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Does auditor industry specialization mitigate earnings management? An estimated generalized least squares (EGLS) analysis of quoted non-financial firms in Nigeria.

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Abstract

This research delves at the correlation between tax evasion and the effectiveness of investments made by publicly traded non-financial companies in Nigeria. Twelve of these companies were listed on the Nigerian Exchange Group (NXG) floor between 2011 and 2022, and the research makes use of panel data that was collected from a secondary source. According to the findings of the estimated generalised least squares (EGLS) method, while one of the variables representing audit industry specialization (TOTAFEES) is positive and significant when correlated with management of earnings; another three of the variables representing audit industry specialization (TOTSALES, ASSETS and AFEES) are negatively and statistically significant with it.

Keywords: Auditor Industry Specialization, Earnings Management, Quoted Non-Financial Firms, EGLS, NXG.

1.0 Introduction

Market participants are informed about a company's performance and financial health via financial statements. To assist them in making informed financial decisions, these investors rely on the accuracy of the data in these statements. For an extended period, the accounting community, academics, regulatory bodies, and shareholders have expressed concern about how accurate financial reports are. I believe this is because financial reporting quality has traditionally been a major conduit for distributing financial information to external consumers.

But previous studies by Egbadju and Kunemoemi(2019) as well as by Egbadju and Chigioke (2023) have documented unethical behaviour since the early 2000s characterized by unparalleled corporate fraud and corruption of which Enron (2001), are just a handful of them. All of these firms have been accused of engaging in earnings management and that is after their external auditors have given them a clean bills of health.

Kitiwong(2014) noted that even though many earlier studies have sought to define the word "earnings management," questions about what it is and how it differs from other concepts like "fraud," "creative accounting," "smoothing income," and "accruals management" still exist. The

term "earnings management" refers to the practice of managers manipulating the profits of their organization. When managers are under pressure to meet or surpass predetermined earnings benchmarks or targets that are expected by management or investors, a global phenomenon known as earnings management often occurs (Egbadju, 2024; Egbadju, 2023a). The act of utilizing aggressive accounting techniques to manipulate sales, profit, or earnings figures for all earnings is known as earnings management. To meet a stated target for reported earnings, management may use accounting practices or implement useful strategies that affect earnings. That is, it is the act of utilizing aggressive accounting techniques to manipulate sales, profit, or earnings figures for all earnings is known as earnings management. To meet a stated target for reported earnings, management may use accounting practices or implement useful strategies that affect earnings.

Auditing's main purpose is to guarantee the calibre of a company's earnings. It is believed that variations in the auditor's worth will result into distinctions in degree of reliability presented, the neutrality applied, and the quality of the profits that clients generate (Rusmin, 2010). The concept of auditor quality is complex and inherently unobservable, hence it cannot be sufficiently captured by a single feature. It is widely acknowledged that the most crucial monitoring tool for lowering agency costs and management-owner conflicts of interest is a thorough grasp of audit quality. Because the effectiveness of monitoring depends on its capacity to lessen the possibility of fraudulent business financial statements and auditor independence in deciding whether or not to report serious misstatements raises concerns (Zgarni et al., 2016).

The two concepts of auditor independence and specialization have received the most attention in the research on the links between quality of auditors and profits management (Rusmin, 2010). Having worked with customers in the same field for a while allows one to develop specialised knowledge about that field. In many industries, including auditing, specialisation is key to maximising efficiency and effectiveness. By assessing discretionary accruals, prior research indicated that industry-specific auditors can improve the integrity of financial reporting by reducing the opportunistic accounting options available to management (Mitra & Hossain, 2010). Specialist auditors are more effective than non-specialists in reducing accrual-based earnings management, according to Krishnan (2003), while customers of industry-specific auditors had fewer discretionary accruals and greater earnings response coefficients, according to Balsam et al. (2003).

This is consequent upon the fact that specialist auditors have more in-depth industry-specific knowledge and abilities in addition to a superior comprehension of their clients' enterprises which curtail management's propensity to report earnings and other financial information incorrectly. According to Dewi and Lekok (2021), industrial-specialized auditors have invested significantly in organizational control systems, physical infrastructure, human resources, and technology, which makes it easier for them to spot any discrepancies and representation errors in financial reports. That is, auditors who have a specific industry specialization are better able to identify problems in client data than auditors who are not industry-specific. The specialist auditors appear to have a better awareness of the specialization of the company industries than the auditors who do not have any industry expertise.

Studies on AIS and earnings management are very rare in Nigeria for out of the fifteen empirical literatures reviewed in this study, none is on Nigeria. However, A number of research have shown a robust correlation between earnings management and AIS. both in developed economy-Hsu(2022); Reguera-Alvarado et al. (2019) and Sun and Liu (2013)- and in developing economy-Al-Qadasi (2023); Dewi and Lekok (2021) and Anissa et al. (2019)-with mixed outcomes. For examples, while some found a positive relationship (Anissa et al. (2019); Ashtiani et al. (2016); others found a negative relationship (Al-Qadasi (2023); Hsu(2022) with Zuo and Guan (2014) showing no relationship at all. Despite contradictory findings in the literature, this study's overarching goal is to learn how AIS may affect profits management at publicly traded non-financial companies in Nigeria.

Unlike previous research, this one employs a total of four variables—clients' total assets, audit firms' fees, audit firms' total fees, and clients' total sales—to assess auditing information system (AIS). While other papers reviewed used only one of these variables at a time. While Mitra and Hossain (2010) and Khurana et al. (2018) from the United States used longer period 1981-2014 and 1996 to 2010 respectively than this study; this study uses a more recent years from 2011 to 2022. We, therefore, hypothesized that all the various AIS measurements considered in this study have no significant relationship with Manipulation of financial results by publicly traded non-financial companies in Nigeria. After this introduction, the remainder of the work is organised into five parts. Section two contains the literature review, section three presents the methodology, section four discusses the findings, and the fifth section finishes the research by providing suggestions.

2.0 Review of Related Literature.

2.1 Theoretical Underpinning.

2.1.1 Signaling Theory of Audit Industry Specialization

Signaling theory arises from the separation of actor and principle and the existence of information asymmetry. This hypothesis states that supplying signals or information to other parties can reduce asymmetry. Signals can be sent with financial statements or reports via corporate policy. One policy signal is the selection of auditors, as they have an impact on the quality of financial accounts. According to agency theory, increasing agency costs will restrain the growth in demand for superior audits (Watts and Zimmerman, 1986). Auditor, especially industry-specialist, is one useful technique of lessening information asymmetry and related agency costs. Superior audits are expected to reduce information asymmetry to a greater extent than inferior audits due to their increased likelihood of detecting and preventing accounting mistakes and misstatements (Zuo & Guan, 2014). Market share expansion and maintenance are dependent on the caliber of the audits. Businesses with special requirements will choose reliable auditors to cut agency costs and guarantee management integrity for all stakeholders.

2.2. Empirical literature

Al-Qadasi (2023) studied the relationship, if any, that existed between auditor industry specialization and financial manipulation in Malaysia. The study used a yearly dataset consisting

of 4211 observations of firm-year pairs, sourced from the Bursa Malaysia stock exchange, covering the time span from 2009 to 2016. The Ordinary Least Squares (OLS) regression analysis yielded the following findings: AIS based on audit fees negatively and significantly influenced DACC for the period under study.

Hsu (2022) attempted to ascertain influence of auditor industry specialisation on actual earnings management in the given context United States of America (USA). A sampled data of 934 firm-year observations of listed Compusat firms over the period 2005 to 2016 was used. The findings indicated that there was a strong and statistically significant negative correlation between AIS and DACC. This implies that AIS acted as a constraint in reducing incoming-increasing earnings management.

Dewi and Lekok (2021) Examined the correlation between auditors who specialise in certain industries and the manipulation of financial profits in Indonesia. A panel data on 297 non-financial companies listed the research used data from the Indonesia Stock Exchange (IDX) floor spanning the years 2017 to 2019. Results of the pooled OLS showed that audit industry specialist (AIS) represented by total sales market shares negatively and statistically Earnings management, as evaluated by the modified Jones model, was affected discretionary accrual (DACC) model. This means that AIS was able to discourage management from engaging in opportunistic earnings management for the periods under review. For the control variables, return on assets (ROA) and corporate diversifications were positively significant with DACC.

Anissa et al. (2019) studied if audit quality had any impact on administration of actual profits in Indonesia. An analysis was conducted using data collected from 118 industrial businesses listed on the Indonesia Stock Exchange (IDX) between 2012 and 2016. The result of the OLS regression showed that AIS represented by total assets market shares positively and significantly impacted DACC. This means that AIS was not able to discourage management from engaging in opportunistic earnings management for the periods under review.

Widya (2019) carried out an empirical assessment Whether earnings management in Indonesia is related to the specialisation of the auditing business. Panel data collected from companies listed on the Indonesian Stock Exchange that are involved in manufacturing and based on secondary sources for the period 2014 to 2016 were used. Results of the pooled OLS showed that AIS negatively insignificant with DACC. This means that AIS managed, with very little impact, to discourage management from engaging in opportunistic earnings management.

Mukhlasin (2019) studied the relationship, if any, that existed between auditor industry specialization and fraudulent financial reporting throughout Indonesia. Secondary panel data collected once a year from 92 companies trading on the Indonesia Stock Exchange during the between 2012 and 2015.out of which 46 were fraudulent and 46 were non-fraudulent was put to use. The outcome of the OLS regression showed that AIS had a substantial and detrimental effect on DACC for the period under study.

Reguera-Alvarado et al. (2019) examined whether auditors can mitigate how Spanish companies' profits management affects their performance, Japan, France, the United Kingdom, Italy and the United Kingdom. Secondarily sourced data from the annual reports of 3,830 firm-year observations spanning the period between 2005 and 2009 was used. The OLS regression results indicated that AIS was negatively significant with DACC meaning it helped in reducing earnings managements for the period under review.

Karimi and Gerayli (2014) studied how earnings management can be influenced by industry specialization as well as by the length of auditor tenure in Iran. Tehran Stock Exchange's 91 listed firms was selected covering the period 2008 to 2012. The results of the multiple regression showed that AIS significantly lower DACC meaning it was negatively related to DACC.

Ashtiani et al. (2016) ascertained the extent to which audit quality improved earnings management in Iran. A panel data of certain listed firms over some years was used. While the relationship between the Big4 and DACC was negative, that between auditor's industry specialization and DACC was positive.

Zuo and Guan (2014) investigated whether AIS and audit firm size had any effect on management of profits for Chinese publicly traded companies. Listed Chinese companies with A-stocks as a basis for this secondary data set culled from the China Stock Market & Accounting Research (CSMAR) database spanning the period from 2008 to 2011 was used. Results of the OLS revealed that AIS represented by total sales market shares was negatively insignificant with DACC. This means that AIS managed, with very little impact, to discourage management from engaging in opportunistic earnings management.

Sun and Liu (2013) empirically tested to what degree auditor specialisation affected earnings management at publicly traded companies in the United States. A panel data of 18,513 observations of selected firms from the Compustat and Risk Metrics datasets spanning the period 1996 to 2010 was used and analyzed with the OLS regression method. The results of the OLS regression showed that AIS represented by total assets market shares was negatively related to DACC meaning it significantly lower DACC.

DeBoskey and Jiang (2011) attempted to ascertain earnings management in light of audit quality's influence, the United States of America (USA). A sampled data of 1249 firm-year observations in the USA over the period 2002 to 2006. Result showed that AIS had a negative and significant relationship with DACC represented by loan loss provision. This means that AIS acted as a constraint in reducing incoming-increasing earnings management.

Rusmin (2010) , in a research study, sought to verify if at all the quality of audit work mitigate the methods used by Australian firms to manipulate their profits. Using the data of 325 Australian listed firms over certain period of time, the OLS regression results found out that AIS represented by audit fees market shares had a negative and significant relationship with DACC. This means that AIS acted as a constraint in lowering earnings management opportunistic behaviour by managers.

Mitra and Hossain (2010) researched on how audit industry specialization that mitigate earnings management in the USA. Data collected for the study on 1285 firm-year observations which covered the period 1981-2014 were analyzed with the OLS method. The results showed that specialist auditors helped to reduce the level of DACC.

Balsam et al. (2003) explored the relationship, if any, that determine how auditor industry specialization helps to improve earnings quality in the USA. Data obtained from Compustat

S/N	Variable Names	Definitions	Variable Types	Measurements
1	KASZNIX	Kazsnix's Model (1999)	Main Dependent Variable	See 3.2.1.1 for Details
2	KASZNIX (-1)	Lag One of KASZNIX	Instrumental Variable	-
3	LARCKER	Larcher and Richardson's Model (2004)	Additional Dependent Variable	See 3.2.1.2 for Details
4	KANGSIV	Kangsiv's Model (1995)	Additional Dependent Variable	See 3.2.1.3 for Details
5	MJONES	Modified Jones' Model (1995)	Additional Dependent Variable	See 3.2.1.4 for Details
6	JONES	Jones' Model (1991)	Additional Dependent Variable	See 3.2.1.5 for Details
7	KEY	Key's Model (1997)	Additional Dependent Variable	See 3.2.1.6 for Details
8	SHIVA	Shivakumar's Model (1996)	Additional Dependent Variable	See 3.2.1.7 for Details
9	TOTSALES	Long-Run Cash ETR	Independent	See 3.2.2 for Details
10	TOTAFEES	Lagged Cash ETR	Independent	See 3.2.2 for Details
11	TOTASSETS	Henry and Sansing's (2014) Measure.	Independent	See 3.2.2 for Details
12	AFEES	Tax Shelter Score	Independent	See 3.2.2 for Details
13	AIND	Auditor's Independence	Control	Logarithms of the audit fees paid by the compan

14	ATEN	Auditor's Tenure	Control	Number of years the auditors audited the compan
15	BIG4	Audit Firm Size (Deloitte & Touche; Ernst & Young; PriceWater Cooper and KPMG)	Control	A dummy variable,1, if company was audited by one of the Big4, otherwise it is, 0
16	AFAGE	Audit Firm Age	Control	Years elapsed since the audit company started providing audit services
17	FSIZE	Firm Size	Control	The company's total assets logarithmically
18	LEV	Leverage	Control	The ratio of a company's total debt to its total assets
19	YDUM	Year Fixed Effect Dummy	Control	A single-value dummy variable that represents the year
20	IDUM	Using a Fixed Effect Dummy for Industry Sector	Control	A single-value dummy variable that represents each industry

database spanning the period between 1991 and 1999 was used in this study. The OLS results showed that specialist auditors helped to reduce the level of DACC and increase the level of earnings response coefficients.

Methodology

This study uses the ex-post facto research method to look for a connection between audit sector specialisation and earnings management of Nigerian enterprises. This approach is also called descriptive or correlational research. Twelve non-financial firms listed on the Nigerian Exchange Group (NXG) floor accounts for the study's sample, with 144 observations drawn from their annual reports covering the twelve (12) years of 2011–2022.

Quantification and Clarification of Variables

Earnings management models as discussed in Egbadju(2023b) are as discussed below.

Kazsnix's Model (1999)

$$\frac{TACCit}{TAit-1} = \alpha 1 + \frac{1}{\text{TAit}-1} + \alpha 2\frac{\Delta REVit - \Delta RECit}{\text{TAit}-1} + \alpha 3\frac{PPEit}{\text{TAit}-1} + \alpha 4\frac{ROAit}{\text{TAit}-1} + \alpha 5\frac{\Delta CFOit}{\text{TAit}-1} + \varepsilon it$$

Where: $TACC_{it}$ = Aggregate accruals for company i in the year t.

TA_{t-1} = All of company i's assets in year t-1

ΔRev_{it}= Variation in company i's income for year t

ΔRec_{it} = How company i's receivables changed in year t

PPE_{it} = Gross assets of company i in the year t on the ground.

ROA_{it-1} = Profit for Company I in Year t-1, with a one-year lag.

ΔCFO_{it} = The shift in company i's operating cash flow in year t

Note that $TACC_{it} = (\Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta DCL_{it} - DEP_t)$
Where: $TACC_{it}$ = Firm I's total accruals for the year t

ΔCA_{it} = The shift in company i's current assets from year t

$\Delta Cash_{it}$ = Cash and equivalents changed hands for company i in year t

ΔCL_{it} = How company i's current liabilities changed in year t

ΔDCL_{it} = Change in short term debt included in current liabilities for firm i in year t
DEP_{it} = Depreciation and amortization for firm i in year t
TA_{it-1} = Total assets for firm i in year t-1, that is, lag of one year.

Larcher and Richardson's Model (2004)

$$\frac{TACCit}{TAit-1} = \alpha 1 + \alpha 2\frac{\Delta SALESit - \Delta RECit}{\text{TAit}-1} + \alpha 3\frac{PPEit}{\text{TAit}-1} + \alpha 4\frac{BTMit}{\text{TAit}-1} + \alpha 5\frac{CFOit}{\text{TAit}-1} + \varepsilon it$$

Where: $\Delta Sales_{it}$ = Product revenue shift for company i in year t.

BTM_{it} = Book-to-Market value for firm i in year t.

Everything else follows the same definitions as in Kasznix's model.

Kangsiv's Model (1995)

$$\frac{ABit}{TAit-1} = \alpha 1 \frac{1}{+\,\mathrm{TAit}-1} + \alpha 2 \frac{\Delta REVit}{\mathrm{TAit}-1} + \alpha 3 \frac{EXPit}{\mathrm{TAit}-1} \alpha 4 \frac{PPEit}{\mathrm{TAit}-1} + \varepsilon \mathrm{it}$$

Where: AB_{it} = Accrual balance for firm i in year t.

Note that $AB_{it} = (\Delta AR_{it} + \Delta INV_{it} + \Delta OCA_{it} - \Delta CL_{it} - DEP_{it})$

Where: AR_{it} = Account Receivables for firm i in year t.

INV_{it} = Inventory for firm i in year t.

OCA_{it} = Other current assets for firm i in year t.

CL_{it} = Current liabilities for firm i in year t.

DEP_{it} = Depreciation and amortization for firm i in year t.

EXP_{it} = Operating expenses for firm i in year t.

Other variables are as defined in Kasznix's model above

Dechow et al.'s (1995) Modified Jones' Model/ **Dechow, Sloan, & Sweeney, 1995)**

$$\frac{TACCit}{TAit-1} = \alpha 1 + \frac{1}{\mathrm{TAit}-1} + \alpha 2 \frac{\Delta REVit - \Delta RECit}{\mathrm{TAit}-1} + \alpha 3 \frac{PPEit}{\mathrm{TAit}-1} + +\varepsilon \mathrm{it}$$

Other variables are as defined in Kasznix's model above

Jones' Model (1991)

$$\frac{TACCit}{TAit-1} = \alpha 1 \frac{1}{+\,\mathrm{TAit}-1} + \alpha 2 \frac{\Delta REVit}{\mathrm{TAit}-1} + \alpha 3 \frac{PPEit}{\mathrm{TAit}-1} + \varepsilon \mathrm{it}$$

Other variables are as defined in Kasznix's model above

Key's Model (1997)

$$\frac{TACCit}{TAit-1} = \alpha 1 \frac{1}{+\,\mathrm{TAit}-1} + \alpha 2 \frac{\Delta REVit}{\mathrm{TAit}-1} + \alpha 3 \frac{PPEit}{\mathrm{TAit}-1} + \alpha 4 \frac{IAit}{\mathrm{TAit}-1} + \varepsilon \mathrm{it}$$

Where: IA_{it} = Gross intangible assets for firm i in year t.

Everything else follows the same definitions as in Kasznix's model

Shivakumar's Model (1996)

$$\frac{TACCit}{TAit-1} = \alpha 1 + \alpha 2\frac{\Delta REVit}{\text{TAit}-1} + \alpha 3\frac{PPEit}{\text{TAit}-1} + \alpha 4\frac{CFOit}{\text{TAit}-1} + \varepsilon \text{it}$$

Other variables are as defined in Kasznix's model above

Derivation of any of the Earnings Management Models.

For examples, to derive the Jones Model (1991):

$TACC_{it}/TA_{t-1} = (\Delta CA_{it} - \Delta Cash_{it} - \Delta CL_{it} + \Delta DCL_{it} - DEP_t)/TA_{t-1}$.....Eq1

where: $TACC_{it}$ = Firm I's total accruals for the year t

ΔCA_{it} = Present value of company i's assets as they changed in year t

$\Delta Cash_{it}$ = Cash and equivalents changed hands for company i in year t

ΔCL_{it} = Change in current liabilities for firm i in year t

ΔDCL_{it} = Change in short term debt included in current liabilities for firm i in year t
DEP_{it} = Depreciation and amortization for firm i in year t
TA_{it-1} = Total assets for firm i in year t-1, that is, lag of one year.

$TACC_{it}/TA_{t-1} = \alpha_1 1/ TA_{it-1} + \alpha_2 \Delta Rev_{it} / TA_{it-1} + \alpha_3 PPE_{it}/ TA_{it-1} + \boldsymbol{\varepsilon_{it}}$.....Eq2

where: $TACC_{it}/TA_{t-1}$ = The ratio of total accruals for company i in year t to total assets for firm i in year t-1

ΔRev_{it}= Variation in company i's income for year t

α_1, α_2 and α_3 = The parameters or coefficients that need to be calculated in order to determine the values of â1 â2 â3

$\boldsymbol{\varepsilon_{it}}$ = The residuals or error terms represent the deviation of company i in year t from the expected value.

Step3. Subsequently, we will determine the non-discretionary accruals (NDACC) by substituting α_1, α_2 and α_3 with $â_1$ $â_2$ $â_3$ In the equations provided above, the error factors are not included when ε is absent.

$NDACC_{it}/TA_{t-1} = â_1 1/ TA_{it-1} + â_2 \Delta Rev_{it} / TA_{it-1} + â_3 PPE_{it}/ TA_{it-1}$

where: $NDACC_{it}/TA_{t-1}$ = Non-discretionary accruals for firm i in year t scaled/divided by total assets for firm i in year t-1

Step 4: Ultimately, we will determine the discretionary accruals by subtracting the non-discretionary accruals from the overall accruals. The non-discretionary accruals are often referred to as the "normal" accruals.

$DACC_{it}/TA_{t-1} = TACC_{it}/TA_{t-1} - NDACC_{it}/TA_{t-1}$ …….Eq3

As a stand-in for Earnings Management, we have discretionary accrual costs (DACC), often called "abnormal" accruals.

Derivation of the Independent Variables

TOTSALES = Audit Industry Specialization (AIS) Using Firms and Industry Total Sales Values. The AIS for sales can be calculated using the following formula:

A specific audit firm's total sales for all liens examined in an industry in a period
Add together all the revenue from all the auditing companies in this sector over the same period

The formula above is used to calculate the auditor's market share in that particular industry.

TOTAFEES = Audit Industry Specialization (AIS) Using Firms and Industry Sum of Values for audit fees and non-audit fees.

The AIS for audit and non-audit fees can be calculated using the following formula:

Total amount of fees received by a certain audit firm for both audit and non-audit services in a given industry in a period
Total amount of audit and non-audit fees charged by all audit companies within this industry over the same period

The formula above is used to calculate the auditor's market share in that particular industry

TOTASSETS = Audit Industry Specialization (AIS) Using Firms and Industry Total Assets Values.

The AIS for sales can be calculated using the following formula:

Sum of the total assets of all cliens audited by a particular audit firm in an industry in a period
Sum of the total assets of all clients of all the audit firms in this industry over the same period

The formula above is used to calculate the auditor's market share in that particular industry

3.2.2.2. AFEES = Audit Industry Specialization (AIS) Using Firms and Industry Audit Fees Values.
The AIS for audit fees can be calculated using the following formula:
Sum of the audit fees earned by a particular audit firm in an industry in a period
Sum of the audit fees earned by all the audit firms in this industry over the same period

The formula above is used to calculate the auditor's market share in that particular industry. In all cases, this study uses a benchmark of at least 10% market share as an industry specialist auditor(Rusmin, 2010).

Specification of the model

Equation 1 is the functional equation used to evaluate the supplied assumptions about earnings management.

$$KASZNIX = f(TOTSALES, TOTAFEES, TOTASSETS, AFEES, AIND, ATEN, BIG4, AFAGE, FSIZE, LEV, YDUM, IDUM) \quad (Eq1)$$

We may derive the functional testable model as follows:

$$KASZNIX = \beta o + \beta_1 TOTSALES + \beta_2 TOTAFEES + \beta_3 TOTAFEES + \beta_4 AFEES + \beta_5 AIND + \beta_6 ATEN + \beta_7 BIG4 + \beta_8 AFAGE + \beta_9 FSIZE + \beta_{10} LEV + \beta_{11} YDUM + \beta_{12} IDUM + \varepsilon \quad (Eq2)$$

The correct format for specifying the model is as follows, given that we are working with panel data:

$$KASZNIX_{it} = \beta o + \beta_1 TOTSALES_{it} + \beta_2 TOTAFEES_{it} + \beta_3 TOTAFEES_{it} + \beta_4 AFEES_{it} + \beta_5 AIND_{it} + \beta_6 ATEN_{it} + \beta_7 BIG4_{it} + \beta_8 AFAGE_{it} + \beta_9 FSIZE_{it} + \beta_{10} LEV_{it} + \beta_{11} YDUM_{it} + \beta_{12} IDUM_{it} + \varepsilon_{it} \quad (Eq3)$$

Dynamic Data Analysis using Estimated Generalized Least Squares (DEGLS) Technique

Alexander Aitken created the generalised least squares (GLS) in 1936, around the middle of the twentieth century, because the ordinary least squares (OLS) regression model relies on specific assumptions that, if broken, could render the OLS estimator unreliable (Virgantari et al., 2019). The GLS regression is an extension of the normal linear OLS estimation designed with some level of unequal error variances (heteroscedastic), not equal or constant variance (homoscedastic) and correlations between the residuals or error terms (serial correlation) in mind. The GLS and OLS estimators are the same in the absence of autocorrelation and heteroskedasticity and so they differ with respect to the error term assumptions which the GLS estimator was improvised to tackle.

Thus, the GLS estimator is a generalization of the OLS estimator which transforms it to a new estimator that is more efficient, consistent, unbiased and asymptotically normal (Priya & Riya, 2017).

A dynamic regression model is designed to solve some problems which the static models are not capable of solving. For examples, variables with unit roots (non-stationary variables), variables with endogeneity problem, variables with serial correlation especially second order, problem of small sample sizes cannot be effectively and efficiently estimated by the classical regression of OLS because it was built on certain strong assumptions which are not realistic. A dynamic GLS performs better in both homogenous and heterogeneous panels which ensure that the estimation is asymptotically efficient and simpler to compute **(**Madaleno & Moutinho, 2021).

That is, by factoring in the dependent variable's lag effect, $KASZNIX_{it-1}$, The static model becomes a dynamic one as a result of unobserved heterogeneity. So, after adding the delayed dependent variable to equation 3, we get the following equation:

$$KASZNIX_{it} = \beta o + \beta_1 KASZNIX_{it-1} + \beta_2 TOTSALES_{it} + \beta_3 TOTAFEES_{it} + \beta_4 TOTAFEES_{it} + \beta_5 AFEES_{it} + \beta_6 AIND_{it} + \beta_7 ATEN_{it} + \beta_8 BIG4_{it} + \beta_9 AFAGE_{it} + \beta_{10} FSIZE_{it} + \beta_{11} LEV_{it} + \beta_{12} YDUM_{it} + \beta_{13} IDUM_{it} + \varepsilon_{it} \quad \text{(Eq4)}$$

Where the definitions are as stated in Table2 above.

β_1 to β_{13} are the beta coefficients of the instrumental, independent and control variables. From this study, we expect β_1 to β_{13} to be greater than zero.

ε_{it} = Error term for year 'i' in year 't'

4. Approach to Analysing Data

The following sequence is followed while analysing the obtained data using EViews 13: one-way statistical tests or descriptive statistics; bivariate data analysis or correlation analysis; do some extra analyses and diagnostics tests; estimate the models; and run a unit root test.

Univariate Data Analyses (Descriptive Statistics)

Table 2 below displays the statistical data, which includes the variables' means, minimums, and maximums, standard deviations and Jarque-Bera Statistics Probability values. All the variables of interest (KASZNIX, TOTSALES, TOTAFEES, TOTASSETS, AFEES, AIND, ATEN, BIG4, AFAGE, FSIZE, LEV, YDUM, IDUM) have maximum values which are greater than their respective minimum values. Also, the mean values of KASZNIX, TOTSALES, TOTAFEES, AFEES, AIND, ATEN, BIG4, AFAGE, FSIZE, LEV, YDUM, IDUM are greater than their respective standard deviation values. (Mean>SD). This show that these variables do not have outliers in their data set and so do not have a high gap between

the highest and lowest values for the last 12 years meaning that the average are quite high (Lestari & Setiany, 2023). TOTASSETS is the only variable in which the mean is smaller than the standard deviation (Mean<STD).

Table 2: Descriptive Analysis Result

Variables	Number of Observations	Mean	Minimum	Maximum	Std Deviations	Probability of Jarque-Bera
KAZSNIX	144	1.941130	1.941115	1.941160	3.26E-06	0.000000
TOTSALES	144	0.155722	0.002129	0.404146	0.141216	0.000000
TOTAFEES	144	0.282959	0.001767	0.692165	0.229574	0.001217
TOTASSETS	144	0.143976	0.000975	0.623685	0.187170	0.000342
AFEES	144	0.135986	0.002948	0.272371	0.099739	0.000000
AIND	144	19182.10	1200.000	107500.0	16715.83	0.000261
ATEN	144	7.167832	1.000000	12.00000	2.545324	0.000000
BIG4	144	0.825175	0.000000	1.000000	0.381153	0.001124
AFAGE	144	44.63636	14.00000	67.00000	16.96539	0.000000
FSIZE	144	47493337	52148.00	6.16E+08	1.11E+08	0.000404
LEV	144	0.816397	0.043889	18.18050	1.734178	0.000000
YDUM	144	6.538462	1.000000	12.00000	3.445285	0.012644
IDUM	144	6.538462	1.000000	12.00000	3.445285	0.012644

Sources: Authors' Computations using EViews 13 Software

Bivariate Data Analysis (Variance Inflation Factor)

Variance Inflation Factors (VIFs) is a statistical technique used for the detection of multicollinearity or collinearity among independent variables. A high VIFs reflect the fact there is collinearity among the independent variables meaning th**e** standard errors and the variances of the regression coefficient estimates will increase leading to a very low *t*-statistics (Murray et al, 2012). Table 3 shows the results of the variance inflation factor (VIF) and the corresponding tolerance column. A VIF of any variable less than 10 with its tolerance level greater than 0.2 is free of multicollinearity for VIF that ranges between 5 to 10 is adjudged to have highly correlated variables (Shrestha, 2020). All the variables have a VIF less than 10 with a tolerance greater than 0.2. Thus, Table 3 shows that our model has no issue with multicollinearity.

Table 3: Model Result

S/N	Variables	Variance Inflation Factor (VIF)	Tolerance
1	TOTSALES	1.353657	0.714286
2	TOTAFEES	1.843944	0.526316
3	TOTASSETS	2.681109	0.37037
4	AFEES	1.468758	0.666667
5	AIND	3.893967	0.25641
6	ATEN	2.132839	0.454545
7	BIG4	2.077764	0.47619
8	AF_AGE	2.305696	0.416667
9	FSIZE	2.428899	0.4000
10	LEV	1.633439	0.588235
11	IDUM	3.295028	0.30303
12	YDUM	1.453185	0.666667

Source: Researcher's Computations (2024) Using EViews13 Software.

Unit Root Test.

Once the EViews workfile has been structured in panel data form, we can go ahead and perform a panel data unit root test as shown in Table 4 below.

Table 4: Unit Root Test Result

Variables	Levin, Lin & Chu t*	Breitung t-stat	Im, Pesaran and Shin W-stat	ADF - Fisher Chi-square	PP - Fisher Chi-square	Decision
KASZNIX	0.0506	0.1161	0.4039	0.4405	0.0004	I(0) stationary
LARCKER	1.7236	0.9481	0.0338	0.0250	0.0008	I(0) stationary
KANGSIV	1.0000	0.1780	0.0028	0.0023	0.0003	I(0) stationary
MJONES	0.0031	0.0592	0.3042	0.3392	0.0001	I(0) stationary
JONES	0.0006	0.0176	0.1414	0.1676	0.0007	I(0) stationary
KEY	0.0005	0.9415	0.5132	0.5673	0.2962	I(0) stationary
SHIVA	0.0001	0.9415	0.5132	0.5673	0.2962	I(0) stationary
TOTSALES	0.0321	0.0015	0.0132	0.3574	0.9642	I(0) stationary
TOTAFEES	0.0159	0.1345	0.4962	0.4931	0.0670	I(0) stationary

ASSETS	0.0121	0.0225	0.9132	0.3114	0.9234	I(0) stationary
AFEES	0.0005	0.0258	0.1723	0.9994	0.3014	I(0) stationary
AIND	1.0000	1.0000	1.0000	0.0455	0.0400	I(0) stationary
ATEN	0.0332	0.9945	0.9982	0.9992	0.0134	I(0) stationary
BIG4	0.9242	0.9997	0.0243	0.0124	0.4800	I(0) stationary
AFAGE	0.9997	0.9961	0.0443	0.0524	0.0222	I(0) stationary
FSIZE	1.0000	0.9978	0.9818	0.0243	0.4443	I(0) stationary
LEV	0.2987	0.9999	0.2958	0.1858	0.0000	I(0) stationary
IDUM	1.0000	0.0078	0.0718	0.0543	0.4000	I(0) stationary
YDUM	0.2987	1.0000	1.0000	1.0000	0.0000	I(0) stationary

Source: Researcher's Computations (2024) Using EViews13 Software.

The results of the p-values of the five unit roots test Statistics are as shown in Table 2 above. At least, One of the relevant variables is I(0), which means it is level-stationary. In the absence of steady behaviour, variables may diverge with time, leading to illogical or misleading regression findings (Maeso-Fernandez et al. 2004). Thus we can use the ordinary least squares (OLS) method of estimation as shown in Table 3 below.

Regression Models Estimation Results.

Table 5. Dependent Variable: KASZNIX
Method: Panel EGLS (Period SUR)
Date: 04/13/24 Time: 13:18
Sample (adjusted): 2011 2022
Periods included: 12
Cross-sections included: 12
Total panel (unbalanced) observations: 144
Linear estimation after one-step weighting matrix
Period SUR (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
KASZNIX(-1)	0.639587	0.012442	51.40597	0.0000
TOTSALES	-0.010867	0.004473	-2.429206	0.0167
TOTAFEES	0.029344	0.003587	8.181466	0.0000
ASSETS	-0.027187	0.003478	-7.815841	0.0000
AFEES	-0.014429	0.005566	-2.592552	0.0107

AIND	9.63E-08	4.62E-08	2.083371	0.0394
ATEN	0.000929	0.000200	4.656502	0.0000
BIG4	-0.000445	0.001626	-0.273584	0.7849
AF_AGE	0.000138	2.65E-05	5.219027	0.0000
FSIZE	-2.88E-11	8.24E-12	-3.499644	0.0007
LEV	0.000853	0.000530	1.609309	0.1102
IDUM	-0.001401	0.000222	-6.306464	0.0000
YDUM	-3.97E-05	0.000107	-0.371057	0.7113
C	-0.004795	0.003325	-1.442010	0.1520

Weighted Statistics

R-squared	0.978267	Mean dependent var	-0.476818
Adjusted R-squared	0.975852	S.D. dependent var	6.346266
S.E. of regression	0.980679	Sum squared resid	112.5225
F-statistic	405.1155	Durbin-Watson stat	1.981949
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.542593	Mean dependent var	-0.001356
Sum squared resid	0.062307	Durbin-Watson stat	1.942912

Source: Researcher's Computations (2024) Using EViews13 Software.

Table 5 above show the regression estimation results of the relationship between audit industry specialization and earnings management of 12 quoted non-financial firms in Nigeria based on equation 1 above.

Discussion of the Regression Results of estimation and hypothesis testing

Inspection of the coefficient (0.639587) of KASZNIX(-1) Indicates a strong positive significance (t-Statistics = 51.40597 and p= 0.0000) at the 1% level of significance. This finding aligns with the existing body of research, which suggests that the dependent variable and its lag exhibit a positive relationship and must have statistical significance (Egbadju & Jacob, 2022). The positive coefficient indicates a direct influence of prior period earnings management on the current year's earnings management, which is very favourable.

With an R2 of 0.978267 and an Adj R2 of 0.975852, the KASZNIX model showed that TOTSALES, TOTAFEES, TOTASSETS, AFEES, AIND, ATEN, BIG4, AFAGE, FSIZE, LEV, YDUM, and IDUM explained almost all of the systematic variance in earnings management. The remaining 3% may be attributed to variables that the model did not account for. Both the F-statistic (405.1155) and the Prob(F-stat.) of 0.000000 indicate that the variables are significantly related to one another in a linear fashion (dependent and independent). With a Durbin-Watson stat of 1.981949, the model is freed from serial correlation.

Specifically, The coefficient for the negative connection between TOTSALES and KASZNIX is -0.010867, the t-statistic is -2.429206, and the p-value is 0.0000. This indicates that KASZNIX reduces as TOTSALES rises. This indicates that managers are less likely to be involved in controlling profits since audit companies specialise utilising total businesses' assets market shares. Both the sign and the magnitude are in agreement with what we had anticipated. We conclude that there is a substantial association between TOTSALES and KASZNIX and reject the alternative hypothesis that there is no relationship. Consistent with previous findings from Al-Qadasi (2023); Hsu, P-H. (2022) and Dewi and Lekok (2021) but contradicts those of Anissa et al. (2019) and Widya (2019).

TOTAFEES A t-statistic of 8.181466, a p-value of 0.0000, and a coefficient of 0.029344 indicate a positively significant connection with KASZNIX. This means that as TOTAFEES increases, KASZNIX increases as well. Managers are more likely to participate in earnings management if audit firms specialise utilising total audit fees market shares. Both the sign and the magnitude are in agreement with what we had anticipated. Consequently, we will accept the alternative hypothesis that TOTAFEES does have a significant association with KASZNIX and reject the null hypothesis that there is no significant link between the two. Consistent with previous findings from Anissa et al. (2019) and Ashtiani et al. (2016) but contradicts those of Al-Qadasi (2023) and Hsu, P-H. (2022)

The correlation between TOTASSET and KASZNIX is statistically significant (p 0.0000), with a t-value of -7.815841 and a coefficient of -0.027187. This suggests that the more audit firms become specialized using total assets market shares, the more likely managers are hindered from engaging in management of earnings. Both the sign and the magnitude are in agreement with what we had anticipated. We conclude that there is a substantial association between ASSETS and KASZNIX and reject the null hypothesis that there is no relationship between TOTASSETS and KASZNIX. Consistent with previous findings from Zuo and Guan (2014) and Sun and Liu (2013) but contradicts that of Anissa et al. (2019).

With a t-value of -2.592552, a p-value of 0.0107, and a coefficient of -0.014429, the AFEES association with KASZNIX is statistically significant in a negative way. This suggests that the more audit firms become specialized using audit fees market shares, the more likely managers are hindered from engaging in management of earnings. Both the sign and the magnitude are in agreement with what we had anticipated. Based on the data, we may conclude that there is a substantial association between AFEES and KASZNIX, and we reject the null hypothesis that there is no relationship at all. While this finding conflicts with that of, it agrees with Al-Qadasi (2023) and Hsu (2022) Anissa et al. (2019).

For the control variables, while AIND, ATEN and AFAGE are positively and statistically significant with KASZNIX; FSIZE is negatively significant.

Residual Diagnostic Tests of No Cross Sectional Dependence

De Hoyos and Sarafidis (2006) observed that in recent decades there has been a significant increase in economic and financial integration across nations, indicating a substantial interdependence among different groups. Consequently, people have a propensity to react similarly to shared "shocks" or common unobserved elements as a result of neighbourhood effects, herd behaviour, social norms, and really interconnected desires (De Hoyos & Sarafidis, 2006). Rodríguez-Caballero (2016) also noted that if Panel data models exhibit cross-sectional dependency, it can complicate statistical inference and any estimators that do not take such into account could be inconsistent even if the number of The cross-sectional size N is quite large, yet the temporal dimension T is finite.

The above necessitate us to test Testing for cross-sectional dependency is crucial when fitting panel-data models.

Table 6. Residual Cross-Section Dependence Test
Null hypothesis: No cross-section dependence (correlation) in weighted residuals
Equation: Untitled
Periods included: 12
Cross-sections included: 12
Total panel (unbalanced) observations: 144
Note: non-zero cross-section means detected in data
Test employs centered correlations computed from pairwise samples

Test	Statistic	d.f.	Prob.
Breusch-Pagan LM	13.90220	66	1.0000
Pesaran scaled LM	-4.534532		0.0000
Pesaran CD	-0.752628		0.4517

Source: Researcher's Computations (2024) Using EViews13 Software.

Usually, where N is very large with a finite time T or where T is greater than N, we use the Breusch-Pagan LM test Statistic. But where N = T or where T is of the same magnitude with N, we use the Pesaran CD test Statistic. The two results above show that there is no cross sectional dependence in the residuals or the residuals are cross sectionally independence since the Pesaran CD test Statistic is 0.4517 which is greater than 0.05 allowed to reject the null hypothesis of no cross sectional dependence.

Residual Diagnostic Tests of No Normality

The normality test's goal is to establish whether or not the distribution of data within a group of data or variables is normally distributed. The normality test can be used to determine if data was obtained from a normal population or was distributed normally. Descriptive statistics, correlation, regression, ANOVA, t tests, and other data analysis techniques require normality assumptions. Because picking the inappropriate data set representation can lead to an inaccurate interpretation,

this normalcy assumption should be upheld notwithstanding the sample size (Mishra et al., 2019). The Jarque-Bera statistic value and its probability value in Table 7 below demonstrate that the data used to analyze the regression model are normally distributed because the p-value is greater/higher than 0.05, or 5%.

Additional Tests of Robustness Comparing Six Other Models.

To test the robustness of our results, we model five scenarios using LARCKER, KANGSIV, MJONES MJONES, JONES, KEY and SHIVA earnings management models.

Table 7: **Robustness Test**

The Regression Results of the Six Models Using Their t-Statitics Values						
VARIABLES	LARCKER	KANGSIV	MJONES	JONES	KEY	SHIVA
DACC(-1)	10.15721	-	36.87488	27.36659	-	-
TOTSALES	-3.134815	-6.454796	-6.247857	-8.274923	13.07678	-13.07677
TOTAFEES	7.625689	-4.401089	7.112428	6.847420	2.408467	-2.408466
ASSETS	-11.38613	-6.925457	-6.466027	-7.311477	-6.008255	6.008243
AFEES	-2.431201	18.00388	-3.339386	-3.434226	-16.56134	16.56132
AIND	6.236266	15.48334	1.054453	1.274721	-7.219271	7.219269
ATEN	5.646979	21.67738	2.526041	2.349560	-27.11434	27.11430
BIG4	-3.271065	-13.60896	-0.887743	-1.570180	22.95627	-22.95625
AFAGE	2.013413	-18.60494	2.381470	1.719805	18.66481	-18.66476
FSIZE	-5.843056	-5.956384	-1.054809	-0.969429	-3.059000	3.059014
LEV	0.433707	6.150048	2.479629	2.236818	-5.853614	5.853616
IDUM	-6.526521	14.96168	-4.885966	-4.750599	-0.959479	0.959477
YDUM	-1.812433	-17.36126	-3.531117	-4.434871	13.90929	-13.90930
C	-1.869831	-5.784467	-0.028778	0.641026	-7.529571	7.529563
Adjusted R-squared	0.817082	0.943676	0.910934	0.877851	.945749	0.945749
Durbin-Watson stat	2.107724	2.165122	2.097968	2.101596	1.826826	1.826826

Source: Researcher's Computations (2024) Using EViews13 Software

There was no statistically significant difference between Table 5 and Table 7 in terms of regression findings when all six scenarios were included. It should be observed that all the variables representing audit industry specialization (TOTSALES, TOTAFEES, ASSETS and AFEES) are statistically significant with any of the earnings management models. This attest to the robustness of the fact that audit industry specialization considered in this study has helped in mitigating earnings management problem for the period under consideration.

Conclusion and Recommendations

This research delves at the correlation between tax evasion and the effectiveness of investments made by publicly traded non-financial companies in Nigeria. Twelve of these companies were

listed on the Nigerian Exchange Group (NXG) floor between 2011 and 2022, and the research makes use of panel data that was collected from a secondary source. According to the findings of the estimated generalised least squares (EGLS) method, while one of the variables representing audit industry specialization (TOTAFEES) is positively and has a substantial statistical relationship with earnings management; another three of the variables representing audit industry specialization (TOTSALES, ASSETS and AFEES) are negatively and statistically significant with it.

Based on the aforementioned data, the research proposes the following recommendations:

- Management has to know that the auditing industry's expertise acts as a substitute regulatory tool to lower agency costs by reducing opportunities to manipulate profits and, thus, increase earnings informativeness, particularly in weak legal contexts.

- The Nigerian government ought to prioritize the enhancement and upkeep of audit quality, as well as the effective reinforcement of accounting norms and regulations. Doing so will contribute to the maturity, standardization, and efficacy of both the stock and audit markets.

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