THE RELATIONSHIP OF CAPITAL STRUCTURE TO PROFITABILITY: 
EVIDENCE OF POWER COMPANIES IN G-20 COUNTRIES

Feti Puspitasari
Magister Manajemen, Universitas Indonesia, Indonesia
Email: puspitasarifeti@gmail.com

ABSTRACT

Net Zero Emissions (NZE) have become a major concern for many countries because of their impact on global business and corporate capital structures, especially in the electricity sector. The purpose of this study was to examine the effect of capital structure on profitability. The object of this study is companies in the electricity sector in G-20 countries for 5 (five) years from 2018-2022. The method used in this study was linear regression panel data with observation companies as many as 267 observation data totaling 1,335. The results of this study show that DAR has a negative and significant influence on ROA and ROE in electricity sector companies (electric utilities) in G-20 countries. The findings of this study indicate that companies are better off relying on internal funding first and if the company needs additional funds, it can use the option of issuing new shares.

Keywords: Capital structure, Profitability

INTRODUCTION

The existence of policies determined by the agreement of many countries can affect the direction of corporate business policies so that these corporations can survive and develop their business. One of the policies that has been agreed by various countries is the policy on Net Zero Emission (NZE). NZE or called zero carbon emissions is a condition where the total carbon emissions released into the atmosphere do not exceed the earth's ability to absorb total carbon emissions (Kementrian ESDM Republik Indonesia, 2022). The NZE policy is contained in the Paris Agreement in 2015 which has been agreed by 196 countries in the world. Policies related to NZE targets issued by various countries generally focus on increasing the use of New Renewable Energy (EBT), decreasing the use of fossil energy, increasing the use of electric vehicles in households, businesses and industries and the use of carbon capture and storage (CCS). These policies will certainly have an impact on corporate business strategies, especially companies in the electric utilities sector.

Policies to increase the use of NRE will certainly be a challenge for companies in the electric utilities sector, especially existing companies that depend on fossil energy. Companies must be careful in preparing infrastructure for the energy transition, both in terms of technology and funding allocation for projects/investments in EBT. The source of use of corporate funds can generally be obtained from debt and equity, where the proportion of debt and equity is identified as capital structure (Ross, Westerfield, Jaffe,
Determining the capital structure is very important for every company because it can have an impact on company performance which is reflected in the company's profitability. This research focuses on companies in the electricity sector (electric utilities) located in G-20 countries (The Group of Twenty). G-20 is a forum between countries consisting of 19 countries including Argentina, Australia, Brazil, Canada, China, France, Germany, India, Indonesia, Italy, Japan, South Korea, Turkey, the United Kingdom and the United States and the European Union (G20, 2023).

There are several previous studies that discuss the relationship between capital structure and profitability, including (Habibniya, 2022) in his research stated that poor company performance causes Total Liabilities to Total Assets (DAR) to have a significant and negative effect on profitability which is reviewed using ROA and ROE. There are other research that is in line with this research, including research that has been carried out by (Das, Chowdhury, & Islam, 2022) and (Ahmed & Afza, 2019) mentions that DAR has a significant negative effect on ROA and ROE. In addition, research carried out by (Nazir, Azam, & Khalid, 2019) and (Ahmed & Afza, 2019) indicates that STD (Short Term Debt) and Long Term Debt (LTD) have a negative and significant influence on profitability. In addition, research conducted by (Ghardallou, 2022) states that DER has a significant negative influence on ROA and ROE. Different results exist in other studies conducted by (Detthamrong, Chancharat, & Vithessonthi, 2016) shows DAR has a positive influence on ROE. Research by (Abdullah & Tursoy, 2018) indicates that DAR has a positive influence on ROA and ROE. In addition, research by (Chadha & Sharma, 2015) indicates that DAR has no effect on ROA, while DAR has a significant negative influence. The inconsistency of previous research results and the absence of research that discusses capital structure and profitability in the electricity sector in particular is unique in this study.

Theoretical Foundation

1. Capital Structure

(Horne & Wachowicz, 2012) Capital structure is identified as a combination of fixed funding of a company over a long period of time that refers to debt, equity, preferred stock, and common stock. As a starting point, a company is advised to determine capital structure goals/targets. The capital structure targets according to (Brigham & Houston, 2018) is a combination of debt, equity and shares (preferred or ordinary) which is a reference in the union of capital. In order to meet the needs of funds using equity or its own capital sources, a company can use its share capital, retained earnings, and reserves. In the scenario/condition of collecting capital needs/funds from own capital is not sufficient, corporations can take other steps by seeking outside funds, namely by collecting debt financing.

There are theories that develop related to capital structure including
Modigliani Miller (MM) theory, pecking order and also trade-off theory. On the theory of Modigliani Miller (MM) introduced by Franco Modigliani and MH. Miller said that traditional approaches are inaccurate in explaining a company's capital structure. MM's theory, later known as modern capital structure theory, began in 1958, when MM published a so-called financial article in American Economic Review 48 (1958, June) entitled The Cost of Capital, Corporate Finance, and The Theory of Investment. MM proves that the value of a company is not influenced by its capital structure. This illustrates that the way a company funds its operations will not affect anything, so the capital structure is irrelevant. However, the MM study was based on a number of unrealistic assumptions, so their results were questionable. The assumptions used in MM theory include: no brokerage fees, no taxes, no bankruptcy fees, investors can borrow at the same rate as the company, all investors have the same information as management about the company's future investment opportunities, Earnings Before Interest and Tax (EBIT) is not affected by the use of debt (Modigliani & Miller, 1958).

Furthermore, the theory related to capital structure is the pecking order theory which assumes that the company aims to maximize the welfare of shareholders. This theory was first introduced by Donaldson in 1961 while the naming of pecking order theory was done by Myers in 1984. This theory states that companies prefer internal financing, which is funding sourced from the company's operating results in the form of retained earnings. If a company requires external financing, the company will issue the safest securities first, starting with the issuance of bonds, then followed by securities with option characteristics, and finally if it is still insufficient will issue new shares. So that the order of use of funding sources based on pecking order theory is internal funds, debt and equity. Internal funds take priority over external funds because internal funds allow companies to not have to "open up again" from the spotlight of outside investors. In addition, the influence of information asymmetry and the emergence of stock issuance costs tend to encourage pecking order behavior. Pecking order theory explains why highly profitable companies generally have a smaller proportion of debt. This happens not because the company has a low debt ratio target, but because the company does not need funds from external parties (Myers, The Capital Structure Puzzle, 1984).

Another theory related to capital structure is the trade-off theory which assumes that the capital structure of the company is a balance between the benefits of using debt with the cost of financial distress and agency costs. Trade off theory is a model based on the trade-off between the gains and losses of using debt.
Debt incurs interest expenses that can save taxes. Interest expense can be a deduction from income so that pre-tax profit becomes smaller. This will have an impact on taxes that also become smaller. The growing use of debt will lead to financial difficulties or bankruptcy. Bankruptcy-related problems are most likely to arise when a company includes more debt in its capital structure. In other words, *trade off* is a capital structure theory that states that companies exchange tax benefits from debt funding with problems posed by potential bankruptcy (Brigham & Houston, 2018).

1. Profitability

   (Husnan, 2001) Defines profitability as the capability of a corporation in its efforts to obtain profits seen from certain levels of sales, assets and share capital. Profitability describes the effectiveness of the corporation on its operational activities so that the company can make a profit. Profitability needs to be considered to maintain and guarantee the sustainability of the company, so it is important for a company to continue to be in a condition that generates profits (*profitable*). If a company does not make a profit (profit), it will make it difficult to get capital / funds from external. (Munawir, 2010) states that profitability is identified as a ratio that indicates the ability of the corporation to create profits in a certain period. (Weygandt, Kimmel, & Kieso, 2015) It also states that the profitability ratio is identified as a ratio that can be used to see an indication of the success of corporate management as a whole or an indicator of management's capacity to get returns, which can be viewed from the amount of profit obtained by the corporation. Profitability can be seen from the ability and success of a corporation in utilizing its assets productively. These conditions are in accordance with (Horne & Wachowicz, 2012) which says profitability is the company's ability to earn profits in a certain period which can be seen from Return on Asset (ROA), Return on Equity (ROE) and NPM (Net Profit Margin).

**Hypothesis Development**

**The Relationship of Capital Structure to Profitability**

If the company has a high DAR ratio, it means more funding with debt, it will be more difficult for the company to obtain additional loans because it is feared that the company will not be able to cover the debt it has and will further impact the company's ability to generate profits. (Habibniya, 2022) in his research stated that poor company performance causes Total Liabilities to Total Assets (DAR) to have a significant and negative influence on profitability as measured using ROA and ROE. This is because the company's responsibility to pay high debts/obligations, so the company is unable to provide sufficient funds to improve operating performance. This is also in accordance with research conducted by (Das, Chowdhury, & Islam, 2022) and (Ahmed & Afza, 2019) which states that the *Debt to Asset Ratio*
(DAR) has a significant negative influence on Return on Assets (ROA) and Return on Equity (ROE). Research conducted by (Sutopo & Adiati, 2021) also mentions that Total Liabilities to Total Assets negatively affect profitability. Based on the description of the previous research, the following hypotheses can be formulated:

**Hypothesis 1:** Capital structure (DAR) negatively affects Return on Assets (ROA) in electricity sector companies (electric utilities) in G-20 countries

**Hypothesis 2:** Capital structure (DAR) negatively affects Return on Equity (ROE) in electricity sector companies in G-20 countries

**RESEARCH METHODS**

**Research Samples and Data Collection**

The data used in this study comes from secondary data, where the data obtained comes from Refinitiv Eikon and also the annual reports of electricity sector companies (electric utilities) in G-20 countries that have been audited and published. Companies

**Operational Research Variables**

The selection for the measurement of dependent variables, independent variables, moderation variables and control variables in this research is based on previous research conducted by (Habibniya, 2022) and theories related to the measurement of capital structure according to (Titman & Wessels, 1988), Theories related to profitability measurement according to (Horne & Wachowicz, 2012). Here is the operational table of dependent variables and independent variables in this study:

<table>
<thead>
<tr>
<th>Table 1. Variable Definition</th>
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</thead>
<tbody>
<tr>
<td><strong>Variable Dependencies</strong></td>
</tr>
<tr>
<td>Return on Assets (ROA)</td>
</tr>
<tr>
<td>Return on Equity (ROE)</td>
</tr>
<tr>
<td><strong>Independent Variables</strong></td>
</tr>
<tr>
<td>Debt to Assets Ratio (DAR)</td>
</tr>
<tr>
<td><strong>Control Variables</strong></td>
</tr>
<tr>
<td>Firm Size (Size)</td>
</tr>
<tr>
<td>Sales Growth (SG)</td>
</tr>
<tr>
<td>Investment Opportunities (INO)</td>
</tr>
<tr>
<td>Tangibility (Tang)</td>
</tr>
<tr>
<td>Liquidity (Liq)</td>
</tr>
<tr>
<td>Ownership (Own)</td>
</tr>
</tbody>
</table>

2562
Research Model

Here is the regression equation used to determine the relationship between capital structure (DAR) and profitability (ROA and ROE):

a. Linear regression equation using Return on Asset (ROA) as dependent variable

\[ ROA_{i,t} = \beta_0 + \beta_1 DAR_{i,t} + \beta_2 Size_{i,t} + \beta_3 SG_{i,t} + \beta_4 INO_{i,t} + \beta_5 Liq_{i,t} + \beta_6 Own_{i,t} + \varepsilon_{i,t} \]  

(1)

b. Linear regression equation using Return on Equity (ROE) as dependent variable

\[ ROE_{i,t} = \beta_0 + \beta_1 DAR_{i,t} + \beta_2 Size_{i,t} + \beta_3 SG_{i,t} + \beta_4 INO_{i,t} + \beta_5 Liq_{i,t} + \beta_6 Own_{i,t} + \varepsilon_{i,t} \]  

(2)

Data Analysis

This study used a data panel, which includes the Company's part (cross-section) and also includes several observation periods (time series). The tests conducted in this study consisted of: descriptive statistical tests, classical assumption tests, panel data regression and hypothesis tests.

RESULTS OF RESEARCH AND DISCUSSION

Descriptive Statistics and Correlation Matrix

Table 2. Descriptive Statistics and the Pearson Correlation Matrix

<table>
<thead>
<tr>
<th>Variable</th>
<th>Descriptive Statistics</th>
<th>Matriks Pearson Correlation</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Mean</td>
<td>Std. Dev</td>
</tr>
<tr>
<td>ROA</td>
<td>-0.01</td>
<td>0.26</td>
</tr>
<tr>
<td>ROE</td>
<td>0.03</td>
<td>1.17</td>
</tr>
<tr>
<td>DAR</td>
<td>0.34</td>
<td>0.20</td>
</tr>
<tr>
<td>FS</td>
<td>21.09</td>
<td>2.60</td>
</tr>
<tr>
<td>SG</td>
<td>0.74</td>
<td>20.17</td>
</tr>
<tr>
<td>INO</td>
<td>0.09</td>
<td>0.64</td>
</tr>
<tr>
<td>TANG</td>
<td>0.68</td>
<td>0.25</td>
</tr>
<tr>
<td>LIQ</td>
<td>2.73</td>
<td>30.90</td>
</tr>
<tr>
<td>OWN</td>
<td>0.03</td>
<td>0.18</td>
</tr>
</tbody>
</table>

Regression Results

Table 3. Panel Data Regression Results

<table>
<thead>
<tr>
<th>Variable</th>
<th>Model 1</th>
<th>Model 2</th>
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2563
Table 3 shows the regression results of panel data, where to answer hypothesis 1 based on regression model 1 with the selected model is REM. The regression results of panel data in regression model 1 show that capital structure (DAR) has a significant negative influence on ROA with a significance level of 1%, with an R square value in model 1 of 0.2084, indicating that the ability of the independent variable to explain the variation of the dependent variable is 20.84%. Meanwhile, to answer hypothesis 2 based on the results of regression model 2 shows that capital structure (DAR) has a significant negative influence on ROE with a significance level of 5%, with an R square value in model 2 of 0.0296, indicating that the ability of the independent variable to explain the variation of the dependent variable is only 2.96%. Simultaneous tests seen from the value of prob wald chi2 in regression models 1 and 2 that have a probability value of less than 0.05 (significance level at 5%), confirm that the regression model is fit or all variables (independent, moderation and control) in the model simultaneously (simultaneously) against the dependent variables (ROA and ROE).

The regression results of models 1 and 2 confirm that the higher the use of debt by a company, the profitability (ROA and ROE) generated will decrease. This finding is in accordance with the assumption of hypothesis 1 which suspects that capital structure has a negative influence on profitability. This finding is also in line with the
pecking order theory which states that companies with high levels of profitability actually have low levels of debt, this is because companies with high profitability have abundant sources of internal funds. In this pecking order theory there is no optimal capital structure. Specifically, companies have a order of preference (hierarchy) in the use of funds. This pecking order theory can explain why companies that have higher profit rates actually have smaller debt levels (Myers, The Capital Structure Puzzle, 1984).

The results of these findings are also in accordance with research conducted by (Habibniya, 2022) which states that the company's poor performance causes Total Liabilities to Total Assets (DAR) to have a significant and negative effect on profitability which is reviewed with ROA and ROE. This is because the company's responsibility to pay high debts/obligations, so the company is unable to provide sufficient funds to improve operating performance. Research conducted by Ismail Kalash in 2021 also states that the debt ratio (leverage) seen from DAR has a negative and significant relationship with ROA and ROE. In this condition, the company will incur higher debt costs, and will benefit after a decrease in the debt ratio in its capital structure (Kalash, 2021). In addition, other studies that are in line with these results, including research that has been carried out by (Das, Chowdhury, & Islam, 2022) and (Ahmed & Afza, 2019) mentions that DAR has a significant negative effect on ROA and ROE. In addition, research conducted by (Nazir, Azam, & Khalid, 2019) and (Ahmed & Afza, 2019) shows that STD and LTD have a negative and significant influence on profitability.

CONCLUSION

Capital structure as measured by debt ratio (DAR) has a negative and significant influence on profitability, both as measured using the return on assets ratio (ROA) and return on equity (ROE) ratio in electricity sector companies (electric utilities) in G-20 countries. This indicates that the increase in debt made by the company will cause a decrease in profitability (ROA and ROE) of the company. The Company is better off relying on internal funding first and if the company needs additional funds, it can use the option of issuing new shares rather than having to increase the Company's debt.

REFERENCE


