1. No brokerage fees
2. There are not any taxes imposed.
3. There are no bankruptcy-related expenses.
4. Investors can borrow at the same interest rate as the company.
5. Regarding the company's prospective investment opportunities, all investors have the same knowledge as management.
6. Utilization of debt has no effect on EBIT.

According to the pecking order theory of capital structure by Myers and Majluf (1984), there is a sort of hierarchical order when it comes to the use of capital by firms. Additionally, the theory explains why firms prioritize internal equity funding (using retained earnings) over external equity funding (issuing new shares).
According to Van Horne and Wachowicz (2007), the capital structure is the composition (proportion) of the company's long-term, permanent funding, which consists of debt, preferred stock, and common stock. Additionally, effective fund management will have a positive effect on the company. The optimal capital structure reflects sound funding decisions.

According to Damodaran (2016), investments are made in projects that have the potential for high profits while also presenting a level of risk that can be tolerated. In order to accomplish this, projects may be financed by either the owner's cash (also known as equity) or borrowed money (also known as debt). This component is referred to as the financial mix. The goal of the financial mix is to generate the least amount of risk that is consistent with the assets that are being supported. If the investment utilizes an excessive amount of debt, it will subject the company to an excessive amount of threat; however, if the firm does not take on an adequate amount of debt, there will be less investment in the business, which will result in a reduction in the dividends that are created for shareholders.

CONCEPTUAL FRAMEWORK

During research or analysis, linkages between concepts and variables are mapped using a conceptual framework. It assists in defining key variables, categorizing how they relate to one another, and outlining the overall framework of the research. Using the actual debt-to-equity ratio, the first stage in calculating the actual capital structure is to calculate the actual cost of debt and the actual cost of equity (Figure II.1). In order to determine the optimal capital structure of the firm, the cost of debt and the cost of equity must be simulated by varying the debt ratio from 1% to 100%. The optimal combination, according to the theory, is the one with the lowest WACC. The WACC projection is anticipated to assist the company in selecting the optimal funding mix by utilizing the minimum WACC, as the debt ratio must be altered to achieve the optimal capital structure. Generally, shareholder value increases as firm value rises. This is due to the fact that shareholders may anticipate greater returns from companies with higher values, which are typically regarded as more valuable by investors. Increasing stock price and dividends are two additional benefits accruing to shareholders as an outcome of firm value growth.

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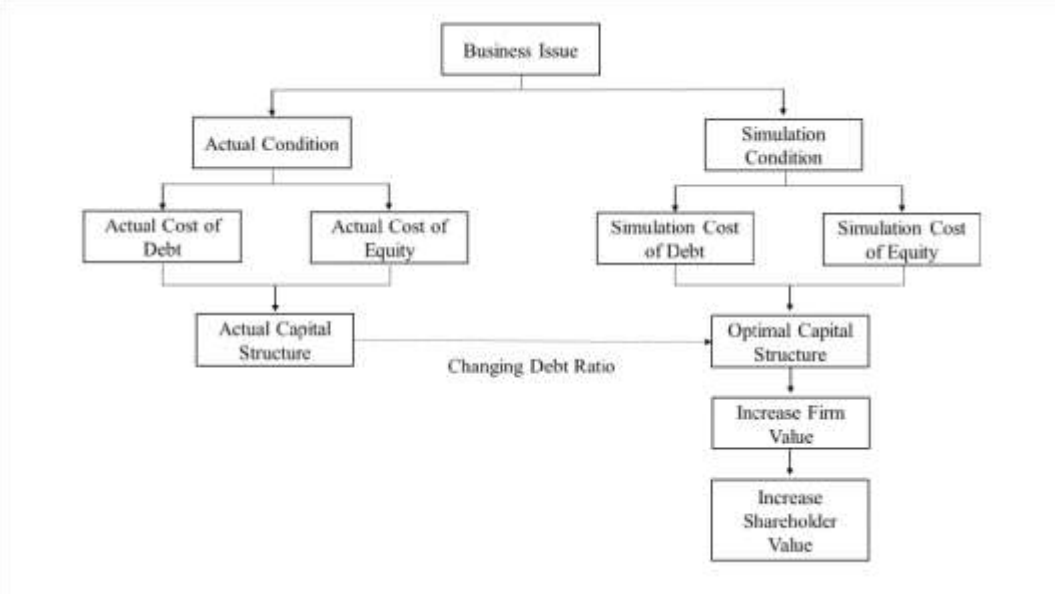

Figure 3. Conceptual Framework.

RESEARCH RESULT AND ANALYSIS

Analysis Liquidity Ratio

Based on the results of the liquidity ratio calculation analysis which consists of current ratio and quick ratio, DOID has a good liquidity ratio because the value of the current ratio and quick ratio is above 1 (Figure IV.1). Even though in 2020 and 2021 it has decreased, the ratio value is still above 1.00. A current ratio that has a value above 1.00 means that the company has a good ability to pay off its obligations at maturity, the greater the current ratio value the company has, the better the company's performance.

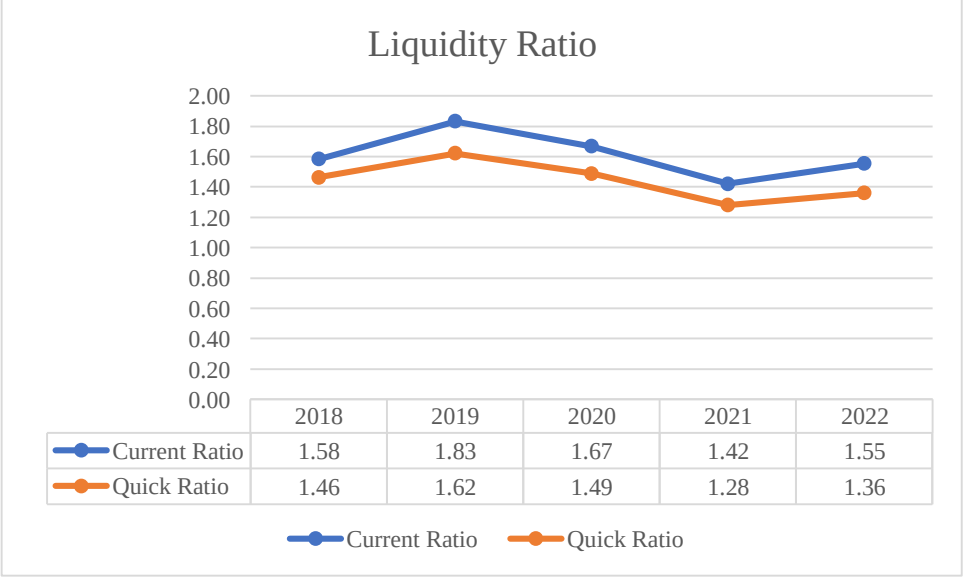

Figure 4. DOID's Liquidity Ratio.

Profitability Ratio

The results of the calculation of profitability ratios, including ROA and ROE, at DOID show that the calculation of ROA has decreased throughout the year from 2018 to 2021 and began to improve in 2022 (Figure IV.2)

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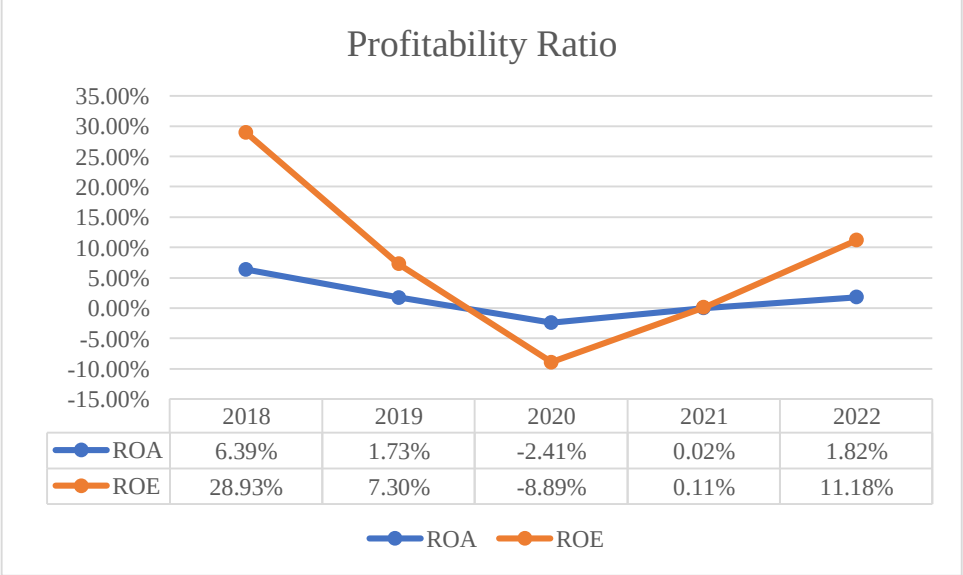

Figure 5. DOID's Profitability Ratio.

Solvency Ratio

Based on the results of the solvency ratio calculation at DOID which includes DER and DAR, it results in a DER that has decreased from 2018 to 2020 but in 2021 it increases drastically to 516% or 5.16 and in 2022 it only decreases by 3% or 0.03 to 513% or 5.13 (Figure IV.3). From this value, it shows that the debt management of the DOID company is not good because a healthy or safe DER ratio should be smaller than 1 or <100%. The smaller the DER, the better. Then the average DAR value obtained from the calculation results is 79%, this shows that the DAR of the DOID company is safe because a healthy or good DAR ratio is generally smaller than 1 or <100%. The smaller the DAR value, the less debt the company uses to obtain assets and vice versa.

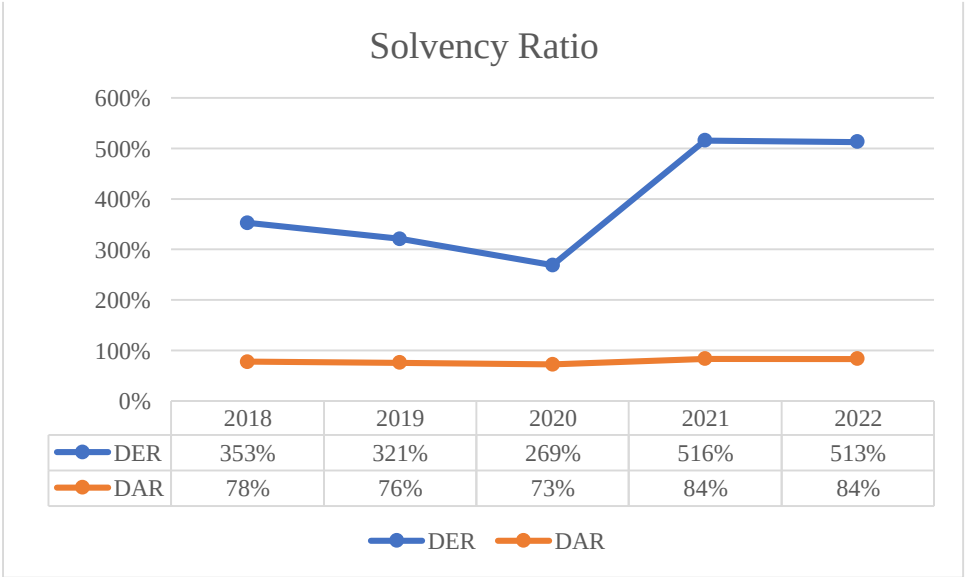

Figure 6. DOID's Solvency Ratio.

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Beta Value

The beta value of the DOID corporation was calculated using regression and the result is 1.36 (Figure IV.4). To calculate a stock's beta, first collect DOID stock returns and JKSE returns as a reference index. The data will next be evaluated using regression analysis to get the best slope for the data. The slope, commonly known as the regression coefficient, is the stock beta. The value of 1.36 suggests that DOID stock is more volatile than the market; this may imply that the investment is riskier, but it may also give greater returns if the market performs effectively.

SUMMARY OUTPUT								
Regression S tatistics								
Multiple R	0.397759255							
R Square	0.158212425							
Adjusted R Square	0.157516733							
Standard Error	0.033272022							
Observations	1212							
ANOVA								
	df	*SS*	*MS*	*F*	*Significance F*			
Regression	1	0.251757162	0.251757	227.4172721	3.20975E-47			
Residual	1210	1.339503208	0.001107					
Total	1211	1.59126037						
	Coefficients	*Standard Error*	*t Stat*	*P-value*	*Lower 95%*	*Upper 95%*	*Lower 95.0%*	*Upper 95.0%*
Intercept	-0.000988659	0.000955742	-1.03444	0.301136498	-0.002863754	0.000886436	-0.002863754	0.000886436
X Variable 1	**1.364498747**	0.090481839	15.08036	3.20975E-47	1.186980032	1.542017461	1.186980032	1.542017461

Figure 7. Regression of DOID's Beta Value.

Cost of Equity

The cost of equity generated from the calculations carried out is 19.52%. The resulting value uses the calculation of the 10-year Indonesia government bond yield of 6.925% (KSEI, 2023) to measure the risk-free rate and the Indonesia equity risk premium of 9.23% (Damodaran, 2023) and also uses the previously obtained beta value of 1.36. So, through the calculation, the cost of equity result is 19.52% (IV.1). The following below is the calculation of the cost of equity:

$r_e = R_f + [\beta \times (R_m - R_f)]$

$r_e = 6.925\% + [1.36 \times 9.23] = 19.52\%$ (1)

Cost of Debt

The first stage in calculating the cost of debt is determining the interest coverage ratio value. This interest coverage ratio is beneficial for determining the spread value, also known as Damodaran's synthetic rating table. After calculating the interest coverage ratio, the spread value obtained will be used to determine the cost of debt. The result of interest coverage ratio calculations is 1.88 (IV.2)

$$Interest\ Coverage\ Ratio = \frac{Rp.131,324,490}{Rp.69,807,697} = 1.88 \quad (2)$$

Based on the calculation above, the interest coverage ratio value is 1.88. From the synthetic rating table below (Table IV.1), it can be seen that if the interest coverage ratio is 1.88, it means it has a B3/B- rating and the spread value is 4.62. After that, calculate the firm's pre-tax cost of debt for the Indonesian market using the 10-year Indonesian government bond yield, which is valued at 6.925% as a risk-free rate and use tax for go-public companies of 19%. Finally, the cost of debt obtained based on the calculation is 9.35% (IV.3).

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Table 1. Damodaran's Spread Synthetic Rating Table.

if interest coverage ratio is			
greater than	**≤ to**	**Rating**	**Spread**
-100000	0.499999	D2/D	14.34%
0.5	0.799999	C2/C	10.76%
0.8	1.249999	Ca2/CC	8.80%
1.25	1.499999	Caa/CCC	7.78%
1.5	1.999999	B3/B-	4.62%
2	2.499999	B2/B	3.78%
2.5	2.999999	B1/B+	3.15%
3	3.499999	Ba2/BB	2.15%
3.5	3.9999999	Ba1/BB+	1.93%
4	4.499999	Baa2/BBB	1.59%
4.5	5.999999	A3/A-	1.29%
6	7.499999	A2/A	1.14%
7.5	9.499999	A1/A+	1.03%
9.5	12.499999	Aa2/AA	0.82%
12.5	100000	Aaa/AAA	0.67%

$r_d = (Risk\ Free + Default\ Spread) \times (1 - Tax)$
$r_d = (6.952\% + 4.62\%) \times (1 - 19\%) = 9.35\%$ (3)

Weighted Average Cost of Capital

To obtain the WACC value, data from DOID's annual report, such as total equity and total debt, are needed to obtain the results of the equity ratio and debt ratio, as well as the cost of equity and cost of debt, which have been calculated previously. Based on the financial statements in DOID's annual report, total equity in 2022 amounted to Rp. 256,228,231 and total debt of Rp. 1,314,859,176, obtaining an equity ratio of 16.31% and a debt ratio of 83.69%. Based on the calculations that have been carried out, the result of DOID's actual WACC is 11.01% (IV.4).

$WACC = w_e \times r_e\, x + w_d \times r_d\,(1 - T)$
$WACC = 16.31\% \times 19.52\% + 83.69\% \times 9.35\% = 11.01\%$ (4)

Optimal Capital Structure

The Company's goal in capital management is to ensure the sustainability of its business in order to provide returns to shareholders and benefits to other stakeholders, as well as to maintain an optimal capital structure in order to reduce the cost of capital. In this research, the author uses simulation to find the optimal capital structure for the company. The way to simulate the optimal capital structure is by assuming the debt ratio from 0% to 100% to get the WACC. The WACC that is considered optimal is the combination with a lower WACC, in accordance with the theory. Likewise, the equity ratio is calculated by assuming 0% to 100%. The debt

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ratio is directly proportional to the debt-to-equity ratio; if the debt ratio increases, the debt-to-equity ratio also increases, and vice versa, which will ultimately affect the leveraged beta value. This WACC projection is expected to help companies in choosing the optimal funding mix using the minimum WACC.

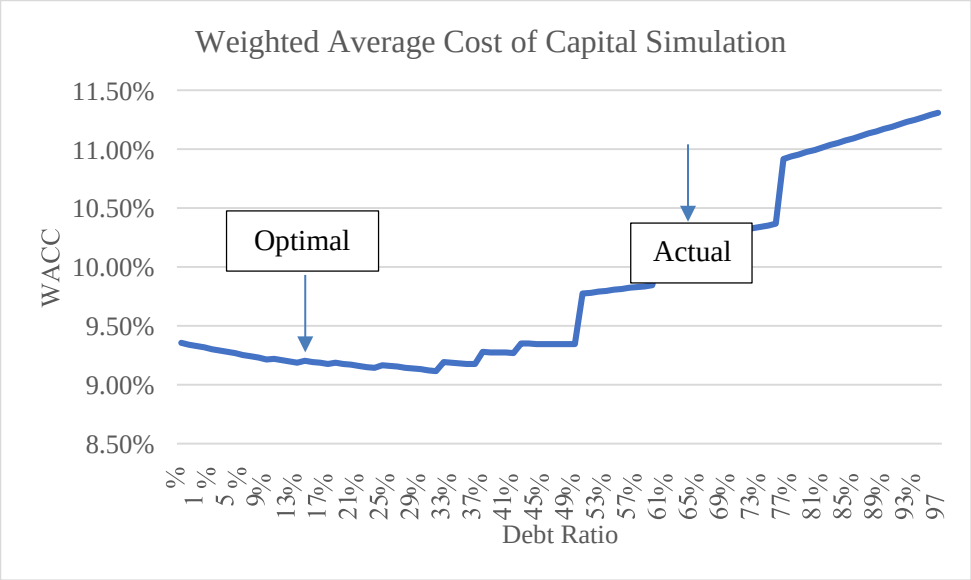

Figure 8. Weighted Average Cost of Capital Sumulation graphic.

Based on Figure IV.2, when the debt ratio is 34% and the equity ratio is 66%, it can produce a minimum WACC value of 9.12%, while the current debt ratio is 84% and the equity ratio is 16%. Using the firm value formula (IV.5), the Weighted Average Cost of Capital (WACC) in the optimal capital structure condition produces a value of Rp. 1.1 billion. This value exceeds the value of Rp. 965 million generated by the actual debt-to-equity composition.

$$V = \frac{EBIT \times (1-T)}{WACC}$$

$$V = \frac{Rp.131,324,490.00 \times (1-19\%)}{9.12\%} = Rp.1,166,687,666.77 \qquad (5)$$

From the comparison between the actual and optimal debt ratios, it can be seen that the actual debt ratio has a greater value when compared to the optimal value, so it can be said that the company is in an overleveraged condition. An overleveraged company is a company that chooses to take on too much debt in relation to its financial resources. The disadvantages of overleverage include inhibited growth, loss of assets, restrictions on borrowing further, and the inability to attract new investors. Overleverage means that the company has too much debt compared to its equity, making it difficult to pay its interest and principal payments and often unable to pay its operating costs due to excessive costs due to its debt burden, then the company can default on its loans and may possibly face bankruptcy.

Altman Z-Score

In this study, the calculation and analysis of bankruptcy theory is needed for company decision to reach an optimal capital structure by using the changing debt ratio framework by Damodaran. With a Z-score, we can see whether the company is under threat of bankruptcy or not. The following are the results of the Z-score calculation for the Delta Dunia company:

Table 2. DOID's Altman Z-score Value.

	2018	2019	2020	2021	2022
Retained Earnings	Rp 75,643,300.0	Rp 20,480,591.0	-Rp 23,436,370.0	Rp 280,546.0	Rp 28,638,710.0
EBIT	Rp 163,908,802.0	Rp 88,416,936.0	Rp 19,703,082.0	Rp 81,824,765.0	Rp 131,324,481.0

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Total Assets	Rp 1,184,094,711.0	Rp 1,181,911,191.0	Rp 974,449,753.0	Rp 1,635,958,307.0	Rp 1,571,087,407.0
Total Liabilities	Rp 922,583,702.0	Rp 901,340,212.0	Rp 710,718,334.0	Rp 1,370,302,118.0	Rp 1,314,859,176.0
Altman Z-Score (non manufacture)	**2.88**	**2.44**	**2.22**	**1.61**	**1.90**

Based on the results listed above, in 2018 the score obtained by DOID was 2.88, which means that the company is in the "SAFE ZONE" but in 2019 it continued until 2021, respectively experiencing a decrease in value of 2.44 in 2019, 2.22 in 2020, and 1.61 in 2021, which means this value indicates that the company is in the "GREY ZONE". Then in the year, the value increased to 1.90 but remained in the "GREY ZONE". Based on the resulting figures and their interpretation, the company must be careful. This is a warning to companies that companies must carefully consider their debt-to-equity ratio and ensure that they have sufficient cash flow to cover their debt obligations, lest the company fall into the "DISTRESS ZONE" category, which results in the risk of bankruptcy.

Internal Growth Rate

Based on the results of the calculations in Table IV.3, it appears that Delta Dunia's IGR has decreased from 2018 to 2021. In 2018, IGR achieved a value of 6.4%; in 2019, it decreased to 1.7%; in 2020, it reached a negative number of -2.4%; and in 2021, it increased to 0.017%. This may indicate that the company did not generate enough revenue to support its growth during the given year. A decline in the internal growth rate may also indicate that the company is not maximizing its resources or investing enough in research and development, marketing, or other growth initiatives. In 2022, the IGR value increased to 1.8%, indicating that the company generated more revenue than the previous year and was therefore able to fund its growth without external financing.

Table 3. DOID's Internal Growth Rate.

	2018	**2019**	**2020**	**2021**	**2022**
IGR	6.4%	1.7%	(2.4%)	0.017%	1.8%

Sustainable Growth Rate

Based on the calculation results in Table IV.4, it shows that from 2018 to 2021, SGR in the Delta Dunia company has decreased. In 2018, SGR obtained a value of 28.9% and then decreased in 2019 to 7.3%; in 2020, it reached a negative number, namely -8.9%; and it rose again in 2021 to 11.2%. The declining SGR indicates that the company's ability to generate growth from its current operations is decreasing. Then in 2022, the SGR value increased to 11.2% along with the increase in net profit generated by the company compared to the previous year.

Table 4. DOID's Sustainable Growth Rate.

	2018	**2019**	**2020**	**2021**	**2022**
SGR	28.9%	7.3%	(8.9%)	0.1%	11.2%

BUSINESS STRATEGY

The results of simulations conducted previously to determine the optimal capital structure indicate that PT Delta Dunia Makmur has not yet reached the optimal capital structure. This conclusion was reached based on the results of the simulations. In order to help the firm achieve an optimal capital structure, it is necessary to adjust the debt ratio in accordance with the Damodaran model. This will ultimately result in an enhancement in the company's performance.

As represented in the Figure IV.3 below, the framework can serve as a guide for the company as it takes the necessary steps to accomplish the optimal capital structure.

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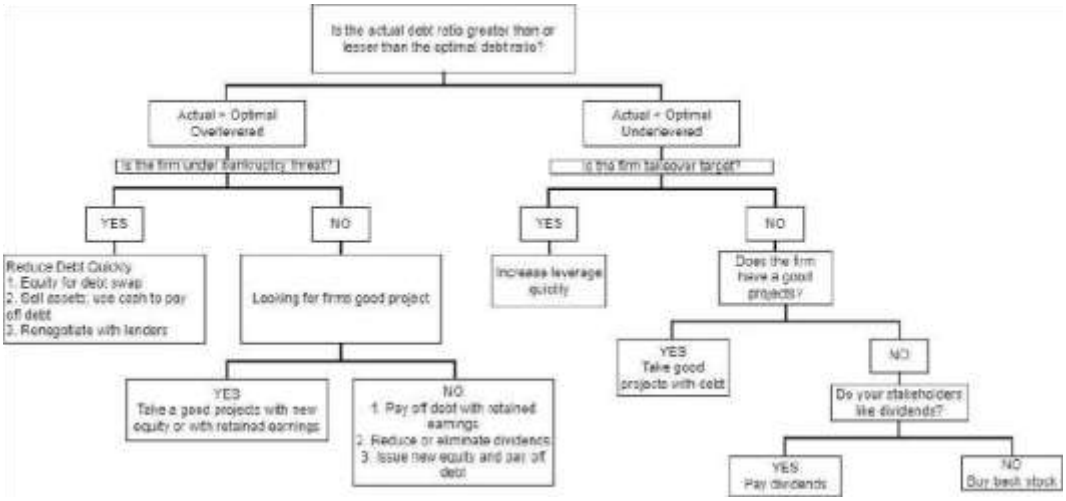

Figure 9. Damodaran's Changing Debt Ratio Framework.

Therefore, through the process of analyzing company decisions in achieving the optimal capital structure for PT Delta Dunia Makmur through Prof. Damodaran's framework, PT Delta Dunia Makmur can achieve an optimal capital structure through new projects, paying off debt with retained earnings, and reducing or temporarily suspending dividends until the company generates maximum profit in accordance with its proportion.

Figure 10. The Result of DOID Debt Ratio Framework.

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Cite this Article: Santi Ronauli Sianipar, Asep Darmansyah (2023). Determining the Optimal Capital Structure of Coal Company. International Journal of Current Science Research and Review, 6(7), 5010-5020