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The Effect of Profitability, Leverage, and Firm Size on Income Smoothing in Food and Beverage Companies Listed on the Indonesia Stock Exchange (IDX) for the 2020–2024 Period

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Abstract

Background: Financial performance in the food and beverage sector remained uneven through the pandemic and recovery, creating potential incentives to stabilize reported earnings.
Objective: This study tests profitability, leverage, and firm size as determinants of income smoothing in Indonesian food and beverage firms during 2020–2024.
Methods: Using a causal-comparative quantitative design, secondary financial data from 23 purposively selected firms produced 112 observations. ROA, DAR, log total assets, and the Eckel Index represented the study variables. Logistic regression was used to test the hypotheses.
Results: The three predictors were jointly significant (Nagelkerke R^2 = 0.122). Profitability and leverage were positively significant, while firm size was negatively significant.
Conclusion: The findings indicate that earnings-smoothing behavior varies with profitability, debt exposure, and company scale and provide evidence relevant to assessing financial-reporting quality.

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INTRODUCTION

Corporate profit is a key indicator of financial condition and an important consideration in decisions made by managers, investors, and creditors. It is obtained from the difference between revenue and the costs recognized in an accounting period (Kurnia & Fajarwati, 2022). Fitriyana et al. (2020) also show that profitability is an important factor associated with stock prices in Indonesian consumer-goods firms. Accordingly, the ability to produce earnings remains relevant when the market assesses a company's prospects.

Financial reporting choices can affect how stakeholders perceive corporate performance. Income smoothing is one form of earnings management in which reported profit is made less volatile across periods (Dwiputri et al., 2022). Agency theory explains that the separation of ownership and control may create information asymmetry and managerial discretion (Jensen & Meckling, 1976). Suyono et al. (2023) likewise identify information asymmetry as a condition that can support income-smoothing behavior. Because earnings are commonly used to assess performance and prospects (Gunawan et al., 2023), managers may have incentives to avoid pronounced fluctuations.

The issue becomes more relevant in food and beverage companies after the pandemic. Sector demand has shown resilience, but the financial results of individual firms have not moved uniformly. Such differences can encourage managers to maintain a favorable appearance of performance before investors and creditors. The PT Tiga Pilar Sejahtera Food Tbk (AISA) case demonstrates that reporting pressure can become problematic when governance and monitoring are insufficient.

Evidence concerning profitability, leverage, and firm size as determinants of income smoothing remains mixed. Significant, insignificant, and opposite findings have all been reported. This inconsistency leaves room for further testing, particularly in the food and beverage subsector, whose market characteristics and pandemic resilience may create incentives that differ from those in other industries.

Accordingly, this research tests profitability, leverage, and firm size as predictors of income smoothing in food and beverage firms listed on the Indonesia Stock Exchange over 2020–2024. The period covers pandemic disruption and recovery, making it useful for observing reporting behavior under changing economic conditions. The study contributes additional evidence for agency theory and offers information that may help investors, managers, and regulators evaluate earnings quality.

METHOD

A quantitative causal-comparative design was used. The unit of analysis was food and beverage companies listed on the Indonesia Stock Exchange during 2020–2024. Financial statements and annual reports were retrieved from the IDX and company websites. The period was retained because it includes the pandemic, recovery, and stabilization phases. The subsector was chosen because of its economic importance and competitive but relatively resilient business environment. The analysis focuses on whether differences in profitability, debt dependence, and asset scale are accompanied by different probabilities of income smoothing.

The population consisted of food and beverage firms listed throughout 2020–2024. Purposive criteria required continuous listing, complete annual reports, and sufficient information for all variables. Secondary financial data were used. ROA represented profitability, DAR represented leverage, and firm size was calculated as the natural logarithm of total assets. Income smoothing was classified with the Eckel Index by comparing changes in profit with changes in sales. Observations were arranged by firm and year before estimation.

Documentation of published financial statements was the data-collection technique. A recording sheet captured ROA, DAR, SIZE, and the Eckel classification. After checking and tabulating the observations, descriptive statistics were generated and logistic regression was applied to test the joint and individual effects of the explanatory variables. The findings were interpreted with reference to agency theory and earlier empirical evidence.

RESULTS AND DISCUSSION

The study concerns food and beverage firms listed on the IDX in 2020–2024. According to IDX information, the number of listed firms in this group rose from 60 in 2020 to 97 in 2024. Based on the population definition applied here, 37 processed food and beverage firms were eligible for further selection.

Purposive selection retained firms that satisfied the listing, reporting, and variable-availability requirements. ROA, DAR, the logarithm of total assets, and the Eckel Index were then calculated. The income-smoothing measure was coded as a binary variable: 1 for smoother observations and 0 for non-smoother observations.

The resulting panel consists of 112 firm-year observations. The five-year structure permits comparison of reporting classifications across the pandemic and recovery period while retaining the financial characteristics needed for regression analysis.

Table 1
Summary Statistics for Explanatory Variables

Descriptive Statistics					
	N	Minimum	Maximum	Red	Std. Deviation
LONG	112	-.48878	.94357	.0680652	.14641216
DAR	112	.09110	1.25889	.4295531	.21391686
SIZE	112	24.60427	32.93787	28.7181093	1.77866950
Valid N (listwise)	112				

Source: SPSS 27 Output

For the independent variables, minimum, maximum, mean, and standard-deviation values were reviewed. Income smoothing was summarized by its observed frequencies.

Table 2
Distribution of Income-Smoothing Observations

IS					
		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	Non-Smoother	50	44.6	44.6	44.6
	Smoother	62	55.4	55.4	100.0
	Total	112	100.0	100.0	

Source: SPSS output, processed by researchers (2026)

Income smoothing refers to managerial efforts to reduce visible changes in reported earnings between periods. Possible motives include lowering perceived risk, supporting firm value, meeting contractual expectations, reducing tax-related exposure, and managing political costs (Winanda & Astika, 2021). A smoother earnings pattern can also shape the perceptions of investors and creditors (Shiyammurti & Iklima, 2024).

Table 3
Income-Smoothing Classification by Year

Year	Categories		Total
	Smoother	*Non-Smoother*	
2020	15	7	22
2021	13	10	23
2022	12	9	21
2023	10	13	23
2024	12	11	23
Total Observations	62	50	112
Percentage	55%	45%	100%

Source: data processed by the author

The five-year classification shows that smoother observations were more numerous than non-smoother observations. This pattern indicates that stable earnings presentation occurred repeatedly in the sample. From the agency perspective, information advantages held by managers may provide room to influence reported performance.

Profitability

Profitability reflects a firm's ability to generate earnings from the resources it controls (Rakhmawati & Chunni'mah, 2020). In ratio form, it indicates the efficiency with which assets are used to produce returns; higher profitability generally signals stronger earnings performance (Maotama & Astika, 2020).

Table 4

ROA Statistics by Observation Year

Remarks	Year				
	2020	2021	2022	2023	2024
Minimum Grade	-0.154	-0.269	-0.216	-0.400	-0.489
Maximum Value	0.599	0.204	0.222	0.944	0.196
Mean	0.086	0.053	0.067	0.093	0.043
Standard Deviation	0.138	0.109	0.087	0.220	0.145

Source: data processed by the author

Mean ROA remained positive in every year, ranging from 0.043 to 0.093. Standard deviations varied between 0.087 and 0.220. The positive averages indicate overall profitability, while the negative yearly minima show that some sampled firms recorded losses.

Leverage

Leverage captures the portion of corporate assets supported by liabilities and therefore reflects debt dependence within the capital structure (Prihatin et al., 2023). Greater debt reliance can raise financial exposure because more resources are committed to debt obligations (Saragih & Nurhasanah, 2023).

Table 5

DAR Statistics by Observation Year

Remarks	Year				
	2020	2021	2022	2023	2024
Minimum Grade	0.115	0.108	0.098	0.111	0.091
Maximum Value	0.843	1.259	0.711	0.796	1.044
Mean	0.441	0.457	0.388	0.407	0.452
Standard Deviation	0.175	0.257	0.186	0.198	0.247

Source: data processed by the author

Average DAR varied from 0.388 to 0.457 across 2020–2024, meaning liabilities financed roughly 38.8%–45.7% of assets on average. Standard deviations of 0.175–0.257 show that debt dependence differed considerably among firms and years.

Firm size

Firm size indicates the scale of a company and is commonly represented by total assets (Fahlevi et al., 2023). It provides a broad picture of operating capacity, resources, and the ability to absorb business risk.

Table 6

SIZE Statistics by Observation Year

Remarks	Year				
	2020	2021	2022	2023	2024
Minimum Grade	25.452	25.391	25.351	24.655	24.604
Maximum Value	32.726	32.820	32.826	32.860	32.938
Mean	28.643	28.637	28.838	28.675	28.804
Standard Deviation	1.763	1.739	1.757	1.881	1.895

Source: data processed by the author

SIZE values ranged from 24.6043 to 32.9379 over the observation period. The reported mean was 26.718109 with a standard deviation of 1.7786695, confirming substantial differences in asset scale among the sampled firms.

Discussion

The descriptive evidence shows that the sample was heterogeneous in earnings capacity, debt use, asset scale, and income-smoothing classification. Thus, resilience at the industry level did not translate into identical financial conditions across firms during 2020–2024.

ROA remained positive on average, although its magnitude differed between firms and years. Variation may be related to operating efficiency, cost management, and changes in demand. As noted by Rahmah Fadhillah et al. (2024), profitability reflects the extent to which resources are converted into earnings and can therefore influence how investors view future prospects.

Debt financing was also material for part of the sample. While leverage can support expansion, it increases financial commitments. Setiowati et al. (2023) describe leverage as an indicator of the role of debt in financing assets and operations. Higher obligations can consequently increase managerial concern about demonstrating adequate financial capacity.

The firms differed substantially in asset scale. Larger companies generally have greater access to financing and organizational resources and may have stronger control systems (Luckieta et al., 2021). However, greater visibility can also mean more scrutiny from investors, regulators, and the public.

The Eckel classification identified income smoothing in a considerable number of firm-year observations. This suggests that reducing earnings volatility may be one reporting response available to managers. Beidleman (1973) associated smoothing with the presentation of a more stable performance pattern. Information asymmetry under agency theory can increase managerial discretion in this process.

The joint test confirms that profitability, leverage, and firm size significantly explain income-smoothing behavior. The result indicates that reporting decisions should be viewed in combination with the firm's financial condition. Agency theory provides a relevant explanation because managerial incentives may strengthen when performance expectations, debt commitments, and stakeholder scrutiny operate simultaneously (Jensen & Meckling, 1976).

The joint finding also helps explain the mixed evidence reported in earlier research. For users of financial statements, earnings should therefore be assessed together with profitability, leverage, and firm size. These characteristics may also provide useful context for regulatory monitoring of reporting quality.

Profitability has a significant positive relationship with income smoothing. Firms reporting stronger returns may face expectations to maintain that performance, making large subsequent declines more difficult to present. The result is consistent with Musyafa and Kholilah (2023) and Maris et al. (2025), but differs from Dwiputri et al. (2022) and Triadi et al. (2020), which did not identify a significant effect.

Differences among previous findings may arise from variations in sectors, periods, and economic conditions. In this study, the observation window includes an exceptional period of disruption and recovery. Under such circumstances, highly profitable firms may have stronger reasons to avoid abrupt earnings movements, making profitability both a performance indicator and a possible source of reporting pressure.

Leverage shows a significant positive relationship with income smoothing. Debt-intensive firms must meet financing commitments and may therefore have stronger incentives to avoid sharp movements in reported earnings. The result agrees with Aisyah et al. (2025) and Ulya and Mahardika (2021), while contrasting with Angraeni et al. (2022), Wulandari and Situmorang (2020), and Suwaldiman and Lubis (2023).

For firms observed during the pandemic and recovery, debt exposure may have heightened concern about financial credibility. Accordingly, investors and creditors should evaluate reported earnings together with the firm's financing burden when judging financial strength.

Firm size has a significant negative relationship with income smoothing. Smaller firms were more frequently classified as smoothers, whereas larger firms were less likely to receive that classification. Limited resources and financing alternatives may increase pressure on smaller firms, while the greater visibility of large companies can strengthen external monitoring. The result is consistent with Tiana and Harjanto (2021) and Alfiyah and Lestari (2023), but differs from Musyafa and Kholilah (2023) and Dwiputri et al. (2022).

The study adds evidence from the food and beverage subsector over a period that includes both pandemic disruption and recovery. The results indicate that sector resilience alone does not remove incentives associated with earnings stabilization; reporting behavior differs according to profitability, leverage, and company scale.

The evidence suggests that earnings quality should not be inferred from firm size alone. In the sample, profitability and leverage increase the likelihood of income smoothing, whereas firm size reduces it. These results also support the use of agency theory to interpret the role of information asymmetry and managerial incentives in financial reporting.

CONCLUSION

The study finds that profitability, leverage, and firm size jointly affect income smoothing among Indonesian food and beverage firms observed in 2020–2024. Profitability and leverage show positive significant effects, whereas firm size has a negative significant effect. The pattern indicates that earnings stabilization is associated with both operating performance and financing pressure, while larger scale may coincide with stronger monitoring. The study contributes evidence from the pandemic-to-recovery period and provides a basis for investors, creditors, and regulators to examine earnings quality alongside underlying financial characteristics. Because the model covers one subsector, three explanatory variables, and five years, subsequent studies should consider wider sectors and periods and add factors such as governance, audit quality, ownership, or dividend policy.

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AUTHOR CONTRIBUTION STATEMENT

Muhammad Zharfan Marsyafadhlan contributed to the conceptualization of the research, literature review, methodology, data collection, data processing and analysis, and manuscript preparation. Wiwin Aminah and Brady Rikumahu contributed to research supervision, refinement of the research methodology, and review and evaluation of the data analysis results. All authors provided guidance and feedback throughout the research process and approved the final manuscript.

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