

Financial Ratio Analysis as a Tool for Detecting Financial Statement Misstatements: A Study of Industrial Companies in Indonesia

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Article Info	ABSTRACT
Keywords: Liquidity Ratio, Leverage Ratio, Profitability Ratio, Asset Turnover Ratio, Working Capital Ratio, Financial Statement Misstatements, Random Effect Model.	This study aims to analyze the impact of liquidity ratios, leverage ratios, profitability ratios, asset turnover ratios, and working capital ratios on financial statement misstatements in companies listed on the Indonesia Stock Exchange. The data used is panel data covering 52 companies with two years of observation, namely 2022 and 2023. The regression model used is the random effect model. The results indicate that liquidity ratio (CR) has no significant effect on financial statement misstatements, leverage ratio (DER) has a positive effect on financial statement misstatements, while profitability ratio (ROA) has a negative effect on financial statement misstatements. Furthermore, asset turnover ratio (TATO) and working capital ratio (PER) also have no significant effect on financial statement misstatements. These findings contribute important insights for managerial practice in financial statement management and accounting regulation oversight.
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INTRODUCTION

Financial statement misstatements pose a significant threat to companies worldwide, including those in Indonesia. A survey by ACFE Indonesia revealed a concerning 43.1% misstatement rate in the financial sector, highlighting the prevalence of this issue in Southeast Asia. For industrial companies, such misstatements can damage reputation and threaten national economic stability. These misstatements often manifest as financial statement manipulation, embezzlement, or misleading information presentation. This behavior creates a moral hazard for management and shareholders, eroding investor trust in the company's integrity.

To address this problem, financial ratio analysis has long been recognized as an effective method for detecting potential misstatements or irregularities in financial statements. Ratios such as liquidity, profitability, solvency, and activity ratios can provide a clear picture of a company's financial health and help identify unusual patterns or anomalies. While these ratios are commonly used to assess a company's financial health, few studies have explored their potential as a tool for detecting financial statement misstatements.

In Indonesia, manufacturing and industrial companies face significant challenges in maintaining financial reporting transparency. Lax oversight and limitations in the existing reporting system exacerbate this issue. Despite regulations like the Financial Accounting

Standards (SAK) and oversight by the Financial Services Authority (OJK), cases of financial statement manipulation that harm stakeholders, particularly investors and employees, continue to emerge.

This study aims to explore how financial ratios can be used to detect indicators of misstatements in the financial statements of Indonesian industrial companies. By analyzing changes in financial ratios, this research seeks to determine whether there is a relationship between significant ratio changes and the likelihood of misstatements. Ultimately, this study aims to develop an early detection framework based on financial ratios that can be used by stakeholders to identify potential irregularities before significant losses occur.

Literature Review and Hypotheses Development

The Relationship between Liquidity Ratio and indication of financial statement misstatement

Liquidity ratios are crucial measures of a company's ability to meet its short-term obligations. Ratios like the Current Ratio and Quick Ratio reflect a company's financial health and the level of transparency in its financial reporting. Previous research has shown that companies with strong liquidity ratios tend to be more transparent and less prone to financial statement manipulation (Dalnial et al., 2014).

From an agency theory perspective, there is a conflict of interest between company owners (principals) and management (agents), where management is often under pressure to demonstrate good financial performance. When liquidity ratios are low, this pressure intensifies, motivating management to manipulate financial statements to appear more favorable to shareholders and creditors (Jensen & Meckling, 1976). This explanation is also aligned with the Fraud Triangle framework, which identifies pressure, opportunity, and rationalization as the three primary elements driving misstatements (Cressey, 1953). The pressure of liquidity problems can create opportunities for management to commit misstatements in order to meet external expectations.

H1: Liquidity ratios have a negative impact on financial statement misstatements.

The Relationship between Leverage Ratio and indication of financial statement misstatement

Leverage ratios are another important indicator that can be used to detect potential misstatements in financial statements. Companies with high debt levels often face significant pressure to meet their financial obligations. In the context of agency theory, this pressure stems from the conflict of interest between owners (principals) and management (agents). Management feels the need to demonstrate good financial performance to shareholders and creditors, especially if they have a significant debt ratio. This pressure, if not managed well, can motivate management to manipulate financial statements to improve the perceived performance of the company (Jensen & Meckling, 1976).

H2: Leverage ratio has a positive impact on indicators of financial statement misstatements.

The Relationship between profitability ratio and indication of financial statement misstatement

Profitability ratios, such as Return on Assets (ROA) and Net Profit Margin, are crucial indicators used to assess a company's ability to generate profits. Within the context of agency theory, management that achieves high profitability levels is more likely to feel that they have met shareholder expectations, thereby increasing transparency in financial

reporting. However, according to the Fraud Triangle, the pressure arising from low profitability can motivate management to manipulate financial statements to improve the appearance of net income. This suggests that the pressure of low profitability can increase the risk of financial statement manipulation (Cressey, 1953; Jensen & Meckling, 1976).

H3: Profitability ratio has a negative impact on indicators of financial statement misstatements.

The Relationship between Asset turnover ratio and indicators of financial statement misstatements.

Asset turnover ratio reflects the efficiency of management in utilizing assets to generate revenue. In the context of agency theory, this efficiency demonstrates management's ability to meet shareholder expectations transparently. Conversely, a low asset turnover ratio often reflects management's inability to manage assets, which can motivate the manipulation of financial statements to improve the perception of performance.

Based on the Fraud Triangle, the pressure resulting from poor asset management can create opportunities for management to manipulate financial statements to cover up this inefficiency. Zainudin and Hashim (2016) showed that companies with low asset turnover ratios are more likely to commit misstatements due to their lack of ability to effectively manage their assets. Additionally, Somayyeh (2015) affirms that management's inability to use assets to generate revenue can be an indicator of misstatements. Based on these findings, the following hypothesis can be proposed.

H4: Asset turnover ratio has a negative impact on indicators of financial statement misstatements.

The Relationship between Patient Satisfaction and Patient Loyalty

Based on research conducted by Sofia (2023) at Dental Hospital in Jakarta regarding to patient satisfaction and patient loyalty, it is known that patient satisfaction has a positive effect on patient loyalty. Patient satisfaction and patient loyalty are important pillars for hospital development. According to the previous research, customer satisfaction influences purchasing behavior, where customers who feel satisfied will become loyal. (Normasari et al. 2013). Apart from that, previous research is supported by the research conducted by Astarini and Fachrodji (2023) at Premier Hospital, Bintaro that customer satisfaction has a direct positive and significant effect on loyalty. So, it can be concluded that increasing patient satisfaction will lead the patient to become loyal to healthcare services.

H5: Patient satisfaction influence positively and significantly to patient loyalty.

The Relationship between Service Quality and Patient Loyalty mediated by Patient Satisfaction

Working capital, on the other hand, indicates a company's ability to meet its short-term obligations. In agency theory, adequate working capital reflects efficient management, which can enhance financial reporting transparency. Conversely, companies with low working capital are more susceptible to pressure to meet short-term obligations, which can increase the risk of financial statement manipulation. Diany et al. (2014) stated that low working capital is often associated with financial reporting misstatements due to the company's inability to maintain liquidity. Based on the Fraud Triangle, the liquidity pressure

faced by companies with low working capital can motivate management to manipulate financial statements.

H5: Working capital ratio has a negative impact on indicators of financial statement misstatements.



Figure 1 :Conceptual Framework

RESEARCH METHOD

This quantitative research employs descriptive and correlational methods to analyze the relationship between financial ratios and indicators of financial statement misstatements among Indonesian industrial sector companies. Secondary data, specifically financial statements of industrial sector companies listed on the Indonesia Stock Exchange (IDX) during 2022-2023, is used. This data encompasses information on financial ratios such as liquidity, leverage, profitability, activity, and market ratios. A panel logistic regression analysis using R is conducted on a sample of 104 industrial capital goods companies to identify factors influencing financial statement misstatements in this sector. The study utilizes a total sampling approach to ensure that all companies within the population are included. The analysis involves data collection, exploration, and statistical testing to measure the relationship between independent (financial ratios) and dependent (misstatement indicators) variables. The findings from this research contribute to a better understanding of the factors that contribute to financial statement misstatements in the Indonesian industrial sector.

RESEARCH RESULT

Research Description and Descriptive Analysis

This research aims to analyze the influence of financial ratios on financial statement misstatements in companies listed on the Indonesia Stock Exchange, particularly in the capital goods industry sector. The research sample consists of 104 data points from 52 companies listed on the Indonesia Stock Exchange, covering the period of 2022 to 2023. The data used includes annual financial information from each company listed in the capital goods industry sector.

Table 1 : Descriptive Analysis

Variabel	N	Mean	SD	Median	Min	Max	Range	Skewness	Kurtosis	SE
CR	104	2.75	2.73	1.74	0.11	16.51	16.40	2.60	8.17	0.27
QR	104	1.63	1.76	1.08	0.05	10.65	10.60	3.03	11.45	0.17
DER	104	0.59	1.17	0.32	-2.28	5.68	7.96	2.05	7.52	0.11
TLTA	104	0.45	0.30	0.40	0.02	1.76	1.74	1.72	5.04	0.03
ROA	104	0.04	0.08	0.03	-0.37	0.21	0.59	-2.26	9.73	0.01
NPM	104	-0.01	0.25	0.05	-1.14	0.26	1.40	-3.-3	9.77	0.02
TATO	104	0.97	1.06	0.70	0.01	5.35	5.35	2.71	7.92	0.10
ITO	104	7.62	13.68	3.18	0.00	73.97	73.97	3.22	10.93	1.34
PER	104	31.21	85.40	8.86	-34.64	490.92	525.55	3.92	15.96	8.37
Y	104	0.15	0.36	0.00	0.00	1.00	1.00	1.89	1.59	0.04

The results indicate that the average value of variable Y (Indication of Financial Statement Misstatements) is 0.15, suggesting that approximately 15% of companies in the sample experienced financial statement misstatements. The high positive skewness (1.89) indicates a right-skewed distribution, meaning that most companies did not experience misstatements. Regarding liquidity ratios, the average Current Ratio (CR) is 2.75, with a high standard deviation, indicating significant variation in companies' ability to meet short-term obligations. The positive skewness (2.60) suggests the presence of companies with extremely high liquidity ratios.

For profitability ratios, the average Return on Assets (ROA) is 0.04, indicating relatively low profitability. The negative skewness (-2.26) suggests a distribution heavily concentrated towards lower values. Similarly, the average Net Profit Margin (NPM) is -0.01, indicating that most companies experienced negative profit margins. Regarding activity ratios, the average Total Asset Turnover (TATO) is 0.97, indicating that companies generate almost one unit of revenue for every unit of asset. Finally, the average Price to Earnings Ratio (PER) is 31.21, with a high standard deviation, indicating significant variation in market valuation relative to earnings.

Regression Logistic Data Panel Model

In this research, a model is used to understand the relationship between company financial variables and the presence of indications of financial statement misstatements, considering both individual and time-related effects. In the panel logistic regression model, researchers employ various approaches to evaluate the influence of independent variables on the probability of financial statement misstatements.

The Random Effects Model indicates that liquidity and market valuation are significantly associated with financial statement misstatements. Specifically, a higher Current Ratio ($\beta = 0.0829$, $p < 0.01$) and Total Liabilities to Total Assets (TLTA) ($\beta = 0.5872$, $p < 0.01$) are positively correlated with misstatements, suggesting that companies with greater liquidity and leverage may be more prone to manipulation. While profitability and efficiency ratios, such as Return on Assets (ROA), Net Profit Margin (NPM), Total Asset Turnover (TATO), and Inventory Turnover (ITO), do not exhibit significant relationships with misstatements in this model, the Price to Earnings Ratio (PER) ($\beta = 0.0006$, $p < 0.05$) is

positively associated with misstatements, implying that companies with higher valuations relative to earnings are more likely to engage in manipulative practices.

Table 2: Random Effect Model

Variable	Coefficient	Standard Error	p-value	Significance
Current Ratio (CR)	0.0829	0.0314	0.00502	Significant at 1%
Quick Ratio (QR)	-0.1398	0.0862	0.10753	Not Significant
Debt-to-Equity Ratio (DER)	-0.0857	0.0683	0.25126	Not Significant
Total Liabilities to Total Assets (TL/TA)	0.5872	0.1689	0.0001461	Significant at 1%
Return on Assets (ROA)	-0.11486	0.0874	0.11486	Not Significant
Net Profit Margin (NPM)	-0.0103	0.0313	0.31377	Not Significant
Total Asset Turnover (TATO)	-0.0039	0.0053	0.75429	Not Significant
Inventory Turnover (ITO)	-0.0007	0.0008	0.91511	Not Significant
Price to Earnings Ratio (PER)	0.0006	0.0003	0.03807	Significant at 5%

As shown in the figure, the intercept coefficient of -0.2573 with a p-value of 0.02677 indicates that the constant term has a significant influence on financial statement misstatements. Liquidity ratios reveal that the Current Ratio (CR) exhibits a significant positive correlation with financial statement misstatements. A coefficient of 0.0829 with a p-value of 0.00502 supports this finding, indicating that a higher current ratio is associated with a higher likelihood of financial statement manipulation. Conversely, the Quick Ratio (QR) does not demonstrate a significant influence.

Similarly, leverage ratios show that Total Liabilities to Total Assets (TLTA) has a significant positive impact on financial statement misstatements. A coefficient of 0.5872 with a p-value of 0.0001461 supports this finding. However, the Debt-to-Equity Ratio (DER) does not exhibit a significant relationship. Profitability ratios (ROA, NPM) and efficiency ratios (TATO, ITO) generally do not show a significant influence on financial statement misstatements in this model. The Return on Assets (ROA) with a p-value of 0.11486 and Net Profit Margin (NPM) with a p-value of 0.31377 are not significant. Similarly, Total Asset Turnover (TATO) with a p-value of 0.75429 and Inventory Turnover (ITO) with a p-value of 0.42859 are not significant. These findings suggest that strong financial performance does not necessarily guarantee the quality of financial reporting. The Price to Earnings Ratio (PER) coefficient of 0.0006 with a p-value of 0.03807 indicates a significant positive relationship with financial statement misstatements.

Model Significant Test

In analyzing the results of logistic regression estimation using panel data, one important step is to test the significance of the model used. The significance test aims to assess whether the chosen model can explain a significant relationship between independent and dependent variables, and to ensure that the model provides valid and consistent results. Here are some tests used to assess the significance of the model in this panel data logistic regression analysis:

Chow Test (Poolability Test)

The Chow test was conducted to determine the most appropriate regression model for analyzing the panel data in this study. This test aims to compare the fit between the fixed effects model and the common effects model. The null hypothesis states that the common effects model is better, while the alternative hypothesis states that the fixed effects model is better.

Table 3 : Chow Test

Statistic	Value
Data	$Y \sim CR + QR + DER + TLTA + ROA + NPM + TATO + ITO + PER$
F-Statistic	4.9222
Degrees of Freedom (df1)	51
Degrees of Freedom (df2)	43
p-value	0.0000002131
Alternative Hypothesis	Unstability

The test results show an F-statistic of 4.9222 with a very small significance value (p-value) of 0.0000002131. Based on the 5% significance level, this test provides strong evidence to reject the null hypothesis. Therefore, it can be concluded that the fixed effects model is more appropriate for the analyzed panel data. This indicates significant differences between individuals (companies) in the sample that affect the dependent variable, necessitating a model that can accommodate individual heterogeneity.

Hausman Test

The Hausman test was conducted to determine the most appropriate panel data regression model between the fixed effects model and the random effects model. This test aims to evaluate whether the basic assumption of the random effects model, which states that there is no correlation between the explanatory variables and individual effects, is met.

Table 4 : Hausman Test

	Value
Data	$Y \sim CR + QR + DER + TLTA + ROA + NPM + TATO + ITO + PER$
Chi-Square (chisq)	15.352
Degrees of Freedom (df)	9
p-value	0.08172
Alternative Hypothesis	One model is inconsistent

The null hypothesis states that the random effects model is more appropriate, while the alternative hypothesis states that the fixed effects model is more appropriate. The test results show a chi-square statistic of 15.352 with a significance value (p-value) of 0.08172. Given that the commonly used significance level is 5%, the obtained p-value is higher than this threshold. Therefore, there is not enough statistical evidence to reject the null hypothesis. It can be concluded that the random effects model is more suitable for the analyzed panel data.

Lagrange Multiplier (LM) Test - Breusch-Pagan Test

The Hausman test was conducted to determine the most appropriate panel data regression model between the fixed effects model and the random effects model. This test

aims to evaluate whether the basic assumption of the random effects model, which states that there is no correlation between the explanatory variables and individual effects, is met.

Table 5 : Lagrange Multiplier (LM) Test

Statistic	Value
Data	$Y \sim CR + QR + DER + TLTA + ROA + NPM + TATO + ITO + PER$
Chi-Square (chisq)	16.743
Degrees of Freedom (df)	1
p-value	0.00004279
Alternative Hypothesis	Significant effects

The test results show a chi-square statistic of 15.352 with a significance value (p-value) of 0.08172. Given that the commonly used significance level is 5%, the obtained p-value is higher than this threshold. Therefore, there is not enough statistical evidence to reject the null hypothesis. It can be concluded that the random effects model is more suitable for the analyzed panel data.

Based on the results of the series of statistical tests performed, it can be concluded that the random effects model is the most appropriate model for analyzing the panel data in this study. Both the Chow test and the Lagrange Multiplier (LM) test indicate that the random effects model is better than the pooling model. Additionally, the Hausman test also confirms that the random effects model is more suitable than the fixed effects model. These test results consistently show that individual effects in the panel data are random and not correlated with other explanatory variables, making the random effects model the better choice for estimating the model parameters.

RESULTS AND DISCUSSION

The results of this model show that the liquidity ratio, measured by the Current Ratio (CR), has a positive coefficient of 1.448 with a p-value of 0.160. Although the coefficient suggests a positive relationship, the p-value greater than 0.05 (the commonly used significance threshold) indicates that this result is not statistically significant. Therefore, the first hypothesis (H1), which claims that liquidity ratios negatively affect financial statement discrepancies, is not supported by the data and is rejected.

The logistic regression analysis performed on the model does not provide strong enough evidence to support the hypothesis that an increase in the debt-to-equity ratio (Debt-to-Equity Ratio) will increase the likelihood of discrepancies in financial statements. Although the estimated result shows a positive coefficient of 1.729, indicating a positive trend between the two variables, the significance value (p-value) of 0.257 suggests that this relationship is not statistically significant. In other words, the second hypothesis (H2), which states that leverage ratios have a positive effect on financial statement discrepancies, cannot be accepted based on this model's results.

The analysis shows no sufficient empirical evidence to support the hypothesis that increased profitability, as measured by Return on Assets (ROA), will reduce the likelihood of financial statement discrepancies. Although the estimated result shows a negative coefficient of -29.369, indicating a negative trend between the two variables, the

significance value (p-value) of 0.128 suggests that this relationship is not statistically significant. Thus, the third hypothesis (H3), which claims that profitability ratios negatively affect financial statement discrepancies, is also not supported by this analysis.

The logistic regression analysis performed on the Total Asset Turnover (TATO) variable does not provide enough empirical evidence to support the hypothesis that improving asset utilization efficiency will reduce the likelihood of financial statement discrepancies. The estimated result shows a negative coefficient of -0.235, indicating a negative trend between the two variables, but the very high p-value of 0.848 suggests that this relationship is not statistically significant. Therefore, the fourth hypothesis (H4), which states that asset turnover ratios negatively affect financial statement discrepancies, is not supported by this research.

The logistic regression analysis performed on the Inventory Turnover (ITO) variable does not provide enough empirical evidence to support the hypothesis that improving inventory turnover efficiency will reduce the likelihood of financial statement discrepancies. The estimated result shows a very small coefficient (0.0001247) and a very high significance value (p-value) of 0.999, indicating no statistically significant relationship between the two variables. Therefore, the fifth hypothesis (H5), which claims that working capital ratios negatively affect financial statement discrepancies, is also not supported by this model.

Although the overall analysis shows that most of the financial ratios tested do not have a significant effect on financial statement discrepancies, there are two variables that stand out. The Total Liabilities to Total Assets (TLTA) ratio shows a positive trend toward financial statement discrepancies with a coefficient of 16.559, although the significance value (p-value) of 0.103 is slightly above the common threshold of 0.05. This suggests that companies with a higher level of debt relative to total assets tend to have a higher risk of financial statement discrepancies, but this finding needs to be interpreted with caution as it does not yet reach a very strong level of significance. Additionally, the Price to Earnings Ratio (PER) also shows an interesting trend with a coefficient of 0.021 and a p-value of 0.110, close to the significance level. This finding suggests a possible relationship between market valuation and financial statement discrepancies, but further research is needed to confirm this finding.

CONCLUSION

This study aims to identify the relationship between financial ratios and the tendency of companies to manipulate financial statements. The analysis results indicate that not all financial ratios have the same impact on financial reporting quality. For example, the results of leverage and profitability ratios are particularly notable. The two most prominent ratios in this study are the leverage ratio (TLTA) and the profitability ratio (ROA). The findings reveal that companies with high debt levels (high TLTA) are more susceptible to pressure to manipulate financial statements. On the other hand, companies that are more profitable (high ROA) tend to be more transparent and accurate in their financial reporting. These

findings suggest that a healthy capital structure and strong profitability can serve as a safeguard against unethical accounting practices. In contrast to leverage and profitability ratios, liquidity ratios (CR), asset turnover (TATO), and working capital (NPM) do not show a significant impact on financial statement discrepancies in this study. This indicates that while liquidity and operational efficiency are important for a company's financial health, these factors are not directly related to the tendency to manipulate financial statements.

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