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Determinants of Capital Structure: Evidence from Coal Mining Companies Listed on the Indonesia Stock Exchange

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Abstract

This study aims to analyze the factors influencing the capital structure of coal mining companies listed on the Indonesia Stock Exchange (IDX) during the 2014–2018 period. The independent variables studied include profitability, asset structure, liquidity, and company size, while the dependent variable is capital structure, proxied by the debt-to-equity ratio (DER). The research method uses panel data regression analysis with a random effects model selected based on model feasibility testing. The data used are secondary data from the companies' annual financial reports. The results of the study indicate that profitability and asset structure do not significantly influence capital structure. Conversely, liquidity has a negative and significant effect on capital structure, meaning that the higher a company's liquidity level, the lower its debt usage. Firm size does not significantly influence capital structure. Overall, the independent variables in this study explain 43.47% of the variation in capital structure, while the remaining 56.53% is influenced by factors outside the research model. These findings imply that coal companies tend to prioritize internal funding over external funding, in accordance with the Pecking Order Theory. Financial managers need to consider liquidity factors when determining capital structure policies to maintain efficiency and ensure business continuity.

Keywords: Capital Structure, Profitability, Asset Structure, Liquidity, Company Size, Coal Companies.

1. Introduction

Amidst increasingly volatile global economic conditions in recent years, funding has become a major challenge for mining companies, particularly those in the coal sector. Coal companies require very large, long-term investments, are highly risky, and face high levels of uncertainty, making funding a significant issue for company development. Mining companies also require significant capital to conduct natural resource exploration and develop the mining sector. Consequently, many mining companies have entered the capital markets to secure investment and strengthen their financial position.

The use of debt, especially very large long-term debt, will certainly make it easier for the coal sub-sector to finance all its business needs which require very large funds. large and takes a long time to obtain results from these efforts. However, the sub-sector coal must bear higher financial risks when compared to other sub-sectors others that have smaller long-term debt. This is because the interest burden and principal loan installments that the coal sub-sector must bear will continue to increase. Consequently, the likelihood of coal sub -sector companies going bankrupt will undoubtedly increase. Based on these conditions, the core problem addressed in this study is to examine whether financing decisions or capital structure decisions in the coal sub-sector are influenced by capital structure determinants.

The company's funding sources for its operational continuity consist of two types of funding: internal funding and external funding. Internal funding uses retained *earnings* (*earnings*) of the company. Meanwhile, external funding is carried out by There are two ways: issuing debt and issuing shares. The fulfillment of a company's funding sources is often known as capital structure theory, namely financial decisions related to the composition of debt, both long-term debt and short-term debt, *preferred stock*, and common stock that will be used by the company. Companies that use long-term financing, resulting in the debt obtained by the company must be able to provide sufficient cash flow to pay interest on debt and principal. According to Sartono (2010), capital structure is the

balance of the amount of permanent short-term debt or the ratio between long-term debt and equity used by the company.

The capital structure decisions made by each company not only impact the company's operational activities but also the risks borne by the company itself. If a company increases *leverage*, it will automatically increase its financial risk. Conversely, companies must consider tax issues when reducing *leverage*, as some experts argue that excessive capital use will reduce profitability (Kartika, 2010). Therefore, every company must carefully determine its capital structure decisions with various appropriate considerations. The importance of capital structure decisions for a company's condition requires every company manager to understand the factors that need to be considered when making a capital structure decision. By understanding these factors, company managers will find it easier to make funding decisions, whether additional capital needed for the company's development and growth should be obtained from debt or should issue new shares as an alternative.

Capital structure proxied by *debt to equity* The *debt-to-assets ratio (DER)* can be used to calculate the level of risk of a company's capital. *to equity* The *debt-to-equity ratio (DER)* is the comparison between total debt and equity in a company's funding and indicates the company's ability to meet all its obligations (Syahyunan, 2015). If the company's debt exceeds its equity, the company will face high risks. This is because the company will bear significant costs and capital burdens, and the risks borne will also increase if the company's investments do not generate optimal returns.

Brigham and Houston (2011) stated that there are several factors that influence capital structure, namely sales stability, asset structure, *leverage Operational factors*, growth rate, profitability, taxes, control, management attitude, lender and rating agency attitudes, market conditions, internal company conditions, and financial flexibility. According to Sartono (2010), several variables that can be considered before determining the capital structure are liquidity, asset structure, company growth, profitability, profit and tax protection variables, company scale and internal company conditions and macroeconomics. Meanwhile, according to Sitanggang (2013), sales level, asset structure, company growth rate, profitability and taxes, dividend policy, *internal* company conditions, control, *attitude Management* has an influence on capital structure. In this study, the factors that influence the company's capital structure decisions that will be discussed are profitability, asset structure (*assets*) structure, liquidity and company size.

Profitability is a company's ability to generate profits from its operations. Sartono (2010) defines profitability as a company's ability to generate profits in relation to sales, total assets, and equity. According to Kasmir (2011), profitability ratios are used to assess a company's ability to generate profits. Profitability is one of the factors that determines a company's capital structure, so managers need to pay attention to it when formulating corporate policies related to corporate profits. Brigham and Houston (2013) state that companies with high profitability generally use relatively little debt because these high profits can be used to finance capital using retained earnings alone. This is in accordance with *the pecking order theory*, which states that companies prioritize raising funds from their own capital first, followed by raising funds from outside the company as the last option. Profitability in this study is proxied by *return on equity. on assets (ROA)*. *Return on Assets* are the company's ability to generate profits from the assets used (Sartono, 2010).

Asset structure is an important variable in corporate funding decisions because fixed assets are related to the company's production process to obtain or increase company profits. Asset structure is a comparison between total fixed assets and total assets owned by the company that can determine the amount of funds allocated to each asset component. Sitanggang (2013), a company with a large composition of tangible fixed assets will have the opportunity to obtain additional capital with debt, because fixed assets can be used as collateral to obtain debt. The higher the company's asset structure, the higher the company's ability to guarantee the long-term debt it borrows.

Liquidity is a company's ability to meet its short-term obligations. According to Sartono (2010), liquidity is a company's ability to pay short-term financial obligations on time. A company's liquidity is indicated by the size of its current assets, which are assets that can easily be converted into cash, including cash, securities, receivables, and inventory. A company's liquidity can be measured by *its current* The *liquidity ratio (CR)* is a ratio used to measure a company's ability to meet its maturing obligations (Wiagustini, 2014). Companies with high liquidity will easily obtain debt financing. This is due to the high level of creditor trust in the company. According to *the pecking order theory*, companies with high liquidity will prioritize internal funds to finance their debt and, if funds are insufficient, will seek external funding.

Based on the background above and the discovery of *a research gap*, the researcher is interested in conducting research. more Far about company mining in Indonesia with take the title research "**Determinants of capital structure" Coal Sub-Sector Mining Companies Listed on the Indonesia Stock Exchange**". The selection of

objects in the coal sub-sector mining companies because the coal sub-sector mining companies reflect the growth/development of the national economy and business and are sectors that have high business complexity. Another reason for choosing the coal sector object is because this sector is more vulnerable to liquidity crises than other sectors so that an effective and efficient capital structure is needed.

2. Theoretical review

Financial Leverage

Leverage is measured using *Debt to Equity Ratio (DER)* which shows the comparison between total debt (short-term and long-term) with equity (common stock and preferred stock) or measured using *debt The ratio of total assets to total assets* shows how much of the total funding needs are financed by debt or how much of the assets are used to guarantee debt. The higher *the debt, the to equity The ratio (DER)* shows that the composition of debt is greater than the total equity and shows that the company's ability to fulfill its obligations is greater.

Profitability

Profitability is the ability of a company to generate profits during a certain period (Riyanto , 2011). The profits earned from the investments to be invested are the main consideration for a company in developing its business. The relationship between profitability and capital structure is that if a company has positive profitability (profit), then in terms of meeting future capital needs, the company can use funding through retained earnings, if retained earnings are deemed sufficient in terms of fulfilling the company's capital, it means the company does not need to use capital from debt.

Profitability has a negative relationship with *leverage* . Companies with high profits tend to use retained earnings as funding sources to meet their funding needs. This reduces the company's need for debt, or reduce corporate *leverage* .

Asset Structure

Asset structure is the determination of how much allocation is made for each asset component , both in current assets and in fixed assets. Current assets are assets that are used up in one rotation in the production process, and the rotation process is in the short term (generally less than one year). According to Brigham & Houston (2011), asset structure is the balance or comparison between fixed assets and total assets.

Liquidity

Liquidity ratios are a measure of a company's ability to meet its short-term obligations. Harahap (2010) states that the ratios used to measure liquidity are the current ratio, quick ratio, cash to assets ratio, cash to current liabilities ratio, current assets to total assets ratio , and current assets to total liabilities ratio. One of the liquidity ratios used in this study is *current assets. ratio* (current ratio). Liquidity ratios indicate a company's ability to pay its short-term liabilities using its current assets. Current assets typically consist of cash, marketable securities, accounts receivable, and inventory. Current liabilities, on the other hand, consist of short-term bank loans or other debts with maturities of less than one year.

Company Size

Size company can interpreted as big small company . Size the company also showed activities owned company . Size company proven own role important in determine choice capital structure that will be used by a company . Big company will more easy obtaining capital in the capital market compared with company small Because company big own greater probability big For win competition or endure in industry . Large companies tend For disclose more Lots information to foreign investors than company small . Companies that are increasingly big so company the will requires high capital , so that company take policy to increase capital from external parties (debt). Selection funding originating from from the debt done company For fulfil needs , activities and development activity companies to gain much greater profits than before.

Creditors always have a consideration when you are going to investing their funds, basically creditors tend to be more interested in large companies compared to small companies because they are worried that small companies have a large risk related to unexpected investment returns for creditors.

3. Methodology Study

Types of research

The data used in this study is secondary data originating from financial reports and annual reports of mining companies in the sub- sector. coal listed on the IDX in 2014 until 2018 .

Operational Definition and Measurement of Research Variables

Dependent Variable (Y)

The dependent variable is the main variable that is the applicable factor in the investigation and is influenced by the independent variable. In this study, the dependent/bound variable is the level of h debt (*leverage ratio*). To measure the level of debt *the* companies in this study use debt to equity ratio (DER), which is a ratio to measure a company's ability to repay debt costs through its own capital, which is measured by total debt and total equity . To measure the size of a company's leverage, the formula used is:

$$\text{Debt to Equity Ratio} = \frac{\text{Total Debt}}{\text{Total Equity}}$$

Independent Variable (X)

Independent variables are also called predictor variables (*predictor*) variable) which is usually symbolized by (X) is a variable that influences the dependent variable, either positively or negatively. The independent variables used in this study are:

1. Profitability (X1)

Profitability , or the ability to generate [profits](#), is a percentage measure used to assess the extent to which a company is able to generate profits at an acceptable level. The profitability variable is measured by looking at the ability of capital invested in total assets to generate net profits or *returns. on assets* (*ROA*). To measure the company's profitability, the following formula is used:

$$ROA = \frac{\text{Earning After Tax}}{\text{Total Asset}}$$

2. Asset Structure (X2)

Asset structure is the determination of how much to allocate to each asset component, both current assets and fixed assets. Asset structure can be calculated using the following formula:

$$\text{Struktru Aktiva} = \frac{\text{Total Aktiva Tetap}}{\text{Total Aktiva}}$$

3. Liquidity (X3)

Liquidity is a ratio used to measure a company's ability to meet its short-term obligations using its current assets. A company's liquidity can be measured by its current assets. The current ratio is a ratio used to measure a company's ability to meet its obligations that will soon fall due. The current ratio can be calculated using the following formula. following:

$$\text{Current Ratio} = \frac{\text{Aktiva Lancar}}{\text{Hutang Lancar}}$$

4. Company Size (X4)

Company size is the size of a company as seen from the value of *equity* , company value, or the total value of a company's assets. Company size is calculated using the following formula: following:

$$\text{Size} = \text{Ln Total Aktiva}$$

Operational Definition Table of Variables

Variables	Measurement	Formula	Scale
Structure (Y)	Total debt divided by total capital	$\frac{\text{Total Hutang}}{\text{Total Modal}}$	Ratio
Profitability (X ₁)	Profit after tax divided by total assets	$\frac{\text{Laba Setelah Pajak}}{\text{Total Asset}}$	Ratio
Structure Assets (X ₂)	Total fixed assets divided by total assets	$\frac{\text{Total Aktiva Tetap}}{\text{Total Aktiva}}$	Ratio
Liquidity (X ₃)	Current assets divided by current liabilities	$\frac{\text{Aktiva Lancar}}{\text{Hutang Lancar}}$	Ratio
Company Size (X ₄)	Natural logarithm of total assets.	Ln (Total Aktiva)	Ratio

Source: Processed by researchers

4. Research Population and Sample

Population

A population is all the data we are interested in within a defined scope and timeframe. The population in this study is the coal mining sub-sector companies listed on the Indonesia Stock Exchange during the 2014-2018 period. The population for this study was 25 coal mining sub-sector companies listed on the Indonesia Stock Exchange for the 2014-2018 period.

The data used by the researcher is secondary data taken from the Indonesian Stock Exchange and media published by the Indonesian Stock Exchange. The method used by the researcher to obtain secondary data is documentation. Essentially, the documentation method is a method used to trace historical data. Data collection was also carried out by reading literature and books on the theories of the problem being studied. using internet media as a supporting medium in research to find additional information regarding the theories and data needed in this research.

Data Analysis Methods

This research uses the panel data regression analysis method, according to Basuki (2017), panel data regression is a regression technique that combines time series data (*time series*). *series*) with cross data (*cross section*). The data obtained from the research results were then analyzed using a panel data regression analysis model which aims to determine the extent of the influence of profitability, asset structure, liquidity and company size on capital structure. However, before conducting the panel data regression analysis, it was first analyzed using descriptive statistics, panel data testing methods and hypothesis testing.

5. Research Results and Discussion

The Effect of Profitability on Capital Structure

Based on the results of empirical testing, it is proven that the profitability variable which is proxied by *return on Return on Assets (ROA)* has no effect on *the capital structure* of coal mining companies listed on the Indonesia Stock Exchange from 2014 to 2018. This is evidenced by the *t- statistic probability value* of 0.4614, which is greater than $\alpha = 0.05$. This means that H₀ is accepted. This result contradicts the previously stated hypothesis which states that profitability has a negative effect on capital structure.

In this case, the company has established its capital structure based on the return *and* cost of capital generated from using debt to support its operations. Profitability is a company's ability to generate profits from its assets. Referring to *the pecking order theory*, higher profitability means lower debt, as internal funding is prioritized. A company with a high rate of return on managed assets demonstrates its ability to generate high profits. A stable level of profitability is an important factor for managers to consider when selecting a capital structure. More stable profitability means less borrowing by the company.

Then if you refer to *trade off theory*, which states that there is a positive relationship between profitability and the use of debt. Companies with high profitability will use more debt to obtain greater profits due to tax reductions (tax shield). Because with debt, there are interest costs that reduce the company's profit and loss. Modigliani and Miller (1963) stated that interest costs can save on tax payments because interest can reduce taxable profits so that the company pays less tax.

The results of this study align with previous research conducted by Pertiwi and Darmayanti (2018), Andika and Sedana (2019), which stated that profitability variables do not affect capital structure. This contrasts with research conducted by Zulvia (2016), Fitriany and Nuraini (2018), and Ahmad *et al.* (2017) who stated that the profitability variable has a significant negative effect on capital structure.

The Influence of Asset Structure on Capital Structure

Based on the results of empirical testing, it is proven that the asset structure variable *has no influence on the capital structure* of coal mining companies listed on the Indonesia Stock Exchange for the 2014-2018 period. This is evidenced by the *t*-statistic probability value. 0.6754 is greater than $\alpha = 0.05$ which means H_0 is accepted. This result contradicts the previously stated hypothesis which states that asset structure has a positive effect on capital structure.

This means that coal mining companies are able to use their own capital to invest and expand their businesses without resorting to debt. Furthermore, the company's fixed assets can be used for its operating activities to generate profits, allowing the profits to be used to increase its investments. Using its own capital for investment reduces the risk of bankruptcy. Companies with substantial assets can use these assets as collateral to secure external loans. Companies with substantial asset value are more likely to secure external loans due to easier access to funding sources compared to smaller companies. This contrasts with *the trade-off Theory* and in line with *Pecking Order Theory*. When a company has a larger proportion of tangible assets, its asset valuation becomes easier, thus reducing information asymmetry. Therefore, the company will reduce its use of debt as the proportion of tangible assets increases.

The results of this study align with previous research conducted by Buchori (2018), Kartika (2016), Handayani and Darma (2018), and Serghiescua and Văideanb (2014), which stated that asset structure variables had no effect on capital structure. This study differs from the findings of Zulvia (2016), Lessy (2016), and Astakoni and Utami (2019), which stated that asset structure variables had a significant negative effect on capital structure.

The Effect of Liquidity on Capital Structure

Based on the results of empirical testing, it is proven that the liquidity variable which is proxied by *current The profitability ratio (CR)* has a negative and significant effect on the capital structure of coal mining companies listed on the Indonesia Stock Exchange in the 2014-2018 period. This is evidenced by the probability value of 0.0000, which is smaller than $\alpha = 0.05$. which means H_0 is rejected. This result is in line with the previously stated hypothesis which states that liquidity is proxied by current ratio has a negative effect on capital structure.

The negative relationship between liquidity and capital structure indicates that an increase in liquidity will result in a decrease in capital structure, and vice versa. This is consistent with *pecking order theory*, which suggests that companies with high liquidity will use less external debt financing. The higher the liquidity level, the more likely a company is to use internal funds before using external funds, resulting in a lower capital structure.

The results of this study are in line with previous research conducted by Widayanti *et al.* (2016), Pertiwi and Darmayanti (2018), Lessy (2016), Ahmad *et al.* (2017) stated that the liquidity variable has a negative and significant effect on capital structure. This research differs from the findings of Fitriany and Nuraini (2018), who stated that the liquidity variable has no effect on the capital structure of consumer companies. goods listed on the Indonesian stock exchange.

The Influence of Company Size on Capital Structure

Based on the results of empirical testing, it is proven that the company size variable does not *influence the capital structure* of coal mining companies listed on the Indonesia Stock Exchange for the 2014-2018 period. This is evidenced by the *t*-statistic probability value. 0.0741 is smaller than $\alpha = 0.05$, which means H_0 is accepted. This result contradicts the previously stated hypothesis which states that company size has a positive effect on capital structure.

The results of this study are contradictory with *The Trade-Off Theory*, in line with *the Pecking Order Theory*, states that companies prefer internal funding over debt, so company size has no effect on the use of external funding sources. Another possibility is that large companies, which have easier access to capital markets than small companies, may not be able to obtain funding as easily. This is because investors who purchase shares or invest

their capital not only consider the company's size but also consider other factors such as the company's prospects, the nature of its current management, and so on. Therefore, it can be concluded that company size does not affect capital structure.

The results of this research are in line with previous research conducted by Lessy (2016), Ahmad *et al* (2013) who stated that the company size variable does not influence capital structure. This is different from the research conducted by Ariani and Wiagustini (2017), Saarani and Shahadan (2013) stated that the company size variable has a significant negative effect. to capital structure.

6. Conclusion

Based on the results of data testing carried out with *software E-reviews 10* by using the model approach and model selection, the results show that the best model to use in this study is *random effect model (REM)* with an *Adjusted R-Square value* of 0.434760 shows that 43.47% of the capital structure influenced by profitability, asset structure, liquidity, and company size. Meanwhile, 56.53% is influenced by other factors outside this study. After conducting the F test, it can be concluded that this model is suitable for use in research because the probability value is smaller than $\alpha=0.05$, namely 0.000005. Based on the results of research on "Determinants of Capital Structure of Coal Sub-Sector Mining Companies Listed on the Indonesia Stock Exchange for the 2014-2018 period" using *software Eviews 10*, researchers managed to conclude that: 1.) Profitability Variables partially not influence on capital structure coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2014 – 2018, 2.) Variables Asset Structure partially not influence on capital structure coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2014 – 2018, 3.) Variables Liquidity partially has a negative and significant influence on capital structure coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2014 – 2018, 4.) Variables Company size partially No influence on capital structure coal sub-sector mining companies listed on the Indonesia Stock Exchange in 2014 – 2018.

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