The Influence of Asset Structure and Profitability on Debt Policy in Manufacturing Companies for the Period 2020 - 2022

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Abstract. This study aims to examine the effect of asset structure and profitability on debt policy in manufacturing companies. The method used is descriptive quantitative with the Ordinary Least Squared (OLS) technique. Data collection techniques are carried out through several methods, including documentation and literature studies. The population in this study is a manufacturing company consisting of 5 companies listed on the Indonesia Stock Exchange. The sampling technique uses total sampling, and the data used is panel data (a combination of time series and cross-section data). This study uses a secondary database of each company's annual reports for the period 2020 to 2022. The results showed that asset structure had no effect on debt policy, and profitability had no effect on debt policy on the debt policy of Manufacturing Companies.

Keywords: Capital Structure, Debt Policy, Manufacturing Companies, and Profitability.

1 Introduction

Corporate funding decisions involve decisions on the form and composition of funding [1]. This includes how much debt or equity will be used. In addition, it determines the timing of obtaining debt or equity capital [2]. The need for the necessary funds becomes more significant with the company's development, which is getting bigger and bigger. Thus, in order to meet its funding needs, it is necessary to utilize the company's external sources of funds, one of which is debt [3, 4].

The utilization of external funds in the form of debt contains risk. The greater the risk a company faces, the greater the level of profitability obtained. Conversely, the smaller the company's risk level, the smaller the level of profitability obtained in return for the small risk [5; 6]. Therefore, company management must prioritize maximizing the use of external sources of funds, especially through the use of debt. The capital obtained from debt is intended to provide optimal benefits in carrying out its business operations. A company's profit level is strongly influenced by how much debt is used; the greater the use of debt, the greater the financial responsibility that must be fulfilled [7]. Thus, an evaluation method is needed to assess the extent to which capital derived from debt can create maximum profit [8].

The high utilization of debt is in line with the high level of company risk, so the right way is needed to evaluate the effectiveness of using debt in creating company performance. In carrying out its operational activities, a company needs performance indicators that can reflect the extent of its efficiency. Therefore, company management can use profitability ratios as a means of evaluation to measure the effectiveness of a company's performance. One ratio that is often used is asset structure and return on assets (ROA).

Asset structure, which includes the composition and allocation of investments in a portfolio, can significantly affect the debt policy of a manufacturing company. If a manufacturing company has a stable and profitable asset structure, with investments that generate stable cash flows, the need for additional funding through debt may be lower [9]. Conversely, if the asset structure shows fluctuations or a high level of risk, manufacturing companies may tend to rely on more debt to support their operations. The relationship between asset structure and debt policy, as measured by the debt-to-equity ratio, can be analyzed based on financial theory involving the concept of optimal capital structure [10]. This theory explains how companies, including manufacturing companies, choose the optimal mix of debt and equity to fund their operations and investments. The optimal capital structure theory suggests that there is an optimal level of debt at which firm value is maximized before higher finance costs reduce that value [11]. Therefore, an efficient asset structure can influence debt policy by directing manufacturing companies to achieve an optimal balance between debt and equity to maximize firm value. Previous research findings explain that the amount of fixed assets owned by a company can affect the extent of debt utilization in its operations. The involvement of fixed assets as loan collateral allows businesses with substantial levels of asset ownership to access significant amounts of debt in their activities [12]. Research by [13] also explains that asset structure can affect debt policy. The study shows that companies with a high proportion of fixed assets tend to use more debt. The pecking order theory can explain the results of this study. This theory states that companies prefer to use internal funding sources before external ones. Fixed assets can be used as collateral to get a loan from the bank. Therefore, companies with a high proportion of fixed assets tend to have easier access to loans. However, research by [14] shows that asset structure has no effect on debt policy.

Research by [14] shows that profitability affects debt policy, where companies with high profitability levels will tend to use internal funds so that the company will not need funds sourced from debt. This is also supported by [15], which suggests that companies with high profitability will reduce capital due to reduced debt that can be repaid using the profits generated by the company. With high profitability, companies use retained earnings more to fund company operations. However, research by [16] shows that profitability can weaken the company's debt policy. The study used data on manufacturing companies listed on the Indonesia Stock Exchange during the 2019-2021 period. The results showed that profitability has no significant effect on debt policy directly but has a considerable impact indirectly through dividend policy. Based on the trade-off theory, companies will use debt to lower the cost of capital, but debt can also increase the company's financial risk [17; 18]. Therefore, companies must consider other factors, such as profitability, company growth, and company financial risk, when determining

debt policy. In the case of profitability, companies with high profitability tend to have greater cash flow [19]. Large cash flows can be used to pay debts, so companies do not need to use large amounts of debt [20].

2 Methods

In this study, a combination of descriptive and quantitative methods was used. Reference [21] explains that descriptive research aims to provide a detailed description of the specific details of a situation, environment, or relationship. Quantitative research is a type of research that produces findings that can be achieved through the application of statistical procedures or other quantification methods, with a focus on specific characteristics [22].

This study uses a secondary database of each company's annual reports for the period 2020 to 2022. This study uses debt policy data proxied by Debt to Equity Ratio (DER), asset structure, and profitability proxied by Return on Assets (ROA). The population in this study is a manufacturing company consisting of 5 manufacturing companies. The sampling technique uses total sampling, and the data used is panel data (a combination of time series and cross-section data).

This study uses the Ordinary Least Squared (OLS) method with the following econometric equation:

$$\text{Debt Policy } i.t = \alpha + \beta 1 \text{Asset Structure} i.t + \beta 2 \text{Profitabilitation}.t + \varepsilon i.t \qquad (1)$$

Where α is a constant and β is the regression coefficient. The level of significance used is 5% ($\alpha = 5\%$). The initial stage of the analysis is to test the basic assumptions (normality test using Jarque-Bera) I and classical assumptions (autocorrelation test (using Breusch-Godfrey Serial Correlation LM Test), I and multicollinearity test using VIF). Furthermore, the regression model selection test and regression model estimation are carried out [23].

2.1 Hypothesis Development

Research by [14] shows that asset structure has no effect on debt policy. The results of other studies also show that profitability has no significant effect on debt policy directly but has a significant effect indirectly through dividend policy. Based on the trade-off theory, companies will use debt to reduce the cost of capital, but debt can also increase the company's financial risk [17, 18].

From some of the previous research above, it indicates the influence of rebranding on brand equity, so the hypothesis in this study is:

- H0. There is no influence between asset structure and probability on debt policy in manufacturing companies.
- H1. There is an influence between asset structure and probability on debt policy in manufacturing companies.

3   Results and Discussion

Before calculating the regression model, the normality test of the classical assumption test and the regression model selection are carried out first, with the following results.

3.1   Normality Test

Figure 1 shows the results of the data normality test.
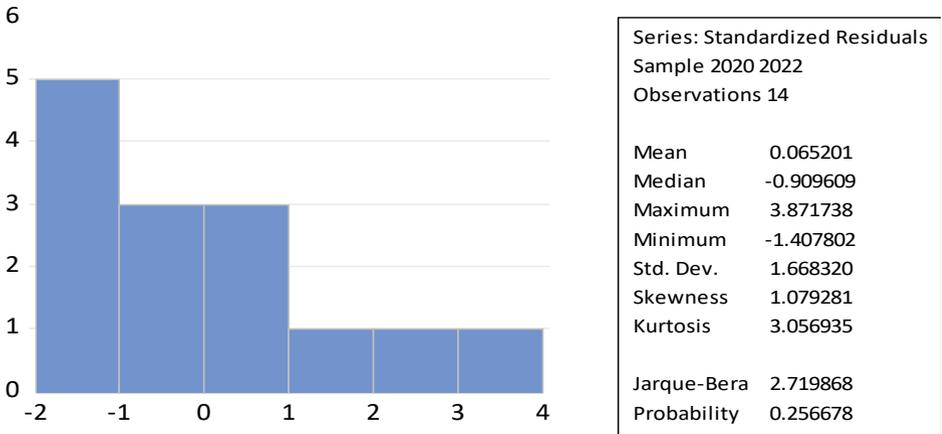

| Series: Standardized Residuals |
| Sample 2020 2022 |
| Observations 14 |

Mean	0.065201
Median	-0.909609
Maximum	3.871738
Minimum	-1.407802
Std. Dev.	1.668320
Skewness	1.079281
Kurtosis	3.056935
Jarque-Bera	2.719868
Probability	0.256678

Fig. 1. Normality test results.

The results of the normality test show that the magnitude of the Jarque-Bera Normality test statistic is 2.7198, with a probability value of 0.256678. Based on this, it can be explained that the empirical model used has residuals or confounding factors that are normally distributed because the probability value with $\alpha = 5\%$ is $0.256678 > 0.05$.

3.2   Classical Assumption Test

Autocorrelation Test.

Autocorrelation means a correlation between members of one observation and other observations at different times. Regarding the least squares method (OLS) assumptions, autocorrelation is the correlation between one residual and another. A critical assumption of the OLS method related to residuals is the absence of a relationship between one residual and another.

By using the help of the Eviews 12 program application, the results of the autocorrelation calculation using the Durbin-Watson value are obtained as shown in Table 1.

Table 1. Autocorrelation test results.

Durbin-Watson stat	Conclusion
2.281223	There is no autocorrelation

From Table 1, the value of d is obtained for each model. This value is then compared with the dL and dU values in the Durbin-Watson table. For $\alpha = 0.05$, k = 3 and n = 15, dL = 0.8140 and dU = 1.7501 are obtained. Since the Durbin-Watson value is between dU and 4-dU ($0.8140 < 1.7501 < 2.281223$), it can be concluded that there is no auto-correlation in the regression model.

Multicollinearity Test.

This study tested for multicollinearity problems by looking at the VIF value, which is as shown in Table 2.

Table 2. Multicollinearity Test Results

Variable	Coefficient Variance	Uncentered VIF	Centered VIF
C	12.48112	121.9301	NA
Profitability	0.000273	1.014774	1.013272
Asset Structure	0.009812	1.098010	1.019933

Table 2 shows that there is no VIF value above 10. Hence, it can be concluded that there is no multicollinearity problem in the regression model.

3.3   Selection of Panel Data Regression Model

This study uses panel data modeling. Panel data consists of several variables, such as cross-section data, but it also has an element of time, as in time series data. There are three methods in the estimation approach for estimating model parameters with panel data: the Pool Least Square-OLS (Common) model, the Fixed Effect model, and the Random Effect model. The following are the results of the testing of the selection of regression models.

Chow Test.

Table 3 shows the results of the Chow test. Based on Table 3, it shows that the Prob. (p-value) Cross section F value is 0.0000. Since the probability (p-value) Cross-section $F < 0.05$, then H0 is rejected, the model used is fixed effect. Because the decision obtained is to use the fixed effect, so proceed with the Hausman test.

Table 3. Chow Test Results

Redundant Fixed Effects Tests			
Equation: Untitled			
Test cross-section fixed effects			
Effects Test	Statistic	d.f.	Prob.
Cross-section F	126.909199	(4,7)	0.0000
Cross-section Chi-square	60.165718	4	0.0000

Hausman Test.

Table 4 shows the results of the Hausman test. Based on Table 4, cross-section random's probability value (p-value) is 0.9462. Based on these data, it can be decided that the random effect model is better than the fixed effect model.

Table 4. Hausman Test Results

Correlated Random Effects – Hausman Test			
Equation: Untitled			
Test cross-section random effects			
Tes Summary	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Cross-section random	0.110602	2	0.9462

Lagrange Multiplier Test.

Table 5 shows the results of the Lagrange Multiplier test. Table 5 shows that the Breusch Pagan value is equal to 0.0002, which is smaller than the alpha value of 0.05. From the results, the right model for panel data regression is the Random Effect Model, which means that H0 is rejected and H1 is accepted.

Table 5. Lagrange Multiplier Test Results

	Test Hypothesis		
	Cross-section	Time	Both
Breusch-Pagan	14.10734	1.804714	15.91205
	(0.0002)	(0.1791)	(0.0001)

3.4   Estimation Results on Regression Model with Random Effect Model Approach

Table 6 shows the results of estimating the effect of asset structure, profitability, and company growth on debt policy in manufacturing companies for the 2020-2022 period.

Based on Table 6, the constant value of the coefficient is known so that it can be formed in the regression equation with the random effect approach as follows:

$$\text{Debt Policy} = 2.252339 - 10.85475 \text{ Asset Structure.} - 1.145385 \text{ Profitability} \quad (2)$$

The equation can be interpreted as follows:

- α is 2.252339, meaning if the asset structure, profitability, and company growth are zero, the debt will be worth 2.252339 units.
- The regression coefficient of the asset structure variable is 1.145385, which means that if there is a change in the increase in asset structure by 1 unit (assuming other variables are constant), then debt will decrease by 1.145385 units.
- The regression coefficient of the profitability variable is -10.85475, which means that if there is a change in profitability increase of 1 unit (assuming other variables are constant), then debt will decrease by -10.85475 units.

Table 6. Regression Estimation Results

Dependent Variable: Debt Policy
Method: Panel Least Squares
Date: 01/04/24   Time: 16:13
Sample: 2020 2022
Periods included: 3
Cross-sections included: 5
Total panel (unbalanced) observations: 14

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	2.252339	0.850214	2.649144	0.0226
Profitability	-10.85475	6.839132	-1.587153	0.1408
Asset_Structure	1.145385	1.766755	0.648299	0.5301
R-squared	0.205025	Mean dependent var		2.055090
Adjusted R-squared	0.060484	S.D. dependent var		1.808188
S.E. of regression	1.752652	Akaike info criterion		4.147547
Sum squared resid	33.78968	Schwarz criterion		4.284487
Log likelihood	-26.03283	Hannan-Quinn criter.		4.134870
F-statistic	1.418458	Durbin-Watson stat		0.589476
Prob (F-statistic)	0.283103			

3.5   Hypothesis Testing

Simultaneous Hypothesis Testing.

The F statistical test indicates whether all independent variables included in the model have a joint (simultaneous) influence on the dependent variable. Table 7 shows the results of simultaneous hypothesis testing.

Table 7. Simultaneous Hypothesis Testing Results

R-squared	0.205025	Mean dependent var	2.055090
Adjusted R-squared	0.060484	S.D. dependent var	1.808188
S.E. of regression	1.752652	Akaike info criterion	4.147547
Sum squared resid	33.78968	Schwarz criterion	4.284487
Log likelihood	-26.03283	Hannan-Quinn criter.	4.134870
F-statistic	1.418458	Durbin-Watson stat	0.589476
Prob (F-statistic)	0.283103		

Table 7 shows that the Prob (F-statistic) value is 0.283103> 0.05; then H0 is accepted, which means that simultaneously, asset structure company profitability has no significant effect on debt policy.

Partial Hypothesis Testing.

The t-test reflects the extent to which the influence of one explanatory or independent variable individually (partially) explains the variation in the dependent variable. Table 8 shows the results of partial hypothesis testing.

Table 8. Partial Hypothesis Testing Results

Variable	Coefficient	Std. Error	t-Statistic	Prob
C	2.252339	0.850214	2.649144	0.0226
Profitability	-10.85475	6.839132	-1.587153	0.1408
Asset_Structure	1.145385	1.766755	0.648299	0.5301

Based on Table 8, it can be seen that:

- The asset structure variable's p-value (sig.) is 0.5301. Due to the Prob. (p-value) > 0.05 (5% significance level) or 0.5301 > 0.05, then H0 is accepted, and it is concluded that asset structure has no significant effect on debt policy.
- The p-value (sig.) of the profitability variable is 0.1408. Due to the Prob. (p-value) > 0.05 (5% significance level) or 0.1408 > 0.05, H0 is accepted, and it is concluded that profitability has no significant effect on debt policy.

3.6   Coefficient of Determination (r2)

The coefficient of determination ($r2$) illustrates how much percentage of the total variation in the dependent variable is explained by the model. The greater the $r2$ value, the greater the influence of the model in explaining the dependent variable.

Table 9. R-squared Results

R-squared	0.147785
Adjusted R-squared	0.067890

Based on Table 9, which is a panel data regression analysis using the random effect model, shows an Adjusted R-squared of 0.067890. Using the random effect model, an Adjusted R-squared of 0.067890 is shown. This indicates that the independent variables of asset structure and company profitability can explain 6.7% of the debt policy level. At the same time, the remaining 93.3% (100 percent - 6.7 percent = 93.3 percent) is described by other variables outside the model that are not included in the study.

4   CONCLUSIONS

4.1   Conclusions

Based on the results of the research and analysis conducted, the following conclusions are obtained:

1. Asset structure has no significant effect on debt policy in manufacturing companies. It means that if there is an increase in the asset structure, the debt policy will not increase.
2. Profitability has no significant effect on the debt policy of manufacturing companies. This means that if there is an increase in profitability, the debt policy will not tend to increase.

Based on points a and b, the debt policy (Debt to Equity Ratio, DER) in manufacturing companies is not influenced by asset structure and profitability. Debt policy is influenced by factors that must be studied further, such as financial market conditions, interest rates, risk-related company policies, and company growth strategies.

4.2   Suggestion

Manufacturing companies can consider debt policy with other related factors. Low interest rates can encourage companies to use debt because borrowing costs are cheaper, but must also be balanced with potential risks. Therefore, manufacturing companies need to conduct an in-depth study of the factors that affect debt policy, including considering the company's sustainability (going concern).

References

1. Gitman, C.J.Z. Principles of Managerial Finance Brief (7th edn, Solutions Manual, Gitman Zutter).
2. Windarsih, E. Pengaruh Keputusan Pendanaan, Kebijakan Deviden, Keputusan Investasi dan Leverage terhadap Nilai Perusahaan. Skripsi, Universitas Muhammadiyah Magelang (2020).
3. Dwi, A.P., Suryani, A.N.I.W. Kebijakan hutang: Struktur aset, profitabilitas dan peluang pertumbuhan. J. Bisnis Akuntansi 22, 211–224 (2020).
4. Muhayatsyah, A. Biaya modal dan biaya hutang dalam keuangan Islam. J. Islamic Accounting Res. 1, 29–50 (2019).
5. Ariefianto, M.D. Peran di tengah pandemi dan kebijakan lanjutan. https://www.kompas.id/baca/opini/2020/08/29/peran-di-tengah-pandemi-dan-kebijakan-lanjutan (2020).
6. Nurkholik, N., Khasanah, K. Pengaruh free cash flow, struktur aset, likuiditas, profitabilitas, pertumbuhan penjualan, dan risiko bisnis terhadap kebijakan hutang. Dinamika Akuntansi Keuangan dan Peran 11, 1–21 (2022).

7. Anisa, B.D. Pengaruh plowback ratio dan keuntungan murabahah terhadap pertumbuhan modal sendiri pada umum syariah periode 2015–2021. Skripsi, UIN Raden Intan Lampung (2023).
8. Kasmir, P. Manajemen Keuangan (Edisi Kedua, Kencana, Jakarta, 2010).
9. Budianto, E.W.H., Dewi, N.D.T. Pemetaan penelitian rasio Dividend Per Share (DPS) pada peran syariah dan konvensional. Al-Mal: J. Akuntansi Keuangan Islam 4, 109–126 (2023).
10. Khan, K.I. et al. Core predictors of debt specialization: A new insight to optimal capital structure. Mathematics 9, 975 (2021).
11. Luu, D.H. The impact of capital structure on firm value: A case study in Vietnam. J. Asian Finance Econ. Bus. 8, 287–292 (2021).
12. Veronisa, F.I., Budiantoro, H., Santosa, P.W., Lapae, K. Pengaruh struktur aset, free cash flow dan pertumbuhan perusahaan terhadap kebijakan hutang dengan profitabilitas sebagai variabel intervening. J. Business Econ. Res. 4, 174–185 (2023).
13. Carlin, E., Purwaningsih, E. Pengaruh struktur aset, profitabilitas, biaya agensi dan pertumbuhan perusahaan terhadap kebijakan hutang. JIIP-J. Ilmiah Ilmu Pendidikan 5, 3121–3133 (2022).
14. Prabowo, R.Y., Rahmatika, D.N., Mubarok, A. Pengaruh struktur aset, profitabilitas, kebijakan dividen, pertumbuhan perusahaan dan ukuran perusahaan terhadap kebijakan hutang. Permana: J. Perpajakan Manajemen Akuntansi 11, 100–118 (2019).
15. Utari, W. Pengaruh faktor internal dan eksternal terhadap kebijakan hutang pada perusahaan BUMN non yang terdaftar di BEI tahun 2012–2017. Skripsi, STIE Perbanas Surabaya (2019).
16. Pidianti, Y. Pengaruh profitabilitas terhadap kebijakan hutang dengan mediasi kebijakan dividen. J. Penelitian Teori Terapan Akuntansi (PETA) 8, 81–95 (2023).
17. Megawati, F.T., Umdiana, N., Nailufaroh, L. Faktor-faktor struktur modal menurut trade-off theory. J. Akuntansi Keuangan (JAK) 26, 55–67 (2021).
18. Umdiana, N., Claudia, H. Analisis struktur modal berdasarkan trade-off theory. J. Akuntansi: Kajian Ilmiah Akuntansi 7, 52–70 (2020).
19. Afiezan, A., Wijaya, G., Claudia, C. The effect of free cash flow, company size, profitability and liquidity on debt policy for manufacturing companies listed on IDX in 2016–2019 periods. Budapest Int. Res. Critics Inst.-J. 3, 4005–4018 (2020).
20. Indriani, M., Napitupulu, H.W. Pengaruh arus kas operasi, tingkat utang, dan ukuran perusahaan terhadap persistensi laba. J. Akuntansi Perpajakan Jakarta 1, 138–150 (2020).
21. Ferdinand. Metode Penelitian Manajemen (Badan Penerbit Universitas Diponegoro, Semarang, 2014).
22. Sujarweni. Metodologi Penelitian Bisnis dan Ekonomi (Pustaka Baru Press, Yogyakarta, 2015).
23. Widarjono, A. Ekonometrika. (2017)