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The Effect of Liquidity on Profitability with Leverage as Mediation in Manufacturing Companies Food and Beverage Subsectors Registered in Indonesia Stock Exchange 2022-2023

Baiq Emi Supiana[1], I Nyoman Nugraha Ardana Putra[2]
[12]Management Study Program, Faculty of Economics and Business, University of Mataram
E-mail:emysupiana31@gmail.com,nyoman.nugraha@unram.ac.id

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Abstract

The manufacturing sector, particularly the food and beverage subsector, contributed 6.61% of Indonesia's GDP in 2023, but faces a liquidity-profitability imbalance amid post-pandemic challenges. This study aims to analyze the effect of liquidity on profitability with leverage as a mediating variable in food and beverage manufacturing companies listed on the Indonesia Stock Exchange (IDX) for the 2022-2023 period. Using a quantitative causal associative approach with an explanatory research design and path analysis, the population included 83 companies, with a purposive sample of 34 companies resulting in 68 observations. Variables measured as the current ratio (CR) for liquidity, debt-to-equity ratio (DER) for leverage, and return on assets (ROA) for profitability were analyzed using EViews 13, including multiple regression, t-test, F-test, and Sobel test. The results showed no significant direct effect of liquidity on profitability ($p=0.1432$) or mediation by leverage (Sobel $Z=0.281$, $p>0.05$), with low explanatory power (Adjusted $R^2=0.004466$). In conclusion, external factors dominate the dynamics of profitability, so efficient asset management is required rather than excess liquidity.

INTRODUCTION

The manufacturing sector plays a vital role in driving national economic growth, with the food and beverage subsector demonstrating high resilience to global economic fluctuations. In Indonesia, this subsector contributed 6.61% to national GDP in 2023 (Central Statistics Agency, 2024). However, companies in this sector face challenges such as rising raw material prices and changes in consumer behavior post-pandemic, which impact the balance between liquidity and profitability (Syahnur, 2023; Purwantoro et al., 2025).

Food and beverage manufacturing companies listed on the Indonesia Stock Exchange (IDX) exhibited significant variations in financial performance during 2022-2023. Several companies, such as PT Mayora Indah Tbk and PT Indofood CBP Sukses Makmur Tbk, experienced increased liquidity, accompanied by a decrease in Return on Assets (ROA). This phenomenon reflects that high liquidity does not always result in optimal profitability, as demonstrated by the mismatch between current asset management and financial performance (Martah, 2021; Anisa et al., 2024).

The mismatch between liquidity and profitability is a crucial issue in the IDX food and beverage subsector, where increasing current assets does not necessarily increase ROA. Previous research has found that liquidity is often not positively correlated with profitability due to inefficient asset management, while leverage can potentially exacerbate the situation through interest expense (Martah, 2021; Lumbantobing & Salim, 2021). Furthermore, fluctuating market

demand and operational cost pressures further complicate this dynamic (Nasution et al., 2024; Syahnur, 2023).

Previous studies tended to be partial, such as examining profitability as a mediator between capital structure and liquidity on firm value, without examining leverage as a specific intermediary between liquidity and profitability. Research by Paramitha (2020) and Lumbantobing and Salim (2021) only addressed separate aspects, leaving gaps in the context of the Indonesian food and beverage subsector. This creates uncertainty for management in formulating optimal financial policies (Paramitha, 2020; Purwantoro et al., 2025).

Reliance on debt to fund operations often creates imbalanced financial risks, particularly when liquidity is not managed efficiently. Economic and managerial perspectives emphasize the need for a balance between liquidity, leverage, and profitability to maintain stability, but empirical findings remain inconsistent in this intensive sector (Syahnur, 2023; Iba & Wardhana, 2024).

This study aims to analyze the effect of liquidity on profitability with leverage as a mediating variable in manufacturing companies in the food and beverage subsector of the Indonesian Stock Exchange (IDX) in 2022-2023, using quantitative path analysis. Its urgency lies in its impact on national food security, employment, and economic policy, where understanding these relationships is crucial for stakeholders and regulators (Nasution et al., 2024; Statistics Indonesia, 2024). Its novelty includes explicitly testing leverage as a mediator in the current context, extending trade-off and pecking order theories, and filling gaps in previous partial studies with new empirical data (Purwantoro et al., 2025; Martah, 2021).

METHODS

The food and beverage manufacturing subsector listed on the Indonesia Stock Exchange (IDX) for the 2022-2023 period is the focus of this study, using a quantitative, causal-associative approach to examine the causal relationship between liquidity (current ratio/CR), leverage (debt-to-equity ratio/DER), and profitability (return on assets/ROA). This study adopts an explanatory research design that emphasizes hypothesis testing through path analysis, as outlined by Sugiyono (2021), who defines causality as the influence of an independent variable on a dependent variable, and Sudaryono (2022), who emphasizes a quantitative approach to empirically measure mediating effects. This approach is consistent with recent financial studies such as Iba and Wardhana (2024) and Purwantoro et al. (2025), which use multiple regression to analyze the financial dynamics of manufacturing companies.

The study population included all 83 food and beverage subsector manufacturing companies listed on the Indonesia Stock Exchange (IDX) during 2022-2023. A sample of 34 companies was selected through purposive sampling based on strict criteria such as the availability of complete financial reports and consistent financial ratio data, resulting in 68 observations (34 companies x 2 years). This purposive sampling technique aligns with Creswell and Creswell's (2023) recommendations for ensuring the relevance of secondary data from IDX annual financial reports, while Emzir (2022) emphasized its effectiveness in causal studies to reduce bias. This criterion has been proven effective in similar studies such as those by Syahnur (2023) and Marthah (2021), which also relied on IDX data for analyzing the financial performance of the food and beverage subsector.

The research variables were measured operationally using standard instruments: liquidity using the formula CR = Current Assets / Current Liabilities, leverage with DER = Total Debt / Total Equity, and profitability through ROA = (Net Profit / Total Assets) x 100%, obtained from

secondary data from the company's financial statements. These instruments follow conventional definitions in the financial literature such as Kasmir (2021) and Sudaryono (2022), with validity tested through classical assumption tests (normality, multicollinearity, heteroscedasticity). Data analysis techniques included descriptive statistics (mean, median, standard deviation) and inferential analysis based on EViews 13 for multiple regression, t-test, F-test, and Sobel mediation test with bootstrapping of 5,000 resamplings, as implemented by Iba and Wardhana (2024) and Purwantoro et al. (2025).

The research procedure was carried out in stages: secondary data collection from the official IDX website (idx.co.id) and Stockbit, followed by data cleaning, classical assumption testing, mediation model estimation (path a: liquidity to leverage; path b: leverage to profitability; path c: direct liquidity to profitability), and hypothesis testing with a p-value <0.05. This procedure aligns with Emzir's (2022) methodological guidelines for causal quantitative research and Creswell and Creswell (2023) which emphasize a logical sequence from sampling to model validation, with empirical support from contemporary studies such as Syahnur (2023) and Nasution et al. (2024). This approach ensures the reliability of the results in testing the insignificant effect of liquidity and leverage on profitability.

RESULTS AND DISCUSSION

Descriptive Statistical Analysis

Table 1. Descriptive Statistical Analysis

	Y	X	M
Mean	3.644085	33.10717	17.95918
Median	0.825	1,585	0.98
Maximum	18.27	489.19	391.2
Minimum	-0.0893	0.017	0.16
Std. Dev.	4.951656	92.26506	65.72376
Skewness	1.457098	3.611612	4.630641
Kurtosis	4.216967	16.4177	24.19383
Jarque-Bera	28.2584	657.9275	1515.691
Probability	0.000001	0	0
Sum	247.7978	2251.288	1221.224
Sum Sq. Dev.	1642,766	570360.4	289414
Observations	**68**	**68**	**68**

Source: Data processed by researchers (2025)

Description:
X: Liquidity
Y: Profitability
Z: Leverage

Table 1 Descriptive statistics show that the Y variable (ROA) has a maximum value of 18.27 and a minimum value of –0.0893, with an average of 3.644085 and a standard deviation of 4.951656, reflecting a fairly high variation in the profitability performance of companies in the

sample. The X variable (CR) shows a very wide data distribution with a maximum value of 489.19 and a minimum of 0.017, followed by an average of 33.10717 and a standard deviation of 92.26506, thus indicating that the company's ability to meet short-term obligations has a very large difference between observations. Furthermore, the Z variable (DER) produces a maximum value of 391.2 and a minimum value of 0.16, with an average of 17.95918 and a standard deviation of 65.72376, indicating a high variation in capital structure among companies. The three variables in this table each have 68 observations, so that the entire series of analyses was conducted with a consistent amount of data in each variable.

Hypothesis Testing

Table 2. Multiple Linear Analysis

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.352498	0.851001	3.939477	0.0002
X1	0.012073	0.008147	1.481942	0.1432
M	-0.006020	0.009961	-0.604385	0.5477
	Effects Specification			
			Elementary School	Rho
Random cross-section			4.406486	0.8138
Idiosyncratic random			2.107946	0.1862
	Weighted Statistics			
R-squared	0.034184	Mean dependent variable		1.167659
Adjusted R-squared	0.004466	SD dependent var		2.120642
SE of regression	2.115901	Sum squared residual		291,0074
F-statistic	1.150296	Durbin-Watson stat		1.988133
Prob(F-statistic)	0.322902			
	Unweighted Statistics			
R-squared	0.066800	Mean dependent variable		3.644085
Sum squared residual	1533.030	Durbin-Watson stat		0.377397

Source: Data processed by researchers (2025)

T-Test Results Analysis (Hypothesis Testing)

a. The Liquidity variable yielded a t-statistic value of 1.4819 with a significance level of 0.1432 (>0.05). Thus, Liquidity does not significantly influence Profitability.
b. The Leverage variable obtained a t-statistic value of -0.6043 with a significance level of 0.5477 (>0.05). This indicates that Leverage does not significantly influence Profitability.

c. The constant has a t-statistic value of 3.9394 with a significance level of 0.0002 (<0.05). This means that when the independent variable is zero, the model still produces a certain profitability value, influenced by factors outside the regression model.

Regression Equation

$$Y = 3.352498 + 0.012073X1 - 0.006020M$$

From the equation above, it can be interpreted that:

a. The constant value of 3.352498 indicates that if CR (X1) and DER (Z) are at zero, then the ROA value as the dependent variable remains at 3.352498. This means that without being influenced by the independent variables, ROA already has a base value of 3.352498.
b. The regression coefficient for variable X1 (CR) is positive at 0.012073, meaning that every one-unit increase in CR will increase ROA by 0.012073, and conversely, a decrease in CR will decrease ROA by the same amount. However, this variable is not statistically significant.
c. The regression coefficient for variable Z (DER) is negative –0.006020, indicating that every one-unit increase in DER will decrease ROA by 0.006020. Conversely, a decrease in DER will increase ROA by that amount. This negative coefficient indicates that the higher the leverage level, the lower the company's profitability.

F Test Results Analysis (Simultaneous):

The F-statistic value in the model is 1.150296 with a Prob level (F-statistic) of 0.322902 (>0.05). Thus, it can be concluded that the CR (X1) and DER (M) variables do not have a significant simultaneous influence on ROA as the dependent variable in this research model.

Analysis of the Results of the Determination Coefficient Test

The Adjusted R-Squared value in the model is 0.004466, which indicates that the independent variables CR (X1) and DER (M) are only able to explain 0.4466% of the variation in changes in ROA as the dependent variable. Thus, 99.5534% of the variation in ROA is influenced by other factors outside this research model.

Mediation regression analysis

Table 3. Mediation Model 1

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	16.51510	8.522896	1.937733	0.0569
X1	0.043618	0.087518	0.498392	0.6199

R-squared	0.003749	Mean dependent variable	17.95918
Adjusted R-squared	-0.011345	SD dependent var	65.72376
SE of regression	66.09553	Akaike info criterion	11.24905
Sum squared residual	288328.9	Schwarz criterion	11.31433
Log likelihood	-380.4677	Hannan-Quinn criter.	11.27492
F-statistic	0.248395	Durbin-Watson stat	0.238459

Prob(F-statistic)	0.619865			

Source: Data processed by researchers (2025)

Table 4. Mediation Model 2

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	3.076978	0.637057	4.829987	0.0000
X1	0.015478	0.006375	2.427842	0.0180
M	0.003045	0.008950	0.340204	0.7348
R-squared	0.086236	Mean dependent variable		3.644085
Adjusted R-squared	0.058120	SD dependent var		4.951656
SE of regression	4.805607	Akaike info criterion		6.020559
Sum squared residual	1501.101	Schwarz criterion		6.118478
Log likelihood	-201.6990	Hannan-Quinn criter.		6.059357
F-statistic	3.067154	Durbin-Watson stat		0.409918
Prob(F-statistic)	0.053347			

Source: Data processed by researchers (2025)

Sobel Test

Based on the model estimation results, the path coefficient a was obtained at 0.043618 with a standard error of 0.087518, while the path coefficient b was recorded at 0.003045 with a standard error of 0.00895. The Sobel calculation produced a statistical value of Z = 0.281. This value is substantially far below the statistical significance limit at the 95% confidence level, which is ±1.96.

These findings indicate that:

$$| Z | = 0.281 < 1.96$$

Thus, the indirect effect of variable X1 on Y through M is not statistically significant. Thus, variable M does not fulfill the role of a mediator in the relationship between X1 and Y. This insignificance indicates that changes in X1 are not transmitted through the mediation mechanism M to affect Y, so that the causal relationship established through the mediator variable is not empirically proven.

CONCLUSION

This study found that liquidity, measured by the current ratio (CR), had no significant effect on profitability (ROA) directly or through leverage (DER) in food and beverage manufacturing companies listed on the Indonesia Stock Exchange (IDX) during the 2022-2023 period. The t-test results showed that each probability value exceeded 0.05 (0.1432 for CR and 0.5477 for DER), while the simultaneous F-test (0.3229) and Sobel test (Z=0.281) confirmed the absence of a mediation effect. The low adjusted R-squared (0.004466) indicated that external factors dominated the variation in ROA. These findings enrich the trade-off theory with empirical

evidence that high liquidity is not optimal amid post-pandemic market fluctuations, consistent with previous studies such as Marthah (2021) and Syahnur (2023).

However, limitations of this study include focusing on only two years of secondary data, which may not capture long-term dynamics, and the use of a sample of 34 companies, which is susceptible to purposive sampling bias. Practical implications encourage financial managers to prioritize asset efficiency over excess liquidity and reduce reliance on leverage to stabilize ROA. Suggestions for future research include expanding the data period, examining moderating variables such as firm size or inflation, and comparative analysis across subsectors for broader generalization, thereby strengthening understanding of financial policy in the Indonesian food and beverage sector.

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