

Original Article

Cash Holding and Leverage as Determinants of Financial Performance: Evidence from Food and Beverage Companies Listed on the Indonesia Stock Exchange, 2022-2024

¹YUNITA ANGGRAINI IMTIYAZ EFENDI, ²ALFI HASANIYAH, ³ISNAIN BUSTARAM, ⁴ADRIANI KUSUMA

^{1,2,3,4}Department of Management, Faculty of Economics and Business, Universities Madura, Pamekasan, Indonesia.

ABSTRACT: *The post-pandemic recovery period confronted Indonesian food and beverage companies with a distinctive combination of recovering demand and elevated input, energy, and financing costs, sharpening the practical importance of corporate liquidity and capital-structure decisions for sustaining profitability. This study empirically examined the partial and simultaneous effects of cash holding and leverage, proxied by the Debt to Asset Ratio (DAR), on financial performance, proxied by Return on Assets (ROA), among food and beverage sub-sector companies listed on the Indonesia Stock Exchange (IDX). From an initial population of 178 listed manufacturing companies, six food and beverage companies with complete, consecutively audited financial statements for the 2022–2024 period were selected through purposive, criterion-based sampling (PT Mayora Indah Tbk, PT Multi Bintang Indonesia Tbk, PT Nippon Indosari Corpindo Tbk, PT Tri Banyan Tirta Tbk, PT Ultrajaya Milk Industry and Trading Company Tbk, and PT Wilmar Cahaya Indonesia Tbk), yielding 18 firm-year panel observations. Secondary data drawn from published annual financial statements were analyzed using multiple linear regression in STATA. The estimated model was $ROA = -8.588 + 0.852(\text{Cash Holding}) + 0.173(\text{Leverage}) + \varepsilon$. Partial (t-test) results indicated that cash holding exerted a positive and statistically significant effect on financial performance ($t = 5.191$, $p = 0.0001$), and leverage likewise exerted a positive and statistically significant effect ($t = 2.283$, $p = 0.037$). The simultaneous (F-test) result confirmed that cash holding and leverage jointly and significantly predicted financial performance ($F = 13.530$, $p = 0.0004$), with the model explaining 64.3 percent of the variance in ROA ($R^2 = 0.643$; adjusted $R^2 = 0.596$). These findings indicate that, within this sample and period, adequate cash reserves enhanced operational flexibility and reduced dependence on external financing, while debt was employed at a level that remained productive, consistent with tax-shield benefits under trade-off theory rather than the financial distress predicted at excessive leverage levels. The results carry practical implications for corporate treasury policy, investment analysis, and capital-market oversight, while the study's modest sample size, short observation window, and single-sector, purposively selected design indicate that its findings should be generalized with appropriate caution pending replication on larger, more diverse, and longer panel datasets.*

KEYWORDS: Cash Holding, Leverage, Debt to Asset Ratio, Financial Performance, Return on Assets, Food and Beverage Industry, Panel Data Regression.

1. INTRODUCTION

The food and beverage industry occupies a strategically important position within Indonesia's manufacturing sector, contributing consistently to non-oil-and-gas manufacturing gross domestic product, employment, investment, and export earnings, and exhibiting comparatively greater resilience to economic shocks than many other manufacturing sub-sectors because its output largely comprises consumer staples. Nevertheless, the post-pandemic global economic environment, characterized by elevated inflation, rising benchmark interest rates, uneven recovery in consumer purchasing power, and continued international supply-chain uncertainty, has introduced new challenges for maintaining financial stability and profitability across this sector. The 2022–2024 period specifically represents an economic recovery phase marked by rising production and consumption activity occurring alongside sustained cost pressures from raw materials, energy, distribution, and the cost of capital, jointly demanding more efficient financial policy to balance liquidity, solvency, and profitability.

Financial performance constitutes the principal indicator by which a company's success in managing its economic resources is assessed, reflecting its capacity to generate profit, enhance firm value, meet obligations to creditors, and deliver adequate returns to shareholders. Under signaling theory, companies exhibiting strong financial performance transmit favorable signals to investors that reinforce market confidence in future prospects, whereas deteriorating performance is typically met with adverse market responses, including declining share prices and reduced investment interest. Among the principal determinants of financial performance examined in the corporate finance literature are cash holding and leverage, both of which speak directly to how a company manages its liquidity and capital structure under uncertainty.

Cash holding refers to the proportion of cash and cash equivalents a company retains to meet operational needs, fund investment, address contingencies, and hedge against economic uncertainty. According to trade-off theory, companies choose an optimal cash level by balancing the liquidity benefits of cash against the opportunity cost of holding non-earning assets; sufficient debt allows enterprises flexibility in operations and ensures they do not rely entirely on external finance, but excess wealth may instead create agency costs since surplus funds would be inefficiently utilized when paid out, whereas shareholders are supposed to use their capacity productively. The significance of this tension is particularly acute in the food and beverage industry where, due to their operational characteristics requiring considerable working capital for raw material purchases, inventory holding costs, labor pay and transportation/ distribution-related expenditures, cash-holding policy has been a more relevant determinant of financial resilience compared to other sectors.

Leverage which is often captured by the Debt to Asset Ratio refers to how much of a company's funding comes through debt. According to trade-off theory, debt utilization can increase firm value from the tax shield that comes with interest deductibility; however, excessive leverage leads a company into bankruptcy risk through larger interest burdens, higher default probability and lower financial flexibility levels. The period between 2022–2024 saw benchmark interest rates increase the cost of borrowing, which has particularly extracted a toll on high-leverage companies, an important dynamic given that much food and beverage company operational and expansion activity is financed with both short- and long-term debt.

Even with an increasing literature base investigating these relationships, empirical results have been remarkably inconsistent. One set of studies finds that cash holding helps increase profitability by reinforcing a firm's ability to absorb uncertainty, while another contends excessive levels of net cash reduce asset-utilization efficacy. In the same vein, while some studies find support for tax-shield-based debt utilization as a driver of performance through capital-structure efficiency, others report negative profitability effects derived from higher interest burdens and risk of bankruptcy associated with increased leverage. Such constant inconsistency represents a true research gap that requires more empirical validation, especially in the course of a post-pandemic recovery phase characterized by pricing and financing conditions that may change the sign or size of these relationships compared to earlier evidence from pre-COVID-19.

This study fills that gap by analyzing the partial and simultaneous influence of cash holding and cash+leverage on food and beverages companies listed on the Indonesian stock exchange (2022 – 2024). This study has three objectives: (1) to analyze the effect of cash holding on financial performance, (2) to analyze the impact of leverage on financial stability, and (3) to analyze the simultaneous effects between cash and leverage holding on financial performance among food and beverage companies listed on the Indonesian Stock Exchange.

2. LITERATURE REVIEW AND HYPOTHESIS DEVELOPMENT

2.1. FINANCIAL PERFORMANCE AND SIGNALING THEORY

As a whole, financial performance reflects the overall efficiency with which an entity uses its assets from all classes to produce income and is often expressed as total revenue or net profit. According to this theory, positive financial information non-mandatory disclosure is an important signal that managers are supposed to send out about the performance of their company, particularly in situations characterized by a distinct asymmetry of Information between shareholders, external investors and management.

2.2. CASH HOLDING: TRADE-OFF AND AGENCY PERSPECTIVES

Prior corporate finance research had documented a large body of theory on the determinants and consequences of cash holding behavior, with analysts framing decisions to hold liquid funds as balancing precautionary versus transactional benefits against opportunity costs associated with liquidity in non-productive assets. Notably, firms with strong growth opportunities and riskier cash flows hold relatively high ratios of cash to assets consistent with a precautionary motive for preserving investment capacity when external financing is costly or unavailable see Almeida et al. 2004, while those that appear more favorably situated in the capital market tend to end up holding lower comparative cash ratios. In contrast, a complementary agency perspective warns that excessive cash beyond operational and precautionary needs generates agency costs as managers may hold surplus earnings to increase managerial discretion rather than maximizing shareholder wealth, an important tension that helps explain the inconsistent positive findings for cash holding on financial performance across studies.

2.3. LEVERAGE: TRADE-OFF THEORY AND CAPITAL STRUCTURE

Capital-structure theory holds that debt financing can enhance firm value through the tax-shield benefit arising from interest deductibility, up to the point at which the marginal benefit of additional debt is offset by the marginal cost of increased financial distress risk. Within this trade-off framework, a moderate, productively deployed level of leverage is expected to support profitability by financing asset expansion and operational capacity, whereas excessive leverage is expected to erode profitability through rising interest obligations and heightened default risk, implying a theoretically ambiguous, context-dependent relationship between leverage and financial performance that must be resolved empirically for any given sector and period.

2.4. INTERRELATION BETWEEN CASH HOLDING AND LEVERAGE

Cash holding and leverage are not independent financial policies but are theorized to interact: firms with higher leverage tend to hold more cash as a precautionary buffer against default risk and cash-flow uncertainty, while firms with lower leverage retain greater flexibility to allocate cash toward productive investment. Recent evidence further suggests that leverage positively influences cash-holding policy, with earnings quality and profitability moderating this relationship through the quality of corporate governance mechanisms, underscoring that liquidity and capital-structure decisions should be understood as jointly determined rather than independently optimized.

2.5. RELATED EMPIRICAL STUDIES AND HYPOTHESIS DEVELOPMENT

Empirical evidence on the cash holding–performance relationship remains mixed: several studies report a positive effect of cash holding on profitability, attributing this to enhanced capacity to withstand economic uncertainty and reduced dependence on costly external financing, whereas other studies report that excessive cash holding reduces asset-utilization efficiency, consistent with agency-cost concerns. Evidence on leverage is similarly divided, with some studies documenting a positive effect via capital-structure optimization and tax-shield benefits, and others documenting a negative effect driven by rising interest burdens and elevated bankruptcy risk, particularly evident in a recent study reporting that leverage negatively and significantly affected the financial performance of Indonesian food and beverage companies listed on the IDX. Based on this body of theory and evidence, the following hypotheses were formulated for empirical testing:

- H1: Cash holding has a significant effect on financial performance.
- H2: Leverage has a significant effect on financial performance.
- H3: Cash holding and leverage simultaneously have a significant effect on financial performance.

3. MATERIALS AND METHODS

3.1. RESEARCH DESIGN

One of the tools used in this research is a quantitative, explanatory study that aims to prove the effects of cash holding and leverage on performance. In line with the stated objectives of this study, multiple linear regression was chosen as the principal analytical technique due to its ability to simultaneously estimate individual and joint effects of two or more independent variables on a single dependent variable.

3.2. POPULATION AND SAMPLE

The sample is taken from 178 manufacturing companies that are listed on the Indonesia Stock Exchange, which includes food and beverage, chemicals, pharmaceuticals, automotive and textiles sub-sectors. Research objects were determined from the population based on a previous Study (ALTO, CEKA, DLTA, ICBP INDF MLBI MYOR ROTI SKBM SKLT STTP ULTJ) a company in food and beverages sub sector. A purposive, criterion-based sampling procedure was subsequently applied, retaining only companies that (1) were consecutively listed on the Indonesia Stock Exchange throughout 2022–2024, (2) published complete audited annual financial statements for the entire observation period, and (3) reported the specific financial-statement line items required to construct the cash holding, leverage, and financial-performance variables. Application of these criteria yielded a final sample of six companies: PT Mayora Indah Tbk (MYOR), PT Multi Bintang Indonesia Tbk (MLBI), PT Nippon Indosari Corpindo Tbk (ROTI), PT Tri Banyan Tirta Tbk (ALTO), PT Ultrajaya Milk Industry and Trading Company Tbk (ULTJ), and PT Wilmar Cahaya Indonesia Tbk (CEKA). Observed over three years (2022–2024), yielding 18 firm-year panel observations. This sampling procedure is more accurately characterized as purposive criterion-based sampling than probabilistic stratified random sampling, since retention in the final sample was determined by data-completeness criteria rather than random selection within strata; this distinction is noted explicitly here as it bears directly on the generalizability of the study's findings, discussed further in Section 6.4.

3.3. DATA SOURCES AND COLLECTION TECHNIQUE

This study relied exclusively on secondary data obtained from audited annual financial statements published on the Indonesia Stock Exchange's official website (www.idx.co.id) and on each sample company's official website. Data collection followed a documentary technique, in which relevant financial-statement line items, namely cash and cash equivalents, total assets, total liabilities, and net income, were traced, recorded, and classified according to the study's variable definitions before being compiled into a structured dataset for statistical analysis.

3.4. VARIABLE DEFINITIONS AND MEASUREMENT

Cash holding (X_1) was measured as cash and cash equivalents divided by total assets, which indicates the share of a firm's asset base that is kept fully liquid to meet operational needs and in case market conditions are unprecedented. Leverage (X_2) was measured as the Debt to Asset Ratio (DAR), calculated by taking total liabilities and dividing it by total assets, which signifies how much a firm is financing its asset base using debt. The dependent variable was financial performance (Y), characterized by the measurement of return on assets (ROA), operating income holding constant total assets, showing how efficiently a firm is utilizing its asset base to generate profit.

3.5. ANALYTICAL PROCEDURE AND HYPOTHESIS TESTING

The data were analyzed using a multiple linear regression model in STATA estimation where $ROA = \alpha + \beta_1 (\text{Cash Holding}) + \beta_2 (\text{Leverage}) + \varepsilon$; α : intercept, β_1 and (β_2) : coefficients for cash holding and leverage, respectively, and ε is the error variable. The partial effect of each independent variable was assessed via the t-test, with an independent variable considered to have a statistically significant partial effect when its p-value fell below 0.05. The joint simultaneous effect of both independent variables was assessed via the F-test, with the overall model considered statistically significant when its p-value fell below 0.05. The model fitting is assessed by both the coefficient of determination (R^2) and adjusted R^2 , reported as a measure of how much variance in financial performance is explained jointly with cash holding and leverage.

4. RESULTS AND DISCUSSION

4.1. DESCRIPTIVE OVERVIEW OF STUDY VARIABLES

The Cash Holding Ratio for each sample firm over the observation period from 2022 to 2024 is illustrated in Table (1). There was also significant cross-sectional variation: PT Multi Bintang Indonesia Tbk (MLBI) and PT Wilmar Cahaya Indonesia Tbk (CEKA) reported relatively high cash ratios in 2024 and 2023, respectively, while generally low cash ratios throughout the period for ALTO indicate very little liquid-asset buffering against the total asset base.

TABLE 1 Cash Holding Ratio by Company, 2022–2024

Company	2022	2023	2024
PT Mayora Indah Tbk (MYOR)	14.64%	17.41%	15.48%
PT Multi Bintang Indonesia Tbk (MLBI)	24.96%	23.42%	30.68%
PT Nippon Indosari Corpindo Tbk (ROTI)	15.19%	13.64%	11.50%
PT Tri Banyan Tirta Tbk (ALTO)	0.13%	0.78%	0.69%
PT Ultrajaya Milk Industry & Trading Co. Tbk (ULTJ)	16.93%	28.90%	27.45%
PT Wilmar Cahaya Indonesia Tbk (CEKA)	6.87%	31.20%	22.30%

Source: Company audited annual financial statements, processed by the author (2026).

Debt to Asset Ratio: The DAR results for each sample company are shown in Table 2. It is notable that ALTO and MLBI had the highest leverage ratios overall years (60–69%), and CEKA the lowest (9–13%), indicative of markedly different capital-structure policies across these firms even though they operated in one same industry sub-sector.

TABLE 2 Debt to Asset Ratio (DAR) by Company, 2022–2024

Company	2022	2023	2024
PT Mayora Indah Tbk (MYOR)	42.38%	35.98%	42.47%
PT Multi Bintang Indonesia Tbk (MLBI)	68.19%	59.16%	61.73%
PT Nippon Indosari Corpindo Tbk (ROTI)	35.09%	31.70%	34.33%
PT Tri Banyan Tirta Tbk (ALTO)	65.90%	67.07%	67.08%
PT Ultrajaya Milk Industry & Trading Co. Tbk (ULTJ)	21.06%	11.12%	17.53%
PT Wilmar Cahaya Indonesia Tbk (CEKA)	9.79%	13.27%	9.20%

Source: Company audited annual financial statements, processed by the author (2026).

Table 3 presents Return on Assets (ROA) for each sample company. MLBI recorded the highest and most consistently improving profitability across the period (27.41–33.19%), while ALTO recorded negative ROA throughout (–1.58% to –2.57%), indicating sustained net losses relative to its asset base despite comparatively high leverage, a pattern discussed further in Section 5.

TABLE 3 Return on Assets (ROA) by Company, 2022–2024

Company	2022	2023	2024
PT Mayora Indah Tbk (MYOR)	8.84%	13.59%	10.32%
PT Multi Bintang Indonesia Tbk (MLBI)	27.41%	31.30%	33.19%
PT Nippon Indosari Corpindo Tbk (ROTI)	10.47%	8.45%	10.22%
PT Tri Banyan Tirta Tbk (ALTO)	–1.58%	–2.57%	–0.56%
PT Ultrajaya Milk Industry & Trading Co. Tbk (ULTJ)	13.03%	15.52%	14.47%
PT Wilmar Cahaya Indonesia Tbk (CEKA)	12.84%	8.01%	9.84%

Source: Company audited annual financial statements, processed by the author (2026).

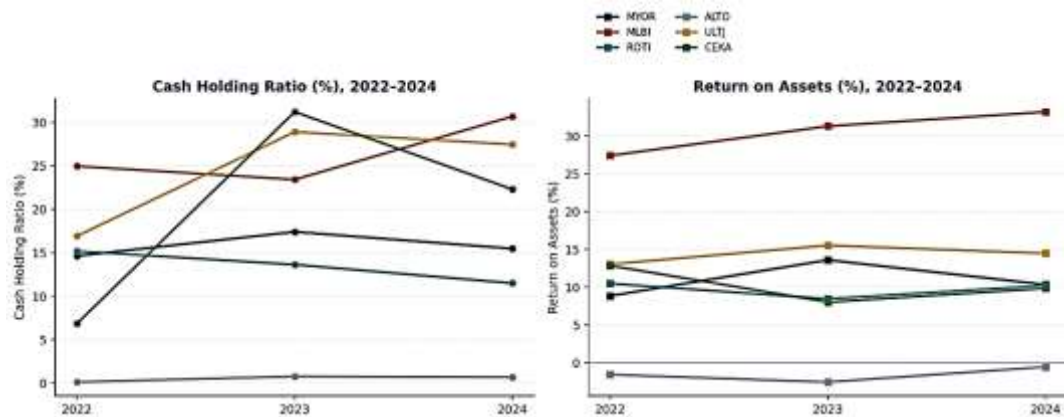


FIGURE 1 Panel Trends in Cash Holding Ratio and Return on Assets, 2022–2024

Source: Author's visualization based on Tables 1 and 3.

4.2. MULTIPLE REGRESSION RESULTS

Table 4 presents the estimated regression coefficients. The resulting model was $ROA = -8.588 + 0.852(\text{Cash Holding}) + 0.173(\text{Leverage})$, indicating that, holding the other predictor constant, each one-unit increase in the cash holding ratio was associated with a 0.852-unit increase in ROA, and each one-unit increase in the leverage (DAR) ratio was associated with a 0.173-unit increase in ROA.

TABLE 4 Multiple Regression Coefficients

Model	B	Std. Error	t	Sig.	Remark
(Constant)	-8.588	4.946	-1.736	0.103	Not significant
Cash Holding (X_1)	0.852	0.164	5.191	0.0001	Significant
Leverage / DAR (X_2)	0.173	0.076	2.283	0.037	Significant

Source: STATA output, processed by the author (2026).

4.3. HYPOTHESIS TESTING

Partial (t-test) results indicate that cash holding exerted a positive and statistically significant effect on financial performance ($t = 5.191 > t\text{-table } 2.131$; $p = 0.0001 < 0.05$), supporting H1. Leverage likewise exerted a positive and statistically significant effect on financial performance ($t = 2.283 > t\text{-table } 2.131$; $p = 0.037 < 0.05$), supporting H2.

The simultaneous (F-test) result (Table 5) indicates that cash holding and leverage jointly exerted a statistically significant effect on financial performance ($F = 13.530 > F\text{-table } 3.682$; $p = 0.0004 < 0.05$), supporting H3.

TABLE 5 F-Test (ANOVA) Results

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	1084.171	2	542.086	13.530	0.0004
Residual	600.988	15	40.066	—	—
Total	1685.159	17	—	—	—

Source: STATA output, processed by the author (2026).

According to the coefficient of determination (Table 6), cash holding and leverage jointly accounted for 64.3 % of the variance in ROA ($R^2 = 0.643$; adjusted $R^2 = 0.596$), while other factors unaccounted for by the current model explained the remaining part (35.7%).

TABLE 6 Model Summary (Coefficient of Determination)

R	R ²	Adjusted R ²	Std. Error of the Estimate
0.802	0.643	0.596	6.330

Source: STATA output, processed by the author (2026).

TABLE 7 Summary of Hypothesis Testing Results

Hypothesis	Test Result	Conclusion
H1: Cash holding affects financial performance	$t = 5.191$; $p = 0.0001$	Supported
H2: Leverage affects financial performance	$t = 2.283$; $p = 0.037$	Supported
H3: Cash holding and leverage jointly affect financial performance	$F = 13.530$; $p = 0.0004$	Supported

5. DISCUSSION

The positive and significant effect of cash holding on financial performance ($\beta = 0.852$, $p = 0.0001$) is consistent with the precautionary and transactional motives for holding liquidity documented in the corporate cash-holding literature, and specifically supports the view that adequate cash reserves confer operational flexibility that reduces dependence on costly external financing, a benefit plausibly amplified during a post-pandemic recovery period marked by volatile input costs and elevated borrowing rates. This finding aligns with prior studies reporting a positive cash holding–performance relationship attributable to enhanced capacity to withstand economic uncertainty, and stands in contrast to studies emphasizing the agency costs of excessive cash retention; within the concentration of cash ratios observed in this sample ranging from below 1 percent at ALTO to above 30 percent at MLBI and CEKA, the results suggest that, at least across this range, the liquidity benefit of cash holding outweighed any offsetting agency-cost concern for these six companies during 2022–2024.

The positive and significant effect of leverage on financial performance ($\beta = 0.173$, $p = 0.037$) is consistent with trade-off theory's prediction that productively deployed debt enhances firm value through tax-shield benefits and expanded operational capacity, provided leverage remains within a manageable range. This finding diverges from a recent study reporting a negative and significant effect of leverage on the financial performance of Indonesian food and beverage companies listed on the IDX, a divergence that may plausibly reflect differences in sample composition, observation period, or the specific leverage levels attained by the sampled firms; it is notable that even the most highly leveraged firms in the present sample (ALTO and MLBI, both exceeding 60 percent DAR) exhibited starkly divergent financial performance ALTO recording persistent negative ROA and MLBI recording the sample's highest ROA indicating that leverage level alone does not determine financial outcomes, and that the productivity of debt-financed assets, rather than the debt ratio in isolation, is likely the more proximate determinant of whether leverage enhances or erodes profitability for an individual firm.

The simultaneous significance of the overall model ($F = 13.530$, $p = 0.0004$) and its substantial explanatory power ($R^2 = 0.643$) indicate that cash holding and leverage jointly constitute meaningful, non-trivial determinants of financial performance within this sample, consistent with the view that liquidity and capital-structure decisions are interrelated components of an integrated financial-management strategy rather than independently optimized policies. The residual 35.7 percent of unexplained variance, however, underscores that other firm-specific and macroeconomic factors not captured in this two-variable model, such as firm size, working-capital efficiency, net profit margin, or prevailing interest-rate and inflation conditions, likely contribute materially to financial-performance outcomes and merit incorporation in future model specifications.

The case of PT Tri Banyan Tirta Tbk (ALTO) merits particular interpretive caution. ALTO combined the sample's lowest cash holding ratio, comparatively high leverage, and persistently negative ROA throughout the observation period, a configuration that, read through trade-off and agency-cost perspectives together, is consistent with a company operating with limited liquidity buffer and debt that has not yet been converted into productive, profit-generating asset deployment; whether this reflects company-specific operational challenges, industry-segment differences (bottled water being a lower-margin segment than dairy or confectionery), or a still-maturing capital structure cannot be determined from the aggregate panel regression alone and warrants firm-level case investigation in future research.

6. CONCLUSION, IMPLICATIONS AND LIMITATIONS

6.1. CONCLUSION

This study demonstrates that, among six food and beverage companies listed on the Indonesia Stock Exchange during 2022–2024, cash holding exerted a positive and statistically significant partial effect on financial performance ($t = 5.191$, $p = 0.0001$), leverage likewise exerted a positive and statistically significant partial effect ($t = 2.283$, $p = 0.037$), and both variables jointly exerted a statistically significant simultaneous effect ($F = 13.530$, $p = 0.0004$), explaining 64.3 percent of the variance in Return on Assets. All three hypotheses (H1, H2, H3) were therefore supported. These findings indicate that, within this sample and period, adequate liquidity management and a productively deployed capital structure jointly functioned as significant determinants of financial performance during the post-pandemic economic recovery.

6.2. THEORETICAL IMPLICATION

The results contribute to the ongoing empirical debate on the cash holding–performance and leverage–performance relationships by providing evidence, specific to the Indonesian food and beverage sector during a distinctive post-pandemic recovery period, that both relationships were positive and significant, aligning with the precautionary-liquidity and tax-shield perspectives of trade-off theory rather than the agency-cost or financial-distress perspectives emphasized in other contexts. The markedly divergent financial outcomes observed among similarly leveraged firms (ALTO and MLBI) further suggest that leverage's effect on performance may be substantially conditioned by asset-utilization efficiency, a relationship meriting explicit theoretical and empirical attention in future work.

6.3. PRACTICAL AND POLICY IMPLICATIONS

For corporate management in this sector, the findings support maintaining cash reserves at a level sufficient to preserve operational flexibility without accumulating idle cash beyond productive need, alongside continued, disciplined use of debt

financing prioritized for capital expenditure that directly enhances operational capacity and efficiency, with short-term liquidity and long-term financing policy managed as an integrated rather than separate set of decisions. For investors and capital-market analysts, the findings suggest that a high leverage ratio should not, by itself, be treated as an unfavorable signal; rather, the productivity of debt-financed assets warrants direct evaluation alongside a company's cash-adequacy position when assessing financial resilience and investment merit.

6.4. LIMITATIONS AND FUTURE RESEARCH

This study is subject to several limitations that should inform the interpretation and generalization of its findings. First, the sample comprises only six companies observed over three years (18 firm-year observations), a modest panel size that, while adequate for the regression procedures applied, constrains statistical power and the precision of the estimated coefficients. Second, the sampling procedure applied was purposive and criterion-based retaining only firms with complete, consecutively audited data, rather than probabilistic random sampling as originally intended in the study's design; this distinction, noted transparently here, means that findings are most directly applicable to companies sharing the sampled firms' characteristics and should not be assumed to generalize to the full population of 178 listed manufacturing companies, or even to the broader twelve-company food and beverage sub-sector, without further verification. Third, the three-year observation window, while capturing the immediate post-pandemic recovery period, is too short to capture longer-run capital-structure dynamics or industry cycles. Fourth, the model excludes external macroeconomic factors such as inflation, benchmark interest rates, and fiscal policy that plausibly moderate the relationships examined. Future research would benefit from expanding the sample across a longer observation window five to ten years, incorporating additional firm-specific control variables such as firm size, working-capital management, and net profit margin, and directly testing whether asset-utilization efficiency moderates the leverage performance relationship suggested by the divergent outcomes observed between ALTO and MLBI in the present sample.

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