



(RESEARCH ARTICLE)



## Knowledge spillover and audit report timeliness: The effect of non-audit services

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### Abstract

This paper investigates the association between audit lag and auditor independence in Nigeria. It studies a sample of Nigerian companies over a 15-year period (2006-2020). The results from the multivariate regression models shows no significant relationship between non-audit services (NAS) fees and audit lag. This shows that the provision of NAS by the audit firm does not significantly influence the timeliness of the audit report. This finding is against the argument that the joint provision of audit services and NAS creates an avenue for knowledge spillover which reduces audit lag. This study contributes to the literature on the effects of joint provision of NAS in emerging economies. It shows further shows the need for African-specific research as there are significant differences in applicability between developed economies and African economies.

**Keywords:** Auditor Objectivity; Knowledge Spillover; Audit Timeliness; Audit Lag; Non-Audit Services

### 1. Introduction

Over the years most of the debates surrounding the joint provision of audit and non-audit services surround the impact on the auditor's objectivity. Some argue evidentially that the practice has led to several accounting scandals globally citing cases like ENRON 2001 and Lehman Brothers 2008 in the United States of America, WoSign 2016 in China, Carillion 2018 in the UK etc. (Benston & Hartgraves, 2002; Berkowsky & Hayajneh, 2017; Li, 2020; Petra & Spieler, 2020).

Even in Nigeria, there have been several audit-related scandals involving auditors who provided both audit and non-audit services (NAS). In 2000, Oshindero and Oni Lasebikan failed to disclose a N10.6 billion debt in African Petroleum's financial statements during privatisation and were accused of aiding management deception by issuing an unqualified audit report (Chukwunedu & Okafor, 2011). In 2006, Cadbury Nigeria Plc overstated profits by N13.255 billion over five years, while its auditor, Akintola Williams Deloitte, which also provided NAS, issued unqualified audit reports. Shortly after, Deloitte was implicated in the Afribank Plc scandal for failing to detect falsified accounts despite providing both audit and NAS (Okafor & Ezeagba, 2018; Okolie, 2014).

More recently, in 2017, Oando Plc was investigated for financial irregularities and poor corporate governance, leading to sanctions against its executives, while Ernst & Young failed to detect the issues (Adams, 2021; Cotterill, 2019). Similarly, in 2019, Ikeja Electric Plc was investigated for financial mismanagement and creative accounting practices, resulting in regulatory fines despite AWD serving as external auditor and provider of additional professional services (Ayotebi, 2019; Iroegbu-Chikezie, 2020).

In theory, the external auditor is appointed by the shareholders to assess the operations of management and ensure that the management's report (financial statements) to the owners (shareholders) gives a true and fair view of the

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affairs of the company. This is based on the assumption of the agency theory that the managers whom the shareholders have put in charge of the daily running of the company will pursue their own benefits to the detriment of the shareholders (Davis et al., 1997; Jensen & Meckling, 1976). This assumption has been corroborated by issues surrounding the various corporate scandals/frauds and is the foundation upon which the need for an external auditor is based.

However, some researchers argue against Causholli et al. (2014) and Onulaka et al. (2019) stating that joint provision of audit and non-audit services does not create a familiarity that impairs the auditor's objectivity. Rather they posit that the auditor is a professional and the provision of NAS creates knowledge spillover that improves audit quality and timeliness (Abid et al., 2018; Ianniello, 2012; Ogbodo & Ajuonu, 2021). Given that the CBN has restricted the joint provision of audit and non-audit services in all financial institutions while the Nigerian SEC is yet to comply, hence this study samples non-financial listed companies and hypothesizes that the joint provision of audit and non-audit services would create a knowledge spillover that improves audit timeliness.

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## 2. Empirical review

### 2.1. Non-Audit Services and Audit Lag

This is based on the *knowledge spillover* hypothesis which was propounded by Simunic (1984). This hypothesis argues that offering NAS improves the auditor's understanding of the clients' business thereby improving both the quality and timeliness of the audit. They suggest a positive relationship, if any, between NAS and audit lag. The following are studies in line with this hypothesis.

Kinney and McDaniel (1989) examined the relationship between non-audit fees and audit lag using 160 publicly traded U.S. companies. Using regression analysis, the study found a positive relationship between NAS and audit lag, suggesting that higher NAS fees are associated with longer audit delays. Interviews with auditors and stakeholders indicated that conflicts of interest arising from NAS provision may explain the longer audit lag. The study therefore emphasized the need to balance NAS provision with auditor independence.

Chung and Monroe (2002) assessed the relationship between non-audit services (NAS) and audit lag using 3,501 firm-year observations from U.S. CompStat Industrial and Transportation files between 1995 and 1997. Using logistic regression analysis, the study found that higher NAS fees were significantly associated with longer audit lag. The study also showed that firms with greater complexity and those audited by Big 5 auditors experienced shorter audit delays.

Cohen, Krishnamoorthy, and Wright (2002) explored the link between NAS and audit timeliness. The authors analysed 1,201 public companies from the United States and gathered data on non-audit services provided by their auditors as well as audit timeliness. The authors controlled for various factors that could potentially affect audit timeliness, such as company size, complexity, and financial health. The findings of the study revealed a non-significant association between NAS and audit timeliness. In other words, the provision of NAS did not have a significant impact on the time it took auditors to complete their audit work.

Krishnan (2003) assessed the association between NAS, audit quality and audit lag in the United States using financial restatements as a measure for audit quality. The study sampled 1,815 public companies over a 3-year period (1996-1998). The regression analyses indicate, among other things, that higher NAS fees are associated with longer audit lags. The study also found a negative association between NAS and audit quality. This suggests that the increase in NAS fees significantly impairs the auditor's independence and objectivity and consequently audit quality.

Basioudis et al. (2008) investigated the effect of audit fees and non-audit service (NAS) fees on auditor independence using financially distressed non-financial firms listed on the London Stock Exchange in 2003. Audit opinion and audit lag were used as proxies for auditor independence. Using logistic regression analysis, the study found that audit lag and prior going-concern reports were significant, suggesting that auditors spend more time reviewing financially distressed firms, particularly those with existing going-concern issues. The study also found a significant negative relationship between NAS fees and going-concern modified audit opinions, implying that firms paying higher NAS fees were less likely to receive qualified audit reports. In contrast, audit fees were positively associated with modified opinions. The findings suggest that while higher audit fees may reflect quality auditing, excessive NAS fees may impair auditor independence.

Knechel et al. (2012) examined the provision of NAS and knowledge spillover in New Zealand. The study analysed 230 firm-years of non-financial companies quoted on the New Zealand Stock Exchange during 2004 and 2005 (post-SOX). It

investigated the concept of knowledge spillover by assessing audit quality and efficiency when NAS are offered by the same auditor. To evaluate audit quality, the study used audit lag and absolute discretionary accruals as proxies, while high NAS fees were employed to represent the provision of NAS. The results from the OLS regression models indicated that providing NAS leads to shorter audit lag without compromising audit quality. This finding suggests that knowledge gained from the joint delivery of audit and NAS contributes to improved efficiency.

Schrand and Zechman (2012) conducted a study to examine the effect of NAS on audit timeliness after controlling for other likely factors that may influence audit timeliness. They sampled and analysed 7,376 firm-year observations from the years 2000 to 2006 and used regression analysis to test their hypotheses. Their findings suggest that NAS had a non-significant effect on audit timeliness after controlling for other factors that may affect audit timeliness, such as firm size, complexity, and financial performance. They also found that auditors who provided NAS tended to be more efficient and complete the audit more quickly than auditors who did not provide NAS.

Alkhtani, Alfraih, and Hussainey (2017) examined the relationship between non-audit services (NAS) and audit quality in Saudi Arabia using 178 publicly listed firms between 2012 and 2015. Audit report lag was used as a proxy for audit quality. The study found no significant relationship between NAS and audit timeliness, suggesting that NAS provision did not impair audit quality in terms of report lag. The findings also showed that larger audit firms and client firms were associated with higher audit quality. The study concluded that although NAS did not significantly affect audit lag, further research is needed on other dimensions of audit quality and potential conflicts of interest arising from NAS provision.

Azizkhani, Monroe, and Shailer (2017) assessed the relationship between NAS and audit quality in Australian using 1,442 Australian firms, sampled from Australian Securities Exchange (ASX) and Australian Securities and Investment (ASIC), that received going concern opinions between 2006 and 2013. The study investigated the impact of non-audit services (NAS) on the probability of receiving a going-concern audit opinion in the context of financial distress, as well as on audit lag. The findings from the logistic regression model indicate that higher levels of NAS correlate with an increased likelihood of receiving a going-concern opinion. Additionally, there is a negative link between NAS and audit lag, suggesting that auditors may sacrifice audit quality to accommodate the provision of more NAS.

Haniffa and Hudaib (2018) investigated the association between NAS, audit quality and audit timeliness. The study sampled 434 UK companies listed on the FTSE All-Share index from 2011-2013. The study focused on modified audit opinion as an indicator of audit quality and audit lag, which measures the time between year-end and the date the audit report is signed, as a gauge of audit timeliness. Utilizing a logistic regression model, along with several control variables, the analysis revealed a negative association between elevated levels of non-audit service (NAS) fees and both audit quality and audit lag. Specifically, companies incurring higher NAS fees were found more likely to receive modified audit opinions and to experience longer audit lag times.

Jizi, Salama, Dixon, and Stratling (2018) investigated the link between NAS and audit timeliness through sampling 220 Australian firms. Utilizing regression analysis, the researchers accounted for various factors potentially influencing audit timeliness, including firm size, complexity, and financial stability. The results indicated a non-significant relationship between NAS and audit timeliness, suggesting that auditors can offer non-audit services without adversely affecting the timeliness of their audit reports.

Huang, Chang, and Chang (2020) conducted a study in Taiwan to examine the relationship between non-audit fees and audit delay. The research analysed 1,300 Taiwanese firms from 2004 to 2014, utilizing regression analysis to assess the influence of NAS on audit delays. The findings revealed a positive correlation between non-audit fees and audit delays, indicating that firms incurring higher NAS fees tended to experience longer audit lags. The authors suggested that this effect may stem from the challenges auditors face in maintaining their independence while providing NAS to their clients. Consequently, the study recommends that regulators contemplate imposing restrictions on the provision of NAS to enhance both audit quality and timeliness.

Gao and Wang (2021) investigated the relationship between non-audit services (NAS) and auditor independence in the Chinese capital market using 10,134 firm-year observations of publicly listed A-share companies from 2012 to 2018. Using regression analysis and propensity score matching, the study found that NAS was negatively associated with auditor independence, evidenced by a higher likelihood of modified audit opinions and longer audit report lag. However, no significant relationship was found between NAS and auditor resignation. Overall, the findings suggest that NAS may impair auditor independence in the Chinese capital market.

Zhang, Jiao, Li, and Chen (2021) examined the impact of non-audit services (NAS) on audit quality and audit timeliness using 2,103 publicly listed Chinese firms from 2012 to 2017. NAS was measured as a proportion of total auditor fees,

while audit quality was proxied by financial restatements and audit qualifications. The study found no significant relationship between NAS and audit timeliness after controlling for firm characteristics. However, NAS was negatively associated with audit quality, particularly in firms with weak corporate governance. The findings suggest that while NAS may not significantly affect audit lag, it may impair audit quality in the Chinese market

Lai (2023) investigated whether different types of non-audit services (NAS) have varying effects on audit report lag using a sample of large accelerated filers. The study found that audit-related and tax fees reduced audit report lag, while other NAS fees had no significant effect. Tests of audit quality showed no evidence that auditors compromised audit quality when providing NAS. The findings support the knowledge spillover theory and suggest that regulators should assess different types of NAS separately rather than treating them as a single category.

Summarily, in New Zealand, Knechel et al. (2012), in their assessment of the 239 non-financial firms quoted on the New Zealand Stock Exchange, also found that high NAS fees significantly influence audit lag. In line with this, Walker and Hay (2013) investigated NAS fees and their impact on audit lag by sampling 260 firm-year observations from companies quoted on the New Zealand Stock Exchange. The findings show that NAS fees have a significant negative relationship with audit lag. However, different from the findings of Knechel et al. (2012), the study did not restrict its data to non-financial companies and based on its findings, the study argues that the shortened audit lag is only evident in the year after the auditor starts providing NAS. In addition to these, Walker and Hay (2013) also argue that shorter audit lag in the subsequent year is indicative of knowledge spillover rather than an impairment of auditor independence since an impairment will be evident from first year. In Japan, Lee and Jahng (2008) investigated audit-related factors that influence audit lag using 1,537 Korean companies. From the findings, the study maintains that audit lag reduces only when the auditor offers tax-related NAS and NAS relating to designing internal control systems. However, Lee, Mande, and Son (2009) examined the impact of joint provision of NAS on audit lag using a sample of Japanese Companies and found a significant negative relationship between NAS fees and audit lag. This finding supports the finding from Lee and Jahng (2008) that NAS reduces audit lag, however, it differs as it does not specify the categories of NAS that are effective in reducing audit lag.

These researchers choose audit lag as a proxy for auditor independence and audit quality on the premise that it provides evidence of knowledge spillover; shorter audit lag when there is joint provision of NAS without reducing audit quality (Knechel & Payne, 2001; W. Robert Knechel et al., 2012). However, Abdillah, Mardijuwono, and Habiburrochman (2019) argues that shorter audit lag may be from other factors like improved internal audit function and audit committee effectiveness. Also, Basioudis et al. (2008) argue that since the auditors take more time in their audit of financially distressed companies than they do well-off companies, the audit lag may not be an effective variable for distressed companies. Lee, Mande, and Son (2009) found that the provision of NAS reduced audit report lags while Wiyantoro and Usman (2018) found no influence from the provision of NAS.

- **Hypothesis 1:** NAS fees have a significant effect on audit lag in non-financial companies listed on the NGX.
- **Hypothesis 2:** NAS fees ratio has a significant impact on audit lag in non-financial companies listed on the NGX.

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### 3. Methodology

The research design that was adopted for this study is the *ex post facto* research design which according to Armstrong, Kepler, and Samuels (2021) helps draw causal inferences that are more credible. It also allows for controls that would enable the researcher establish the causal relationship between variables while adjusting for bias from other factors that may affect the variables (Petchko, 2018).

The study focuses on the non-financial firms listed on the Nigerian Stock Exchange (NGX) from 2006 to 2020. From the 1,208 firm-year observations, a final sample of 174 firm-year observations was selected as there were the observations that had their non-audit fees clearly disclosed. To test the impact of the joint provision of audit and non-audit fees on audit lag, this study employs multivariate logistic regression models for each hypothesis.

The author designs two multivariate models to test the study hypotheses;

#### **Model 1:**

$$AuL_{ifn} = \beta_0 + \beta_1 \text{LogNF}_{ifn} + \beta_2 \text{AC}_{ifn} + \beta_3 \text{LOSS}_{ifn} + \beta_4 \text{RGR}_{ifn} + \beta_5 \text{LNTA}_{ifn} + \beta_6 \text{DTAR}_{ifn} + \beta_7 \text{ROA}_{ifn} + \beta_8 \text{BIGF}_{ifn} + \beta_9 \text{ACG}_{ifn}$$

**Model**

2:

$$AuL_{ifn} = \beta_0 + \beta_1 NFRatio_{ifn} + \beta_2 AC_{ifn} + \beta_3 LOSS_{ifn} + \beta_4 RGR_{ifn} + \beta_5 LNTA_{ifn} + \beta_6 DTAR_{ifn} + \beta_7 ROA_{ifn} + \beta_8 BIGF_{ifn} + \beta_9 ACG_{ifn}$$

Where:

- $AuL_{ifn}$  = Audit lag of firm  $i$  in industry  $f$  for year  $n$
- $LogNF_{ifn}$  = natural logarithm of non-audit fees of firm  $i$  in industry  $f$  for year  $n$
- $NFRatio_{ifn}$  = non-audit fees ratio of firm  $i$  in industry  $f$  for year  $n$
- $AC_{ifn}$  = 1 if firm  $i$  in industry  $f$  has audit committee in year  $n$ , otherwise 0
- $LOSS_{ifn}$  = 1 if firm  $i$  in industry  $f$  reported loss at the end of year  $n$ , otherwise 0
- $RGR_{ifn}$  = revenue growth rate i.e., year  $n$  revenue of firm  $i$  in industry  $f$  less revenue for year  $t-1$  divided by revenue in year  $t$
- $LNTA_{ifn}$  = natural logarithm of total assets for firm  $i$  in industry  $f$  for year  $n$
- $DTAR_{ifn}$  = debt-to-asset ratio of firm  $i$  in industry  $f$  for year  $n$  (total liabilities divided by total assets of firm  $i$  in industry  $f$  for year  $n$ )
- $ROA_{ifn}$  = return on assets i.e., net profit scaled by total assets of firm  $i$  in industry  $f$  for year  $n$
- $BIGF_{ifn}$  = 1 if firm  $i$  in industry  $f$  is audited by PWC, Deloitte, KPMG or EY in year  $n$ , otherwise, 0.
- $ACG_{ifn}$  = 1 if firm  $i$  in industry  $j$  changed audit firm during year  $t$ , 0 otherwise.

**4. Results****4.1. Correlation between dependent and independent variables****Table 1** Descriptive statistics for variables

	Mean	Median	Maximum	Minimum	Std. Dev.
$AuL$	98.615	87.5	317	43	42.528
$LogNF$	3.9237	3.8554	5.5441	2.0334	0.68
$NFRatio$	0.2784	0.2654	0.9263	0.0206	0.1642
$AC$	5.477	6	7	3	1.0012
$LOSS$	0.2356	0	1	0	0.4256
$RGR$	-0.105	0.043	0.8641	-9.454	1.0218
$LNTA$	7.5247	7.5011	9.2412	6.1175	0.8223
$DTAR$	0.6107	0.608	2.0299	0.1004	0.2731
$ROA$	0.0158	0.0265	0.2315	-0.526	0.0923
$BIGF$	0.6494	1	1	0	0.4785
$ACG$	0.0805	0	1	0	0.2728

Researcher's computation, 2025

Table 1 above shows the descriptive statistics of the data showing the dispersion of the key variables of this study. The mean audit lag ( $AuL$ ) is 99 days while the standard deviation is 46 days suggesting considerable but not excessive

variation in audit timeliness across firms. The natural log of non-audit fees (*LogNF*) has a mean of 3.92 and a standard deviation of 0.16 indicating low variability in non-audit fees across the sampled firms. Non-audit fees ratio (*NFRatio*) has a mean of 27.9%, this is less than the 44.8% NAS fees ratio for the UK sample companies in Ferguson et al. (2004) and greater than the 21.3% in the Chinese H share companies in Wei (2016) and the 21.46% for the Chinese A-share companies in Ma (2013). This suggests that within the study period, when compared to the UK result, NAS purchases by Nigerian listed companies may not be as influencing. The results are much similar to the results from the Chinese listed companies.

Within the period, all the sample companies disclosed that they have set up an audit committee. The mean number of persons on the audit committee (*AC*) is about 5. The means of size of audit firm (*BIGF*) and auditor change (*ACG*) are 0.64943 and 0.0846 respectively. These indicate that about 65% of the sample companies engaged one of the Big 4 audit firms and only 8% of the companies changed audit firm in the period. The researcher perceives that the companies lean towards the Big 4 companies because of the global reputation of accounting excellence and international outreach. The mean values of revenue growth rate (*RGR*) and return on asset (*ROA*) are -0.105 and 0.0158 respectively. An average of 10.5% decline in growth and barely 2% return on assets suggests an overall negative financial performance. In addition, the mean of debt-to-asset ratio (*DTAR*) is 0.6107, which means that on average, the sample companies are about 61% leveraged. The capital structure of firms is usually dependent on a number of factors, however, at 61%, these companies are leveraged higher than the 56.80% leverage for the UK companies Ferguson et al. (2004) and the 54.84% leverage for A share Chinese Listed companies Wei (2016). Finally, about 24% of the sample companies declared losses in the study period. This is consistent with the decline in revenue and the overall financial performance of the companies. Lastly, the mean of the natural log of total assets is 7.52 with a maximum of 9.24. This shows that in sizes of the sample companies, in general, are smaller than those of the Chinese listed companies which had a mean and median of 23.93 and 24.20 respectively (Wei, 2016).

#### 4.2. Correlation between Dependent and Independent Variables

**Table 2** Correlation between variables

	AuL	LogNF	NFRatio	AC	LOSS	RGR	LNTA	DTAR	ROA	BIGF	ACG
AuL	1										
LogNF	0.0133	1									
NFRatio	0.0049	0.2886	1								
AC	0.0347	0.1910	-0.0492	1							
LOSS	0.2883	-0.1998	0.0083	-0.0483	1						
RGR	0.0375	0.1617	-0.1717	0.0271	-0.2502	1					
LNTA	-0.1373	0.7008	-0.2372	0.1886	-0.2266	0.1599	1				
DTAR	0.2083	-0.1777	-0.1715	-0.0374	0.3747	-0.0793	-0.0315	1			
ROA	-0.3452	0.1289	0.0180	0.0060	-0.7076	0.1826	0.2288	-0.5411	1		
BIGF	-0.1691	0.0523	-0.1989	0.0736	-0.1029	0.0801	0.2175	0.0804	0.1392	1	
ACG	0.0391	-0.0921	-0.0316	0.0280	0.0349	0.0309	-0.0727	0.0009	-0.0392	0.0402	1

Researcher's computation, 2025

Table 3 above shows a positive correlation between both proxies of NAS (*NFRatio* and *LogNF*) and Audit Lag. This suggests that the higher the NAS fees and the ratio of NAS fees to total auditor remuneration, the longer the audit lag. This is consistent with the studies by Chung & Monroe (2002), Huang et al. (2020) and Krishnan (2003) who argue that the payment of NAS fees does not reduce the audit lag. Suggesting, thereby, that the knowledge spillover hypothesis is inconsistent within the sampled firms.

Regarding the control variables, Table 3 shows mixed correlations with audit lag (*AuL*). Audit committee size (*AC*), loss status (*LOSS*), revenue growth rate (*RGR*), debt-to-asset ratio (*DTAR*), and audit change (*ACG*) are positively correlated with audit lag, suggesting that increases in these variables are associated with longer audit delays. In contrast, firm size (*LNTA*), profitability (*ROA*), and engagement of Big 4 audit firms (*BIGF*) are negatively correlated with audit lag, indicating that larger, more profitable firms and firms audited by Big 4 auditors tend to experience shorter audit delays.

High correlation among variables could lead to multicollinearity so that the regression model may not be reliable in detecting the relationship between variables (Dougherty, 2011). Between the proxies for NAS (*NFRatio* and *LogNF*), the correlation coefficient is 28.7% which is relatively low. However, since *NFRatio* and *LogNF* are explanatory variables and are in different regression models, any multicollinearity would not affect the models. Within the control variables, there are few significant correlations; *LNTA* is highly correlated with *LogNF* at 70.08%. This is significantly higher than their correlations with other variables (mostly less than 43%). Debt-to-Asset Ratio (*DTAR*) is highly and negatively correlated with *ROA* at 54.1%. However, according to Dougherty (2011), high correlation does not necessarily translate to poor regression models, the model should be tested to confirm that the high correlations will not cause multicollinearity.

### 4.3. Multicollinearity Tests

After further assessment of the correlations between the variables, the multicollinearity of the regression models is tested by Variance Inflation Factor (VIF) and Tolerance. To confirm the absence of collinearity within the models, the VIF results should be between 0 to 10 (i.e.,  $0 < \text{VIF} < 10$ ) and Tolerance should be within 0.25 and 4.

**Table 3** Variance Inflation Factor (VIF) and Tolerance

<b>Panel A (N=174): AuL group</b>					
<b>Model One</b>			<b>Model Two</b>		
<b>Variables</b>	<b>Centred VIF</b>	<b>Tolerance</b>	<b>Variables</b>	<b>Centred VIF</b>	<b>Tolerance</b>
<b>c</b>	-	-	<b>C</b>	-	-
LogNF	1.7346	0.5765	NFRatio	2.5821	0.3873
AC	1.8892	0.5293	AC	1.7969	0.5565
LOSS	5.7408	0.5745	LOSS	6.8250	0.5479
RGR	2.4142	0.4142	RGR	3.9330	0.2543
LNTA	1.4892	0.6715	LNTA	1.3064	0.7655
DTAR	2.4848	0.4024	DTAR	2.7958	0.3577
ROA	1.7580	0.5688	ROA	1.7512	0.5710
BIGF	2.2455	0.4453	BIGF	2.2295	0.4485
ACG	1.9357	0.5166	ACG	2.0855	0.4795

Researcher's computations, 2025

As shown in *Table 3* above, the two models have centred VIF and Tolerance within the acceptable ranges. This confirms that correlations within the variables would not significantly impact the results of the regression models.

### 4.4. Multivariate Regression Model Results

Table 4 above summarises the results from the multivariate logistic regression under the multivariate regression models. models 1 and 2 show an adjusted r-squared of 13.7% and 11.56% respectively, which means that while model 1 explains about 14% of the changes in *AuL*, model 2 explains about 12%. This shows the models are not considered a good fit for testing *AuL*. However, the F-statistic which indicates the overall significance of the model, shows that at a 5% test of significance, the models are statistically significant.

**Table 4** Regression results

Model 1 - AuL			Model 2 - AuL		
Observations	174		Observations	174	
Variable	Coefficient	P-Values	Variable	Coefficient	P-Values
C	111.2162	0.2162	C	107.3453	0.066231
LogNF	13.4039	0.0742	NFRatio	1.3229	0.9469
AC	2.1784	0.4804	AC	2.6155	0.4017
LOSS	14.0656	0.1719	LOSS	11.6819	0.2589
RGR	4.9512	0.1084	RGR	5.4311	0.0849
LNTA	-11.0993	0.0480	LNTA	-3.0871	0.4499
DTAR	18.5967	0.1837	DTAR	10.9574	0.4254
ROA	-75.3315	0.1596	ROA	-99.248	0.0612
BIGF	-10.7175	0.1069	BIG4	-11.9656	0.0768
ACG	4.912	0.659	ACH	3.422	0.761
Adjusted R <sup>2</sup>	0.1372		Adjusted R <sup>2</sup>	0.1156	
F-statistic	4.057		F-statistic	3.5127	
Prob. (F-Statistic)	0.0410		Prob. (F-Statistic)	0.0483	
Prob. Chi-Square	0.3351		Prob. Chi-Square	0.4142	

Researcher's computations, 2025

## 5. Discussion of Results

The results on Panel 1 of Table 4 above shows that the natural log of NAS fees (*LogNF*) and the non-audit fees ratio (*NFRatio*) have no significant impact on *AuL*. This is evident from the p-values of the *LogNF* coefficients the p-value for *AuL* (0.0742) and (0.9469) both of which exceed 0.05.

These results show that the purchase of NAS does not significantly influence audit lag i.e., the time within which the auditor concludes the audit. This was consistent with the findings by Alkhtani et al. (2017), Jizi et al. (2018), Schrand and Zechman (2012) and Zhang et al. (2021), that the provision of NAS does not impact audit lag. However, it is contrary to the findings of Azizkhani et al. (2017), Haniffa and Hudaib, (2018), Huang et al. (2020), Kinney and McDaniel (1989), Krishnan (2003) and Zhang et al. (2021) that NAS fees have no significant effect on audit lag.

This finding does not support the knowledge spillover hypothesis of studies like Wahab et al. (2014), Basioudis et al. (2008) and Knechel et al. (2012) suggesting that the knowledge gained in the provision of non-audit service does not play any significant role in improving audit timeliness. In addition, with the adjusted R<sup>2</sup> of 13%, the main factors that influence audit lag in Nigeria are not built into the models.

Regarding control variables, the results show that the audit committee (AC) has a non-significant positive relationship with *AuL*. This finding shows that the presence of an audit committee does not significantly influence the audit lag. The results show that *LOSS* has a non-significant positive relationship with *AuL* in both models 1 and 2. This positive relationship suggests that the higher the loss the companies experience the longer their audit lag. These findings are in line with Schrand and Zechman (2012) and Knechel et al. (2012) who argued that audit lag would be higher in companies that declared loss as the auditor would be more meticulous in the audit assessment to ensure that the stakeholders have a true and fair view of the company's affairs which would result in longer audit lag. It is also in line with Kapoor and Goel (2017) who argue that companies that achieved excellent performance in a given year have no reason to manipulate their reported earnings while those that performed poorly have more reason to. The results show revenue growth (*RGR*) has no significant impact on *AuL*.

Regarding total assets (*LNTA*), the models 1 and 2 show that *LNTA* has a negative and statistically significant relationship with *AuL* in model 1 and negative and non-significant relationship in model 2. This means that the larger the company, the shorter the audit lag which suggests that the bigger companies are audited faster which could support the knowledge spillover hypothesis (R. W. Knechel et al., 2012; Walker & Hay, 2013). It could be in line with the findings of Dee et al. (2006) and Wu (2007) who argue that larger companies tend to have more discretionary transactions which may be difficult for the auditor to detect due to their large volume of complicated transactions.

The results on Debt-to-Asset Ratio (*DTAR*) in both models, show positive non-significant relationships with *AuL* suggesting that increase in debt does not significantly contribute to the number of days it takes the auditor to complete the audit. The results show that *ROA* is non-significantly and negatively associated with *AuL* at a 5% test of significance. This means that for the listed companies, while improved corporate performance would not significantly impact audit lag, the negative relationship suggests that, the lower the *ROA*, the higher the audit lag. This is contrary to the arguments of Azizkhani et al. (2017) and Chung and Monroe (2002) who argue that the audit lag for better corporate performance is much longer than their counterparts.

Regarding big-four (*BIGF*) audit firms, models 1 and 2 results show that the *BIGF* is negatively and non-significantly associated with *AuL* at a 5% test of significance. This means that the choice of either a big four audit firm or non-big four audit does not increase or decrease the audit timeliness or lag. The result also shows that *ACG* has no significant impact on audit timeliness. This is contrary to the knowledge spillover hypothesis which suggest that an incumbent auditor would be very familiar with the company and hence have reduced audit lags, however, this result show no significant differences during the change in auditors.

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## 6. Conclusion

In conclusion, this study finds that the joint provision of audit and non-audit services has no significant impact on audit lag. Essentially, there is no evidence that in Nigeria, the auditor gains significant knowledge spillover from the provision of non-audit services which results in a shorter audit lag. Additionally, contrary to other countries, the factors that significantly impact audit lag in Nigeria are not audit related nor are they economic performance related.

Based on the findings of this study, the study recommends that, firms looking to reduce audit lag should focus on other determinants such as internal control efficiency, financial reporting processes, and auditor workload distribution rather than relying on *NAS* as a means of accelerating the audit process. Also, given that the *NAS* fees ratio does not influence audit lag, companies and regulators should shift their attention to other critical factors, such as audit firm capacity, regulatory requirements, and industry complexities, when formulating policies aimed at improving audit timeliness.

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## Compliance with ethical standards

### *Disclosure of conflict of interest*

No conflict of interest to be disclosed.

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