

## IMPLICATIONS OF STOCK VOLATILITY, INVESTMENT EFFICIENCY ON ACCRUAL AND REAL EARNINGS MANAGEMENT: EVIDENCE FROM NIGERIA

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**Abstract:** The separation of ownership from control creates an agency problem which continues to reverberate across the globe due to the perennial failure of firms soon after the publication of juicy profits. Management out of the desire to earn enhanced bonuses, avoid violation of debt covenants, massage taxes and influence market outcomes create information ambiguity through signaling, timing of financial reports and falsification of reported earnings. Exacerbating the problem is the weakness in institutional and poor enforcement of laws. This study therefore examines information asymmetry through the lens of stock volatility and investment efficiency effects on accrual and real earnings management using audited financial statements of manufacturing firms for the period 2004 to 2023. The study adopted Hausman test for selection of models and correlation analysis for determination of relationship. Causality test was carried out to determine direction of causality. Various diagnostic tests were conducted. Findings revealed a positive association between stock returns volatility and real earnings management. Also noted is the positive connection between investment efficiency and discretionary accruals. A positive association between stock return volatility and discretionary accruals was indicated by the study. Strong positive association was indicated between investment efficiency and real earnings management. It is therefore recommended that Firms should be required to report their discretionary accruals and real earnings so that users can understand significant variances each year. Doing this helps make financial facts clearer and so investors can better judge the company's earnings. To lessen the possibility of opportunistic manipulation, board audit committees should examine accrual-based accounting entries more closely, especially those that have a major impact on profits figures. Despite the weak direct association found in the study, investors and regulators should keep an eye on stock return volatility as an early warning indicator for potential manipulation, particularly in companies with erratic earnings patterns.

**Keywords:** *Investment efficiency, stock volatility, AEM, REM.*

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### Introduction

One of the topical issues facing stakeholders is the reliability and accuracy of financial reports. Investors and providers of funds do so with the intent to maximize gains and shareholders wealth. In gauging the ability of Managers to deliver on the objectives of the owners of business, Managers are measured through financial reports. Corporate scandals in the world created concern about the various types of financial practices carried out in corporate organizations, which therefore affected perceptions of investors and other stakeholders about the quality of financial reports presented by most corporate organizations. The collapse of companies like Enron, Parmalat, Xerox, HealthSouth, Toshiba Corp, Lucent, Adelphia, Tyco, WorldCom, Maxwell pension scandals, Satyam, Reebok etc have been attributed to poor accounting practices which is as a result of unethical conduct and misuse of power by both preparers of financial statements and auditors, poor and weak corporate governance practices (Martin, 2023; Reddy, Locke & Scrimgeour, 2019; Surbakti, Shaari &

Bamahros, 2021). Financial reporting is expected to provide useful and important information for decision-making of stakeholders and aims at ensuring the availability of fair information for effective allocation of scarce resources (Yilmaz, Hacıoglu, Tatoglu, Aksoy, & Duran, 2022). A qualitative financial report is expected to be accurate, timely, easy to understand, reliable, valuable to users and faithfully represent all the transactions entered into by the entity within a certain time frame.

Following the collapse of many entities there is heightened interest about the causes of the anomaly. Many studies (Davidson et al., 1987; Dechow & Skinner (2000), ; Sevin & Schroeder 2005 Roychowdhury (2006),; Ewert & Wagenhofer (2005 ( however have fingered earnings management. Earnings management occurs when managers within organizations use accounting methods and techniques to present a distorted number of their company's earnings (Beneish, 2001). Several researchers, including Dechow & Skinner (2000), have demonstrated that the self-interested

modification of earnings undermines the quality of earnings, as well as the degree to which financial reports are credible. Furthermore, according to Sevin & Schroeder (2005), opportunistic earnings management serves the interests of managers at the expense of stakeholders. This is because the inaccurate earnings reported by managers inform the investment and lending decisions made by key personnel inside and outside the organization.

The process of earnings management involves the intentional manipulation of accounting records by firm managers, the aim being to modify reported earnings (Davidson et al., 1987). There are two strands of literature involved in earnings management. Real and accrual earnings management. real earnings management (REM) was first introduced by Schipper (1989). Specifically, he described real earnings management as a process of timing financing or investment decisions to manipulate reported earnings. Real earnings management involved real business activities whose effect is directly linked to operating cash-flows. Similarly, Ewert and Wagenhofer (2005) described real earnings management as variations in the structure of real business activities aimed at altering earnings. Roychowdhury (2006) also defined real earnings management as deviation from usual operating practices, driven by managers need to deceive some stakeholders into trusting that some specific financial reporting objectives have been achieved in the course of normal operating activities. Accrual earnings management involves the use of accruals facilitated by capitalizing on accounting decisions made within the framework of Generally Accepted Accounting Principles (GAAP). To achieve earnings management, Management can take sub-optimal investment decisions that best serve their interest thereby impacting the efficiency of investment. However, from another angle management may use stock volatility (Long, 2010) to manipulate earnings. Motivations for earnings management arise from income smoothing, contractual agreements, capital markets considerations and regulatory concerns (or political costs issues) (Healy & Wahlen, 1999; Dechow & Skinner, 2000; Yoon & Miller, 2002). Prior studies examined whether earnings management is connected to specific events or incentives. Examples of such events and incentives include maximizing of management compensations, raising the prices of equity offers, avoiding violating debt covenants, and avoiding anti-trust violations (e.g., Healy, 1985; DeAngelo, 1986; Jones, 1991; Cahan, 1992; Defond & Jiambalvo, 1994; Teoh et al., 1998). Empirical literature on the nexus of investment efficiency and stock volatility is mainly in developed countries with few studies conducted in third world countries like Nigeria, Further, the findings from such scholarly work on the subject is mixed and directional thereby creating opportunities for further empirical work

## Conceptual Literature

### Investment Efficiency

Investment efficiency refers to the effective allocation of capital to projects with positive net present value ( $(NPV)$ ), maximizing returns while minimizing costs and risks. It is a critical driver of profitability and growth, ensuring resources are not wasted through underinvestment or overinvestment. The idea of investment efficiency for an entity can be considered as the attempt to engage in investments that possess a positive net present value without any economic friction (Biddle, G.C. et al 2009). This generates fundamental concerns about the nature of efficiency and appropriate conditions for its attainment in the course of economic

activity. In reality, managers can carry out activities that contradict the interest of shareholders, leading to cases of overinvestment or underinvestment which deviates from the optimal investment decisions (Taylor and Francis, 2023). As stated above, underinvestment is an intentional choice to avoid investment opportunities that result a positive net present value without giving rise to adverse selection and may cause a reduction in the company's value while overinvestment demonstrates an investment decision to embark on projects with negative net present value (Biddle, et al 2009)

### Stock Returns Volatility

Stock volatility measures the rate and magnitude of a stock's price fluctuations over time, indicating how far its price diverges from its average, typically measured by standard deviation. High volatility signals rapid, large swings (high risk/opportunity), while low volatility implies gradual, steady price movements. Generally, higher volatility implies higher risk, as prices can drop sharply, although it also offers potential for greater gains. Stock volatility significantly influences earnings management, as companies often utilize discretionary accruals or real activities to smooth earnings and reduce the perceived risk that high volatility creates. High volatility acts as a catalyst for managers to manipulate earnings to meet market expectations, with studies indicating a positive, and sometimes U-shaped, relationship between the two. In highly volatile markets, such as those with fluctuating exchange rates or significant macroeconomic instability, managers are under greater pressure to manipulate financial outcomes to meet targets. During periods of rising market volatility, companies that miss earnings estimates tend to suffer more significant stock price declines compared to periods of lower volatility

### Real Earnings Management

Real earnings management according to Gunny, K.A. (2010), is the intentional actions taken by managers to alter the timing or structure of an operation, investment or financing transaction to influence the output of the accounting system. Al-Shattarat, B. et al (2022) and Gunny, K.A. (2010) argue that entities with the potential to display superior future performance use real earnings management as an avenue to display such potential to the capital market. Considering the expensive nature of real earnings management and its associated consequences, managers employ these practices in areas where the positive gains from relating this information to the capital markets exceed the negative consequences of real earnings management (Zhao, V. et al 2012). In another study, Bimo, I.D. (2022) states that real earnings management can take the shape of intentional over-production to diminish the cost of goods sold and deliberate reduction in research and development costs to increase earnings in the current financial timeframe and ignore the credit terms to boost reported revenues. Habib, A. et al (2022) posit that real earnings management masks the actual performance of the entity and diminishes the effectiveness of accounting metrics as an instrument for evaluating and monitoring the entity

### Accrual Earnings Management

Accrual earnings management (AEM) is the deliberate manipulation of financial statements using discretionary accounting estimates and choices, such as prematurely recognizing revenue or deferring expenses, to achieve specific financial targets without altering actual business activities. It involves manipulating

accounting entries rather than cash flows. Management often engages in AEM for opportunistic reasons, including securing bonuses, meeting debt covenant requirements, or minimizing political costs.

## Theoretical Underpinning

### Value Relevance Theory

Investors' behaviour in the stock market is usually predicated on the usefulness of the financial information displayed in the financial statements. Kordlouie et al (2014) establishes that a financial statement is value relevant if it results to a change in investors' evaluation of the probability distribution of future returns. This implies that the larger the change the more induced the behaviour of the investors. In Brown et al (1999) and Outa et al (2017), value relevance is the degree to which changes in accounting figures explain the changes in stock prices. It is the extent to which cash and accrual performance measures (financial statement items) are reflected in the market-based performance measures which are captured in changes in stock prices. In the light of this study however, accounting manipulations can influence behavioural decisions of investors. When financial statements appear impressively, stock prices may increase in like manner thereby inducing favourable investors' behaviour, and with reference to future returns. The success of this behaviour largely depends on the level of asymmetric risk. Hence, the higher the asymmetric risk the higher the intent to decorate accounting information and the more the effect on the value of stocks in the capital market which will finally result to investors' investment decision favourably or adversely.

### Agency Theory

The theory postulated by Jensen and Mecklings (1976) establishes the conflict of interest embedded on divorce of ownership and managerial control and highlights the misalignment of the interest of the owners of a business from that of the agents. This misalignment caused by the self interested motives of the agent can cause misbehaviour such as pursuit of sub-optimal investment decisions leading to investment inefficiency, falsification of reported earnings to achieve high bonuses or for tax cut, to present a rosy picture of the firm or stability of earnings in essence creating false reports and information asymmetry which ultimately harm the business

### Empirical Literature

Lian (2024) Using a sample of 169 of the largest non-financial firms with 507 firm-years observations from an emerging market, the researchers examined the relationship among derivative use, earnings volatility, and earnings management. The results of a panel regression analysis showed that derivative use by Malaysian public listed companies was positively connected with earnings volatility, inferring that the use of derivatives did not mitigate earnings volatility as intended. This study also found that both earnings volatility and derivative use have a positive relationship with earnings management. This implies that firms engage in earnings management to curb earnings volatility under circumstances where derivative use is associated with higher earnings volatility

Manish, B. et al (2021) investigated the impact of upward and downward real earnings management by making use of market size, value and momentum effect which is already in existence in the Nigeria stock market. Study revealed that stocks having upward real earnings management experience lower excess returns than

stocks with downward real earnings management. Several research studies (Huang and Ho, 2020; Dayanandan and Sra, 2018; Jiang and Lu, 2017; Peng et al., 2016; Wu et al., 2012; Li, 2010) have extensively evaluated the extent of association between accounting manipulation and stock returns. Irrespective of their findings, they overlooked the form and endogenous nature of earnings management in the course of analyzing the relationship between the course variables. In this instance, it seems that investors have different perceptions of downward and upward earnings management (Manish, B. et al., 2021). Stockholders are expected to apportion different heights to these forms of earnings management, based on the level of risk under consideration. By endogenous nature of real earnings management, Manish, B. et al., (2021) referred to the influence of cross-sectional effects prevalent in the equity market. They noted that the association between real earnings management and stock return is expected to be influenced by the systematic risk associated with the stocks, size of the stock, nature of the stock (value and growth stock), and the historical pattern of stock returns and these result to the impact of market effect, size effect, value effect, and momentum effect (Manish, B. et al 2021). The results of Chu, (2012); Papanastopoulos, et al (2011); Resutek, (2010) revealed an inverse relationship between accruals and future stock returns on assets. In their research on the Indian economy, and with respect to the association between real earnings management and stock return, Manish and his colleagues divided their study into two categories of: investigating the impact of upward and downward real earnings management. This means that investors perceive downward earnings management as an ingredient of risk, and consequently, they discount it at a higher rate; on the other hand, investors perceive upward earnings management as less risky, and as a result, they decide to hold the stocks even when the rate of return is lower. Their findings showed that firms with higher beta, large firms, overvalued firms and firms with higher momentum quantities are more likely to be engaged in upward earnings management. Therefore, they emphasized that the relationship between real earnings management (REM) and stock return seem to be consistent with all the selected moderating effects. Long (2010) empirically studied the influence of stock market volatility and regional effect on earnings management of 1024 listed firms from 2007 to 2008. stock market volatility has a very significant positive effect on earnings management; even stock market volatility has reversing U curve relationship with earnings management while regional difference has significant positive effect on earnings management, especially in China's eastern area. The analysis of the connection between accounting earnings and stock return has also attracted the attention of many researchers especially at the international scene. Ball, R. and Brown, P. (1968) were the first to document the link between accounting earnings and stock return. Irrespective of the fact that several researches have been carried out on the variables stated above, the results are in conclusive. One group of researchers submitted a positive impact between real earnings management, and stock return (Sayari, S.; et al., 2013; Fazeli, Y.S and Rasouli, 2011; Nuryaman, N. 2013). Resutek, (2010) examined anomaly of accruals and intangible effect of returns on the anomaly were examined. The study reveals an inverse relationship between accruals and stock returns. But the inclusion of intangible returns variable of the prior periods in the regression mode, changed the result to a positive relationship between stock returns and discretionary accruals., Mohammad and Nemati (2017) indicated that managers seem to use discretionary accruals, especially positive discretionary accruals (increases in income) to relate the

expected information to the external funds providers. Their study showed no significant difference in the use of discretionary accruals and between entities with high and low growth. It was also found in their study that positive discretionary accruals are more relatively connected with the performance of companies with high growth. In a similar study by Chu, J. (2012), Papanastopoulos, G. et al (2011), Fedyk, T. et al (2011) and Resutek, R.J. (2010), found inverse relationship between accruals and future return on assets and abnormal stock returns

## Methodology

### Research Design

The study was based on ex-post facto designed using secondary data extracted from the fact book of the Nigerian Exchange Group (NGX) and various companies financial

### Variables

Summary of the variables used in the study is as indicated below on the table

Table 1: Measurement of Variables

Variables	Acronym	Measurement	Previous Studies	Aprioi Expectation
<b>INDEPENDENT VARIABLE</b>				
Stock return volatility	SRV	Natural log of one plus the standard deviation one year of daily stock return as a percentage	Garcia, Lara et al 2014	Positive relationship between REM, DAC
Investment Efficiency	IE	Cash paid for acquisition of non-current assets divided by total assets at the beginning of the period	Aminu and Hassan 2016	Positive association between REM, DAC
<b>DEPENDENT VARIABLE</b>				
Real Earnings Management	REM	See formular below	Kordlouiee et al 2014 and Ducharme et al 2004	Drastic reduction resulting from low returns volatility and real earnings management
Duscretionary Accruals	DAC	See formular below	Kordlouie et al 2014 and Mohammad et al 2017	A positive connection between tock returns, investment efficieny and discretionary accruals.

### Measurement of Earnings Management

#### Real Earnings Management

The study adopts cost of production method as a measure of real earnings management. Following Roychowdhury (2006), the model below was used to estimate the level of production cost.

$$\frac{PRD_{i,t}}{Asst_{i,t} - 1} = \beta_0 + \beta_1 \left( \frac{1}{Asst_{i,t} - 1} \right) + \beta_2 \left( \frac{Sale_{i,t}}{Asst_{i,t} - 1} \right) + \beta_3 \left( \frac{\Delta Sale_{i,t}}{Asst_{i,t} - 1} \right) + \beta_4 \left( \frac{\Delta Sale_{i,t}}{Asst_{i,t} - 1} \right) + \varepsilon_t \tag{2}$$

Where  $PRD_{i,t} = COGS_{i,t} + \Delta IN_{i,t}$ , which stands for the sum of the cost of goods sold and the change in inventory from  $t - 1$  to  $t$ .  $Sale_{i,t}$  represents the annual sales, and  $\Delta Sale_{i,t}$  denotes the change in sales from period  $t - 1$  to period  $t$ , while  $\Delta Sale_{i,t} - 1$  is the change in the sales from  $t - 2$  to  $t - 1$ .  $Asst_{i,t} - 1$  are the lagged total assets.

#### Discretionary Accruals (Modified Jones Model)

The distinction between the Modified Jones Model and the Jones Model lies on the determination of non-discretionary accruals which includes elements of changes in accounts receivables. The choice of this mode is based on its universal acceptability in detecting accounting

statements for the period. The independent variables for the study are investment efficiency and stock volatility while earnings management is divided between real and accrual earnings management. Correlation and other methods were used to determine the nature of relationship. Haudsman test was used for determination of models while Granger causality test was deployed to determine causality. The study used various diagnostic tests Multicollinearity Test was used to check for correlation between the indepdent variables. Heteroscedasticity Test was used to check for the constant variance of the error terms while autocorrelation Test was used to examine the correlation between the error terms. Thus, this econometric model specification provides a framework for analysis of implications of stock return volatility, investment efficiency on real earnings and accruals nearnings management

manipulation. Sulistiyanto, S. (2008) added that the model gives the strongest results and has a standard error of  $\epsilon_{it}$ . He noted that the regression result of the estimated total actual value is the smallest compared to other models.

$$\frac{TA_{it}}{A_{it-1}} = \alpha_0 \frac{1}{A_{it-1}} + \alpha_1 \frac{\Delta REV_{it} - \Delta REC_{it}}{A_{it-1}} + \alpha_2 \frac{PPE_{it}}{A_{it-1}} + \epsilon_{it}$$

Where:

- $TA_{it}$  = the sum of total accruals in year  $t$ ;
- $A_{it-1}$  = the sum of assets in year  $t-1$ ;
- $\Delta REV_{it}$  = the change in revenues between year  $t$  and  $t-1$ ;
- $PPE_{it}$  = the sum of the property, plant and equipment in year  $t$ ;
- $\epsilon_{it}$  = statistical error;

**Estimation**

**Model 1 (REM):**

$$REM_{it} = \beta_0 + \beta_1 SRV_{it} + \beta_2 IE_{it} + \mu_i + \epsilon_{it}$$

**Model 2 (DAC):**

$$DAC_{it} = \beta_0 + \beta_1 SRV_{it} + \beta_2 IE_{it} + \mu_i + \epsilon_{it}$$

**Apriori Expectations**

**Model 1 (REM):**

- $\beta_1$  (SRV): Positive (Higher stock return volatility may lead to more real earnings management)
- $\beta_2$  (IE): Negative (Higher investment efficiency may lead to less real earnings management)

**Model 2 (DAC):**

- $\beta_1$  (SRV): Positive (Higher stock return volatility may lead to more discretionary accruals)
- $\beta_2$  (IE): Negative (Higher investment efficiency may lead to less discretionary accruals)

**RESULTS**

**Pre-modelling Analysis: Lag Length Criteria - Model 1**

**Table 2 Lag Length Criteria- Model 1**

VAR Lag Order Selection Criteria

Endogenous variables: REM SRV IE

Exogenous variables: C

Sample: 2004-2023

Included observations: 240

Lag	LogL	LR	FPE	AIC	SC	HQ
0	467.6195	NA	2.47e-07	-3.863496	-3.805485	-3.840121
1	514.8756	92.54328*	1.90e-07*	-4.123963*	-3.833910*	-4.007093*
2	525.8911	21.20476	1.98e-07	-4.082426	-3.560330	-3.872059
3	531.0183	9.698945	2.17e-07	-3.991819	-3.237680	-3.687956
4	535.9554	9.174767	2.38e-07	-3.899628	-2.913447	-3.502269

Using 240 observations from 2004 to 2023, Table 4.1 shows the ideal lag order for a VAR model that includes REM, SR, VIE, with a constant term. This choice is based on multiple criteria: Likelihood Ratio (LR) test, Final Prediction Error (FPE), Log-Likelihood (LogL), and information criterion (AIC, SC, HQ). With more lags, the LogL shows better model fit, rising consistently from 467.6155 at lag 0 to 535.9554 at lag 4. However, penalizing criteria are required to adjust for complexity. The

addition of one lag is justified by the LR test, which demonstrates a statistically significant improvement from lag 0 to lag 1 (LR = 92.5432). The VAR(1) model is supported for predictive purposes at lag 1 (2.07e-07), when the FPE, which measures predicting accuracy, is lowest. This conclusion is supported by information criteria. Lag 1 is the ideal balance between fit and parsimony, as indicated by the fact that the AIC, SC, and HQ all attain their minimal values there. In conclusion, the application of a one-lag

VAR model is supported by consistent support across all selection measures. Therefore, it is statistically reasonable to use the

VAR(1) specification to analyze the dynamic interactions between REM, SR, VIE, from 2004 to 2023.

**Table 3: Lag Length Criteria- Model 2**

VAR Lag Order Selection Criteria

Endogenous variables: DAC SRV IE

Exogenous variables: C

Sample: 2004-2023

Included observations: 240

Lag	LogL	LR	FPE	AIC	SC	HQ
0	887.9530	NA	7.43e-09	-7.366275	-7.308264	-7.342901
1	1031.424	280.9638*	2.57e-09*	-8.428532*	-8.138479*	-8.311662*
2	1044.044	24.29281	2.64e-09	-8.400363	-7.878267	-8.189996
3	1050.637	12.47339	2.86e-09	-8.321978	-7.567840	-8.018116
4	1054.073	6.384562	3.18e-09	-8.217275	-7.231094	-7.819916

\* indicates lag order selected by the criterion

The ideal lag structure for a VAR model with DAC, SRV, IE, is shown in Table 4.2. The model uses 240 data from 2004 to 2023 and has a constant term as the exogenous variable. Log-Likelihood (LogL), the Likelihood Ratio (LR) test, Final Prediction Error (FPE), and three information criteria (AIC, SC, and HQ) are among the statistical criteria used. With more lags, the LogL rises, showing better model fit, from 887.9530 at lag 0 to 1054.073 at lag 4. However, penalty criteria are necessary to take overfitting into consideration. The inclusion of one lag is supported by the LR test, which demonstrates a significant improvement from lag 0 to lag 1

(LR = 280.9638). There is a compelling argument for predictive modeling with a one-lag structure since forecast accuracy, as determined by the FPE, is at its best at lag 1 (2.57e-09).

Its optimality is confirmed at lag 1, where all three information criteria - AIC (-8.428532), SC (-8.138479), and HQ (-8.311662) - also reach their minimum. This uniform suggestion across selection techniques confirms that the VAR(1) model provides the best possible compromise between model parsimony and explanatory power. Therefore, the best specification for examining the interactions between DAC, SRV and IE, throughout the 2004–2023 timeframe is VAR(1).

**Univariate Analysis**

**Descriptive Statistics**

Table 4 below is the Presentation the summary of the descriptive statistic of the panel data variables.

**Table 4: Descriptive Statistics**

	REM	DAC	SRV	IE
Mean	0.719267	0.103367	0.193167	0.145233
Median	0.635000	0.070000	0.130000	0.110000
Maximum	5.290000	0.460000	5.230000	2.130000
Minimum	0.050000	0.010000	0.010000	0.010000
Std. Dev.	0.478959	0.083106	0.342102	0.159672
Skewness	3.589706	1.881580	11.39624	6.881828
Kurtosis	30.31609	6.644845	161.3038	81.52047

Jarque-Bera	9971.409	343.0783	319745.0	79436.27
Probability	0.000000	0.000000	0.000000	0.000000
Sum	215.7800	31.01000	57.95000	43.57000
Sum Sq. Dev.	68.59124	2.065100	34.99309	7.623084
Observations	300	300	300	300

Table 4 provides the descriptive statistics for the key financial and accounting variables examined in the study, including Real Earnings Management (REM), Discretionary Accruals (DAC), Stock Return Volatility (SRV), Investment Efficiency (IE). The variables with the greatest mean values are REM (0.719), SRV (0.193), and IE (0.145). These values suggest that the sample firms had a comparatively greater average level of earnings management and stock return volatility. On the other hand, DAC has the lowest means 0.103, indicating tighter less discretionary accrual activity. IE also exhibits significant fluctuation (Std. Dev. = 0.160), REM and SRV exhibit significant variability (Std. Dev. = 0.479 and 0.342, respectively). With standard deviations of just 0.019 and 0.083, respectively DAC, on the other hand, seem more steady. With a moderate mean (0.090) and significant variation (Std. Dev. = 0.166), All variables in the data show a considerable amount of positive skewness, which suggests that the distributions contain extreme high values and lengthy right tails. A small number of companies exhibit abnormally high levels of volatility, investment inefficiency, and earnings management methods in SRV (skewness = 11.40), IE (6.88), and REM (3.59). Even DAC and SR exhibit considerable skewness (3.76 and 1.88, respectively), indicating asymmetry in accrual patterns and return distribution. Kurtosis values show that all variables have sharper peaks and heavier tails than a normal distribution, indicating that they are leptokurtic. Both SRV (161.30) and IE (81.52) exhibit extreme kurtosis, suggesting that outliers are likely to occur in the data and that some firms have abnormally high levels of volatility and investment

inefficiency. Heavy tails are also shown in REM (30.32) and SR (18.26), which supports the idea that extreme outcomes are common in these dimensions. All the p-values from the Jarque-Bera test are well below the usual 0.05, with most being almost zero which reveals no variable follows a normal distribution. The outcome with least deviation, SD, continues to show a statistically significant JB value (JB = 8.40, p = 0.015) which suggests that the data is not normally distributed. Since the data are not normally distributed, using non-parametric methods would be more appropriate for the next steps. The major variables SRV, IE and REM being highly skewed and kurtotic are highly significant with major implications. This shows that there may be firms behaving in unusual ways that could make a big impact on the results of studies. In other words, if stock returns fluctuate too much or if companies manage their earnings too much, it could change the results of a regression or how inference is drawn. Summing up, the findings suggest that using transformation methods or employing robust estimation methods for outlier and non-normality can be essential. Especially, care must be taken with earnings quality proxies (REM and DAC) and variables from the market microstructure (SRV) due to their distributions

**Panel Unit Root**

PP-Fischer test was employed in testing the presence of a unit root in the heterogenous panel. The results of the panel unit root test to confirm if the variables are stationary or non-stationary is presented below in Table 4.2.

**Table 5: Panel Unit Root test – PP-Fisher**

variables	Level I(0)		First Order Difference I(1)		
	Constant	Status	Constant	Status	
REM	63.0674 (0.004)	Stationary	210.326 (0.0000)	Stationary	I(0)
DAC	39.2386 (0.1205)	Not stationary	206.637 (0.0000)	Stationary	I(1)
SRV	169.941 (0.0000)	Stationary	310.363 (0.0000)	Stationary	I(0)
IE	72.9659 (0.0000)	Stationary	239.288 (0.0000)	Stationary	I(0)

Table 5 presents the results of the Panel Unit Root Test using the PP-Fisher method, evaluating the stationarity of the variables at both level [I(0)] and first-difference [I(1)] under a constant specification. A variable is considered stationary if the p-value is less than 0.05, indicating rejection of the null hypothesis of a unit root. At level, the variables REM, SRV and IE, are found to be stationary, with p-values below the 5% significance level,

indicating they are integrated of order zero, I(0). Conversely, DAC is non-stationary at level (p > 0.05), but become stationary after first differencing, confirming it is integrated of order one, I(1). These results suggest a mix of integration orders across the dataset, with most variables (REM, SRV, IE,) being stationary in levels, while DAC require differencing to achieve stationarity. This outcome has implications for subsequent model specification; for

instance, a panel VAR or cointegration approach must account for the mixed integration properties of the variables.

**Panel Cointegration**

To examine the existence of a long-run relationship among the panel data variables, both the Pedroni and Kao cointegration

tests were employed. Utilizing both tests helps to ensure robustness and confirm the presence of cointegration with greater certainty. The results of the Pedroni and Kao panel cointegration tests are presented in Tables 6 - 7.

**Table 6: The Pedroni Panel Cointegration Test (model 1, REM)**

Test	Statistic	probability	Weighted Statistics	Probability
Panel v-statistic	-4.2899	1.0000	-2.6260	0.9957
Panel rho-statistic	0.0821	0.537	1.0655	0.8567
Panel PP-statistic	-4.8427	0.0000	-3.0635	0.0011
Panel ADF-statistic	-1.1758	0.1198	0.2916	0.6147
Group rho-statistic	2.5870	0.9952		
Group PP-statistic	-2.8186	0.0024		
Group ADF-statistic	1.2721	0.8983		

Table 6 presents the results of the Pedroni Panel Cointegration Test for Model 1, using REM as the dependent variable. The test provides multiple statistics to assess whether a long-run equilibrium relationship exists among the panel variables. These include both within-dimension (panel statistics) and between-dimension (group statistics) test results. Among the within-dimension tests, the Panel PP-statistic (probability = 0.0000) and its weighted version (p = 0.0011) are both statistically significant at the 1% level, indicating evidence of cointegration. However, the Panel ADF-statistic and Panel v-statistic are not significant (p = 0.1198 and p = 1.0000, respectively), suggesting

mixed results. The Panel rho-statistic also fails to reject the null hypothesis of no cointegration (p = 0.5370). For the between-dimension (group) tests, the Group PP-statistic is significant (p = 0.0024), indicating cointegration, whereas the Group ADF-statistic and Group rho-statistic are not significant (p = 0.8983 and 0.9952, respectively). All things considered, finding significant PP-statistics for the Panel and Group models supports a moderate amount of evidence that the model is cointegrating when REM is the dependent variable. Yet, because the statistics vary, the evidence could be stronger and using other tests (e.g., Kao or Johansen Fisher panel tests) would support a more reliable result.

**Kao Cointegration Test (model 1, REM)**

	T-statistic	Probability
ADF	0.9463	0.1720
Residual variance	0.2190	
HAC Variance	0.0372	

Table 7 reports the results of the Kao panel cointegration test for Model 1, where Real Earnings Management (REM) is the dependent variable. The ADF t-statistic is 0.9463 with a p-value of 0.1720, indicating that the result is not statistically significant at the 5% level. Therefore, the null hypothesis of no cointegration cannot be rejected.

Therefore, the data show that patterns within the model do not suggest a firm link between the involved variables over time. Although the supporting diagnostics and HAC variance suggest good quality data, the conclusion on cointegration remains the same. Overall, results from the Kao test indicate that the panel data model has no cointegration, suggesting that the main variables do not maintain simultaneous movements over the long run with REM as the chosen outcome variable.

**Table 8: The Pedroni Panel Cointegration Test (Model 2, DAC)**

Test	Statistic	probability	Weighted Statistics	Probability
Panel v-statistic	-2.3877	0.9915	-3.4470	0.9997
Panel rho-statistic	1.1245	0.8696	1.5017	0.9334
Panel PP-statistic	-3.1076	0.0009	-3.3257	0.0004
Panel ADF-statistic	0.1797	0.5713	-2.4995	0.0062
Group rho-statistic	2.7152	0.9967		
Group PP-statistic	-2.9902	0.0014		
Group ADF-statistic	-0.5770	0.2820		

**Source: Researcher’s computation from Eviews 10**

Table 8 presents the results of the Pedroni panel cointegration test for Model 2, with Discretionary Accruals (DAC) as the dependent variable. The test examined whether a long-run equilibrium relationship exists among the panel data variables. Among the within-dimension statistics, the Panel PP-statistic (-3.1076, p = 0.0009) and Weighted Panel PP-statistic (-3.3257, p = 0.0004) are both statistically significant at the 1% level. Additionally, the Weighted Panel ADF-statistic (-2.4995, p = 0.0062) is significant at the 1% level. These results provide strong evidence in favor of cointegration within the panel.

In contrast, other statistics such as the Panel v-statistic and Panel rho-statistic are not significant (p > 0.05), indicating some

inconsistency among test components. However, in Pedroni's methodology, particular emphasis is often placed on the PP and ADF statistics for inference. The Group PP-statistic (-2.9902, p = 0.0014) is statistically significant in terms of the between-dimension (group) statistics, supporting the panel's cointegration findings. Nevertheless, there is no statistical significance in the Group ADF-statistic (-0.5770, p = 0.2820). In summary, the significance of the Panel and Group PP-statistics as well as the Weighted ADF-statistic points to the existence of a long-term cointegrating connection between the variables in Model 2, with DAC as the dependent variable, despite some contradictory findings.

**Table 9: Kao Cointegration Test (Model 2, DAC)**

	T-statistic	Probability
ADF	-2.0261	0.0214
Residual variance	0.0029	
HAC Variance	0.0019	

Table 9 reports the results of the Kao cointegration test for Model 2, where Discretionary Accruals (DAC) is the dependent variable. The test assesses whether a cointegrating relationship exists among the panel variables under the assumption of homogeneity in the cointegrating vector across cross-sections. The Augmented Dickey-Fuller (ADF) t-statistic is -2.0261 with a p-value of 0.0214, indicating that the null hypothesis of no cointegration is rejected at the 5% significance level. This result suggests the presence of a statistically significant long-run equilibrium relationship among the variables in the model. The test's error correction procedure uses the reported residual variance

and HAC variance, which are 0.0029 and 0.0019, respectively. These values do not change how the significant result is interpreted. In conclusion, the Kao test supports the evidence of a long-term link between the panel variables with DAC as the dependent variable by confirming the presence of a cointegrating relationship in Model 2, which is in line with the results of the Pedroni test.

**Bivariate Analysis**

In this section, we covered two forms of Bivariate analysis, that is, correlational analysis and granger causality analysis.

**Correlation Analysis**

**Table 10: Correlation Analysis (Model 1, REM)**

Covariance Analysis: Ordinary

<b>Covariance</b>			
<b>Correlation</b>	<b>REM</b>	<b>SRV</b>	<b>IE</b>
REM	0.228637		
	1.000000		
SRV	-0.003100	0.116644	
	-0.018981	1.000000	
IE	0.016394	-0.001842	0.025410
	0.215081	-0.033832	1.000000

The correlation analysis presented in Table 10 examines the linear relationships between Real Earnings Management (REM), Stock Return Volatility (SRV), Investment Efficiency (IE). The findings revealed generally weak correlations among the variables, indicating minimal linear dependence and suggesting that these financial indicators largely operate independently within the sampled firms. The correlation coefficient between REM and SRV is -0.0190, indicating a weakly negative connection. This implies that, although the effect is small, stock return volatility tends to decrease significantly when real earnings management rises. Managerial attempts to smooth earnings and lessen perceived risk may be the cause of the inverse link, which could lower volatility. REM is unlikely to have a substantial impact on stock price movements, nevertheless, given the extremely poor association.

There is a slight positive association (r = 0.2151) between REM and IE. This suggests that greater investment efficiency is slightly correlated with higher levels of real earnings management. Managers may manipulate results to conceal inefficiencies in other operational areas or to signal the best course of action for investments. The association is still comparatively weak despite its moderate strength, underscoring the need for additional research to comprehend the underlying mechanisms. According to the weak correlations, it appears that multicollinearity will not become a major issue in the later regression analyses. This research also points out that any relationship among these variables is not likely to be straightforward or uninfluenced by additional firm- or macroeconomic-related elements.

**Table 4.4b: Correlation Analysis (Model 2, DAC)**

Covariance Analysis: Ordinary

Included observations: 300			
<b>Covariance</b>			
<b>Correlation</b>	<b>DAC</b>	<b>SRV</b>	<b>IE</b>
DAC	0.006884		
	1.000000		
SRV	-0.000357	0.116644	
	-0.012587	1.000000	
IE	0.002934	-0.001842	0.025410
	0.221821	-0.033832	1.000000

The correlation analysis presented in Table 10 examines the linear relationships among Discretionary Accruals (DAC), Stock Return Volatility (SRV), Investment Efficiency (IE), in Model 2. The findings revealed generally weak correlations across the variables, suggesting minimal linear dependence and limited concern for multicollinearity in subsequent regression analyses. A coefficient of -0.0126 indicates a very mild negative association between DAC and SRV. This suggests that lower stock return volatility is marginally correlated with higher discretionary accruals. One rationale is that accrual-based earnings management could minimize market uncertainty by temporarily smoothing earnings. Nevertheless, the effect is unlikely to be statistically or economically significant due to the poor association.

On the other hand, there is a slight positive association ( $r = 0.2218$ ) between DAC and IE. This implies that greater investment efficiency may be partly correlated with larger amounts of

discretionary accruals. This might be an example of situations in which managers use accruals to portray a positive financial picture that either supports or conceals more effective capital allocation. Nevertheless, considering the correlation's moderate strength, it's possible that this association depends on the context or is impacted by other firm-level factors.

Since weak to modest links were reported, it is possible to include all these variables in a regression model with low multicollinearity. In addition, the results may point to some links between discretionary accruals and both investment efficiency and liquidity, making it necessary to examine this further using stronger multivariate models.

**Granger Causality Analysis**

Table 11- 12 below is a presentation of the granger causality matrix of the variables under study.

**Table 11: Granger Causality Analysis (Model 1, REM)**

**Pairwise Granger Causality Tests**

Sample: 2004-2023

Lags: 1

<b>Null Hypothesis:</b>	<b>Obs</b>	<b>F-Statistic</b>	<b>Prob.</b>
SRV does not Granger Cause REM	285	0.03284	0.8563
REM does not Granger Cause SRV		0.00040	0.9841
IE does not Granger Cause REM	285	4.24551	0.0403
REM does not Granger Cause IE		12.6503	0.0004
IE does not Granger Cause SRV	285	0.64745	0.4217
SRV does not Granger Cause IE		0.01497	0.9027

Source: Researcher’s computation from Eviews 10

The Granger causality analysis in Table 11 examines the directional predictive relationships between Real Earnings Management (REM), Stock Return Volatility (SRV), Investment Efficiency (IE). The study revealed that there exists a bidirectional Granger causality between IE and REM. At the 5% significance

level, the null hypothesis that IE does not Granger cause REM was rejected (F-statistic = 4.24551,  $p = 0.0403$ ), suggesting that historical investment efficiency values can be used to forecast current real earnings management values. However, at the 1% level, the null hypothesis that REM does not Granger induce IE is

rejected (F-statistic = 12.6503, p = 0.0004), indicating that REM has an even higher predictive power than IE. This mutually reinforcing association suggests a dynamic interplay in which capital allocation efficiency and earnings management techniques impact one another over time, possibly illustrating purposeful managerial conduct that connects investment choices with financial reporting discretion. However, there is no evidence of a causal association between SRV and REM because both directions produce strong p-values (p = 0.8563 and p = 0.9841), suggesting that real earnings management is not predicted by stock return

volatility and vice versa. This implies that managers' actual activity-based earnings manipulation within the tested firms is not much informed by or reflected in market-based volatility measurements. To conclude, real earnings management and investment efficiency are closely related, while other variables seem to develop without much interaction. The results illustrate that decisions regarding operations and how capital is distributed are linked and should be discussed together when evaluating corporate behavior.

**Table 12: Granger Causality Analysis (Model 2, DAC)**

**Pairwise Granger Causality Tests**

Sample: 2004-2023

Lags: 1			
Null Hypothesis:	Obs	F-Statistic	Prob.
SRV does not Granger Cause DAC	285	0.03533	0.8510
DAC does not Granger Cause SRV		0.21037	0.6468
IE does not Granger Cause DAC	285	0.52225	0.4705
DAC does not Granger Cause IE		3.75359	0.0537
IE does not Granger Cause SRV	285	0.64745	0.4217
SRV does not Granger Cause IE		0.01497	0.9027

Table 12 presents the results of the Granger causality analysis for Model 2, focusing on the relationships between Discretionary Accruals (DAC), Stock Return Volatility (SRV), Investment Efficiency (IE). The results are based on a one-period lag across 285 observations. Overall, the findings revealed limited causal interactions, with only a few statistically significant effects. There is no evidence that SRV and DAC are causally associated because both routes yield statistically insignificant results (F = 0.03533, p = 0.8510 for SRV → DAC; F = 0.21037, p = 0.6468 for DAC → SRV). Given that stock return volatility neither predicts nor is predicted by the amount of discretionary accruals, this suggests that there is no temporal relationship between market risk and accrual-based earnings management. The association between IE and DAC is frequently insignificant, despite the existence of one marginal direction. At the 10% significance level, IE does not Granger cause DAC (p = 0.4705),

whereas DAC does Granger cause IE (F = 3.75359, p = 0.0537). This equivocal conclusion suggests that earnings management could affect the effectiveness of subsequent investments; it could be an example of how businesses manipulate accruals to affect financial outcomes that affect future investment decisions. Overall, most features in the model adjust independently; even so, the results reveal that discretionary accruals are associated with more effective uses of capital and a smoother flow of market activity. Overall, these findings support the claim that earnings management shapes how a business acts and is seen by investors.

**Multivariate Analysis**

The Analysis of the models employed in the study using Fixed and Random Effects approach and Hausman Test are presented in Table 13-4.14.

**Table 13: Results of fixed Effects Vs Random Effects and Hausman Test for Model 1**

Dependent Variable: REM				
Variables	Fixed Effect	Prob	Random Effects	Prob
Constant	-0.0792	0.7339	-0.0821	0.7485
Stock Return Volatility (LNSRV)	0.0492	0.2197	0.0474	0.2314
Investment Efficiency (LNIE)	0.1198	0.0014	0.0363	0.0007
R <sup>2</sup>	0.4817		0.0431	
Adjusted R <sup>2</sup>	0.4504		0.0334	
F -Test	15.4190		4.4393	
F-Test (Prob)	0.0000		0.0045	
Durbin Watson	1.0348		0.9906	
Hausman Test				
	Chi-sq stat	Df	Prob	
Cross-section random	2.0941	3	0.5531	

Table 13 presents the regression results for Model 1, where Real Earnings Management (REM) is the dependent variable. The table reports coefficient estimates from both the Fixed Effects (FE) and Random Effects (RE) models, alongside the result of the

Hausman test, which is used to determine the more appropriate model for analyzing panel data.

The Hausman test yields a chi-square statistic of 2.0941 with 3 degrees of freedom and a p-value of 0.5531. Since this p-value exceeds the conventional 5% significance level, the null

hypothesis that the Random Effects model provides a more efficient and consistent estimation is not rejected. As a result, the Random Effects model is selected for interpretation in this analysis. In the Random Effects estimation, the R-squared value is 0.0431, and the adjusted R-squared value is 0.0334, suggesting that the explanatory variables: Stock Return Volatility (LNSRV), Investment Efficiency (LNIE) — collectively explain only 4.3% of the variation in REM. The F-test statistic of 4.4393 and associated p-value of 0.0045 indicate that the overall model is statistically significant, despite its relatively low explanatory power.

Among the independent variables, Investment Efficiency (LNIE) is positively and significantly associated with REM ( $p = 0.0007$ ), implying that firms with more efficient investment

practices are more likely to engage in real earnings management. This could reflect strategic timing or manipulation of operational decisions to influence reported earnings. Conversely, both Stock Return Volatility (LNSRV) ( $p = 0.2314$ ) is not statistically significant. This indicates that market volatility and liquidity, as proxied by bid-ask spreads, do not have a meaningful direct impact on REM in the sampled firms. In summary, while the model demonstrates low explanatory power, the statistical significance of the overall regression and the strong influence of investment efficiency underscore its relevance. The findings suggest that internal firm behaviors, particularly investment efficiency play a more critical role than market-based factors in shaping real earnings management practices.

**Table 14: Results of fixed Effects Vs Random Effects and Hausman Test for Model 2**

Dependent Variable: DAC				
Variables	Fixed Effect	Prob	Random Effects	Prob
Constant	-1.2976	0.0000	-1.2603	0.0001
Stock Return Volatility (LNSRV)	0.0405	0.4303	0.0534	0.2853
Investment Efficiency (LNIE)	0.1708	0.0004	0.1853	0.0001
R <sup>2</sup>	0.3679		0.0825	
Adjusted R <sup>2</sup>	0.3298		0.0732	
F -Test	9.6549		8.8703	
F-Test (Prob)	0.0000		0.0000	
Durbin Watson	0.9083		0.8687	
Hausman Test				
	Chi-sq stat	Df	Prob	
Cross-section random	2.4823	3	0.4785	

Table 15 presents the regression results for Model 2, where Discretionary Accruals (DAC) is the dependent variable. The table provides coefficient estimates from both the Fixed Effects (FE) and Random Effects (RE) models and includes the results of the Hausman test, which is used to determine the more appropriate model for panel data analysis. The Hausman test reports a chi-square statistic of 2.4823 with 3 degrees of freedom and a p-value of 0.4785. Since this p-value is greater than the 5% significance level, the null hypothesis that the Random Effects model is a more efficient and consistent estimator is not rejected. Consequently, the Random Effects model is deemed appropriate for interpreting the results in Model 2. Under the Random Effects model, the R-squared value is 0.0825 and the adjusted R-squared is 0.0732, indicating that the explanatory variables: Stock Return Volatility (LNSRV), Investment Efficiency (LNIE), account for approximately 8.3% of the variation in DAC. Although the explanatory power is relatively low, the F-test statistic of 8.8703 and its p-value of 0.0000 show that the overall model is statistically significant. Among the individual variables, Investment Efficiency (LNIE) shows a positive and statistically significant relationship with DAC ( $p = 0.0001$ ), suggesting that firms with more efficient investment practices are more likely to engage in accrual-based earnings management.

On the other hand, Stock Return Volatility (LNSRV) is not statistically significant ( $p = 0.2853$ ), suggesting that market volatility does not have a meaningful influence on discretionary accruals within the sampled firms. In conclusion, despite the model's limited explanatory power, its statistical significance highlights the relevance of internal firm characteristics, particularly investment efficiency and market liquidity in influencing accrual-

based earnings management practices. These findings support the view that managerial discretion in financial reporting is shaped more by firm-level operational and market dynamics than by external market fluctuations.

## Discussion of Results

### Hypothesis One

Table 14 revealed that Stock Return Volatility (SRV) has a positive association with Real Earning management, this implies that, on average, as the volatility in a company's stock returns increases, so does the tendency for managers to engage in REM practices. Also, a percent increase in Stock return volatility is expected to bring about a 0.04% increase in real Earning across the selected firms. Furthermore, the Table revealed that there is no statistically significant relationship between stock return volatility and real earnings management. This is same as revealed by Rachman et al., (2021). This is also in line with the findings of Habib et al., (2020), they found that a positive association is more pronounced for firms with more information asymmetry, for firms in the mature stage of the life cycle, compared with their growth-stage counterparts; and during periods of high EPU. Similarly, Fonnu-Dembeu et al., (2022) revealed that for companies in Johannesburg, earnings smoothness positively influenced the idiosyncratic volatility, suggesting that firms with less smooth earnings display an increase in stock return volatility. This supports the hypothesis that variations in stock returns do not meaningfully influence managerial decisions to engage in REM, at least within the sample and context of this study. The findings suggest that other factors may have a more substantial role in driving earnings management practices. This finding implies that managerial

behavior in earnings management may be less reactive to external market signals than previously thought, at least within the observed sample. Garcia Osma et al., (2022) noted that it is possible that managers prioritize internal benchmarks (e.g., budget targets, executive compensation thresholds, or debt covenants) over external market dynamics when deciding whether or not to engage in REM. The results may also reflect the strength (or weakness) of corporate governance mechanisms. In firms with robust oversight, managers may have less discretion to respond to short-term market volatility with opportunistic behavior (Yahaya, 2025). Thus, regardless of stock return fluctuations, the ability to engage in REM might be constrained by internal control systems, audit quality, or board independence.

### **Hypothesis Two**

Table 15 revealed that Investment Efficiency has a positive association with Discretionary Accruals. Also, a percent increase in Investment Efficiency (IE) brings about a 0.18 percent increase in Discretionary Accruals practices. This implies that as firms become more efficient in allocating their investment resources, they also tend to engage more frequently or more intensively in accrual-based earnings management. Again, the positive relationship with DAC also suggests that these firms may use accounting discretion strategically, possibly to smooth earnings over time, Meet or beat analysts' expectations, maintain a consistent financial image. This challenges the assumption that only poorly performing or inefficient firms manipulate earnings. This is in line with the findings of Anagnostopoulou (2024), who based on a sample of 25 countries found that accruals quality is positively associated with efficient investing, regardless of any country-level institutional characteristics. This association becomes more pronounced when the country-level strength of institutional enforcement is weaker, consistent with firm-specific reporting quality increasing in importance when country level institutional enforcement worsens. Thus, the effectiveness of institutional enforcement in a country does not successfully alleviate information asymmetries or secure efficient monitoring of corporate insiders by capital providers, there is greater need for firm-specific accounting quality to perform this function and promote efficient firm-level investing. Furthermore, the Table revealed that there is a statistically significant relationship between Investment Efficiency (IE) and Discretionary Accrual (DAC). The statistical significance and direction of the relationship suggest that companies with higher investment efficiency are more likely to engage in accrual-based earnings management. This findings show that investment-efficient firms are not immune to earnings management indeed, they may be more adepted to.

### **Hypothesis Three**

Table 15 revealed that Stock Return volatility (SRV) has positive association with Discretionary Accruals(DAC). Also, a percent increase in Stock Return Volatility (SRV) brings about a 0.05 percent increase in Discretionary Accruals practices. This implies that firms experiencing greater fluctuations in their stock prices may be slightly more inclined to engage in accrual-based earnings management. However, volatile market performance might prompt some managers to consider smoothing earnings, other factors like governance, industry norms, or internal controls might mitigate the use of discretionary accruals. Furthermore, the Table revealed that there is no statistically significant relationship between Stock Return Volatility (SRV) and Discretionary Accrual (DAC). This support the findings of Akhgar, & Nemati, S. (2017)

indicate no significant relationship between discretionary accruals and stock returns in Tehran, However, they also observed that with the addition of firm's growth to the model, positive discretionary accruals were more in firms with high growth than firms with low growth. This implies that fluctuations in stock prices alone are not sufficient to explain or predict managers' use of accrual-based earnings management techniques in this context. Therefore, other variables such as investment efficiency are likely to play a more central role in explaining variations in discretionary accruals. The findings also suggests that alternatively, stock return volatility could influence other forms of earnings management, such as real earnings management, rather than accrual-based techniques. However, the results of Chu, 2012; Papanastasopoulos, et al (2011); Resutek, (2010) revealed an inverse relationship between accruals and future stock returns on assets.

### **Hypothesis Four**

Table 14 revealed that Investment Efficiency (IE) has a strong positive association with Real Earning management. Also, a percent increase in Investment Efficiency (IE) brings about a 0.036 percent increase in Real Earning management. A positive relationship means that as investment efficiency increases, the level of real earnings management also increases. This is somewhat counterintuitive, as we would typically expect more efficient investment to reduce the need for earnings manipulation as observed in Assad et al., (2023). This could be because Firms with high investment efficiency often have greater flexibility and discretion over capital allocation. This freedom may allow managers to manipulate real activities more easily to meet earnings targets (e.g., timing capital expenditures or R&D to smooth earnings). Similarly, Firms with efficient investments may engage in REM to sustain a positive market perception, leveraging their credibility to manipulate earnings through real operations without immediate investor suspicion. Also, High investment efficiency might reflect aggressive investment strategies, which can also align with earnings management behavior, particularly if managers are focused on meeting growth expectations. Furthermore, the Table revealed that there is a statistically significant relationship between Investment Efficiency (IE) and Real Earnings Management (REM). Again this is in contrast to the findings of Ukolobi et al., (2025) who did not observe any significant influence between return on equity and real earnings management for non-financial firms in Nigeria between 2011-2023. This significant negative relationship between discretionary accruals and the bid-ask spread during the global financial crisis, although only limited to firms with strong corporate governance suggests that for manufacturing firms, efficient capital allocation does not eliminate, and may even enable, REM behavior. Managers may leverage operational flexibility in investment decisions to influence earnings, suggesting that investment efficiency should not be viewed as a substitute for strong financial reporting controls.

## **Conclusion**

This study investigated the implications of Stock volatility and investment efficiency on accrual and real earnings management of selected quoted manufacturing companies in Nigeria from 2004 to 2023. The analysis reveals a strong reciprocal relationship between investment efficiency and real profits management, indicating that managerial discretion over capital allocation and operational choices are related and may even reinforce one another in situations where information asymmetry is

large. In sum based on results of the panel data regression the following conclusions were made

- Real earnings management (REM) and stock return volatility (SRV) have a statistically negligible and incredibly weak association, suggesting little influence. Granger causality study also showed that there was no correlation between SRV and REM.
- A very weak positive relationship was noted between stock return volatility (SRV) and discretionary accruals (DAC). Granger causality analysis showed no association because both directions yielded statically insignificant results. This suggests that both SRV and DAC does not counter predict each other.
- The findings showed a weak but statistically insignificant relationship between discretionary accruals (DAC) and investment efficiency (IE). Granger causality tests, however, revealed that DAC had a slight impact on IE, indicating that earnings management may provide some input into investment choices.
- The findings of the Granger causality test showed a statistically significant bidirectional association between real earnings management (REM) and investment efficiency (IE), indicating that real-based earnings manipulation and managerial choices about capital allocation are closely related.

### Recommendations

Based on the findings of the study, the following recommendations were made

- Regulatory bodies, including the Financial Reporting Council of Nigeria (FRCN) should require companies to have their capital allocation decisions audited from time to time to find and prevent ineffective capital usage from being hidden behind real earnings management.
- Firms should be required to report their discretionary accruals and real earnings so that users can understand significant variances each year. Doing this helps make financial facts clearer and so investors can better judge the company's earnings.
- To lessen the possibility of opportunistic manipulation, board audit committees should examine accrual-based accounting entries more closely, especially those that have a major impact on profits figures.
- Despite the weak direct association found in the study, investors and regulators should keep an eye on stock return volatility as an early warning indicator for potential manipulation, particularly in companies with erratic earnings patterns.
- In addition to accounting standard compliance, external audit standards should be updated to mandate reporting on earnings quality indicators, especially those pertaining to actual earnings management and discretionary accruals.
- To maintain ongoing compliance and protect market integrity, capital market regulators should impose more market surveillance on companies with historically high levels of real earnings management.
- To address the underlying causes of information asymmetry and earnings manipulation, companies should

improve whistleblower protection and reporting avenues to promote internal reports of unethical reporting practices.

- In line with our findings investors should carefully evaluate the accruals quality in accordance with their decision parameters or models. In order to earn high future returns, investors should direct their investment to firms with low accruals and high operating cash flows. They also need to be prompt and accurate in responding to changes in accruals, and seek professional assistance from financial analysts when making investment decisions because their services will be more beneficial to inexperienced investors.
- Companies quoted in the stock market should provide prompt, updated and comprehensive information on accruals on a separate report, and the information displayed in the summarized financial statement should be effective enough to facilitate rational investment decisions.
- The sufficiency of unequal information in the agent-principal relationship can lead to total collapse of the company. Therefore adequate measures to reduce information asymmetry should be prioritized especially through legal requirement for listed companies to disclose significant information on a timely basis that would aid accurate and objective evaluation of the company at a given period of time.

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