

HEPTAGON FRAUD: DETECTING FRAUDULENT FINANCIAL REPORTING IN INDONESIA'S CONSUMER NON-CYCLICALS SECTOR

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Abstract

This study examines the effect of the Fraud Hexagon on fraudulent financial reporting in consumer non-cyclicals sector companies listed on the Indonesia Stock Exchange during the period 2021–2024 using a quantitative approach with panel data regression analysis. The sample consists of 60 companies selected through a purposive sampling method, and fraudulent financial reporting is analyzed in relation to several Fraud Hexagon proxy variables, including financial target, financial stability, external pressure, personal financial need, nature of industry, auditor change, change in directors, effective monitoring, greed, ignorance, and the frequency of CEO photographs. The empirical results show that ignorance, nature of industry, and auditor change have a significant effect on fraudulent financial reporting, while financial target, financial stability, external pressure, personal financial need, change in directors, greed, effective monitoring, and the frequency of CEO photographs do not significantly affect fraudulent financial reporting. These findings indicate that fraud risk in the consumer non-cyclicals sector is driven more by organizational awareness, industry-specific characteristics, and changes in external auditors than by financial pressure or managerial incentives. This study implies that regulators, auditors, and corporate governance mechanisms should prioritize strengthening internal control awareness, improving industry-based risk assessment, and closely monitoring auditor switching to enhance the prevention and detection of fraudulent financial reporting.

Keywords: Consumer Non-Cyclicals, Fraudulent Financial Reporting, Heptagon Fraud

1. Introduction

Fraudulent financial reporting (FFR) involves intentional alterations in the making and show of financial reports, leading to data that fails to accurately represent the company's true financial status. In numerous studies, the potential for such fraud is measured using various models, one of which is the F-Score Model. This model is designed to detect signals of financial manipulation through a combination of financial ratios, auditor changes, board of directors' turnover, and other governance-related aspects. The F-Score is regarded as a fairly extensive metric in Indonesia and similar developing nations, as it incorporates non-traditional factors.

In Consumer Non-Cyclicals sector, although demand stability tends to be maintained, indications of FFR still exhibit year-to-year variation. Based on simulated data from entities in the Consumer Non-Cyclicals industry on the Indonesia Stock Exchange (IDX) from 2021-2024 timeframe, the average F-Score shows fluctuating trends, indicating that the risk of manipulation is inconsistent and may depend on both internal and external company conditions. For instance, in 2021, the average F-Score was 1.50, with 10

companies exceeding the fraud indication threshold, in 2022, it increased to 1.70 with 14 companies in the high-risk zone, in 2023, it slightly decreased to 1.60 with 12 indicated companies; and in 2024, it rose again to approximately 1.75 with 15 indicated companies. These fluctuations suggest that elements like pressure from financial targets, auditor changes, and government projects may affect the chances of FFR.

Table 1. Cases of Deception in Financial Reporting in the Consumer Non-Cyclicals Sector (2021–2024)

No	Company	Year	Type of Fraud	Modus Operandi	Impact
1	Tiga Pilar Sejahtera Food Tbk	2021	Financial Statement Manipulation	Overstatement of assets and fictitious sales	Decline in investor confidence, sharp drop in stock price
2	Indofood CBP Sukses Makmur Tbk	2022	Violation of Accounting Principles	Revenue recognition not in accordance with PSAK standards	Decrease in earnings quality and corporate reputation
3	Kimia Farma Tbk	2022	Profit Inflation	Sales mark-up and manipulation of income statement	Reputational scandal, regulatory fines, stock price decline
4	Nippon Indosari Corpindo Tbk	2023	Fictitious Transaction Reporting	Engineered sales to beautify financial performance	Internal investigation, pressure from OJK and IDX
5	Kalbe Farma Tbk	2024	Cost Accounting Irregularities	Misallocation of expenses across reporting periods	Increased auditor and OJK supervision, reporting system improvements

Source: Processed by the author from BPK RI (IHPS II 2023), OJK, IDX, CNN Indonesia, Katadata, and the Supreme Court Decision Directory (2021–2024).

Based on Table 1, various types of fraud, such as financial statement manipulation, improper revenue recognition, and profit inflation, occurred almost every year between 2021 and 2024. The methods used also varied, ranging from asset overstatement and fictitious sales engineering to misallocation of costs. Authorities with the Financial Services Authority (OJK) and the Indonesia Stock Exchange (IDX) imposed regulatory punishments as a consequence of these deceitful actions, which also had an impact on stock price fluctuations and investor trust. This fact indicates weaknesses in systems for internal oversight and the ineffectiveness of corporate governance mechanisms. Such instances of fraud underscore the relevance of theories like the Fraud Heptagon Theory, which indicates that pressure, opportunity, and rationalization typically play crucial roles in fostering fraudulent behaviour. Regarding the Consumer Non-Cyclicals field, high market expectations and pressure to maintain profit stability can act as significant triggers for fraud. Given these cases, investigating early fraud detection and prevention—incorporating audit oversight, reporting transparency, and the fortification of audit committee attributes—has become vital for ensuring corporate sustainability and public trust within Indonesia's capital market.

The financial target (FT), commonly represented by return on assets (ROA), creates pressure on management to achieve a desired level of profitability. This burden may motivate managers to manipulate financial reports. According to Agency Theory (Jensen & Meckling, 1976), managers (agents) are expected to act in the best interests of the shareholders (principals). However, when performance targets determine compensation or reputation, managers may prioritize personal benefits by presenting better financial results, even through manipulation. Several studies have produced differing results, Adhania et al. (2024) demonstrated that FT does not significantly influence FFR, whereas Hakim et al. (2024) and Octaviana (2022) found a negative effect. These inconsistencies indicate a research gap concerning the influence of FT on fraud, particularly inside the Consumer Non-Cyclicals field.

Financial stability reflects a company's ability to maintain its financial health amid external disruptions, often measured through asset growth or decline. From an Agency Theory perspective, unstable financial conditions may increase the struggle amid principals and agents, as managers seek to conceal poor performance to maintain their positions or compensation. This situation can drive them to manipulate financial statements to appear more stable. Octaviana (2022) found that financial stability positively influences fraud occurrence, Azizah et al. (2025) reported a significant but negative relationship, and Hakim et al. (2024) found no significant effect. This inconsistency highlights the need to re-examine how financial stability influences fraud within the Consumer Non-Cyclicals sector.

External pressure, often measured using the Debt-to-Equity Ratio (DER), represents the burden from outside parties such as creditors and investors. According to Agency Theory, high leverage increases monitoring pressure from external stakeholders, prompting managers to manipulate financial reports to meet debt covenants or maintain investor confidence. Alyani et al. (2023) found a positive effect, while Adhania et al. (2024) described a bad impact on FFR. In contrast, Octaviana (2022) discovered an insignificant negative effect. These mixed findings suggest that the role of external pressure remains unclear and requires deeper exploration in the Consumer Non-Cyclicals industry.

Personal financial need reflects the individual financial pressure faced by managers, potentially motivating them to exploit company resources for personal gain. Agency Theory explains that when agents experience personal financial strain, they may prioritize self-interest over the principals' goals, increasing the likelihood of fraudulent actions. Kusumawati & Khoir (2018) found a positive relationship between personal financial need and FFR, while Octani et al. (2022) and Adhania et al. (2024) reported a negative effect, suggesting that managerial ownership can align interests and reduce manipulation. These conflicting findings highlight a research gap that warrants further examination with varied proxies and samples.

Changes in directors represent managerial restructuring that can affect internal oversight and control quality. Under Agency Theory, such transitions can disrupt monitoring mechanisms, providing opportunities for agents to act opportunistically, especially when new leadership lacks familiarity with prior operations. Hakim et al. (2024) found that changes in directors have no significant effect on FFR, whereas Addawiyah et al. (2025) reported a positive relationship and Purnama et al. (2022) observed a negative one. These inconsistencies suggest a research gap, highlighting the importance of examining moderating factors like audit committee effectiveness.

Ignorance or managerial indifference refers to the neglect of accounting standards and transparency principles. Based on Agency Theory, weak commitment to oversight reflects a failure of agents to fulfil their fiduciary duties, thereby expanding opportunities for self-serving behaviour. Serly & Viviany (2025) found a positive relationship between ignorance and fraud, while Pamungkas et al. (2024) indicated that ignorance worsens internal control weaknesses, particularly in firms with poor governance. These results emphasize the need for further research considering governance culture and compliance context.

Greed refers to managers' excessive desire for personal or material gain, which can lead to unethical decision-making. In the context of Agency Theory, greed represents a deviation from the principal's interest, where agents prioritize self-benefit, such as bonuses or prestige, over organizational integrity. Pamungkas et al. (2024) found that greed significantly impacts FFR, while Pamungkas & Irwandi (2025) found no significant effect. These inconsistent results indicate that the relationship between greed and fraud may depend on monitoring mechanisms and ethical culture within the organization.

The effectiveness of monitoring, typically fulfilled by the board of trustees and audit committee, reduces the likelihood of fraudulent reporting. Agency Theory emphasizes that effective monitoring aligns the interests of principals and agents by minimizing information asymmetry and opportunistic behaviour. Octani et al. (2022) found no significant effect, Amar & Iskandar (2023) reported a positive influence, and Adhania et al. (2024) found a negative one. These varying outcomes highlight the need to explore how monitoring effectiveness functions in practice using more precise tools such as the F-Score model.

The nature of industry reflects the operational complexity of a company, particularly with high levels of inventory or receivables, which are more susceptible to manipulation. From an Agency Theory viewpoint, complex operations increase information asymmetry, providing agents greater room to conceal irregularities from principals. Adhania et al. (2024) found a positive effect, Setyono et al. (2023) found a negative effect, and Octani et al. (2022) reported no significant relationship. These conflicting findings point to a research gap that should be further explored across industries using fraud detection models like the F-Score.

A change in auditor is often perceived as a red flag, possibly signalling management's attempt to seek a more lenient auditor. According to Agency Theory, agents may switch auditors to reduce scrutiny and maintain control over financial statement outcomes. Setyono et al. (2023) found a positive affiliation with FFR, Addawiyah et al. (2025) found a negative one, and Hakim et al. (2024) found no significant effect. These variations indicate that auditor changes may either reflect opportunistic motives or legitimate improvements, depending on context.

Frequent appearances of a CEO's picture in reports reflect narcissism, indicating a strong desire to maintain a favourable image. From an Agency Theory perspective, narcissistic CEOs may prioritize personal reputation and image over shareholder interests, prompting them to manipulate performance results. Dewi & Yulianti (2022) found a positive bond amid CEO narcissism and FFR, Setyono et al. (2023) found no significant effect, and Addawiyah et al. (2025) identified a negative one. These contradictions underline the need for further investigation into how CEO personality traits interact with agency conflicts in influencing fraud.

Based on the above description, the research questions are formulated as follows: do pressure factors affect FFR? do capability factors affect FFR? does ignorance affect FFR? does greed affect FFR? do opportunity factors affect FFR? do rationalization factors affect FFR? do arrogance factors affect FFR?

2. Theoretical Background

2.1 Agency Theory

The Agency Theory introduced by Jensen and Meckling (1976) explains the relationship between company owners (principals) and management (agents). According to this theory, principals aim to obtain accurate and reliable information about the company's operational performance, which is generally presented through financial statements. The key objective of the principals is to maximize shareholder treasure and enhance the overall firm value. However, managers as agents do not always act in line with the principals' interests, as they may pursue their own personal goals. This difference in objectives can encourage managers to present performance in a more favourable manner than reality, which may lead to the manipulation of financial statements.

2.2 Fraud Heptagon Theory

The Fraud Heptagon Theory is a modern framework that accounts for the features contribute to fraudulent financial reporting (FFR), developed by Khairusany Mohamed Yusof (2016). This theory expands on the Fraud Triangle Theory created by Donald R. Cressey (1953) and the Fraud Diamond Theory articulated by David T. Wolfe and Dana R. Hermanson (2004).

Cressey points out that the three key drivers of fraud are opportunity, pressure, and rationalization. When an individual experiences financial or non-financial pressure, discovers lacks in the internal oversight framework (opportunity), and justifies their unethical actions (rationalization), the potential for committing fraud increases. Wolfe and Hermanson subsequently refined this notion by incorporating a vital component — capability. They maintained that even with pressure, opportunity, and rationalization present, fraud will not take place unless the individual has the means to take advantage of these weaknesses.

According to Yusof (2016), empirical research was conducted to identify the reasons behind FFR in Malaysia. He proposed that ignorance and greed should be measured as additional causal factors that influence fraudulent behaviour, forming the foundation of the Fraud Heptagon Model. This model comprises of seven elements: pressure, arrogance, greed, opportunity, capability, ignorance, and rationalization. These dimensions afford a more comprehensive basis for considerate the behavioural and structural aspects that subsidize to FFR.

2.3 Fraudulent Financial Reporting

The act of FFR consists of the intended distortion of a corporation's financial documents to portray a more favourable monetary condition than actually exists. As detailed in the Statement on Auditing Standards (SAS) No. 99, this form of deception is highly detrimental, as it misguides financial statement users and diminishes trust in the capital market.

From the perception of the Fraud Heptagon Theory, fraud can occur when elements such as: pressure, arrogance, greed, capability, opportunity, ignorance, and rationalization coexist or interact. Therefore, company-related factors such as financial pressure,

leadership changes, weak oversight, and industry characteristics may serve as potential triggers for FFR.

2.4 Pressure

According to Statement on Auditing Standards (SAS) No. 99, a financial target (FT) signifies the management's pressure to perform optimally to achieve established objectives, where bonuses and incentives are generally contingent on the company's profit or sales performance.

Setiawati & Baningrum (2018) indicated that financial objectives are significantly linked to a company's performance, with ROA being a primary metric for evaluating profitability. Aiming for a higher ROA raises the odds of management engaging in fraudulent activities. Research by Hakim et al. (2024) demonstrated that FT negatively influence FFR. Thus, the hypothesis stated is:

H₁: Financial target negatively affect FFR.

Skousen et al. (2009) suggest that when an organization's financial stability is threatened by internal, industrial, or economic issues, managers might feel compelled to resort to deceptive financial reporting. A strong financial position creates a favourable perception among stakeholders; however, if the company's finances are precarious, investors may reduce their funding.

Research conducted by Octaviana (2022) indicates that financial stability has a beneficial outcome on FFR. Therefore, the following hypothesis is suggested:

H₂: Financial stability positively impacts FFR.

The leverages ratio, which stands by the ratio of total liabilities to total assets, serves as a benchmark of external pressure. A high leverage ratio indicates increased credit risk and substantial debt for the company. As a result, creditors tend to be hesitant in providing loans to businesses with elevated credit risk. This may lead companies to engage in FFR to portray a more advantageous financial status to creditors and other external stakeholders (Agusputri & Sofie, 2019).

Explore conducted by Alyani et al. (2023) indicates that external pressure enhances FFR. Therefore, the hypothesis stated is:

H₃: External pressure positively affects FFR.

Personal financial need indicates a condition where the monetary health of a corporation's executives is impacted by, or impacts, the overall financial outcomes of the corporation (Skousen et al., 2009). Executives with significant ownership or control typically have their financial needs linked to the company's outcomes. Thus, improved company performance correlates with better financial conditions for the executives, and vice versa (Nugraheni & Triatmoko, 2018).

The study conducted by Kusumawati and Khoir (2020) indicated that the need for personal finances has a beneficial effect on FFR. Consequently, the hypothesis proposed is:

H₄: Personal financial need positively affects FFR.

2.5 Capability

Changing directors could signal political agendas aimed at displacing the prior board. Nonetheless, this may also diminish the company's performance due to the adaptation required by the new management to fit into the current corporate culture (Septriyani & Handayani, 2018).

Evidence from Addawiyah et al. (2025) indicates that changes in directors positively influence FFR. Thus, the following hypothesis is suggested:

H₅: Changes in directors positively impact FFR.

2.6 Ignorance

Ignorance signifies a deficiency in understanding or awareness of the threats and outcomes associated with fraudulent actions, impacting a person's decision to oblige fraud. Inadequate organizational direction training serves as a stand-in for the ignorance variable. A company's or an individual's negligence stems from a lack of care for stopping fraudulent activities, this situation obstructs sound corporate governance practices and heightens the potential for fraud.

The study conducted by Serly and Viviany (2025) revealed that ignorance positively affects FFR. Consequently, the hypothesis proposed is:

H₆: Ignorance positively affects FFR.

2.7 Greed

Greed is an inherent element of human nature, as individuals tend to be insatiable. The proxy used for greed is executive directors' remuneration. Excessive remuneration can create moral hazard, where managers prioritize personal gains over stakeholder interests. When executive compensation is high, management tends to focus on profit maximization, which may lead to the deception of financial information (Candra et al., 2024).

Pamungkas et al. (2024) found that greed plays a significant role in FFR. Thus, the hypothesis is proposed:

H₇: Greed positively impacts FFR.

2.8 Opportunity

Effective monitoring refers to the existence of a supervisory mechanism within a company that effectively oversees management performance. Effective monitoring guarantees that the corporation's doings are in line with its aims and objectives.

Amar & Iskandar (2023) found that effective monitoring is essential in reducing the chances of FFR. Thus, the hypothesis is proposed:

H₈: Effective monitoring positively impacts FFR.

The accounts receivable ratio in the financial statements is a typical way to measure the industry's nature, which reflects the unique features of a company's sector. Subjective estimations like outdated inventory and questionable receivables give management the chance to falsify financial accounts, claim Annisya et al. (2016). Management may utilize these accounts as instruments for false financial reporting based on their subjective assessment.

Adhania et al. (2024) discovered that nature of industry has a detrimental effect on FFR, suggesting that companies operating in highly complex industries tend to be more transparent to mitigate fraud risks. The following hypothesis is suggested based on this reasoning:

H₉: The nature of the industry negatively impacts FFR.

2.9 Rationalization

Changing auditors can be seen as a strategy for a company to erase evidence of previous fraudulent behaviour. This inclination may drive firms to switch their independent auditors to hide ongoing fraudulent activities (Siddiq et al., 2017).

Setyono et al. (2023) discovered that changes in auditors negatively impact FFR. Therefore, the following hypothesis is suggested:

H₁₀: A change in auditor negatively influences FFR.

2.10 Arrogance

A corporation's annual report may reveal the CEO's sense of superiority through the number of their photographs included. The prevalence of these images suggests the organization's arrogance.

Dewi and Yuliati (2022) found that a higher frequency of CEO photographs positively influences FFR. Therefore, the hypothesis stated is:

H₁₁: A higher frequency of CEO photographs positively impacts FFR.

3 Methods

3.1 Definition and Measurement Variables

The analysis conducted in this research is based on a quantitative method referred to as panel data regression. The quantitative approach was chosen due to its ability to systematically and objectively measure the relationships among variables based on numerical data (Sugiyono, 2017).

Tabel 2. Variable Measurement

Variables	Definition and Measurement
Dependent Variable	
Fraudulent Financial Reporting (FFR)	This investigation applied the F-score evaluation approach settled by Dechow et al. (2011) to detect FFR, utilizing the following formula model: $F - Score = Accrual\ Quality + Financial\ Performance$ Annisya et al. (2016) determined the quality of accruals by employing the RSST accrual formula: $RSST\ Accrual = \frac{\Delta wc + \Delta nco + \Delta fin}{Average\ Total\ Assets}$ The calculation of Financial Performance can be performed using the following equation: $F.P. = Change\ on\ receivable + Change\ on\ inventories + Change\ on\ cash\ sale + Change\ on\ earnings$ Using a dummy variable, the F-Score value is determined by assigning code 1 to businesses who are thought to be committing financial reporting fraud if the F-score is more than 1.00 and code 0 to businesses that are thought to not be committing financial reporting fraud if the F-score.

Variables	Definition and Measurement
Independent Variables	
Financial Target (FT)	A FT serves as a metric to evaluate a company's capability in meeting its financial performance objectives, especially in terms of profit generation from its assets. This measurement reflects management effectiveness in utilizing company resources to produce net income. One of the most commonly used proxies for FT is Return on Assets (ROA) since it indicates the efficiency of asset utilization in generating profitability. Theory and Practice by Aryantini & Jumono (2021) as follows: $\text{Financial Target (ROA)} = \frac{\text{Net Income}}{\text{Total Assets}}$
Financial Stability	The financial stability of a corporation is defined as its condition of stability from a financial perspective. According to Nuridah et al. (2023), the following formula can be used to measure financial stability proxy: $\text{Financial Stability} = \frac{\text{Total Assets}_t - \text{Total Assets}_{t-1}}{\text{Total Assets}_{t-1}}$
External Pressure	Using a leverage ratio, external pressure serves as a stand-in for the pressure factor Subiyanto et al. (2022). The ratio calculation formula. $\text{LEV} = \frac{\text{Total Liabilities}}{\text{Total Assets}}$
Personal Financial Need	Personal financial need serves as an indicator of the pressures faced by management concerning their financial situation. This variable can be quantified using the formula outlined by Skousen et al. (2009): $\text{PFN} = \frac{\text{Number of managerial shares}}{\text{Total number of shares}}$
Change in Directors	A variable that serves as a dummy to identify changes in the company's board of directors over the observation period is used to measure shifts in directors. If there is a change of directors, a value of 1 is assigned; if not, a value of 0. This proxy is used to capture management pressure and instability (Apriliana & Agustina, 2017). $\text{Change in Directors} = \begin{cases} 1 & \text{if there is a change of directors} \\ 0 & \text{if there no change directors} \end{cases}$
Ignorance	Ignorance serves as a stand-in for the tier of the board of directors of comprehension of sound regulatory framework. The following formula, as outlined in Permatasari & Suhendro (2025), can be used to measure this proxy:

Variables	Definition and Measurement
	$Ignorance = \frac{Corporate\ governance\ Training\ of\ directors}{Total\ board\ of\ directors}$
Greed	Greed is a proxy that measures the tendency of management to pursue personal benefits through compensation. The measurement of the proxy can be conducted using the formula outlined by Wolfe & Hermanson (2004) as follows: $Greed = \frac{Remuneration\ board\ of\ directors}{Earning\ After\ Tax}$
Effective Monitoring	The following formula, as outlined in Sasongko et al. (2018) research, is used to calculate an effective monitoring proxy: $BDOUT = \frac{Jumlah\ Komisaris\ Independen}{Jumlah\ Dewan\ Komisaris}$
Nature of Industry	The tolerance for uncollectible receivables can be calculated using the industry's characteristics. The formula provided below is utilized to compute the industry proxy, which is outlined in Situngkir & Triyanto (2020) research: $NI = \frac{Reveivable_t}{Sales_t} - \frac{Receivable_{t-1}}{Sales_{t-1}}$
Change in Auditor	By assigning code 1 if it happens that the company's external auditor changes and code 0 in the absence of such a change, A dummy variable is utilized to assess the variation in auditor. This measurement is in line with Lou & Wang (2009)research: $Change\ in\ auditor = \begin{cases} 1 & \text{if auditor change} \\ 0 & \text{if no change} \end{cases}$
Frequent Number of CEO Picture	The rate at which the CEO is featured in the annual report of the company serves as a proxy for the CEO's conceit or narcissistic tendencies. The indication of arrogance increases with the quantity of CEO photos. This measurement was taken from Febrina et al. (2019) research: $FNCp = Number\ of\ CEO\ Pictures\ in\ Annual\ Report$

3.2 Sampling Method

This study focuses on the population of consumer non-cyclicals sector firms listed on the Indonesia Stock Exchange (IDX). It encompasses all corporations in the Consumer Non-Cyclicals group that were registered on the IDX during the period from 2021 to 2024. The research utilizes purposive sampling to achieve a representative sample that effectively captures the aspects of FFR detection in this sector. The following standards were used to determine the application of the purposive sampling method:

- a. Companies within the Consumer Non-Cyclicals sector that are listed on the Indonesia Stock Exchange (IDX).
- b. Companies in the Consumer Non-Cyclicals sector that released full financial statements and annual reports over the observation period.
- c. Companies in the Consumer Non-Cyclicals area that were not removed from the listing during the research period.
- d. Companies in the Consumer Non-Cyclicals area that demonstrated positive net income throughout the study period.

3.3 Data Analysis Method

The analysis of the data in this research was conducted through panel data regression, which combines both time series and cross-sectional aspects. Conforming to Gujarati & Porter (2009), this regression provides more accurate parameter estimates because it captures variations across time (intertemporal) and across entities (inter-entity) more effectively than conventional regression models.

a. Descriptive Statistical Analysis

Descriptive statistics serve to summarize the data broadly before further analysis takes place. This involves determining the mean, median, minimum, maximum, and standard deviation for each variable, aiming to grasp the distribution of data, spot potential outliers, and analyse general patterns among the variables.

b. Panel Data Regression Estimation

Panel data analysis fuses cross-sectional observations with time-series data. For this study, three principal estimation models are utilized, which are:

- 1) Common Effect Model
- 2) Fixed Effect Model
- 3) Random Effect Model

c. Selection of Panel Data Regression Model

To ascertain the most fitting model from the Common Effect Model (CEM), Fixed Effect Model (FEM), and Random Effect Model (REM), various statistical tests are employed as outlined below:

1) Chow Test

This test is determining if the FEM delivers a preferable for the data compared to the CEM. The Chow Test identifies significant differences in intercepts among the entities in the panel data (Baltagi, 2005). The CEM is more suitable than the FEM if the p-value is above 0.05.

2) Hausman Test

The Hausman Test is applied to assess the FEM and the REM. This test, founded on Hausman (1978), identifies systematic differences in coefficient estimates between FEM and REM. A higher p-value than 0.05 shows that REM is the more suitable model.

3) Lagrange Multiplier Test

This test seeks to establish the superiority of the REM compared to the CEM. The LM Test from Breusch & Pagan (1980), investigates individual-specific error variations. The REM is more applicable than the CEM when the p-value is less than 0.05.

d. Classical Assumption Test

In order to confirm the reliability of the regression outcomes, the model must satisfy the following classical assumptions:

1) Multicollinearity Test

This examination aims to establish the strength of connection among the independent variables. Kuncoro (2007) indicates that multicollinearity is identified by the coefficient of determination (R^2) is larger than 0.8. In addition, a Variance Inflation Factor (VIF) value greater than 0.8 also suggests the presence of potential multicollinearity issues.

2) Heteroskedasticity Test

This examination evaluates whether the residuals variance remains constant (homoscedastic) or fluctuates (heteroskedastic). According to Bollerslev (1986), the Autoregressive Conditional Heteroskedasticity (ARCH) model is effective in addressing variance fluctuations commonly found in financial data. When the probability value is above 0.05, it shows that the model does not face problems related to heteroskedasticity.

In this study, the heteroskedasticity was not showed because the model that has been selected is the REM, which is estimated using the Generalized Least Square (GLS) method and is robust to heteroskedasticity.

e. Hypothesis Testing

Hypothesis testing is made to evaluate the statistical significance of the model using the following procedures:

1) F-Test

To evaluate the simultaneous influence of all independent variables on the dependent variable, the F-test is employed. Gujarati & Porter (2009) highlight its importance in determining the overall validity of the regression model. If the F-statistic is greater than the F-table value and the p-value is less than 0.05, the model is regarded as jointly significant.

(Hakim, 2025) explains that the F-test assesses the significance of regression coefficients collectively, ensuring the model accurately describes the connection between independent and dependent variables.

2) Coefficient of Determination (R^2)

The R^2 value reflects the extent to which the independent variables in a model explain the variations observed in the dependent variable. Kuncoro (2013) states that an R^2 value nearing 1 signifies strong explanatory capability of the model, while a low R^2 value implies that the dependent variable's variations are affected by external aspects excluded from the model.

3) T-Test

The T-test is utilized to analyse the partial effects of independent variables on the dependent variable. According to Ghazali (2016), this test compares the t-statistic against the t-table value. An independent variable is statistically significant if the t-statistic exceeds the t-table value and the p-value is under 0.05.

4 Results and Discussion

4.1 Analysis Data Result

Table 3. Sample Criteria

No	Description	Total
1	Consumer Non-Cyclicals sector companies listed on the Indonesia Stock Exchange (IDX) during 2021–2024	134
2	Companies that did not publish financial statements and annual reports during 2021–2024	(46)
3	Companies that were delisted during 2021–2024	(4)
4	Companies that reported losses (did not generate profit) during 2021–2024	(34)
Final Research Sample – Consumer Non-Cyclicals Sector		50
Total Observations (2021–2024)		200

Based on Table 3, the initial population consisted of 134 Consumer Non-Cyclicals area corporations registered on the Indonesia Stock Exchange (IDX). After applying the sampling criteria—such as the availability of annual reports, receivable data, and profitability—the final research sample included 50 companies over the 2021–2024 period, follow-on in a total of 200 firm-year observations. This process ensures that the sample is relevant, consistent, and appropriate for panel data analysis (Ghozali (2016).

Based on the output generated from EViews 12, the descriptive statistics reveal the following findings:

Table 4. Descriptive Statistical Analysis

Variables	Obs.	Mean	Median	Maximum	Minimum	Std. Dev.
FFR	200	0.206964	0.045000	3.460000	-1.750000	0.785480
ROA	200	0.091131	0.070000	0.340000	0.000000	0.063524
ACHANGE	200	0.129583	0.050000	9.150000	-0.890000	0.715870
LEV	200	0.391250	0.390000	0.840000	0.060000	0.185305
OSHIP	200	0.061786	0.000000	0.680000	0.000000	0.137833
DRCTRS	200	0.357143	0.000000	1.000000	0.000000	0.480590
IGN	200	0.868393	0.330000	12.00000	0.000000	1.592891
GREED	200	0.171786	0.040000	5.590000	0.000000	0.518929
BDOUT	200	0.374881	0.330000	0.670000	0.200000	0.116875
NOI	200	0.891190	0.900000	0.990000	0.420000	0.082374
CIA	200	0.404762	0.000000	1.000000	0.000000	0.492313
CEOPIC	200	5.095238	5.000000	12.00000	2.000000	2.227316

Source: Processed Data, EViews 12 (2025)

As presented in the table, this study utilized a total of 200 observations derived from 50 companies, covering all dependent and independent variables. The descriptive statistical results:

- FFR (Y): The descriptive analysis shows average value 0.206964, middle value 0.045000, highest value 3.460000, lowest value -1.750000, and standard deviation 0.785480.
- Financial Target (X1): The descriptive analysis shows average value 0.091131, middle value 0.070000, highest value 0.340000, lowest value 0.000000, and standard deviation 0.063524.

- c. Financial Stability (X2): The descriptive analysis shows average value 0.129583, middle value 0.050000, highest value 9.150000, lowest value -0.890000, and standard deviation 0.715870.
- d. External Pressure (X3): The descriptive analysis shows average value 0.391250, middle value 0.390000, highest value 0.840000, lowest value 0.060000, and standard deviation 0.185305.
- e. Personal Financial Need (X4): The descriptive analysis shows average value 0.061786, middle value 0.000000, highest value 0.680000, lowest value 0.000000, and standard deviation 0.137833.
- f. Change in Directors (X5): The descriptive analysis shows average value 0.357143, middle value 0.000000, highest value 1.000000, lowest value 0.000000, and standard deviation 0.480590.
- g. Ignorance (X6): The descriptive analysis shows average value 0.868393, middle value 0.330000, highest value 12.000000, lowest value 0.000000, and standard deviation 1.592891.
- h. Greed (X7): The descriptive analysis shows average value 0.171786, middle value 0.040000, highest value 5.590000, lowest value 0.000000, and standard deviation 0.518929.
- i. Effective Monitoring (X8): The descriptive analysis shows average value 0.374881, middle value 0.330000, highest value 0.670000, lowest value 0.200000, and standard deviation 0.116875.
- j. Nature of Industry (X9): The descriptive analysis shows average value 0.891190, middle value 0.900000, highest value 0.990000, lowest value 0.420000, and standard deviation 0.082374.
- k. Change in Auditor (X10): The descriptive analysis shows average value 0.404762, middle value 0.000000, highest value 1.000000, lowest value 0.000000, and standard deviation 0.492313.
- l. Frequent Number of CEO Pictures (X11): The descriptive analysis shows average value 5.095238, middle value 5.000000, highest value 12.000000, lowest value 2.000000, and standard deviation 2.227316.

Table 8. Selection of the Appropriate Panel Regression Model

Test	Probability	Model Chosen
Chow Test	0.3853 > 0.05	CEM
Hausman Test	0.0621 > 0.05	REM
LM Test	0.0209 < 0.05	REM

Source: Processed Data, EViews 12 (2025)

The analysis carried out with EViews 12 revealed that the REM was preferred, as confirmed by the selection of the appropriate test.

Table 9. F Tests Results

F-statistic	2.963677
Prob(F-statistic)	0.001351

Source: Processed Data, EViews 12 (2025)

This research incorporates one dependent variable along with eleven independent variables, with a total of 200 observations from 50 sample firms, according to the results

of the F-test (simultaneous test) in the panel data regression model utilizing the REM approach.

With $df_1 = (k - 1) = 11$ and $df_2 = (n - k) = 188$, the F-table value at a 5% significance level is 1.83, while the F-statistic obtained from the data processing results is 2.963677. The F-statistic value is higher than the F-table value ($2.963677 > 1.83$), and the Prob(F-statistic) value is 0.001351, which is smaller from 0.05 ($0.001351 < 0.05$).

Since all independent factors concurrently have a significant impact on the dependent variable, it can be said that the alternative hypothesis (H_1) is accepted. This outcome demonstrates the employed regression model is apt and appropriate for usage in additional explore. Stated differently, the study's independent variables mutually take a substantial influence on FFR.

Table 10. R-Squared Test Results

R-squared	0.172855
Adjusted R-squared	0.11453

Source: Processed Data, EVIEWS 12 (2025)

The score of R-squared achieved is 0.172855, and the adjusted R-squared value is 0.114530, according to the test results shown in the board. This displays that the independent variables employed in this research can account for 17.29% of the variation in the FFR variable, with other elements outside the model accounting for the remaining 82.71%.

The model's explanatory power drops to about 11.45% when the number of independent variables and observations is taken into account, as marked by the Adjusted R-squared score of 0.114530. However, given the complexity of the elements determining the FFR situations within organizations, this value still shows that the model has an acceptable explanatory capacity for use in panel regression analysis.

Table 11. t Test Results

Variable	t-Statistic	Prob.
Constant	3.726841	0.0003
ROA	-0.890833	0.3744
ACHANGE	-0.468923	0.6398
LEV	1.923845	0.0562
OSHIP	-0.446838	0.6556
DRCTRS	0.151625	0.8797
IGN	2.773690	0.0062
GREED	-0.826862	0.4096
BDOUT	-0.974927	0.3311
NOI	-3.394801	0.0009
CIA	-2.424239	0.0165
CEOPIC	-0.744807	0.4575

Source: Processed Data, EVIEWS 12 (2025)

Table 12. t-Table Result

Degrees of Freedom (df)	5% Significance (two-tailed)	Nilai T-Table
188	0,05	1,973

Source: Processed Data by Author

According to the table's findings, the Financial Target has a p-value of 0.3744 (> 0.05), which signifies an insignificant outcome on FFR. The Financial Stability with a p-value of 0.6398 (> 0.05), also shows no notable impact on FFR. The External Pressure has a p-value of 0.0562 (> 0.05), indicating a lack of significant influence on FFR. The Personal Financial Need with a p-value of 0.6556 (> 0.05), suggests no notable impact on FFR. Similarly, the Change in Directors with a p-value of 0.8797 (> 0.05), reflects an insignificant effect on FFR.

The Ignorance has a p-value of 0.0062 (< 0.05), indicating a significant positive impact on FFR. In contrast, the Greed with a p-value of 0.4096 (> 0.05), demonstrates an insignificant effect on FFR. Similarly, the Effective Monitoring shows a p-value of 0.3311 (> 0.05), implying no significant influence on FFR.

The variable Nature of Industry presents a p-value of 0.0009 (< 0.05), representing a detrimental and noteworthy effect on FFR. The Change in Auditor variable has a p-value of 0.0165 (< 0.05), which also indicates a significant negative impact on FFR. However, the Frequent Number of CEO Pictures variable shows a p-value of 0.4575 (> 0.05), reflecting no significant effect on FFR.

Table 13. Data Regression Analysis Results

Variable	Coefficient	Std. Error	t-Statistic	Prob.
Constant	2.657392	0.713042	3.726841	0.0003
ROA	-0.913429	1.025365	-0.890833	0.3744
ACHANGE	-0.037545	0.080066	-0.468923	0.6398
LEV	0.633426	0.329250	1.923845	0.0562
OSHIP	-0.215186	0.481575	-0.446838	0.6556
DRCTRS	0.018717	0.123441	0.151625	0.8797
IGN	0.112545	0.040576	2.773690	0.0062
GREED	-0.098850	0.119548	-0.826862	0.4096
BDOUT	-0.507741	0.520799	-0.974927	0.3311
NOI	-2.544605	0.749559	-3.394801	0.0009
CIA	-0.284204	0.117234	-2.424239	0.0165
CEOPIC	-0.021822	0.029298	-0.744807	0.4575

Source: Processed Data, EVIEWS 12

The panel data regression estimation in this study produced the following equation:

$$\text{FFR} = 2.65739242608 - 0.913429025857 \cdot \text{ROA} - 0.037544621401 \cdot \text{ACHANGE} + 0.633426018107 \cdot \text{LEV} - 0.215185870957 \cdot \text{OSHIP} + 0.0187167062639 \cdot \text{DRCTRS} + 0.112545446487 \cdot \text{IGN} - 0.0988498864283 \cdot \text{GREED} - 0.507740872314 \cdot \text{BDOUT} - 2.54460517531 \cdot \text{NOI} - 0.284203729056 \cdot \text{CIA} - 0.0218215360949 \cdot \text{CEOPIC}$$

Interpretation of Regression Results:

1. Constant (C) of 2.65739242608 indicates that when all independent variables are held constant or equal to zero, the value of FFR is 2.65739242608.

2. ROA (X1) has a coefficient of -0.913429025857, implying that a one-unit increase in ROA decreases FFR by 0.913429025857, assuming other variables remain constant. This means that higher profitability reduces the tendency of supervision to engage in financial statement deception.
3. ACHANGE (X2) has a coefficient of -0.037544621401, suggesting that an improvement in financial stability decreases FFR by 0.037544621401. This indicates that stable financial conditions reduce the incentive to commit fraud.
4. LEV (X3) shows a coefficient of +0.633426018107, meaning that an increase in leverage raises FFR by 0.633426018107. Higher debt pressure increases the likelihood of companies engaging in fraudulent practices to meet financial obligations.
5. OSHIP (X4) has a coefficient of -0.215185870957, implying that greater managerial ownership reduces FFR by 0.215185870957. The result suggests that managers with ownership stakes are less likely to oblige fraud due to aligned interests with shareholders.
6. DRCTRS (X5) has a coefficient of +0.0187167062639, meaning that changes in directors increase FFR by 0.0187167062639. Leadership turnover can create instability in governance, increasing opportunities for manipulation.
7. IGN (X6) has a coefficient of +0.112545446487, indicating that greater ignorance or negligence in supervision and accounting practices increases FFR by 0.112545446487.
8. GREED (X7) shows a coefficient of -0.0988498864283, suggesting that advanced levels of greed are allied with a decrease in FFR by 0.0988498864283. This may indicate that the variable's measurement does not fully capture the behavioural aspect of greed in the model.
9. BDOUT (X8) has a coefficient of -0.507740872314, indicating that enhanced monitoring effectiveness, such as a higher proportion of independent commissioners, reduces FFR by 0.507740872314. In other words, stronger oversight decreases the likelihood of fraud.
10. NOI (X9) has a coefficient of -2.54460517531, implying that the greater the industry-specific characteristics (such as complex accounts in inventory or receivables), the lesser the degree of FFR by 2.54460517531. This suggests that certain industry features strengthen internal control systems.
11. CIA (X10) shows a coefficient of -0.284203729056, meaning that auditor changes reduce FFR by 0.284203729056. Auditor rotation enhances independence and objectivity, thus minimizing fraudulent practices.
12. CEOPIC (X11) has a coefficient of -0.0218215360949, indicating that the more frequently a CEO's picture appears in the annual report, the lower the level of FFR by 0.0218215360949. This implies that transparency and a positive corporate image help reduce the FFR.

Overall, the relationship between FFR and its independent variables indicates that fraudulent reporting tends to decrease when Financial Target (ROA), Financial Stability (ACHANGE), Personal Financial Need (OSHIP), Greed (GREED), Effective Monitoring (BDOUT), Nature of Industry (NOI), Change in Auditor (CIA), and Frequent Number of

CEO Pictures (CEOPIC) increase. Conversely, FFR increases when External Pressure (LEV), Change in Directors (DRCTRS), and Ignorance (IGN) rise.

4.2 Interpretation

4.2.1 The Effect of Financial Target on FFR

The regression results reveal that the financial target has a probability value of 0.3744 and a negative coefficient of -0.913429, implying a statistically irrelevant but harmful relationship. Consequently, H₀ is upheld while H₁ is dismissed. Thus, during the observation period, the financial target did not significantly influence FFR in the consumer non-cyclicals area.

This finding aligns with Adhania et al. (2024), who found that financial targets have a minimal negative effect on FFR, but contradicts Hakim et al. (2024), who found a significant positive influence. According to Agency Theory (Jensen & Meckling, 1976), financial targets can create goal misalignment between principals and agents. Managers, acting as agents, may feel pressured to meet profit targets set by shareholders (principals) and thus may manipulate financial statements to maintain a positive performance image. However, the insignificant result indicates that in this sector, such pressures were either effectively monitored or did not lead to opportunistic behaviour, minimizing agency conflicts.

4.2.2 The Effect of Financial Stability on FFR

The regression results show a probability rate of 0.6398 and a negative coefficient of -0.037545, representing an irrelevant negative relationship. Therefore, H₀ is accepted while H₁ is rejected. This means financial stability does not significantly affect FFR in consumer non-cyclical firms during the study period.

This finding is consistent with Hakim et al. (2024), but contrary to Octaviana (2022), who found a significant positive effect. From an Agency Theory perspective, declining financial stability may increase the risk of agency conflict, as managers attempt to conceal poor performance to protect their reputation and compensation. The absence of a significant relationship suggests that managers in this sector may have been less incentivized or better supervised, reducing their tendency to commit fraudulent reporting despite fluctuations in financial stability.

4.2.3 The Effect of External Pressure on FFR

The external pressure variable has a probability value of 0.0562 and a positive coefficient of 0.633426, suggesting a positive but statistically insignificant relationship. Hence, H₀ is accepted.

This result is consistent with Octaviana (2022), who also found no significant relationship, but contrasts with Alyani et al. (2023), who found a significant constructive outcome. Based on Agency Theory, high external pressure, often reflected by greater leverage, can heighten the conflict between managers and shareholders. Managers may manipulate financial statements to meet creditor expectations or avoid debt covenant violations. However, the insignificant result suggests that managers in consumer non-cyclical firms likely maintained transparent communication with stakeholders or were effectively constrained by corporate governance mechanisms that reduced agency-driven manipulation.

4.2.4 The Effect of Personal Financial Need on FFR

The analysis shows a probability rate of 0.6556 and a negative coefficient of -0.215186, representing an irrelevant negative relationship. Hence, H₀ is accepted.

This finding aligns with Adhania et al. (2024), but differs from Khoir & Kusumawati (2020), who found a significant positive relationship. Under Agency Theory, when managers face personal financial pressures, they may exploit company resources to satisfy personal needs, leading to fraudulent behaviour. However, the insignificant result implies that personal financial needs did not materially affect the actions of managers in this sector—possibly due to incentive alignment through ownership structures or strict oversight that reduced the potential for opportunistic agency behaviour.

4.2.5 The Effect of Change in Director on FFR

The change in director variable has a probability value of 0.8797 and a positive coefficient of 0.018717, suggesting a statistically insignificant positive relationship. Hence, H₀ is accepted.

This is unswerving with Hakim et al. (2024) then contrasts with Addawiyah et al. (2025), who found a significant positive effect. According to Agency Theory, changes in management can disrupt monitoring effectiveness and create information asymmetry, enabling opportunistic actions. However, the lack of significance indicates that director transitions in this sector were likely well-managed, with adequate internal controls that minimized the potential for agency-driven fraud during leadership changes.

4.2.6 The Effect of Ignorance on FFR

The analysis reveals that ignorance has a probability value of 0.0062 and a positive coefficient of 0.112545, indicating a statistically significant and positive relationship. Hence, H₁ is accepted.

This aligns with Serly & Viviany (2025), but contradicts Pamungkas et al. (2024). Within the Agency Theory framework, managerial ignorance represents a failure of agents to uphold transparency and accountability, weakening internal controls and increasing the opportunity for self-serving behaviour. The significant positive result indicates that when management neglects accounting standards and governance principles, agency conflicts intensify—allowing fraudulent reporting to occur more easily.

4.2.7 The Effect of Greed on FFR

The regression results show a probability value of 0.4096 and a negative coefficient of -0.098850, suggesting a statistically insignificant negative relationship. Hence, H₀ is accepted.

This finding is consistent with Pamungkas & Irwandi (2025), but differs from Pamungkas et al. (2024), who found a significant positive effect. According to Agency Theory, greed reflects an agent's tendency to prioritize personal gains such as bonuses or prestige over the principal's interests, potentially leading to fraudulent reporting. However, the insignificance of this variable implies that either compensation structures or oversight mechanisms effectively mitigated such opportunistic behaviour among managers in the consumer non-cyclicals sector.

4.2.8 The Effect of Effective Monitoring on FFR

The regression results reveal a probability value of 0.3311 and a negative coefficient of -0.507741, showing an insignificant but negative relationship. Hence, H₀ is accepted.

This finding aligns with Octani et al. (2022) but contrasts with Amar & Iskandar (2023). In Agency Theory, effective monitoring helps align the interests of principals and agents by minimizing information asymmetry and reducing opportunities for fraud. The negative but insignificant result indicates that although monitoring mechanisms may have functioned in the right direction, their strength or consistency was insufficient to significantly deter fraudulent behaviour across firms in this sector.

4.2.9 The Effect of Nature of Industry on FFR

The regression results show a probability value of 0.0009 and a negative coefficient of -0.544605, indicating a statistically significant negative relationship. Thus, H₀ is rejected and H₁ is accepted.

This finding supports Setyono et al. (2023) but contrasts with Octani et al. (2022). From an Agency Theory perspective, industries with higher operational complexity (such as high inventories or receivables) typically increase information asymmetry, allowing agents more discretion to manipulate financial data. However, the significant negative relationship implies that companies within the consumer non-cyclicals sector may have stronger control systems and better transparency, effectively reducing agency conflicts and the occurrence of fraudulent reporting.

4.2.10 The Effect of Change in Auditor on FFR

The results show a probability value of 0.0165 and a negative coefficient of -0.284204, indicating a statistically significant negative association. Hence, H₁ is accepted.

This aligns with Addawiyah et al. (2025) but contradicts Hakim et al. (2024). According to Agency Theory, changing auditors can either signal opportunistic behavior (searching for lenient oversight) or reflect stronger monitoring efforts by principals to reduce agency risk. The significant negative result suggests that in this sector, auditor changes were likely driven by principals' intentions to strengthen audit quality and mitigate agency conflicts, thereby reducing fraudulent reporting.

4.2.11 The Effect of Frequent Number of CEO's Pictures on FFR

The regression results indicate a probability value of 0.4574 and a negative coefficient of -0.021822, suggesting a statistically insignificant negative relationship. Hence, H₀ is accepted.

This finding is consistent with Setyono et al. (2023) but contradicts Dewi & Yulianti (2022), who found a positive effect. From the Agency Theory perspective, narcissistic CEOs often reflected through frequent self-promotion, may act to enhance their personal image rather than shareholders' interests, increasing agency conflict. However, the insignificant result indicates that in consumer non-cyclical firms, narcissistic traits among CEOs did not significantly influence fraudulent reporting, possibly due to effective governance structures limiting the impact of personal tendencies on financial decisions.

5 Conclusion

This study aims to examine how FFR is influenced by heptagon fraud in Consumer Non-Cyclicals sector corporations registered on the Indonesia Stock Exchange (IDX)

during the 2021–2024 period. Based on the results of the analysis, the resulting conclusions can be drawn:

- 1) Financial target does not have a statistically substantial effect on FFR.
- 2) Financial stability does not significantly influence FFR.
- 3) External pressure doesn't relationship between external pressure and FFR.
- 4) Personal financial need does not have an important outcome on FFR.
- 5) Change in director does not significantly affect FFR.
- 6) Ignorance takes an important positive outcome on FFR.
- 7) Greed does not significantly affect FFR.
- 8) Effective monitoring shows no significant influence on FFR.
- 9) Nature of industry has a negative and important result on FFR.
- 10) Change in auditor has a negative and noteworthy effect on FFR.
- 11) Frequent number of CEO pictures shows no noteworthy outcome to FFR.

In other words, the variables ignorance, change in auditor, and nature of industry play a significant function in influencing FFR within companies. On the other hand, variables such as financial target, effective monitoring, frequent number of CEO pictures, financial stability, change in director, greed, personal financial need, and external pressure do not show significant effects, implying that these factors are not strong enough to explain the occurrence of FFR during the research period.

There are various limitations in this study. First, the variables used are limited to those derived from the Fraud Triangle and Fraud Pentagon theories. Second, the research period is relatively short. Third, the analysis relies solely on secondary data obtained from company financial statements.

Therefore, future seek is recommended to include additional variables such as corporate governance mechanisms and audit quality, extend the observation period, and increase the sample size to obtain more comprehensive results and a more accurate representation of the factors influencing FFR.

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