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Income Smoothing Drivers: Evidence from Indonesian Heavy Construction & Civil Engineering Sector

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ABSTRACT: This study investigates the influence of Cash Holding and Financial Leverage, as measured by the Debt to Asset Ratio (DAR), on the practice of Income Smoothing among infrastructure companies in Indonesia. Specifically, it focuses on firms operating in the heavy construction and civil engineering sub-sector listed on the Indonesia Stock Exchange (IDX) during the 2019–2023 period. Employing a quantitative research approach with both descriptive and verification methods, the study examines a total population of 125 financial statements and annual reports from 25 companies over a five-year span. Through purposive sampling, 40 financial reports from 8 selected companies were analyzed to explore patterns and relationships between financial behavior and earnings management practices. The findings aim to provide insight into how liquidity and leverage decisions may relate to managerial efforts to stabilize reported earnings within the capital-intensive infrastructure sector.

Keywords: Cash Holding, Financial Leverage, Income Smoothing.

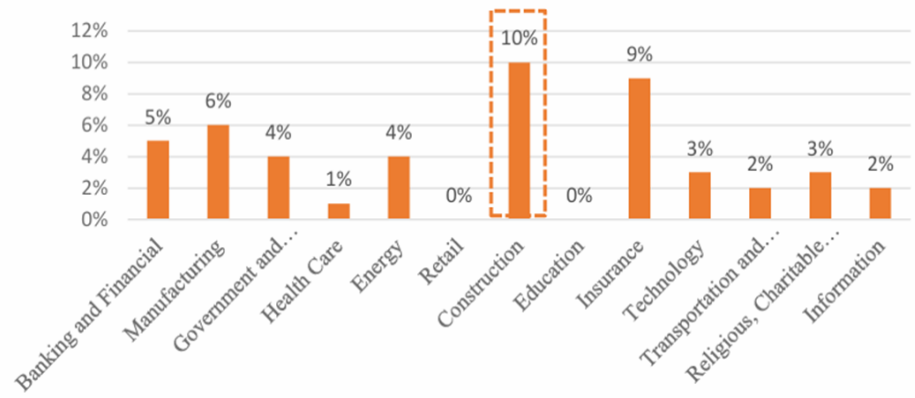
INTRODUCTION

The ongoing global economic slowdown poses significant risks for countries with poor credit ratings, particularly developing nations that rely heavily on debt to finance government expenditures amid declining revenues (Laoli, 2024). Amid these conditions, a growing number of individuals are investing in companies listed on the Indonesia Stock Exchange (IDX), including those in the infrastructure sector, particularly the construction sub-sector (Anindita et al., 2023). Investors are typically drawn to companies with strong performance records and promising future prospects (Adiwidjaja & Tundjung, 2019). In making investment decisions, accurate and reliable information is crucial, as investors aim to generate returns, either through capital gains or dividends (Nursita, 2021). However, incidents of financial reporting fraud remain prevalent across many countries and industries (Putra & Sari, 2021). Numerous companyes are still found to manipulate financial statements, misrepresenting actual conditions. According to the report of (ACFE) in 2024, the construction sector ranks among the highest in terms of reported fraud cases (Lestari &

Henny, 2019). Despite this, the construction industry has demonstrated considerable growth within the IDX.

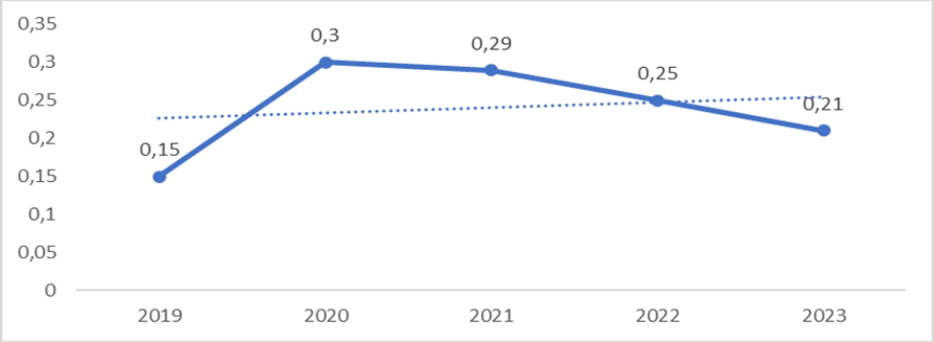
The Ministry of Public Works and Housing forecasts a 4.5% growth in the construction sector for 2024 (Adhito, 2024). Nevertheless, in contrast to these projections, construction-related stocks in Indonesia experienced a decline in mid-2023, primarily due to increased debt burdens and deteriorating financial performance among listed construction firms (Dewi, 2023). One of the managerial actions aimed at enhancing the appearance of financial statements is income smoothing (Choerunnisa & Muslih, 2020). Income smoothing refers to a deliberate effort to reduce earnings volatility, thereby providing a sense of stability and assisting investors in predicting future profits (Agitia & Dillak, 2021). In this context, eight companies were identified as engaging in income smoothing practices. This strategy presents more stable earnings, making the companies appear to have strong performance, which can attract potential investors (Choerunnisa & Muslih, 2020). Income smoothing typically occurs when actual earnings deviate from expected figures.

Figure 1. Comparison of Sectors Engaged in Financial Statement Fraud



Management often engages in this practice to achieve personal or organizational goals, especially when companies offer performance-based incentives such as bonuses tied to profit targets (Bangun & Justin, 2023; Verlianti & Hidayat, 2023). This study employs cash holding and financial leverage as the independent variables, as both exhibited relevant empirical patterns during the data tabulation phase. The liquid nature of cash holding is considered to influence managerial incentives to engage in income smoothing behavior (Adiwidjaja & Tundjung, 2019). The following section presents the cash holding data of infrastructure companies in the Heavy Construction & Civil Engineering sub-sector for the 2019–2023 period:

Figure 2. Average Cash Holding Values of Infrastructure Companies in the Heavy Construction & Civil Engineering Subsector from 2019 to 2023

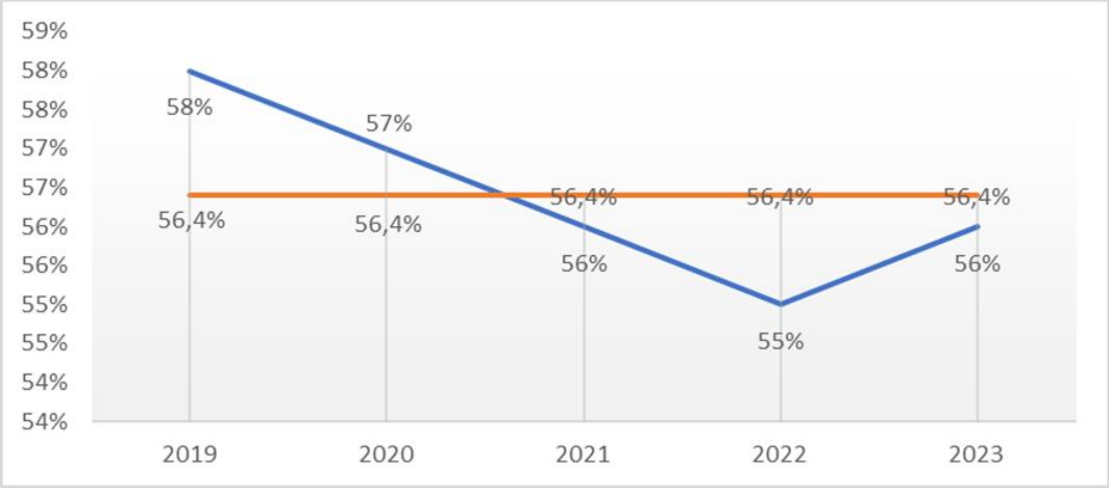


Sumber: annual report, olah data peneliti (2024)

The average value of cash holdings has shown fluctuations with an overall increasing trend. Ideally, a company's cash holdings should remain at a stable or optimal level, as this reflects positively on the company's performance in the eyes of investors (R. Sari & Darmawati, 2021). An upward trend in cash holdings may indicate that the company is not utilizing its cash resources effectively to generate profits. Consequently, a higher cash holding can also suggest a greater tendency for management to engage in income smoothing practices (Afninofia et al., 2023). Previous studies examining the relationship between cash holdings and income smoothing have produced mixed findings. Research conducted by Agitia and Dillak (2021), Ningrum et al. (2021), Haniftian and Dillak (2020), as well as (Nirmanggi & Muslih, 2020) found that cash holdings have a significant impact on income smoothing. On the other hand, studies by Sarjalie, (2019), Afninofia et al. (2023), Sari and Darmawati (2021), and Adiwidjaja and Tundjung (2019) concluded that cash holdings do not significantly influence income smoothing behavior.

Companies are not always capable of financing their investments solely through internal capital, often requiring external funding sources (Aprianti et al., 2024). One potential indicator of income smoothing is a firm's ability to meet its debt obligations using its existing assets (Suhartono & Hendraswari, 2020). A higher level of financial leverage indicates increased risk exposure, which can deter investors and potentially lead to income smoothing as a strategy to maintain financial appearance (Agitia & Dillak, 2021). The following section presents data on the financial leverage Heavy Construction & Civil Engineering sub-sector, for the period 2019–2023:

Figure 3. Average Debt to Asset Ratio (DAR) of Infrastructure Companies in the Heavy Construction & Civil Engineering Subsector from 2019 to 2023



Sumber: annual report, olah data peneliti (2024)

The average Debt to Asset Ratio (DAR) among infrastructure companies in the heavy construction and civil engineering subsector stands at 56.4%, exceeding the industry benchmark of 35% as suggested by Kasmir, (2018). This elevated ratio raises concerns among investors regarding the company's ability to fulfill its debt obligations and comply with debt covenants (Sari & Darmawati, 2021). Prior research conducted by Afninofia et al. (2023), Sari & Darmawati (2021), Indrawan & Damayanthi, (2020), and N. M. Sari & Rudy, (2020) indicated that financial leverage significantly influences income smoothing practices. Conversely, findings from Tiwow et al., (2021), Setyani & Wibowo, (2019), Agitia & Dillak (2021), and Adiwidjaja & Tundjung (2019) reported no significant relationship between these variables, revealing inconsistencies in previous studies. Referring to these conflicting results and the underlying background, this research identifies issues within each examined variable. Firstly, the income smoothing variable demonstrates that some firms engage in earnings management practices.

Secondly, the cash holding variable displays instability, with certain companies experiencing substantial fluctuations. Lastly, the financial leverage variable, represented by the DAR, shows values that surpass the industry standard exceeding 50% indicating a greater reliance on debt financing rather than equity. This study holds significance as it offers insights into how cash holding, financial leverage, and income smoothing collectively contribute to strengthening corporate financial resilience. Furthermore, it provides valuable information to enhance stakeholder confidence and sheds light on the interrelationships among these variables in mitigating financial risks. The novelty of this research lies in its emphasis on the interplay between cash holding, financial leverage, and income smoothing. It also introduces a distinct research locus, focusing on the infrastructure sector specifically the heavy construction and civil engineering subsector, which remains underexplored in the existing literature. Additionally, the study analyzes data over the 2019–2023 period, offering a more current perspective on the subject matter.

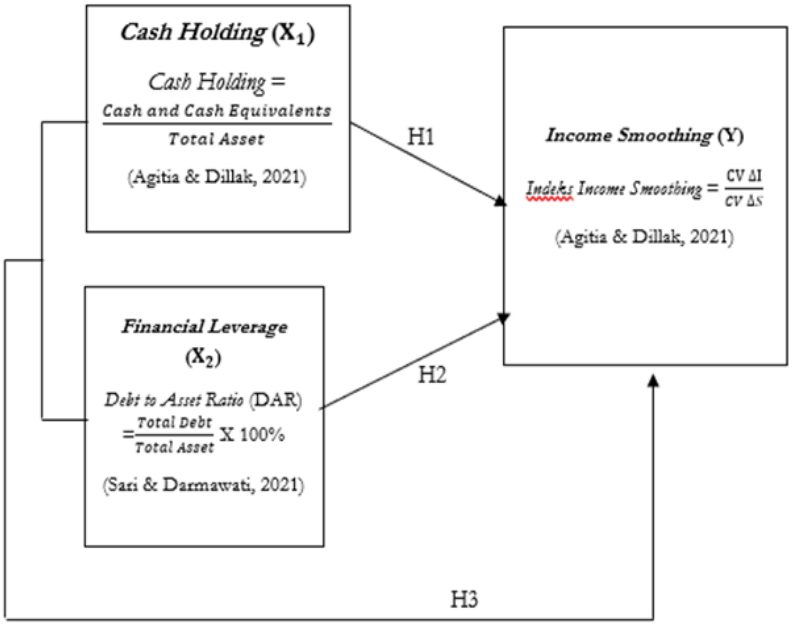
METHOD

The research methodology is a structured set of activities undertaken to explore and verify the truth of a research problem. It begins with the formulation of a research question, which leads to a preliminary hypothesis, guided by insights from prior studies. This process enables researchers to process, analyze, and ultimately derive conclusions from the data (Sahir, 2022). This study employs a quantitative research design with both descriptive and verification approaches. In general, a population refers to the entire group of subjects or objects that share specific characteristics defined by the researcher, from which generalizations can be made (Sugiyono, 2021). According to Abdullah, (2015), when a population is too vast, a representative subset, or sample, must be selected for analysis. The population for this study consists of 125 financial statements and annual reports from 25 infrastructure companies in the heavy construction and civil engineering subsector listed on the Indonesia Stock Exchange between 2019 and 2023.

A sample is defined as a portion of the population selected based on particular characteristics and criteria (Sahir, 2022; Sugiyono, 2021). This study adopts a non-probability sampling technique, specifically purposive sampling. Based on this method, 40 financial reports from 8 infrastructure firms were selected over the 2019–2023 period. These companies include Adhi Karya (Persero) Tbk, Bukaka Teknik Utama Tbk, Nusa Raya Cipta Tbk, Paramita Bangun Sarana Tbk, PP Presisi Tbk, PP (Persero) Tbk, Total Bangun Persada Tbk, and Wijaya Karya Bangunan Gedung Tbk. The dependent variable in this research is income smoothing, measured using the Eckel Index. The independent variables include cash holding (X_1) and financial leverage (X_2), the latter indicated by the debt-to-asset ratio (DAR). Reliable data should be trustworthy, timely, and capable of providing a comprehensive understanding of the research problem (Bahri, 2018).

This research utilizes secondary data sourced from publicly accessible financial reports, which are obtained from the official website of the Indonesia Stock Exchange and the annual reports of the selected companies within the observation period. To validate the suitability of the regression model, classical assumption tests are performed, covering checks for normality of residuals, multicollinearity, autocorrelation, and heteroscedasticity. The core analytical approach employed is multiple linear regression. In addition, correlation analysis is conducted to examine the strength and direction of relationships among cash holdings, financial leverage, and income smoothing practices. The coefficient of determination (R^2) is applied to measure the proportion of variation in the dependent variable that can be explained by the independent variables, with values ranging between 0 and 1. To test the research hypotheses, both partial (t-test) and simultaneous (F-test) significance tests are carried out, assessing the individual and collective influence of the independent variables on the dependent variable.

Figure 4. Research Framework



RESULT AND DISCUSSION

Descriptive analysis serves as the preliminary step in data processing, aiming to provide an overview of the characteristics inherent in the collected dataset. The following section presents the outcomes of the descriptive analysis conducted in this study:

Table 1. Descriptive Statistics of Cash Holding, Financial Leverage, and Income Smoothing

Descriptive Statistics

	N	Minimum	Maximum	Mean	Std. Deviation
Cash Holding	40	0.02	1.47	0.2360	0.29040
Financial Leverage (DAR)	40	0.24	0.86	0.5623	0.17050
Income Smoothing	40	-6.35	3.74	0.5668	1.68363
Valid N (listwise)	40				

Following the descriptive statistics, a series of classical assumption tests were conducted. The normality of the residuals was assessed using the One-Sample Kolmogorov–Smirnov Test, which returned an Asymp. Sig. (2-tailed) value of 0.134. Since this value exceeds the 0.05 threshold, it can be concluded that the residuals follow a normal distribution. Furthermore, multicollinearity diagnostics indicated that both cash holding and financial leverage variables had tolerance values greater than 0.10 (0.876), and VIF values well below the critical limit of 10 (1.141), suggesting that multicollinearity is not present in the regression model.

The heteroscedasticity test results showed significance values of 0.921 for cash holding and 0.732 for financial leverage, both of which are greater than 0.05. Therefore, it can be concluded that there is no heteroscedasticity in this study. Furthermore, the autocorrelation test resulted in a

Durbin–Watson value of 2.206. According to Ghozali (2021), if the Durbin–Watson statistic lies between Du and 4 – Du, no positive or negative autocorrelation is present. In this case, Du = 1.600 and 4 – Du = 2.400; hence, the value of Dw = 2.206 falls within the range (1.600 < 2.206 < 2.400), indicating no autocorrelation. A multiple linear regression analysis was conducted to determine the effect of the independent variables, cash holding and financial leverage, on the dependent variable, income smoothing. The results of the regression coefficient analysis are presented in the following section:

Table 2. Results of Multiple Linear Regression Analysis

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.300	1.094		1.188	0.242
	Cash Holding	0.519	0.997	0.089	0.520	0.606
	Financial Leverage (DAR)	-1.521	1.698	-0.154	-0.896	0.376

a. Dependent Variable: Income Smoothing

The coefficient of determination was utilized in this study to evaluate how effectively the model accounts for variations observed in the dependent variable. The outcomes of this determination analysis are presented below:

Table 3. Determination Coefficient of Cash Holding on Income Smoothing

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.144[a]	0.021	-0.005	1.68795

a. Predictors: (Constant), Cash Holding

The R-Square value of 0.021, or 2.1%, indicates that Cash Holding accounts for only a small portion of the variability in Income Smoothing. This suggests that 97.9% of the variation is attributed to other factors not examined in this research.

Table 4. Determination Coefficient of Financial Leverage on Income Smoothing

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.186[a]	0.034	0.009	1.67602

a. Predictors: (Constant), Financial Leverage (DAR)

The coefficient of determination for Financial Leverage, based on an R-Square value of 0.034 or 3.4%, indicates that the independent variable Financial Leverage explains 3.4% of the variation in the dependent variable Income Smoothing. Meanwhile, the remaining 96.6% is influenced by other factors not examined in this study.

Table 5. Determination Coefficient of Cash Holding and Financial Leverage on Income Smoothing

Model Summary

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	0.204[a]	0.041	-0.010	1.69235

a. Predictors: (Constant), Financial Leverage (DAR), Cash Holding

The coefficient of determination for the independent variables Cash Holding (X_1) and Financial Leverage (X_2), as indicated by the Adjusted R-Square value of 0.010, can be interpreted as effectively zero. Referring to the view of Damodar N. Gujarati (as cited in Yusuf, 2019), a negative Adjusted R-Square suggests that the model lacks explanatory power, and such a value should be treated as zero. Consequently, this implies that the independent variables under consideration fail to account for the variance observed in the dependent variable, namely Income Smoothing.

The partial test results for Cash Holding demonstrate a t-statistic of 0.520, which falls below the critical t-value of 2.026. Since the t-statistic is less than the threshold (0.520 < 2.026), the null hypothesis (H_0) cannot be rejected, whereas the alternative hypothesis (H_a) is not supported. This outcome indicates that Cash Holding does not exert a statistically significant influence on Income Smoothing among infrastructure firms in the Heavy Construction & Civil Engineering subsector listed on the Indonesia Stock Exchange for the 2019–2023 period.

Similarly, the hypothesis test for Financial Leverage yields a t-statistic of -0.896. Taking the absolute value (0.896), it remains below the critical value of 2.026. Thus, since |t| < t-table (0.896 < 2.026), the null hypothesis is accepted, and the alternative is rejected. This suggests that Financial Leverage also lacks a significant effect on Income Smoothing within the same group of companies during the specified timeframe.

Table 6. Results of the F-Test

ANOVA[a]

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	4.580	2	2.290	0.800	0.457[b]
	Residual	105.969	37	2.864		
	Total	110.549	39			

a. Dependent Variable: Income Smoothing
b. Predictors: (Constant), Financial Leverage (DAR), Cash Holding

The results of the F-test reveal that the calculated F value is 0.800, which falls below the critical threshold of 3.25. According to the principles of hypothesis testing, this outcome indicates that the independent variables, when considered collectively, do not exert a statistically significant influence on the dependent variable.

Based on the results of this study, it was found that there is no significant influence of cash holding on income smoothing in infrastructure companies operating in the heavy construction and civil engineering sub-sector listed on the Indonesia Stock Exchange (IDX) during the period 2019–2023. This suggests that whether a company holds a high or low amount of cash, it does not significantly motivate managers to engage in income smoothing practices. In other words, the level

of cash reserves maintained by a firm is not considered a critical factor in determining the stability of the company's reported earnings. Cash holding is perceived more as a flexible asset that can be utilized based on internal company policy and liquidity strategy rather than as a determinant of earnings management behavior. One plausible explanation for this phenomenon is that companies may view cash holding as a short-term liquidity buffer that is influenced by operational cycles and investment requirements rather than a strategic tool for manipulating earnings figures. Furthermore, due to its liquid nature, cash can be easily reallocated or spent depending on corporate needs, such as operational expenses, capital expenditures, or debt repayment. As such, the dynamic character of cash holding may make it an unreliable foundation for income smoothing activities, which are often designed to portray long-term earnings stability.

The COVID-19 pandemic also played a significant role in altering corporate financial behavior during the period under study. The pandemic caused widespread economic disruptions, including in the construction sector, which relies heavily on the continuity of large-scale infrastructure projects. As projects were postponed or halted, companies experienced delays in receivables and declines in cash inflows. Simultaneously, firms still had to cover fixed costs and capital-intensive investments, causing substantial pressure on liquidity. This unstable economic environment severely impacted the cash position of many infrastructure firms. Due to the unpredictable nature of revenue streams and increased operational risk, companies found it difficult to maintain consistent levels of cash holding. In such an uncertain climate, firms were more focused on survival and operational efficiency rather than engaging in earnings management practices such as income smoothing. The practical use of available cash took precedence over discretionary reporting behaviors, reducing the incentive for managers to smooth reported earnings via manipulation.

In addition, the role of investor perception must be considered in understanding why cash holding does not drive income smoothing behavior. From a capital market perspective, investors tend to place more weight on reported earnings and profitability indicators rather than on the company's cash holding status. Investors typically use earnings as the primary measure of a firm's financial performance and long-term viability, while cash holding is often seen as a secondary metric. Therefore, even if a company has volatile or inconsistent cash reserves, there is minimal pressure from investors to smooth income through discretionary accounting practices. This misalignment between investor focus and cash management reduces managerial motivation to engage in earnings smoothing based on cash positions. These findings are consistent with several prior studies that also concluded that cash holding has no significant effect on income smoothing. Studies conducted by Sari & Darmawati (2021), Afninofia et al. (2023), Adiwidjaja & Tundjung (2019), and Sarjalie (2019) support the results of the current research by demonstrating that the cash reserves held by a firm do not necessarily lead to income manipulation or smoothing practices. These authors argue that cash holding is more influenced by operational factors than by managerial intentions for earnings stability.

Conversely, the results of this study differ from findings by Agitia & Dillak (2021), Ningrum et al., (2021), and Haniftian & Dillak, (2020), who reported a significant influence of cash holding on income smoothing. Their studies suggested that cash reserves provide managers with the flexibility to manage reported earnings by timing discretionary expenses or adjusting accruals. However, the current research posits that in the capital-intensive and project-driven construction sector, cash is

too volatile and operationally constrained to serve as a consistent tool for earnings management. With regard to financial leverage, the study also found no significant effect of leverage—measured through the debt-to-asset ratio—on income smoothing. The absence of influence can be attributed to the unique nature of infrastructure firms, particularly those in the heavy construction and civil engineering sub-sector. These companies play a vital role in national economic development and require substantial investment in fixed assets such as machinery, land, buildings, and vehicles to support large-scale operations. Given their high capital requirements, such firms often rely on external financing; however, increasing leverage also escalates the risk of financial distress and default. A higher debt-to-asset ratio implies greater financial risk. Companies with high leverage are often subject to stricter monitoring from creditors and regulatory bodies.

Consequently, these firms are compelled to provide more frequent and transparent financial disclosures to satisfy stakeholder expectations. In such contexts, engaging in earnings manipulation or income smoothing would increase the likelihood of detection and reputational damage. Thus, financial leverage becomes a risky and ineffective tool for income smoothing in this industry. Moreover, firms with elevated debt levels often prioritize debt servicing and compliance with loan covenants over manipulating earnings. The cost of potential penalties or covenant violations outweighs the perceived benefits of presenting a stable earnings profile. Therefore, it is rational for infrastructure companies with high leverage to avoid discretionary accounting practices that might compromise financial transparency. This conclusion aligns with previous research conducted by Tiwow et al. (2021), Setyani & Wibowo (2019), Agitia & Dillak (2021), and Adiwidjaja & Tundjung (2019), who found no significant relationship between financial leverage and income smoothing. These studies also emphasized that in sectors requiring high capital investment, the strategic management of leverage is more focused on funding and risk mitigation rather than on earnings manipulation. On the other hand, this study diverges from findings by Afninofia et al. (2023), Sari & Darmawati (2021), and Indrawan & Damayanthi (2020), who found that higher financial leverage motivates managers to engage in income smoothing to meet debt covenants or maintain credit ratings.

While such behavior may be relevant in other industries, particularly those with more volatile earnings or investor scrutiny, it appears less applicable in the infrastructure sector due to the regulatory, operational, and reputational risks associated with debt management. In conclusion, this study highlights that in Indonesia's heavy construction and civil engineering sector, neither cash holding nor financial leverage significantly influences income smoothing behavior. The unique characteristics of the industry capital intensiveness, regulatory oversight, and the macroeconomic impact of the COVID-19 pandemic have reduced the relevance of these financial indicators as drivers of earnings manipulation. The findings underscore the importance of context when analyzing financial behavior, suggesting that income smoothing is not a one-size-fits-all phenomenon but is shaped by sector-specific dynamics and external pressures.

CONCLUSION

This study examines the influence of Cash Holding and Financial Leverage on Income Smoothing practices in infrastructure companies within the Heavy Construction & Civil Engineering sub-sector listed on the Indonesia Stock Exchange during the period 2019–2023. The findings indicate that neither Cash Holding nor Financial Leverage has a significant impact on Income Smoothing. Descriptive statistics reveal that Cash Holding values fluctuated throughout the study period, reflecting varied cash management efficiency across companies. Meanwhile, Financial Leverage, measured by the Debt to Asset Ratio (DAR), suggests a high dependence on debt financing, with seven out of eight companies exhibiting ratios above the industry average. T-test results show that both Cash Holding and Financial Leverage do not significantly affect Income Smoothing. The coefficient of determination (R^2) values of 2.1% for Cash Holding and 3.4% for Financial Leverage indicate a minimal contribution to explaining Income Smoothing. Moreover, the Adjusted R-Square value of -0.010 demonstrates that, simultaneously, these variables fail to account for variations in Income Smoothing. The F-test further supports this conclusion, with the F-statistic being lower than the critical F-value, confirming the lack of simultaneous influence.

These outcomes suggest that other factors beyond the variables examined may play a more substantial role in Income Smoothing practices within this sector. Regarding financial management, companies with low Cash Holding are advised to optimize financing strategies and postpone major investments, while those with high Cash Holding are encouraged to utilize excess funds for business expansion, human resource development, and operational efficiency. Firms with high leverage ratios should manage debt levels carefully and strengthen equity, whereas those with lower ratios should maintain a balanced asset-liability structure. The prevalence of Income Smoothing indicates the ongoing effort to maintain favorable investor perceptions of corporate earnings. Hence, implementing Good Corporate Governance principles is crucial for enhancing transparency and accountability in financial reporting. Investors are recommended to conduct thorough reviews of financial statements before making investment decisions. Future research should consider expanding sample sizes, extending the study period, and incorporating additional variables to develop a more comprehensive and accurate model.

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