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## RESEARCH ARTICLE

# The Impact of Leverage on Accrual-Based Earnings Management

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## ABSTRACT

This study investigated the Impact of Leverage on Accrual-Based Earnings Management for a sample of Nigerian companies, excluding financial and insurance companies, listed on the Nigerian stock exchange for the period 2000-2020. Secondary data were collected from the Central Bank of Nigeria Statistical Bulletin and World Bank Development Indicators. This study uses the Hribar and Collins (2002) model and the Kothari et al. (2005) model to calculate discretionary accruals. The OLS estimation technique was employed to empirically analyze the effect of firm leverage on earning management practices. Consistent with the 'control hypothesis' for debt creation, we find that a significant negative association between leverage and earnings management for Nigerian firms. The empirical results show that leverage limits earning manipulating activities of managers.

**Keywords:** Accrual-Based Earnings Management; Earnings Management Practices; Leverage

## 1. Introduction

The versatile need for accounting data by creditors and shareholders aroused the increasing interest in earnings management both firms and accounting scholars. Continuous research on earnings management explored the influential attributes of a firm's characteristics such as the financial leverage on earning management. Earnings management provides data that are relevant for informational content and are used by various stakeholders such as the creditors for assessing financial viability, credibility, and health of a firm (Ge, 2010) and shareholders for monitoring operational performance (Vakilifard & Mortazavi, 2016). Specifically, earnings management is involved when accounting policies relating to income and achievement of some profit goals are stated in the financial statement (Scott, 2015). Earnings management can be applied in different forms of either accrual-based or real earnings management.

Earnings management occurs in a firm when the management uses opportunity in economic transactions to alter the financial reports and present achievement of stated targets to influence agreements or regulatory authorities (Healy & Wahlen, 1999). Earning management can present a masked economic transaction thereby affecting the quality of earnings in a firm (Vakilifard & Mortazavi, 2016). Earnings management in a firm can be in any form, however, accrual-based management is the focus of this study. Accrual-based earnings management involves the use of accounting policies to achieve the earning objective

of the firm (Darmawan, Sutrisno, & Mardiaty, 2019). This involves practices limited to accounting policies that are used by the manager to enable the firm to attain certain profits. Accrual-based earnings management according to Darmawan, et al. (2019) has the tendency to reverse after manipulation; the increased profit presented can be seen as a decreased profits in the next period, a decrease in profits at a period can be a product of a decreased profits in the past period. It can fluctuate after manipulation, however, earnings management in the form of accrual profit does not affect the cash flow of the firm (Darmawan, Sutrisno, & Mardiaty, 2019). According to Xiong (2006), the practice of using accrual-based earning management can be in two forms; discretionary and non-discretionary accruals. While discretionary accruals are the manager's policy that is not accountable in the agreement, non-discretionary accruals are accrual earnings management that represents the normal economic transactions of the firm.

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Practically, the activities involved in earnings management are the function of the managers in a firm, to achieve profit through the presentation of financial reports that may not contain the actual performance of the firm. This managerial function of the manager is beneficial to the firm, but oftentimes, the managers use the opportunity to achieve their individual goals (Susanto, 2016). This happens when the regulatory bodies or the market are incapable of detecting the opportunistic behavior of the manager and assume that the account statement presented is a result of the firm's good performance. However, the discretionary accruals of accrual-based earnings management can be monitored by some variables such as leverage which can impose some disciplinary measures on the manager's activities and limit their access to the firm's cash flow. This aligns with the free cash flow theory by Jensen (1986) that *"leverage plays a disciplinary role in monitoring discretionary activities of managers and imposes disciplinary restrictions by reducing their access to the cash flow of firm"*.

Leverage is noted to have an influence on earnings management and can assist stakeholders to recognize earning management in a firm (Vakilifard & Mortazavi, 2016). Results from different studies confirm that leverage influences earning management. According to Jelinek (2007), leverage limits earning management. The author maintained that an increase in leverage can minimize the discretionary earnings management because; debt payment involved in leverage reduces the available cash for excess expenditure and that debt financing used by the firm attracts inspection and supervision on how it is being spent. Increasing leverage negatively affects the Accrual-based earning management, as an increase in leverage results in a decrease in accrual-based earnings management (Dischev & Skinner, 2002). Certainly, Leverage promotes a firm's commitment to the use of free cash flow in paying interest and capital of outstanding debt and curbing non-value investment projects. Leverage reduces the managers' access to free cash flow and the firm's cost of free cash flow.

## 2. Review of Literature

A large number of studies have been carried out on earning management. Specifically, studies relating to the impact of Leverage on accrual-based earnings management will be reviewed in this study. Notably, the findings of the studies vary, while some results attested that leverage on accrual-based earning has a positive impact on earning management, some were of a negative result. It is notable also, that the varying results are dependent on the firm and its management.

Lazzem & Jilani (2017) examined the impact of leverage surges on accrual-based earnings management practices for a selected number of French firms. The French firms were indexed in CAC All-Tradable within 2006 and 2012. The study applied panel data in calculating discretionary accruals to analyze the impacts of leverage on the opportunistic behaviour of firm managers. Using the debt covenants hypothesis, the study revealed that there is a positive impact of firm leverage on earnings management for french firms, and as such increasing leverage encourages the managers to manipulate earnings.

In the same vein, the study by Vakilifard & Mortazavi (2016) focused on whether leverage enhances movement from accrual-based to real earnings management. The sample of the study was 118 firms indexed in Tehran Stock Exchange from 2008 to 2013. Using multiple regression analysis, the relationship between leverage and two strategies of earnings management was reviewed. The findings of the study showed that as the leverage is increasing, managers apply real earnings management than accrual-based earnings management and highlighted that the total earnings management activities are underestimated when the focus is only on accrual-based earnings management.

Also, studies on the connection between real earnings management activities and leverage, using Abnormal Cash Flow from Operation, and a sample of 3, 745 observations from in firm-year from 2006 to 2011, revealed that there is a negative impact of leverage on real earning managements (Zamri, Rahman, & Isa, 2013). Accordingly, Khanh & Thu (2019) examined the effect of leverage on the extent and forms of earnings management in listed firms in Vietnamese. They used the panel data of 241 companies during the period, 2010 to 2016 indexed in the Vietnam stock markets and applied GMM regression on the data. Applying four models, the result showed a positive connection between leverage and earnings managements relying on the "debt hypothesis". The findings showed that the firms preferred real earnings management over accrual-based earnings management. In 2017, Anagnostopoulou and Tsekrekos investigated the levels of financial leverage on the empirically documented trade-off. The findings showed that leverage increase attracts heavy scrutiny on the outside, creating the necessity for a firm to use both real earnings management and accrual-based earnings management to achieve the firm's earnings targets. The findings also showed that leverage caused by real earnings management is not easily detected by market participants as debt is caused by accrual earnings management.

It was discovered by Kim & Lei (2010) that in the consistent debt covenants, levels of earnings management are higher, and borrowers that had an increase in bankruptcy risk previously, experience higher earnings management. The study on the relationship between firms that go through leverage increases on earnings management and firms that are consistently highly leveraged by (Jelinek, 2007) suggested that the relationship is affected by factors such as growth and free cash flows levels while leverage increase enhances reduction in earnings management. The researchers also suggested that high the impacts on earnings management from leverage levels and leverage changes differ. Moreso, Wassimullah & Abbas (2010) examined the impact of leverage earnings management practices in the Pakistan textile industry. The researchers resolved that low free cash flow is experienced in highly leveraged firms due to the use of a large share of the cash flow in interest expenses. They also found that the managers evade investment in projects that are non-value maximizing, which control the creation of accruals in the firms earning management, and that increasing leverage creates a negative connection between earnings management and firm's leverage. Similarly, the association between real earnings management and leverage increases was examined by Zagers-Mamedova (2009) to find out available incentives for managers to use real earnings management in manipulating cash flow through operational activities in increasing leverage. The result of the study showed that in firms with increasing leverage, the real earnings management affects the cash flow operation. A very similar result by (Gombola, Ho, & Huang, 2016) showed that when the leverage increases, firms that are highly leveraged engage in earnings management activities.

### 3. Hypothesis Development and Methodology

Prior studies suggest that shareholders and managers incur significant costs when they violate debt covenants. These costs that are written in accounting figures provide strong incentives for the shareholders and managers to perform earning management activities to prevent violating debt covenants.

Furthermore, Zagers-Mamedova (2009) and Gombola et al. (2010) found that when the leverage increases, firms that are highly leveraged engage in earnings management activities. This shows that earning management in leverage-increasing firms and highly leveraged firms respond differently to changes in leverage. leverage increasing firms create less discretionary accruals to manipulate their earnings; real earnings management is lower in highly leveraged firms than in leverage increasing firms than in highly leveraged firms (Mamedova, 2009). Thus, we propose to test the following hypothesis:

H<sub>0</sub>- high leveraged firms are Less likely to involve in earnings management practice than the lower leveraged firms.

H<sub>1</sub>-high leveraged firms are more likely to involve in earnings management practice than the lower leveraged firms.

#### Sample Selection and Data Collection

The initial sample covers all the Nigerian companies, excluding financial and insurance companies, listed on the Nigerian stock exchange, belonging to different sectors, during the period, 2000 to 2020. Any missing values and outliers determined in the sample firms were eliminated and, as a result, our sample consists of 185 non-financial Nigerian companies. The data about relevant variables have been obtained from the annual report and consolidated accounts published by the companies. The data obtained will be used to test the hypothesis developed in the current study.

#### Measurement for Dependent Variable: Discretionary Accruals

Following the Hribar & Collins (2002) model and the Kothari et al. (2005) model, different aspects of earning manipulation will be captured. The income statement is the basis of the Hribar and Collins (2002); it is presented as follows:

$$TAC_{i,t}/A_{i,t-1} = \beta_0 (1/A_{i,t-1}) + \beta_1 (\Delta SALES_{i,t}/A_{i,t-1}) + \beta_2 (PPE_{i,t}/A_{i,t-1}) + \epsilon_{i,t}$$

Where:  $TAC_{i,t}$ = Total Accruals of the firm  $i$  in year  $t$  measured as follows

$$TAC_{i,t} = \text{Operating income}_{i,t} - \text{Operative cash flow}_{i,t}$$

$$A_{i,t-1} = \text{Beginning total assets of firm } i \text{ in year } t$$

$$\Delta SALES_{i,t} = \text{Change in sales revenues minus the change in accounts receivables of firm } i \text{ in year } t$$

$$PPE_{i,t} = \text{Property, Plant and Equipment of firm } i \text{ in year } t$$

$\varepsilon_{i,t}$  = denotes unspecified random factors

The standardized residual of  $(\varepsilon_{i,t})$  is the primary proxy for discretionary accruals.

In addition, we measure discretionary accruals by using the Kothari et al. (2005). Kothari et al. (2005) modified the Hribar & Collins (2002) model by including a performance indicator, i.e. the return on assets (ROA). This model uses the accruals and the return on assets as a measure of corporate performance.

**The Kothari et al. (2005) model is presented as follows:**

$$TAC_{i,t}/A_{i,t-1} = \beta_0 (1/A_{i,t-1}) + \beta_1 (\Delta SALES_{i,t}/A_{i,t-1}) + \beta_2 (PPE_{i,t}/A_{i,t-1}) + \alpha_3 (ROA_{i,t-1}) + \varepsilon_{i,t}$$

Where:  $ROA_{i,t-1}$  = Return on Asset, the ratio between the net income and total assets at the beginning of the period.

**Model and Control Variables**

The dependent variables, discretionary accruals are calculated with the two models. The estimated model is:

$$|dlnDAC_t| = \alpha_0 + \alpha_1 dlnLEV_t + \alpha_2 dlnROA_t + \alpha_3 dlnSFR_t + \alpha_4 dlnINTEXP_t + \mu_t$$

Where  $\mu$  = the error term

$t$  = the year of analysis

$dlnLEV_t$  = the ratio of long-term debt to total book value of equity.

$dlnROA_t$  = the net income divided by total assets

$dlnSFR_t$  = the operating cash flow divided by net investments in fixed assets

$dlnINTEXP$  = the ratio of interest expense to total debt.

**4. Empirical Results**

**Descriptive Analysis**

The descriptive statistics for discretionary accruals in absolute value are presented in Table 4.1 and the descriptive statistics for independent variables are presented in Table 4.2

**Table 4.1 Descriptive Statistics for Discretionary Accruals in Absolute Value**

	Approach	Obs.	Mean	Std. Dev	Min	Max
<b>dlnDAC1</b>	Hribar and Collins (2002) model	21	0.048938	0.041294	-0.021333	0.131032
<b>dlnDAC2</b>	Kothari et al. (2005) model	21	0.029383	0.016747	0.016747	0.062245

The mean of the absolute value of discretionary accruals is significant, for the two different models, which shows the presence of earnings management practices in the Nigerian firms. This proves that the Nigerian firms tend to conceal their failures and reduce the quality of financial and accounting information.

**Table 4.2 Descriptive Statistics for Independent Variables**

	dlnLEV	dlnROAt	dlnSFR	dlnINTEXP
<b>Mean</b>	0.087991	0.053635	0.289683	0.018813
<b>Median</b>	0.038054	0.033448	0.155517	0.021916
<b>Maximum</b>	0.611208	0.178619	2.549106	0.061232
<b>Minimum</b>	-0.023267	-0.020332	0.019021	-0.084364
<b>Std. Dev.</b>	0.138767	0.050501	0.546139	0.032062
<b>Skewness</b>	2.736418	0.906020	3.627442	-1.884673
<b>Kurtosis</b>	10.77138	3.075103	15.43559	6.896090

Observations	21	21	21	21
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The mean of leverage varies between -0.023267 and 0.611208, which indicates that the leverage among the Nigerian firms in the sample is high. This shows Long term debt seems to be an important source of financing for the Nigerian firms in our sample.

**Pre-estimation Tests**

A pre-estimation test is carried out to determine if the data complies with the criteria for economic analysis. The tests required here are the stationarity/unit root test and the co-integration test.

**Stationarity Test**

**Table 4.3 Result for Stationarity Test**

VARIABLES	ADF STAT AT LEVELS	5% CRITICAL VALUE	ADF STAT AT FIRST DIFFERENCE	5% CRITICAL VALUE	ORDER OF INTEGRATION
dlnDAC1	-3.403324	-3.020686		-	I(0)
dlnDAC2	-2.482782	-3.020686	-5.165412	-3.029970	I(1)
dlnLEV	-7.667897	-3.020686			I(0)
dlnROAt	-3.897567	-3.020686	-5.865199	-3.029970	I(1)
DLSFR	-1.799103	-3.052169	-3.738854	-3.052169	I(1)
dlnINTEXP	-2.771595	-3.020686	-7.448923	-3.029970	I(1)

*Source: Author's computation from E-views 10*

Table 4.3 above gives information about the stationarity of the variables used in this study. It is conducted using the Augmented Dickey-Fuller procedure, taking into consideration trends and no intercept. A variable is not stationary at any given level if the ADFTest statistic is less than the ADF.5% critical value. The results on the table show that all the variables except dlnDAC1 and dlnLEV are stationary at first difference; dlnDAC1 and dlnLEV are stationary at level.

**Co-integration Test Results**

**Table 4.4 Johansen Co-Integration Test Rest**

No. of Co-Integrating Equations	Trace Statistic	Trace Statistic	P-value
None *	285.2722	95.75366	0.0000
At most 1 *	151.9032	69.81889	0.0000
At most 2	47.41145	47.85613	0.0550
At most 3	15.87622	29.79707	0.7210
At most 4	4.330509	15.49471	0.8751
At most 5	0.030614	3.841466	0.8611

*Source: Author's Computation*

Since not all the variables are stationary at level, a co-integration test is carried out using the Johansen procedure considering trend and no intercept. The result shows the presence of two significant co-integrating equations. This indicates a long-run relationship among the variables. Hence, although not all the variables are stationary at levels, they have a long-run relationship. Therefore, a long-run model can be estimated.

### OLS Regression Result

The hypothesis developed in Section 3 is tested in this section. In table 4.3, The regression result is represented with the variables separately regressed using each one of the dependent's absolute value of discretionary accruals variables calculated with the two models employed as earnings-management measures.

**Table 4.5 Regression Results of Determinants of the Absolute Value of Discretionary Accruals with Different Models**

DAC	dlnDAC1 Hribar and Collins (2002) model	dlnDAC2 Kothari and et al. (2005) model
(Constant)	0.024066 (1.263425)	0.012409 (1.256747)
dlnLEV	-0.452609** (-2.174182)	-0.265631** (-2.461638)
dlnROA	0.874918** (2.444812)	0.368204* (1.984907)
dlnSFR	0.073965* (1.782601)	0.045394* (2.110593)
dlnINTEXP	-0.194273 (-0.512473)	0.395925* (2.014857)
R2	0.579182	0.312555
Adjusted R2	0.473977	0.140694
F-statistics	5.505287 (0.005540)	1.818649 (0.017459)
Jarque-Berra	8.3618 (0.015284)	1.914039 (0.384036)
Breusch-Godfrey Serial Correlation LM Test:	0.641701 (0.7255)	2.698617 (0.2594)
Heteroskedasticity Test: Breusch- Pagan-Godfrey	0.900696 (0.9245)	2.036205 (0.7291)

Notes: The sample consists of three different observations (each model represents an observation) made over the period 2000-2020.

\*, \*\*, \*\*\* significant at the 0.1, 0.05 and 0.01 levels respectively. T-statistics are in parentheses.

### Findings and Discussion

The F-statistics for all of the two models is significant at the 5 percent level. The regression of the absolute value of discretionary accrual-based earnings management on the firm's debt to equity ratio shows that this ratio affects negatively and significantly the practice of earnings management in the Hribar and Collins (2002) model and Kothari and et al. (2005) model. The findings support Jensen (1986) 'control hypothesis' for debt creation. According to the 'control hypothesis' for debt creation theory, debt can be used to reduce agency costs where managers control the firm's cash flow at their discretion. When managers have an obligation to make interest and principal payments, they control the firm's cash flow at their discretion. The larger a firm's leverage ratio, the less likely the firm's manager is to select income-increasing accounting procedures. In addition, the negative association between leverage and Earning management practices is also supported by the reason of the managers evading investment in projects that are non-value maximizing, which control the creation of accruals in the firms and that increasing leverage creates a negative connection between earnings management and firm's leverage (Wassimullah & Abbas, 2010).

In addition, the control variables show a different result. First, in the Kothari and et al. (2005) model, dlnINTEXP (with a coefficient of -0.194273) has a negative association with dlnDAC2 but is not significant. Second, dlnROA is significantly positive at 5 percent and 1 percent levels respectively with dlnDAC in the first and second models. This result was consistent with **Gunny, 2010**. Managers tend to exercise operational discretion, hence, to portray a better future performance or to signal future firm value.

The findings show that the coefficient of the self-financing ratio is positive (-0.000877) and significant in the two models. This result indicates that managers who finance their investments through internal resources still practice

earnings management. Thus, we find that high self-financing capacity does not limit the opportunistic behavior of managers.

To check for the presence of autocorrelation, the Breush Pagan LM test was applied. The null hypothesis ( $H_0$ ) for the autocorrelation test is that there is no autocorrelation in the residual, with the decision rule to reject  $H_0$  if the p-value of the observed chi-square is less than or equal to 0.05 level of significance. The result above shows that the probability of the chi-square distribution in the two models is greater than 0.05. Therefore, we fail to reject the null hypothesis and conclude that there is no presence of autocorrelation in the residual.

To access heteroskedasticity, the Breusch-Pagan-Godfrey heteroskedasticity test was employed. The result shows that the probability of the chi-square distribution in the two models is greater than 0.05. Therefore, we fail to reject the null hypothesis and conclude that the residual is homoscedastic, implying that there is no problem of heteroscedasticity in the model. Thus, there is constant variance in the error term.

We conclude that our first hypothesis is rejected for our sample of Nigerian companies confirming that the managers of high leveraged firms engage in earnings management practice than in the lower leveraged firms of leveraged firms to avoid the violation of debt covenants.

## 5. Conclusion

This paper empirically investigated the impact of leverage increases on the extent of accrual-based earnings management in the Nigerian context. As pointed out in the literature, it is clear that leverage can have a positive effect on accrual-based earnings management in some studies, and in some cases, negative associations exist between leverage and accrual-based earnings management. After an empirical analysis, the result shows that the leverage has a significant negative association with the absolute value of discretionary accruals in the Hribar and Collins (2002) model and Kothari et al. (2005) model. The result supports the review that leverage is one of the controlling and monitoring systems which limits managers of increasing leveraged firms from engaging in income-increasing discretionary accruals. Thus, leverage responds to firms that have failed due to the practice of earnings management; this could affect the quality of accounting earnings. Although this study argues that leverage limits accrual-based earnings management in Nigerian companies, the findings do not indicate a causal relationship between leverage and discretionary accruals.



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