

THE EFFECT OF PROFITABILITY AND LIQUIDITY ON CAPITAL STRUCTURE WITH FIRM SIZE AS MODERATING VARIABLE

Angelina Richie Kho¹, Merry Susanti^{1*}

¹Faculty of Economics and Business, Universitas Tarumanagara, Jakarta - Indonesia

*Email: merrys@fe.untar.ac.id

Submitted: 27-03-2023, Revised: 17-05-2023, Accepted: 23-06-2023

ABSTRACT

This study aimed to obtain the empirical evidence of the effect of profitability and liquidity on capital structure with firm size as a moderating variable. The study was conducted on manufacturing companies listed on Indonesia Stock Exchange for the 2018-2020 period and sample obtained through purposive sampling technique were 58 companies after outlier being eliminated. Data analysis method used in this study were multiple regression and moderated analysis regression. The statistical tool used for data processing in this research was EViews 9. The results of this study were (1) profitability had a negative and significant effect on capital structure, (2) liquidity had a negative and significant effect on capital structure, (3) firm size was not able to moderate the effect of profitability on capital structure, (4) firm size was not able to moderate the effect of liquidity on capital structure.

Keywords: capital structure, profitability, liquidity, firm size

1. INTRODUCTION

Every company may have different goals from one another. One of the common goals of every company is to make a profit. The company will try to generate profit as high as possible. Strategy will be needed by the company to be implemented throughout the year so that it can achieve their goals.

One of the largest sectors in Indonesia is manufacturing. Manufacturing companies process raw materials to be produced into a product that has added value [1]. Production by manufacturing companies, which typically on a large scale will require large resources [2]. These resources include human resources, various tools and materials, and funding.

The number of manufacturing companies that continues to increase makes competition between companies increasingly fierce. Companies will compete to produce the best products to win the competition. A variety of technologies in production equipment also continue to develop to support the production process of manufacturing companies to be more effective and efficient. The need for companies to keep abreast of developments in order to win this competition makes the company need a lot of funds.

The company's funding sources are divided into two categories, namely internal funding and external funding. Internal funding can be obtained from the results of operational activities, while external funding can be obtained from debt or capital invested by investors. The funding obtained will then be reflected in the company's capital structure. Therefore, the company's management must carefully take into consideration the choice of funding source.

Taking the wrong financing decisions can bring a negative impact on the company and can even lead to bankruptcy [3]. The manager of the company need to decide the source and amount of funds appropriately in order not to impose an excessive burden on the company

[4]. One source of high-risk funding is debt. If the company is incapable of paying its debts, then the company may lose the guaranteed assets as well as investor's trust. As a result, companies must consider several factors in determining their capital structure, such as profitability, liquidity, and firm size.

This research is expected to assist company managers in determining their capital structure so that companies can maximize the use of the funds obtained. In addition, investors and creditors are expected to understand the company's needs so that they can assess whether the company is eligible for funding or not.

Theoretical Review

Pecking Order Theory

Pecking Order Theory is a theory that shows the hierarchy of corporate funding [5]. This theory states that companies choose funding sources based on the costs and risks that will be borne by the company. The selected funding source will be reflected in the company's capital structure. According to Laissa [6], the company's preferred source of funds is funding that has the lowest cost and the smallest risk. Companies can obtain funding from internal and external parties. When choosing a funding source, companies tend to prioritize internal funds because they are considered as the cheapest and safest source of funds for the company [7]. The use of internal funds does not result in periodic payment obligations. This will eliminate the risk of default which can affect the company's continuity [3]. Furthermore, when internal funds are not able to meet the needs of the company, the source of funding that the company will choose is debt. Companies that have debt will have to pay installments every month to pay off the debt. However, the company still prefers to acquire debt over issuing shares because the company does not want to lose control over the company [8].

Literature Review

The Effect of Profitability on Capital Structure

Profitability is a ratio that can show the company's ability to earn profit [9]. According to Pratama and Susanti [10], profitability has a positive and significant effect on capital structure. The higher the company's profitability, the creditor's level of trust in the company will also increase. This makes it easier for companies to obtain debt. These results are supported by research conducted by Mujiatun, Rahmayati, and Ferina [11], Darto [12], and Claudia [13]. On the other hand, research done by Kurniasari and Listiawati [14] shows that there is a negative effect of profitability on capital structure. This is because the high profitability can indicate that the company has sufficient internal funds to meet its needs so that debt acquisition will be delayed. Other research that supports this result are conducted by Dewi and Fachrurrozie [4], Ryando [15], and Khafid, Prihatni, and Safitri [5].

The Effect of Liquidity on Capital Structure

Liquidity is a ratio that can show the company's ability to pay its debts, especially debts that mature in a short-term. According to Rahmiyanti and Nugroho [16], liquidity has a positive and significant effect on capital structure. The higher the level of company liquidity, the company's ability to meet its short-term obligations is also higher. Therefore, creditors will have courage to give debt to companies with high liquidity levels. On the other hand,

research conducted by Astriyani [7] shows that liquidity has a negative and significant effect on capital structure. This is because a high level of liquidity indicates that the company has large current assets so that the company is able to meet its needs independently. Some research that also have the same result are conducted by Hidayat and Debbianita [17], Darto [12], Pratama and Susanti [10], and many more.

The Effect of Profitability on Capital Structure with Firm Size as a Moderator

Company size can be assessed from the total assets owned by the company. Companies with high profitability indicate large asset ownership. Research conducted by Nisfianti and Handayani [18] states that firm size can moderate the effect of profitability on capital structure. When the company's profitability is high and the company has large amounts of assets, creditors will see this as an opportunity to offer debt to the company. On the other hand, research conducted by Mukaromah and Suwarti [19] states that firm size cannot moderate the effect of profitability on capital structure. The number of assets owned by the company makes the company able to meet its needs independently. High profitability indicates the company is able to manage its assets effectively so as to generate profits for the company. Other studies that support this result include Dewi and Fachrurrozie [4], as well as research by Khafid et al [5].

The Effect of Liquidity on Capital Structure with Firm Size as a Moderator

Liquidity of a company is calculated by comparing current assets with current liabilities. Companies with a high level of liquidity indicate that the company has large current assets, where current assets are part of the total assets that will be taken into account to assess the size of the company [19]. Research conducted by Mukaromah and Suwarti [19] states that company size cannot moderate the effect of liquidity on capital structure because the company does not necessarily want to pledge its assets to obtain debt even though the liquidity ratio indicates the company has the ability to pay its short-term debt. On the other hand, research conducted by Dewi and Fachrurrozie [4] states that firm size is able to moderate the effect of liquidity on capital structure. If the company's liquidity is high and the assets owned are also quite a lot, then the level of creditor confidence in the company will increase. Therefore, it will be easier for the company to obtain debt.

Research Hypothesis

Profitability is a measure of the company's ability to earn a profit. High profitability of the company indicates a good financial performance. Companies with a high level of profitability have the ability to finance the company's needs due to the availability of abundant internal funds. In line with the pecking order theory, debt acquisition will be delayed when the company's profits are high because the financing needs are considered capable of being met using these profits.

H_{a1}: Profitability has a significant negative effect on capital structure.

The company's liquidity shows whether the company is able to meet its short-term obligations with its current assets. The high level of company liquidity can indicate higher current assets so that the company's ability to finance its need without debt also increases. According to pecking order theory, when a company has sufficient funds to finance its operational activities, the company will delay obtaining debt. This is also due to the smaller risk of using internal funds compared to debt.

Ha₂: Liquidity has a significant negative effect on capital structure.

Companies with a high level of profitability generally have a lot of assets so that the size of the company becomes large. When the company applies for debt, creditors will also assess whether the company's assets can be accepted as collateral, so that not all company assets can be accepted by creditors. In addition, if the company has a lot of assets but the profitability is not comparable, then the company can be said to be ineffective in managing its assets. Therefore, in line with the pecking order theory, the company will prioritize the use of its assets to meet its needs so that the portion of debt will be reduced.

Ha₃: Firm size moderated the effect of profitability on capital structure.

Company size is measured by the total assets owned by the company, both short-term assets and long-term assets. High liquidity indicates the ownership of a lot of short-term assets so that the size of the company becomes large. In addition, the availability of these assets makes the company able to meet its needs independently. This makes external funding is not needed by the company. In line with the pecking order theory, the acquisition of debt will only be chosen by the company when the internal funds owned are not sufficient to finance their needs.

Ha₄: Firm size moderated the effect of liquidity on capital structure.

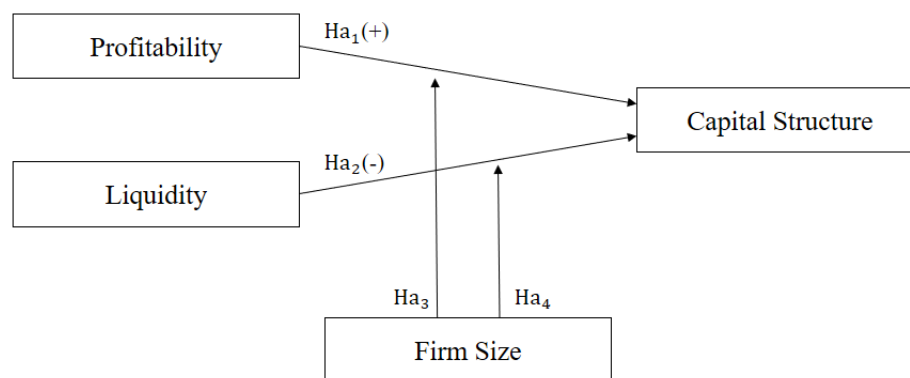


Figure 1. Research Hypothesis

2. RESEARCH METHODS

This study uses a descriptive research design with secondary data obtained from the official website of the related company and the website www.idx.co.id. The sample selection was carried out using a purposive sampling technique and then processed using EViews 9. The criteria in this study included 1) manufacturing companies listed on the Indonesia Stock Exchange during the 2018-2020 period, 2) manufacturing companies that were not delisted on the Indonesia Stock Exchange during the 2018-2020 period, 3) manufacturing companies that present financial statements consecutively during the 2018-2020 period, 4) manufacturing companies that present financial reports ending on December 31 during the 2018-2020 period, 5) manufacturing companies that present financial reports using Rupiah currency, 6) manufacturing companies that earn successively during the 2018-2020 period. There are 174 samples used in this research after 39 outliers being eliminated. Data analysis was conducted using multiple regression analysis and moderated regression analysis.

Table 1 Variables of This Study

Variable	Formula	Scale	Sources
Dependent Variable			
Capital Structure	$DER = \frac{Total\ Debt}{Total\ Equity}$	Ratio	[16]
Independent Variable			
Profitability	$ROA = \frac{Net\ Profit}{Total\ Assets}$	Ratio	[16]
Liquidity	$CR = \frac{Current\ Assets}{Current\ Liabilities}$	Ratio	[16]
Moderating Variable			
Firm Size	Size = Ln (Total Assets)	Ratio	[5]

3. RESULTS AND DISCUSSION

Table 2. Normality Test Before Outlier

Series: Standardized Residuals	
Sample 2018 2020	
Observations 213	
Mean	-4.75e-16
Median	-0.250787
Maximum	4.589134
Minimum	-0.767247
Std. Dev.	0.761922
Skewness	2.599764
Kurtosis	12.78670
Jarque-Bera	1089.980
Probability	0.000000

Table 3. Multicollinearity Test Before Outlier

	ROA	CR
ROA	1.000000	-0.062598
CR	-0.062598	1.000000

The regression model that was selected before the outliers were removed was the random effect model. Classical assumption tests based on this model are normality test and multicollinearity test. Based on the test results, the prob value that is smaller than 0.05 and the value of the correlation coefficient between variables that is less than 0.85 indicating that the research data passed the multicollinearity test but did not pass the normality test.

Table 4. Multicollinearity Test After Outlier

	ROA	CR
ROA	1.000000	0.109569
CR	0.109569	1.000000

Table 5. Heteroscedasticity Test After Outlier

Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	0.131291	0.025891	5.070837	0.0000
ROA	-0.302923	0.263094	-1.151390	0.2520
CR	-0.005616	0.006814	-0.824123	0.4116

Therefore, the outlier test was carried out to remove data that had extreme values. The regression model that was chosen after the outliers were removed was the fixed effect model. Classical assumption test that must be done are multicollinearity test and heteroscedasticity test. The correlation value between variables which is smaller than 0.85 indicates that the research data passed the multicollinearity test. The heteroscedasticity test which was carried out using the Glejser test method showed that there was no heteroscedasticity problem because the prob value of each variable is greater than 0.05.

Chow test and Hausman test were conducted on 174 samples without interaction variables and with interaction variables showing that the model that is suitable for this research is the fixed effect model. The results of data analysis are as follows.

Table 6. Multiple Regression Test Results without Interaction Variables

Dependent Variable: DER				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	0.971198	0.060249	16.11970	0.0000
ROA	-2.011996	0.612220	-3.286394	0.0013
CR	-0.046439	0.015857	-2.928643	0.0041

Table 7. Moderated Regression Analysis Results

Dependent Variable: DER				
Variable	Coefficient	Std. Error	t-Statistics	Prob.
C	-14.94705	2.900716	-5.152885	0.0000
ROA	-5.587780	9.048793	-0.617517	0.5382
CR	0.631803	0.399522	1.581396	0.1166
M1	0.137093	0.316350	0.433357	0.6656
M2	-0.023536	0.014017	-1.679082	0.0959

Based on the results above, regression equation without interaction variable and with interaction variable are as follows:

$$\text{DER} = 0.971198 - 2.011996 (\text{ROA}) - 0.046439 (\text{CR}) + e$$

$$\text{DER} = -14.94705 - 5.587780 (\text{ROA}) + 0.631803 (\text{CR}) + 0.549671 (\text{Size}) + 0.137093 \text{ M}_1 - 0.023536 \text{ M}_2$$

The first equation shows regression coefficient of profitability (ROA) is -2.011996 with a prob value of 0.0013. This indicates that profitability has a negative and significant effect on capital structure. When profitability increases, the company's capital structure will decrease. Similar to profitability, the liquidity regression coefficient is also negative with a prob value less than 0.05. This shows that liquidity has a negative and significant effect on capital structure. An increase in the company's liquidity will reduce the company's capital structure.

The second equation focused on the regression coefficient of the interaction variables to determine whether the moderating variable can moderate the effect of the independent variable on the dependent variable. The first interaction variable is between profitability and firm size. It has a regression coefficient of 0.137093 and a prob value of 0.6656. This indicates that firm size cannot moderate the effect of profitability on capital structure. The second interaction variable is between liquidity and firm size. It has a regression coefficient of -0.023536 and a prob value of 0.0959. This indicates that firm size cannot moderate the effect of profitability on capital structure.

The coefficient of determination test is performed to see how far the independent variables in the study explain the dependent variable. Adjusted R² value obtained is 0,861775. This shows that 86,1775% of the independent variables used in this study, namely profitability and liquidity, are able to explain the dependent variable in the form of capital structure.

The F-test was conducted to assess whether the model was fit or not. Based on the results of the study in, it can be seen that the Prob (F-Statistics) value is smaller than 0.05, which is 0.00000. Therefore, it can be concluded that the research model is fit so that the independent variables in this study are able to explain the dependent variable

4. CONCLUSIONS AND RECOMMENDATIONS

The first conclusion based on the results of this study is that profitability as proxied by return on assets can describe the company's ability to generate profits through its assets [15]. The greater the company's profitability indicates the greater the internal funds obtained from the results of operational activities. When the company succeeds in making a profit, the company will have internal funds to finance its needs. Therefore, companies with high profitability tend to choose to use internal funds rather than using debt. This finding is in line with pecking order theory that states if internal funds are sufficient to finance its needs, the company will use it first before obtaining debts.

Second, high liquidity indicates that the company has a lot of liquid assets [20]. If the company obtains debt in this condition, the liquid assets will become useless and the company's liabilities will be increased because they have to pay interest on the debt. Companies that choose to ignore and not take advantage of existing assets will certainly be questioned by the shareholders. Therefore, the company will prefer to use its assets first to finance the company's needs. This result is also in line with pecking order theory.

The third conclusion is that the determination of the optimal capital structure can be done regardless of the size of the company [19]. High profitability indicates that the company has been utilized their assets optimally to be able to obtain large profits. This shows that the company is able to run independently with these assets without requiring external funding. In addition, Khafid et al [5] also states that the assets owned by the company are not necessarily

considered feasible by creditors. This condition will make the company not so easy to obtain debt.

The last conclusion is companies with high levels of liquidity and large company sizes can show the availability of abundant assets, especially the current assets. Management of company assets does not necessarily make the company choose to pledge these assets to obtain debt even though the liquidity ratio indicates the company has the ability to pay its short-term debt.

This research certainly has some limitations. The variables used in this study were only two independent variables and one moderating variable. Further research is expected to add other variables, such as asset structure, firm value, and others. In addition, the research data used is only limited to the manufacturing industry in a short period, namely only from 2018 to 2020. In order to obtain a different view, further research is expected to be carried out on different sectors or on a wider sector and can use longer period in order to better reflect actual conditions.

REFERENCES

- [1] Hasanah, U. (2021). Apa itu Perusahaan Manufaktur: Sistem, Proses, dan Karakteristik. Accessed on 11 Agustus 2022, from <https://greenpermit.id/2021/11/23/apa-itu-perusahaan-manufaktur/>
- [2] Idris, M. (2021). Apa itu Perusahaan Manufaktur: Pengertian, Sistem Kerja, dan from <https://money.kompas.com/read/2021/07/16/235100926/apa-itu-perusahaan-manufaktur-pengertian-sistem-kerja-dan-contohnya>
- [3] Alipour, M., Mohammadi, M. F. S., & Derakhshan, H. (2015). Determinants of Capital Structure: An Empirical Study of Firms in Iran. *International Journal of Law and Management*, 57(1): 53-83.
- [4] Dewi, C. R., & Fachrurrozie. (2021). The Effect of Profitability, Liquidity, and Asset Structure on Capital Structure with Firm Size as Moderating Variable. *Accounting Analysis Journal*, 10(1): 32-38.
- [5] Khafid, M., Prihatni, R., & Safitri, I. E. (2020). The Effects of Managerial Ownership, Institutional Ownership, and Profitability on Capital Structure: Firm Size as the Moderating Variable. *International Journal of Financial Research*, 11(4): 493-501.
- [6] Laisa, A. (2019). Apa yang Anda Ketahui Tentang Pecking Order Theory. Accessed on 17 Agustus 2022, from <https://www.dictio.id/t/apa-yang-anda-ketahui-tentang-pecking-order-theory/120198>
- [7] Astriyani, P., Yohanes, S., & Marwan, A. (2021). The Influence of Liquidity Toward Capital Structure. *E-Jurnal Akuntansi*, 31(11): 2800-2811.
- [8] Wiagustini, N. L. P., Ramantha, I. W., Sedana, I. B. P., & Rahyuda, H. (2017). Indonesia's Capital Structure: Pecking Order Theory or Trade-Off Theory. *International Journal of Applied Business and Economic Research*, 15(16): 119-131.

- [9] Hartoyo, A. K. W., Khafid, M, & Agustina, L. (2014). Faktor-Faktor yang Mempengaruhi Struktur Modal Perusahaan Tekstil dan Garmen di BEI. *Accounting Analysis Journal*, 3(2): 247-254.
- [10] Pratama, H., & Susanti, M. (2019). Pengaruh Profitabilitas, Likuiditas, Struktur Aktiva, Pertumbuhan Aktiva, Ukuran Perusahaan Terhadap Struktur Modal. *Jurnal Multiparadigma Akuntansi*, 1(4): 1076-1084.
- [11] Mujiatun, S., Rahmayati, & Ferina, D. (2021). Effect of Profitability and Asset Structure on Capital Structure (In Sharia Based Manufacturing Companies in Indonesia Stock Exchange in 2016-2019 Periode). *Proceeding international Seminar on Islamic Studies*, 2(1): 4-15.
- [12] Darto. (2021). Determinan Struktur Modal BUMN Konstruksi. *Jurnal Penelitian Universitas Muhammadiyah Jakarta*, 26(2): 59-68.
- [13] Claudia, B. F. (2017). Pengaruh Profitabilitas, Likuiditas Dan Ukuran Perusahaan Terhadap Struktur Modal Pada Perusahaan Manufaktur Sektor Industri Barang Konsumsi Yang Terdaftar Di Bursa Efek Indonesia Periode 2014-2016. *Simki-Economic*, 1(5): 3-18.
- [14] Kurniasari, E., & Listiawati. (2021). Pengaruh Likuiditas, Profitabilitas, dan Struktur Aset terhadap Struktur Modal Perusahaan, *Jurnal Cafetaria*. 2(2): 1-14.
- [15] Ryando. (2021). Pengaruh Profitabilitas Terhadap Struktur Modal pada Perusahaan Pertambangan Sub Sektor Batu Bara yang Terdaftar di Bursa Efek Indonesia Tahun 2012-2017. *Jurnal Ilmiah Manajemen Surya Pasca Scientia*, 10(1): 31-42.
- [16] Rahmiyanti, S., & Nugroho, A. S. (2020). The Effect of Profitability and Liquidity Against Capital Structure (Case Study in Registered Property and Real Estate Sector Companies on The Indonesia Stock Exchange (IDX) Period 2014-2018). *Primanomics: Jurnal Ekonomi dan Bisnis*, 18(1): 1-13.
- [17] Hidayat, V. S., & Debbianita. (2020). The Effect of Profitability and Liquidity Towards the Capital Structure on Retail Companies That Are Listed in Indonesia Stock Exchange in The Period 2014-2015. *Competitive Jurnal Akuntansi dan Keuangan*, 4(1): 106-116.
- [18] Nisfianti. R., & Handayani, N. (2017). Pengaruh Struktur Aktiva dan Profitabilitas terhadap Struktur Modal: Ukuran Perusahaan sebagai Pemoderasi. *Jurnal Ilmu dan Riset Akuntansi*, 6(2): 667-682.
- [19] Mukaromah, D. U., & Suwarti, T. (2022). Pengaruh Profitabilitas, Likuiditas, dan Struktur Aset terhadap Struktur Modal dengan Ukuran Perusahaan sebagai Variabel Moderating. *JIMAT (Jurnal Ilmiah Mahasiswa Akuntansi) Universitas Pendidikan Ganesha*, 13(1): 222-232.
- [20] Astriawati, N. (2016). Penerapan Analisis Regresi Linier Berganda untuk Menentukan Pengaruh Pelayanan Pendidikan terhadap Efektifitas Belajar Taruna di Akademi Maritime Yogyakarta. *Bahari Jogja*, XIV(23): 22-37.