The Moderating Role of Liquidity on Capital Structure and Profitability: A Study on Indonesian Transportation Subsector

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Abstract: This research analyses the impact of capital structure on profitability, considering liquidity as a moderating variable. Furthermore, it is focused on transportation sub-sector companies listed on the Indonesia Stock Exchange from 2012 to 2020. A causal-comparative research method is employed, with hypothesis testing is conducted for a moderating regression. To ensure the accuracy of the findings, a purposive sampling technique is utilised, resulting in 198 firm-year observations which represented by 22 listed firms. The study's findings indicate that capital structure has no bearing on profitability. The analysis's findings indicate that the liquidity ratio, which acts as a moderating variable, significantly affect for the relationship between capital structure and profitability. The capital structure further strengthens the increase in profitability if it is supported by the company's liquid current assets.

Keywords: Capital Structure; Profitability; Liquidity; Transportation Sub Sector

Introduction

Currently, a rapid expansion in economic activity which marked by notable advancements in technology and the availability of highly effective and efficient facilities and infrastructure. The share of the transportation and warehousing industry to the Gross Domestic Product (GDP) in 2018 was Rp 797.3 trillion, or 5.37% of GDP, estimated to be worth Rp 14,837.36 trillion, according to data from the Central Statistics Agency (CSA). According to CSA Deputy for Balance Sheets and Statistical Analysis, the growth of the transportation and warehousing sector showed an increase of 8.59% in 2017-2018 based on statistics provided by Ali.web.id on May 9, 2018.

Transportation is moving people or goods from one location to another with a machine or human-driven vehicle. The transportation sub-sector is crucial to the growth of the national economy. However, throughout the past 8-year, the growth has been hampered by varying restrictions on corporate earnings. This phenomenon exerts a significant influence and carries implications for a company's capacity to generate optimal profits. Consequently, when a company fails to achieve this objective, potential investors may be reluctant to allocate their funds. This hesitancy stems from concerns surrounding the ability to generate optimal profits and sustain capital investment growth.

In this study, we use net profit margin (NPM) as a proxy for the profitability. The NPM trends of companies in the transportation sub-sector from 2012 to 2020, specifically focusing on service businesses, are summarized in Figure 1.

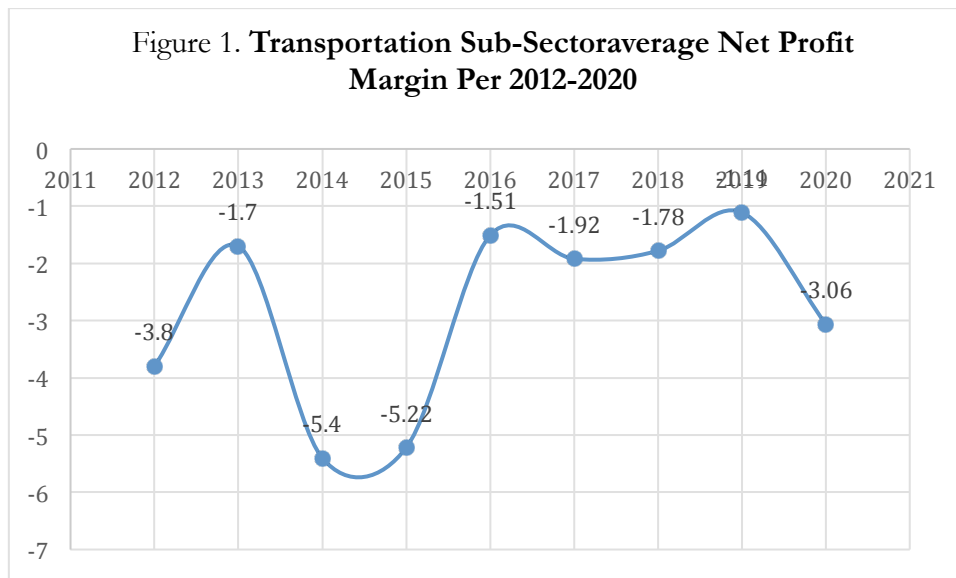Figure 1. **Transportation Sub-Sectoraverage Net Profit Margin Per 2012-2020**

Figure 1 shows that the average NPM in the transportation sector was listed on the Indonesia Stock Exchange (IDX) between 2012 and 2020. The figure exhibits an unsteady fluctuating movement, resulting in an annual average NPM variation at a negative ratio. Whereas the average NPM in 2012 was -3.8% and had some variability, it fell very sharply in the 2014–2015 period to -5.4% and -5.22%, respectively.

Various factors influence the changes in a company's profitability. A high capital structure also boost profitability (Mardiyanto, 2011). It is because businesses that take on more debt are perceived as more optimistic. According to (Astuti et al., 2015), the debt to asset ratio has a positive and significant effect on profitability (return on equity). Increasing the use of debt will have an impact on increasing profitability. (Shubita & Alcavala, 2012) has a different opinion, they claim that profitable firms depend more on equity as their main financing option. Meanwhile, (Ajibola et al., 2018) prove that capital structure has an insignificant negative effect on profitability. The prior studies show that the relationship between capital structure and profitability is not consistent. Researchers believe that there are other variables that influence the relationship between capital structure and profitability.

Many studies argue that liquidity affect the relationship between capital structure and profitability. These findings align with (Mota & Moreira, 2017) who state that businesses with strong liquidity have a low capital structure. (Bassey & Moses, 2015) demonstrate that a higher level of liquidity has more possibilities to enhance profitability and strengthen the link between between capital structure and profitability. This aligns with research of (Khan & Ali, 2016), who claim that greater liquidity can boost a company's profitability.

There is a research gap on the relationship between capital structure and profitability, in which researchers believe that the liquidity ratio might be a factor that strengthens or weakens the relationship between these two variables. Thus, this study re-examined the relationship between between capital structure and profitability by including the liquidity ratio as a moderating variable in transportation sub-sector companies which listed the Indonesian Stock Exchange. The research on corporate profitability are examined by integrating liquidity as a moderating variable to overcome the gaps based on the research findings. Some of the research questions presented are: (1) Does capital structure determine profitability?; (2) Does the liquidity ratio moderate the relationship between capital structure and profitability?

Literature Review

Trade-off Theory

The hypothesis of this study is based on conventional thinking. According to this theory, the ideal business balances the advantages and disadvantages of borrowing, such as a balance between the company's tax advantages and bankruptcy expenses. Taxes, adjustment fees, bankruptcy expenses, and agency fees are all factored into the development costs (Nirmala & Andarwati, 2016).

Pecking Order Theory

The pecking order theory explains the funding sequences and the necessity for investment determines the amount of money required. It is possible to select funding sources in a hierarchical sequence, with companies favouring internal funding sources above external. The business initially selects the safest securities when outside finance is required (Sulindawati, 2016).

Profitability

The profitability of a business refers to its ability to generate earnings. These earnings, derived from sales and investments, serve as concrete evidence (Kasmir, 2014). In contrast, Hery (2016) argue that profitability is the company's capability to generate income through regular business operations. Therefore, the company signifies proficiency in utilising its resources and capabilities to generate profits.

Capital Structure

The capital structure illustrates the relationship between owned capital, derived from long-term debt, and capital, which is the source of a company's financing (Fahmi, 2014). (Tommy et al., 2014) state that the capital structure is a combination of long-term funding

source. Furthermore, financial managers must evaluate the capital structure and comprehend its connection to risk or return value to meet the objective of maximizing shareholder wealth.

Liquidity

The ability of a business to timely complete its short-term obligations is known as liquidity (Fahmi, 2014). (Sulindawati et al.,2016) shared the same viewpoint, stating that a company's liquidity refers to its capacity to meet immediate short-term obligations.

Hypotheses Development

The Impact of Capital Structure on Profitability

The trade-off argument claim that because of the capital structure below the ideal point, extra debt affected rising corporate profits, explaining the connection between capital structure and bolstering profitability. A firm's tax benefits increase in proportion to its debt level, promoting profits (Nasimi, 2016). Empirically, (Sultan & Adam, 2015) established a link between the capital structure ratio and the profitability ratio that was in favour. The research conducted by (Opoku et al., 2013) demonstrated a substantial and positive correlation between the capital structure and profitability. (Negasa, 2016) established a link between a company's financial structure and profitability. In addition, (Tailab, 2014) demonstrated an empirically significant inverse link between capital structure and profitability. The return on equity and assets tended to decline as total debt increased. (Mohamed, 2015) stated how capital structure negatively affected profitability. (Yapa, 2015) reported a capital structure that was unprofitable and substantial.

Based on the interpretation of some of these sources, hypothesis 1 stated that the capital structure ratio impact the company's profitability.

The Impact of Moderation Liquidity on the relationship between Capital Structure and Profitability

The capital structure is strengthened by liquidity. According to the pecking order theory, a company's level of liquidity serve as an indicator of its state. Companies with low liquidity exhibited a growing amount of external funding (Handayani, 2016). High liquidity capacities increasingly rely on internal funding sources, reducing their reliance on external funds to finance operational activities and strengthening the capital structure (Rizki et al., 2018). Additionally, (Bhattarai, 2016) demonstrated that businesses with strong liquidity leads to less debt in capital structure.

According to the pecking order hypothesis (Prabowo & Sutanto, 2019), liquidity boosted profitability. Empirically, (Ghasemi & Ab Razak, 2016) showed that organizations with a greater Quick Ratio met their short-term obligations and had an effect on growing company profitability. (Ofoegbu et al., 2016) established a strong positive association between profitability and the current ratio. Furthermore, excessive liquidity hindered a company's potential to make money because of idle cash (Nurhayati, 2013; Kombih & Suhardianto, 2017). Kobika's research from 2018 showed that the correlation between liquidity and profitability ratios was quite strong and significant in the negative direction.

According to (Tuffour et al., 2018) there was a clear and negative correlation between liquidity, return on equity, and return on assets.

Hypothesis 2 is constructed based on the explanation from different pertinent references as stated below: The liquidity ratio moderate the relationship between capital structure and profitability.

Methods

The research design employed a causal relationship. The population in this study is transportation-related companies listed on the Indonesia Stock Exchange from 2012 to 2020. A purposive sampling method was employed to determine a sample size of 22 businesses and the analysis was conducted using 198 observational data points. Debt Asset Ratio (DAR), a ratio that assesses the relationship between total debt and total assets, was used to quantify capital structure as the independent variable (Kasmir, 2014; Andhani, 2019). Profitability, as determined by net profit margin (NPM), which was the ratio of net profit after tax or net income to total sales (Mahardini & Juwita, 2018), is dependent on this research. Meanwhile, the quick ratio (QR), the ratio of total current assets minus inventories to current debt (Saputra & Syarfan, 2017), is the moderator variable. The hypothesis test was conducted on the regression equation describing the connection between capital structure and profitability. The regression equation that describes the relationship modulated by the liquidity ratio was also tested as follows:

$$NPM = \alpha + \ 1 \ LnDAR + \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots(1)$$

$$NPM = \alpha + \ 1 \ Lg + \ 2LnDAR*LnQR + \ \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (2)$$

Findings

Descriptive Statistics

Table 1 shows that N, or the amount of capital structure data as determined by the debt-asset ratio (DAR), is 198 from the sample of enterprises in the transportation subsector from 2012 to 2020. The average value (mean) and the standard deviation are 0.651 and 0.507, respectively. The research data dispersion can also be favorable when the average value is higher than the standard deviation number. Additionally, the company PT Pelayaran Nelly Dwi Putri Tbk and Arpeni Pratama Ocean Line had a debt-to-asset ratio of 0.07 and 3.25 in 2017 and 2014, which was the highest value in the previous seven years.

Table 1. **Descriptive Statistics**

	N	Minimum	Maksimum	Mean	Std.Deviasi
DAR	198	,070	3,138	,651	,507
NPM	198	-9,365	1,803	-1,176	0,868
QR	198	,030	6,002	1,090	1,087

Source: data is processed

According to Table 1, N, or the quantity of Net Profit Margin (NPM) Profitability data, is 198 from the sample of businesses in the transportation sector from 2012 to 2020. The average value (mean) and the standard deviation are -0.176 and 0.868, respectively. The distribution of the research data is poor when the average number is less than the standard deviation value. The Sidomulyo Selaras Tbk company had the lowest (minimum) net profit margin figure of -9.365 in 2017, indicating that the business sustained losses and did produce the highest possible net income. Meanwhile, PT. ITCSI Jasa Prima recorded the greatest (maximum) value of 1.803 in 2012.

The research sample of firms in the transportation subsector for the years 2012 to 2020 had 198 Quick Liquidity Ratio (QR) data points, or N. The standard deviation was equal to 1.087, while the mean Quick Ratio value was 1.090. The research data fluctuated when the average value was higher than the standard deviation value. In the business, Arpeni Pratama Line Ocean Tbk, the lowest (minimum) figure of 0.03 occurred in 2016. Furthermore, PT Mitrabahtera Sagera Sejati recorded the highest (maximum) value of 6.002 in 2017.

Classical Assumption Tests

We conduct several traditional assumption tests using normality test, multicollinearity test, heteroscedasticity test, and autocorrelation test analysis to convince that our model free from bias and has high validity. First, the Kolmogrov-Sminorv statistical test was used in the normality check. The results indicate that the data is normally distributed as showed on Table 2. Second, by examining the tolerance value and variance inflation factor (VIF), the multicollinearity test can determine the presence or absence of multicollinearity. There is no multicollinearity when the tolerance value is more than 0.10 and FIV is lower than 10 (Ghozali, 2018). According to Table 3, the tolerance value for the debt-to-asset and quick ratio variables is 0.593, and the VIF value that these variables produce is 1.685. Therefore, it can be argued that this research does not have multicollinearity. Third, Table 4 shows that heteroscedasticity in the model is rejected when the White test is used, where sig < significant level 0.05 (Ghozali, 2018). Therefore, there is no evidence of heteroscedasticity in the regression model. Fourth, Table 5 shows that the autocorrelation analysis employed the Durbin-Watson test (DW-test). It can be concluded that the regression model does not exhibit autocorrelation symptoms, allowing it to pass the traditional assumption test.

Table 2. **One-Sample Kolmogorov-Smirnov Test**

		Unstandardized Residual
a.Test distribution is Normal		-
b.Calculated from data		-
Std. Deviation		,81143444
Most Extreme	Absolute	,062
Differences	Positive	,062
	Negative	-,060
Asym.Sig. (2-tailed)		,200

Table 3. **Result Multicollinearity Test**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.	Collinearity Statistics	
	B	Std.Error	Beta			Tolerance	VIF
(Constan)	,229	,107		2,133	,035		
sqrtDAR	,088	,093	,110	,939	,350	,593	1,685
sqrtQR	,009	,048	,022	,190	,850	,593	1,685

a. Dependent Variable: sqrtNPM

Table 4. **Heteroskedasticity Test (White Test)**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std.Error	Beta		
(Constan)	,067	,068		,981	,328
sqrtDAR	,109	,059	,212	1,853	,066
sqrtQR	-013	,030	-,050	-,439	,661

a. Dependent Variable: sqrtNPM

Autocorrelation Test

Table 5. **Autocorrelation Chocrane Orcutt Test**

Model	R	R Square	Adjusted R Square	Std.Error of the Estimate	Durbin-Waston
1	,209a	,044	,024	,53797	1,967

a.Predictors: (Constan), sqrtDAR, sqrtQR
b.Dependent Variable: CO_sqrtNPM

Hypotheses Test

The regression equations (1) and (2) are as follows:

sqrtNPM= 0.246 + 0.076 sqrtDAR + 0.99 ……………………..……….(1)
sqrtNPM= 0.139 + 0.306sqrtDAR +0.380sqrtDAR*sqrtQR+0.96……....(2)

The Impact of Capital Structure on Profitability

According to Table 11 above, the calculated t value of the capital structure (DAR) on profitability (NPM) was 1.066, with a significance of 0.288. Therefore, H_0 was accepted, and the capital structure have not effect on profitability

Table 6. **T Statistics Test of Capital Structure on Profitability**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	Std.Error	Beta		
1 (Constant)	,246	,055		4,456	,000
sqrtDAR	,076	,072	,096	1,066	,288

a.Dependent Variable: sqrtNPM

The finding of this study does not support the trade-off theory, which is frequently employed as a research guide. According to this theory, debt levels result in greater

financial pain than tax savings, leading to business failure. The possibility for financial distress and agency growth increased with debt levels above the ideal greater than the tax savings of the company's debt policy. The study's findings also disagree with those reported by (Tailab, 2014), demonstrating that a company's capital structure inhibited its profitability. The return on equity and the return on assets declined as total debt increased. However, the findings are pertinent to (Mohamed, 2015) and (Yapa, 2015) as well since they demonstrate a weak and significant link between capital structure and profitability.

The research showed that a debt-to-equity ratio of 65.10% represented high debt ratio performance. The average net profit margin of -17.60% indicated that profitability has stayed within the management's expectations due to the high debt ratio. A company's debt-to-equity ratio reaches an unfavourable level (above the ideal level) when the debt becomes onerous to the company's finances. In such cases, the tax benefits derived from the debt strategy are no longer sufficient to offset the increased agency expenses and the risk of financial disaster. However, with these results, the current and increased debt ratios do not increase the potential for financial difficulties, both to fulfil company operations and to meet investment needs.

The Impact of Moderation Liquidity on the relationship between Capital Structure and Profitability

Based on table 7 above, a regression coefficient value of 0.380 and it is significance of 0.004 are determined for the moderating variable, which results from the interaction between sqrtDAR*QR. N = 123 (df = 123) with a significance threshold of 5% get a t-table value of -1.97944. Because Ho is not accepted by the t count > t table, it may be inferred that liquidity can attenuate the impact of capital structure on profitability.

Table 7. **The Impact of Moderation Liquidity on The Relationship between Capital Structure and Profitability**

Model	Unstandardized Coefficient		Standardized Coefficient	T	Sig.
	B	**Std.Error**	**Beta**		
(Constan)	,139	,108		1,278	,204
sqrtDAR	,306	,117	,385	2,624	,010
sqrtDAR*sqrtQR	-,380	,128	-,434	-2,968	,004

a.Dependent Variable: sqrtNPM

The research result does not in line with study of (Bhattarai, 2016) who state that companies with a strong liquidity position show a decrease in the ratio of debt to equity in the capital structure and an increase in the amount of external funding (Handayani, 2016). Prabowo and Sutanto (2019) confirm that a company's ability to meet obligations immediately increases its ability to generate profits. Meanwhile, (Nurhayati, 2013), and (Kombih & Suhardianto, 2017) report that excessive liquidity indicates a large amount of idle cash, hindering the potential to increase profitability.

The results of this research indicate that the existing liquidity does not strong enough and has the potential to increase the company's debt ratio, thereby reducing the company's ability to increase its profits. The implication is that the more the liquidity position is not strengthened, the more the company depends on external funding originating from debt,

so that the company's financial burden to pay debt instalments and interest costs becomes higher, which has the impact of disrupting healthy cash flow to support smooth operations. This tendency has the potential to reduce a company's ability to increase its profits.

Conclusion

The current debt ratio level does not have the potential to increase financial difficulties, both to meet the company's operational needs and to meet investment needs. The performance of liquidity ratios tends to weaken the relationship between capital structure and company profitability. The level of liquidity a company has predicts a strengthening of its debt ratio, thereby potentially reducing the company's profitability. The implication this study is that the performance of the company's existing current assets will continue to drive the company's debt ratio higher, thus tending to reduce the company's ability to increase its profits.

The limitation of this research is related to the object. This study used the data in the Indonesia Stock Exchange-listed Transportation Sub-Sector, making it impossible to extrapolate the findings to other industries. To ensure consistency of the results, a single proxy was used for each observed variable, preventing the use of additional proxies. However, future research should employ a range of proxies and include multiple sub-sectors to enhance the comprehensiveness and robustness of the results.

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