

ASSESSING THE RELATIONSHIP BETWEEN TAX INCENTIVES AND PERFORMANCE OF LISTED AGRICULTURAL FIRMS IN NIGERIA

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Abstract

This study examines the effect of tax incentives on the performance of listed agricultural firms in Nigeria. Specifically, it evaluates the effects of tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief on return on assets (ROA). An ex-post facto design was employed using secondary data extracted from the audited financial statements of the five agricultural firms listed on the Nigeria Exchange Group over 2013–2023. A census approach was adopted because the population comprised five firms. Multiple regression analysis was performed using SPSS version 23. The results indicate that tax holiday and annual allowance have positive and statistically significant effects on ROA, whereas investment tax allowance and tax rate reduction have negative and statistically insignificant effects. Loss relief has a negative and statistically significant effect on ROA. The findings suggest that the effectiveness of tax incentives is heterogeneous: incentives that directly reduce current tax burdens or support the recovery of qualifying asset costs appear more closely associated with firm performance than investment allowance, tax-rate reductions and loss relief in the observed sample. The study concludes that tax-incentive policy for listed agricultural firms should be more targeted, transparent and performance-oriented, with particular attention to tax holidays and annual allowances and a review of the administration of investment and loss-related incentives.

Keywords: tax incentives; tax holiday; annual allowance; investment tax allowance; tax rate reduction; loss relief; return on assets; agricultural firms; Nigeria.

1. Introduction

Taxation is a major fiscal policy instrument through which governments mobilise revenue, regulate economic activity and influence investment decisions. Beyond revenue generation, taxation can affect the allocation of capital because the tax burden changes the expected return from alternative investment opportunities. Governments therefore use tax incentives as deliberate departures from the ordinary tax regime to encourage investment, production and employment in targeted sectors (Aguolu, 2019; Okauru, 2019). Tax incentives may take the form of exemptions, tax holidays, reduced rates, capital allowances, investment allowances and loss relief.

In developing economies, tax incentives are frequently justified by the need to compensate investors for structural constraints in the business environment and to stimulate activities considered strategically important. Nigeria has historically used a variety of incentives to attract and retain investment, including pioneer relief, reduced corporate tax rates, accelerated depreciation, annual allowances, loss relief, investment allowances and other sector-specific concessions (Ogbole, 2015). Within agriculture, such incentives are particularly important because agricultural production is capital intensive in several segments and is exposed to weather, infrastructure, financing and market risks.

Agriculture has historically been central to Nigeria's employment, domestic production and export activity. The sector was the dominant contributor to the Nigerian economy before the emergence of oil as the principal source of foreign-exchange earnings. Although agriculture remains important, its relative contribution and the performance of agricultural enterprises have fluctuated over time. The literature reviewed in the original study links part of this weakness to policy instability, limited finance, infrastructure constraints and the relative neglect of the sector during the oil boom (Edoumiekekumo & Audu, 2019; Nwoke, 2022).

Listed agricultural firms provide a useful setting for examining the effectiveness of tax incentives because their audited financial statements provide observable measures of tax-related benefits and financial performance. The firms identified in the study are Ellah Lakes Plc, FTN Cocoa Processing Plc, Livestock Feeds Plc, Okomu Oil Palm Plc and Presco Plc. Despite the strategic importance of agriculture, the literature reviewed in the study is dominated by evidence from manufacturing, consumer goods, foreign direct investment and economy-wide outcomes. Consequently, there is limited firm-level evidence on how specific tax incentives affect the profitability of listed agricultural firms in Nigeria.

The present study addresses this gap by examining five specific tax incentives simultaneously. Rather than treating tax incentives as a single aggregate construct, the study separates tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief. This approach permits assessment of whether different forms of tax relief have similar or different relationships with firm performance.

Tax incentives are granted partly on the expectation that tax savings will be translated into investment, productivity, profitability, employment and wider economic development. If firms benefit from lower tax liabilities without corresponding improvements in productive activity, however, the fiscal cost of the incentives may not generate the intended economic returns. The evidence reviewed in the source study indicates that agricultural performance in Nigeria has remained uneven despite the existence of several tax and non-tax support measures.

Prior empirical studies have produced mixed results. Some report positive effects of tax incentives on firm profitability, investment or growth, while others find insignificant or negative relationships for particular incentives. For example, Tsegba (2021) reported a positive significant effect of tax-exempt income and a negative significant effect of loss relief on investment performance of listed manufacturing firms. Mauda and Saidu (2019) found positive and significant effects for capital allowance and loss relief but an insignificant effect for investment allowance among listed consumer goods companies. Daniel (2018), studying listed agricultural firms in Kenya, found that effective tax rate had little and insignificant explanatory power for ROA and ROE.

The gap is therefore both sectoral and variable-specific. The reviewed studies rarely focus on the five agricultural firms listed in Nigeria and do not jointly examine tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief using firm-level audited financial statements. The present study contributes by providing evidence for the 2013–2023 period and by examining the separate effects of these incentives on ROA.

The main objective is to examine the effect of tax incentives on the performance of listed agricultural firms in Nigeria. Specifically, the study investigates whether tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief significantly affect return on assets.

2. Literature Review and Theoretical Framework

2.1 Concept of Tax Incentives

Kiabel (2017) conceptualises tax incentives as preferential tax treatments granted to eligible taxpayers relative to the general tax regime. Similarly, the International Monetary Fund (IMF, 2008) describes tax incentives as special provisions in the tax system that create favourable deviations from the general tax code for qualifying investments or enterprises.

The economic rationale for tax incentives is primarily linked to their potential effect on the after-tax return to investment. Where taxation increases the cost of capital or reduces expected investment returns, appropriately designed tax incentives can alter firms' investment decisions by reducing the effective tax burden. The resulting increase in retained earnings and expected after-tax returns may provide firms with additional resources for working capital, asset acquisition, technological upgrading and expansion. Tax incentives may therefore influence firm performance through both direct and indirect channels.

In Nigeria, tax incentives have historically been used to promote investment, industrialisation, employment creation, exports, regional development and investment in productive assets. Examples include pioneer status incentives, investment tax allowances, capital allowances, rural investment allowances, export-zone incentives, research and development incentives, tax-free dividends and tax exemptions on specified forms of income. Although these instruments share the broad objective of encouraging economic activity, their mechanisms and timing differ considerably. Some incentives affect the current tax liability of firms, whereas others influence the tax treatment of investment expenditure over several accounting periods.

This distinction is important because tax incentives should not necessarily be regarded as a homogeneous policy instrument. An incentive that immediately reduces a firm's tax liability may have a different effect on profitability from an allowance that provides tax benefits only after qualifying capital expenditure has been incurred. Similarly, loss relief may provide valuable support for firms experiencing temporary losses but may exhibit a negative statistical association with profitability because firms claiming such relief are more likely to have experienced weak financial performance in preceding periods.

Consistent with the objectives of the study, five categories of tax incentives are examined: tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief. Examining these incentives separately

provides a more nuanced assessment of whether and how alternative forms of tax support affect the profitability of listed agricultural firms in Nigeria.

2.1.1 Tax Holiday and Firm Performance

A tax holiday is a temporary exemption from specified taxes granted to qualifying firms, investments or activities for a predetermined period. It is commonly employed by governments to attract investment into priority sectors, encourage the establishment of new enterprises and stimulate investment in economically disadvantaged areas. The principal mechanism through which a tax holiday may influence firm performance is the immediate reduction or elimination of tax payments during the qualifying period.

From a firm-level perspective, the tax savings generated by a holiday increase the amount of internally generated funds available to management. These funds can be deployed to finance working capital, acquire productive assets, expand operations, undertake research and development or reduce dependence on external financing. In capital-intensive sectors such as agriculture, the availability of additional internal resources may be particularly important because firms often require substantial investment in processing facilities, storage, machinery, transportation and other productive infrastructure.

The positive effect of tax holidays on profitability is therefore theoretically plausible. By reducing the effective tax burden, the incentive can increase retained earnings and improve the after-tax return on investment. However, the magnitude of the effect depends on whether firms actually convert the tax savings into productive activities rather than simply retaining or distributing the additional cash.

Empirical evidence generally provides support for a positive relationship. The present study reports a positive and statistically significant association between tax holiday and return on assets (ROA), suggesting that firms benefiting from tax-holiday arrangements may achieve stronger profitability. This finding is consistent with Tsegba (2021), Ibraheem et al. (2020), Okwurume (2018), Tasie and Akinyomi (2022) and Ugochukwu (2022), who documented positive relationships between tax exemptions or tax-holiday-type incentives and measures of investment, profitability or business performance.

Nevertheless, the effectiveness of tax holidays remains dependent on their design and administration. If eligibility requirements are weak, firms may receive benefits without generating corresponding additional investment or employment. Consequently, the empirical effect of tax holidays should be interpreted as an outcome of the interaction between tax savings, firm behaviour and the institutional environment rather than as an automatic consequence of exemption from taxation.

2.1.2 Annual Allowance and Firm Performance

Annual allowance represents a tax deduction available in respect of qualifying business assets over specified periods. It permits firms to recover part of the cost of qualifying productive assets through deductions from taxable income. Unlike a tax holiday, which may temporarily eliminate or reduce tax liability, an annual allowance generally operates through the tax treatment of capital expenditure over time.

The expected relationship between annual allowance and firm performance is positive. By reducing taxable income, the allowance lowers the firm's tax liability and consequently increases its after-tax cash flow. The underlying productive asset remains available for use in generating revenue while the associated tax deduction is recognised over the relevant period. The incentive may therefore improve both the effective cost of capital and the firm's capacity to finance further investment.

The mechanism is particularly relevant to agricultural enterprises because agricultural production and processing frequently require investment in machinery, equipment, storage facilities, processing plants and transportation infrastructure. Where annual allowances reduce the tax cost associated with such investments, firms may have greater incentives to maintain or expand productive capacity.

The empirical evidence supports this expectation. The present study finds a positive and statistically significant relationship between annual allowance and ROA. This result is consistent with Aondohembaa (2021), Nnubia and Fabian (2018), Uwuigbe (2016) and Yusuf (2022), who reported positive relationships between allowance-based tax incentives and measures of business or economic performance.

However, the effectiveness of annual allowance depends on firms having sufficient taxable income against which the deductions can be utilised. Consequently, the incentive may be less valuable to firms experiencing persistent losses or very low taxable income. This observation further suggests that the effect of tax incentives may depend on firm-specific characteristics and the timing of investment and taxable income.

2.1.3 Investment Tax Allowance and Firm Performance

Investment tax allowance is an incentive linked to qualifying investment expenditure. Its fundamental purpose is to reduce the effective cost of investment by allowing firms to deduct an additional or specified proportion of qualifying capital expenditure in determining taxable income. By reducing the tax-adjusted cost of capital, investment tax allowance is expected to encourage firms to undertake productive investment.

Theoretically, a reduction in the effective cost of investment should increase the expected return from capital expenditure. Firms may consequently be encouraged to acquire new productive assets, expand capacity and improve operational efficiency. These effects could ultimately enhance profitability and asset utilisation.

Contrary to this expectation, however, the present study reports a negative but statistically insignificant relationship between investment tax allowance and ROA. The absence of statistical significance indicates that the observed negative coefficient does not provide sufficient evidence of a systematic relationship between investment tax allowance and profitability among the sampled firms.

Several explanations are possible. First, investment expenditure may generate benefits only after a considerable gestation period. Consequently, the tax benefit may occur before the investment has generated sufficient additional revenue to improve accounting profitability. Second, firms may be unable to utilise the full value of the allowance where taxable income is inadequate. Third, administrative complexity, compliance costs or uncertainty surrounding eligibility may reduce the effective value of the incentive. Finally, investment incentives may stimulate capital accumulation without producing an immediate improvement in ROA because the denominator of ROA—total assets—increases before the associated increase in earnings is realised.

The finding is consistent with Nnubia and Fabian (2018), who reported a negative significant relationship between investment allowance and economic growth, and is broadly compatible with Klemm and Van Parys (2014), whose analysis suggests that the effects of tax incentives may differ according to the specific design and timing of the incentive. The result therefore reinforces the argument that the existence of an investment incentive does not automatically translate into improved short-term firm profitability.

2.1.4 Tax Rate Reduction and Firm Performance

Tax rate reduction involves lowering the statutory or effective tax rate applicable to qualifying firms, income streams or economic activities. The conventional theoretical expectation is that a lower tax rate increases the proportion of earnings retained by firms and improves the after-tax return on investment. Higher retained earnings may strengthen internal financing capacity and provide resources for expansion, investment and other productive activities.

The relationship between tax rate reduction and profitability is therefore expected to be positive. Nevertheless, the empirical effect may depend on whether the reduction is sufficiently large to influence investment and operating decisions. A relatively small reduction may have little effect where other costs—such as financing costs, infrastructure deficiencies, energy costs, exchange-rate volatility or regulatory costs—constitute more significant constraints on firm performance.

The present study reports a negative but statistically insignificant coefficient for tax rate reduction. The result suggests that, within the sampled firms and study period, variation in tax rate reduction was not sufficiently associated with changes in ROA to establish a statistically reliable relationship. The negative sign also indicates that the conventional expectation of a positive relationship is not supported empirically in this context.

This finding is consistent with Daniel (2018), who reported limited and insignificant explanatory power of effective tax rate for ROA and ROE among listed agricultural firms in Kenya. It nevertheless contrasts with the conventional expectation that reductions in taxation should improve profitability. The divergence may reflect differences in institutional settings, the magnitude of tax reductions, firms' ability to utilise tax benefits and the presence of non-tax constraints affecting agricultural enterprises.

Thus, tax rate reduction should not be interpreted simply as a direct determinant of profitability. Its effectiveness may depend on whether the resulting tax savings are translated into productive investment, improved efficiency or increased operating capacity.

2.1.5 Loss Relief and Firm Performance

Loss relief permits qualifying firms to offset tax losses against taxable income in accordance with applicable tax rules. The principal objective is to prevent firms from bearing an excessive tax burden when profitability fluctuates across periods. By allowing firms to carry forward or otherwise utilise qualifying losses, loss relief can improve the intertemporal neutrality of the tax system and support business continuity.

The theoretical effect of loss relief on firm performance is potentially positive. Firms experiencing temporary losses can preserve liquidity and reduce future tax liabilities when they return to profitability. This can strengthen financial resilience and reduce the likelihood that temporary adverse conditions will lead to business failure.

Overall, the empirical relationship, however, may be more complex. Firms that utilise loss relief are, by definition, more likely to have experienced tax losses. Consequently, an observed negative relationship between loss relief and current profitability may reflect the underlying financial condition that generated the tax loss rather than a harmful effect of the incentive itself.

The present study reports a negative and statistically significant relationship between loss relief and ROA. This finding should therefore not be interpreted to mean that loss relief causes poor performance. Rather, the negative coefficient may indicate that firms with weaker profitability are more likely to generate and subsequently utilise tax losses. The result is consistent with Tsegba (2021), who also reported a negative relationship between loss relief and investment performance.

The finding nevertheless differs from Mauda and Saidu (2019), who reported a positive and significant effect of loss relief among listed consumer goods companies. This difference may arise from sectoral characteristics, differences in tax regimes, sample composition, measurement approaches or the timing of loss utilisation. The divergent findings highlight the importance of examining tax incentives within specific institutional and sectoral contexts.

Empirical evidence on tax incentives and firm or economic performance remains mixed. Tsegba (2021) found that tax-exempt income was positively associated with investment performance, while loss relief was negatively related to performance. Aondohembaa (2021) reported positive and significant effects of company income tax and annual allowance on net income. Nnubia and Fabian (2018) found annual allowance to have a positive significant effect on economic growth but reported a negative significant relationship for investment allowance.

Similarly, Ibraheem et al. (2020) found that tax incentives, particularly tax holidays, were positively associated with profitability and industrial development. Daniel and Faustin (2019) reported a positive relationship between tax incentives and SME growth in Rwanda. However, Daniel (2018) found effective tax rate to be insignificant in explaining ROA and ROE among listed agricultural firms in Kenya.

Evidence from other sectors also demonstrates considerable variation. Mauda and Saidu (2019) found capital allowance and loss relief to be positively and significantly associated with performance among listed consumer goods companies, while investment allowance was positive but statistically insignificant. These divergent findings suggest that the effectiveness of tax incentives may depend on the nature of the incentive, industry characteristics, institutional environment, firm characteristics and the period over which performance is measured.

The mixed evidence also suggests that aggregating different tax incentives into a single composite measure may conceal important differences in their economic effects. For example, a tax holiday provides an immediate reduction in tax liability, whereas investment allowance may generate benefits only after qualifying investment expenditure has been incurred. Similarly, loss relief is inherently associated with periods of weak taxable performance, creating the possibility of an inverse statistical relationship with current profitability even where the incentive provides valuable financial support.

2.1.6 Research Gap

The reviewed literature reveals three important gaps.

First, conceptual and empirical heterogeneity remains insufficiently addressed. Existing studies frequently combine several tax incentives into a single measure, making it difficult to determine which specific incentives are associated with firm performance. Disaggregating tax incentives provides a clearer understanding of the mechanisms through which individual instruments influence profitability.

Second, there is a sectoral gap in the Nigerian literature. Existing studies have examined tax incentives across broad populations or in sectors such as consumer goods and manufacturing, while comparatively limited attention has been given to listed agricultural firms. Agriculture has distinctive characteristics, including substantial investment in productive assets, exposure to climatic and seasonal risks, long investment gestation periods and significant working-capital requirements. These characteristics may alter the effectiveness of different tax incentives.

Third, there is a contextual and temporal gap. Evidence from other countries and sectors cannot necessarily be generalised to Nigerian listed agricultural firms because differences in tax administration, institutional quality,

investment conditions and regulatory environments may influence the effectiveness of incentives. The present study therefore provides sector-specific evidence by examining the individual effects of tax holiday, annual allowance, investment tax allowance, tax rate reduction and loss relief on ROA among listed agricultural firms in Nigeria over the period 2013–2023.

The study consequently contributes to the literature by moving beyond the broad question of whether tax incentives affect firm performance to examine which specific tax incentives matter, in what direction, and with what statistical significance within the Nigerian agricultural sector. This disaggregated approach provides more useful evidence for tax-policy design and for firms seeking to understand the performance implications of available fiscal incentives.

The literature suggests that tax incentives can affect firm performance by altering the effective tax burden, investment cost and availability of internally generated funds. The expected direction, however, varies according to the nature and timing of the incentive. Tax holidays and annual allowances are generally expected to improve profitability because they directly or indirectly increase firms' retained resources. Investment tax allowances and tax-rate reductions are also theoretically expected to improve performance, although their effects may depend on the timing and utilisation of the associated tax benefits. Loss relief presents a more complex case because firms benefiting from the incentive may simultaneously exhibit weaker profitability as a result of the losses that generated the relief.

2.2 Theoretical Framework

This study is anchored on the neoclassical theory of investment and economic growth, which provides a useful framework for explaining how fiscal incentives can influence investment decisions, capital accumulation and productivity. The theoretical tradition is associated with the Solow-Swan growth framework, in which capital accumulation, labour and technological progress are important determinants of economic growth.

Applied to taxation, the neoclassical perspective suggests that taxation can influence firms' investment decisions by affecting the expected after-tax return on capital. When taxation reduces the net return from investment, firms may have weaker incentives to undertake additional capital expenditure. Conversely, tax incentives that reduce the effective tax burden can increase the expected after-tax return and potentially stimulate investment.

The relevance of the theory to the present study lies in its explanation of the transmission mechanism between tax incentives and firm performance. A tax incentive can reduce the tax-adjusted cost of investment or increase the amount of income retained by the firm. Increased retained resources can then support capital accumulation, expansion and productivity improvement, which may ultimately increase profitability.

The theoretical relationship can be represented conceptually as:

Tax incentive → Lower effective tax burden/cost of investment → Higher retained resources and investment → Greater productive capacity → Improved firm performance.

The five tax incentives examined in this study can operate through different points in this chain. Tax holidays and tax-rate reductions can increase current after-tax income, annual allowances can reduce taxable income associated with productive assets, investment tax allowances can lower the effective cost of capital expenditure, while loss relief can reduce the intertemporal tax burden associated with fluctuations in taxable income.

Importantly, the theory does not imply that every tax incentive must produce a positive and statistically significant effect on firm performance. The actual outcome depends on the size of the incentive, timing of the tax benefit, eligibility requirements, administrative efficiency, firms' ability to utilise the incentive and the extent to which tax savings are converted into productive investment. This qualification is particularly important in interpreting the negative or insignificant coefficients obtained for investment tax allowance and tax rate reduction.

The neoclassical perspective consequently provides the theoretical basis for expecting tax incentives to influence profitability while allowing for heterogeneous empirical outcomes across different forms of incentives.

Based on the theoretical arguments and empirical evidence reviewed, the study tests the following hypotheses:

H01: Tax holiday has no significant effect on the profitability of listed agricultural firms in Nigeria.

H02: Annual allowance has no significant effect on the profitability of listed agricultural firms in Nigeria.

H03: Investment tax allowance has no significant effect on the profitability of listed agricultural firms in Nigeria.

H04: Tax rate reduction has no significant effect on the profitability of listed agricultural firms in Nigeria.

H05: Loss relief has no significant effect on the profitability of listed agricultural firms in Nigeria.

3. Methodology

3.1 Research Design and Population

An ex-post facto research design was adopted because the study uses historical observations that cannot be manipulated by the researcher. The population comprised the five agricultural firms listed on the Nigeria Exchange Group as at 31 December 2023: Ellah Lakes Plc, FTN Cocoa Processing Plc, Livestock Feeds Plc, Okomu Oil Palm Plc and Presco Plc. A census sampling technique was used because the population was small and manageable.

3.2 Data Source and Period

Secondary data were obtained from the audited financial statements of the five firms for 2013–2023, giving 55 firm-year observations. The data collection approach used a checklist to extract information relating to the tax incentives and ROA.

Table 1: Variable Measurement

Variable	Operationalisation in the study	Role
ROA	Return on assets; used as the measure of firm performance	Dependent
TH	Tax holiday; tax savings associated with the qualifying holiday	Independent
AA	Annual allowance; 20% of qualifying capital expenditure reduced by initial allowance	Independent
ITA	Investment tax allowance; 10% of qualifying investment	Independent
TRR	Tax rate reduction; initial tax rate less the reduction amount	Independent
LRI	Loss relief; application of the relief rate to qualifying loss	Independent

3.4 Model Specification

The study introduced tax incentives into a production-function framework and estimated the following linear model:

$$ROA = \beta_0 + \beta_1 TH + \beta_2 AA + \beta_3 TRR + \beta_4 ITA + \beta_5 LRI + \varepsilon$$

where ROA is return on assets; TH is tax holiday; AA is annual allowance; TRR is tax rate reduction; ITA is investment tax allowance; LRI is loss relief; β_0 is the intercept; β_1 – β_5 are parameter estimates; and ε is the error term.

Descriptive statistics and multiple regression were conducted using SPSS version 23. Statistical significance was evaluated at the 5% level: null hypotheses were rejected where $p < 0.05$.

4. Results

4.1 Descriptive Results

Table 2: Descriptive Statistics

Variable	N	Minimum	Maximum	Mean	Std. Dev.
ROA	55	0.45	15,041.00	396.6993	2,053.17920
TH	55	311.00	17,145,191.00	1,708,333.6000	3,258,388.20680
TRR	55	70,562.00	330,760,624.00	11,358,579.9636	44,693,738.10391
ITA	55	35,281.00	20,375,380.00	2,597,571.3455	3,820,869.29474
LRI	55	58,802.00	275,633,854.00	9,159,976.9455	37,194,288.26639
AA	55	23,520.00	110,253,541.00	3,491,892.1455	14,828,059.38851

The descriptive results show substantial dispersion across the tax-incentive variables. Tax rate reduction has the highest mean among the incentive variables, followed by loss relief, annual allowance, investment tax allowance and tax holiday. ROA also displays considerable dispersion, indicating substantial differences in the scale and profitability of the sampled firms. The source study reports positive skewness and kurtosis above three for the variables, indicating right-skewed and leptokurtic distributions.

4.2 Multicollinearity Diagnostics

The reported variance inflation factors are below the conventional threshold of 5. The largest VIF reported is 2.900, while the remaining values are lower. This indicates that the explanatory variables do not exhibit problematic multicollinearity in the estimated model.

4.3 Multiple Regression Results

Variable	B	Beta	t	p-value	Decision
Constant	543.458	—	1.473	0.147	Not significant
TH	3.746	0.059	4.360	0.018	Reject H01
TRR	-1.108	-0.241	-0.209	0.835	Accept H04
ITA	-2.462	-0.046	-0.225	0.823	Accept H03
LRI	-1.170	0.212	2.130	0.037	Reject H05
AA	6.135	0.443	5.240	0.023	Reject H02

Model fit: $R^2 = 0.901$; Adjusted $R^2 = 0.828$; $N = 55$.

The regression model explains approximately 90.1% of the observed variation in ROA, with an adjusted R^2 of 82.8%. Tax holiday has a positive significant coefficient ($B = 3.746$, $p = 0.018$), and annual allowance is also positive and significant ($B = 6.135$, $p = 0.023$). Investment tax allowance has a negative but insignificant coefficient ($B = -2.462$, $p = 0.823$), while tax rate reduction is negative and insignificant ($B = -1.108$, $p = 0.835$). Loss relief is negative and significant ($B = -1.170$, $p = 0.037$).

5. Discussion of Findings

5.1 Tax Holiday and ROA

The positive and significant coefficient for tax holiday indicates that, within the sample and study period, greater tax-holiday benefits are associated with higher ROA. The result supports the argument that temporary tax exemptions can increase internal funds available to firms and improve the after-tax return on productive activity. It is consistent with Tsegba (2021), Ibraheem et al. (2020), Okwurume (2018), Tasie and Akinyomi (2022) and Ugochukwu (2022). For agricultural firms, the result is economically plausible because tax savings may help firms finance working capital, maintain productive assets and absorb operating risks.

5.2 Annual Allowance and ROA

Annual allowance has the strongest positive coefficient among the significant incentive variables. The result indicates that allowance-based tax relief associated with qualifying assets is positively related to ROA. This is consistent with Aondohembaa (2021), Nnubia and Fabian (2018), Uwuigbe (2016) and Yusuf (2022). One interpretation is that annual allowance lowers the effective cost of using productive assets and therefore supports the retention of resources that can be reinvested in operations. The finding is particularly relevant to agricultural firms whose operations depend on machinery, processing equipment and other capital assets.

5.3 Investment Tax Allowance and ROA

Investment tax allowance has a negative but insignificant coefficient. Statistically, the study therefore provides insufficient evidence that this incentive affects ROA during the period examined. The negative sign may indicate that the tax benefit did not translate immediately into profitability, possibly because investment expenditure creates costs before the resulting assets generate returns. The finding is consistent with the negative result reported by Nnubia and Fabian (2018), while it differs from Mauda and Saidu (2019), who found investment allowance to be positive but insignificant.

5.4 Tax Rate Reduction and ROA

Tax rate reduction is negative and statistically insignificant. The result suggests that variations in the tax-rate reduction captured in the study did not provide sufficient evidence of an improvement in ROA. This is consistent with Daniel (2018), who found effective tax rate to have little and insignificant explanatory power for ROA and ROE among listed agricultural firms in Kenya. The finding cautions against assuming that a lower statutory or effective tax rate will automatically improve profitability when other constraints affecting agricultural firms remain binding.

5.5 Loss Relief and ROA

Loss relief has a negative and statistically significant relationship with ROA. This finding should be interpreted carefully because the research design is ex-post facto and does not establish causality. Loss relief is more likely to be relevant where firms have incurred losses or weak taxable profits; hence, the negative association may partly reflect the fact that weaker-performing firms generate the conditions under which loss relief becomes useful. The result is consistent with Tsegba (2021), but contrasts with Mauda and Saidu (2019). The divergence across studies reinforces the importance of sectoral and institutional context.

6. Implications for Policy and Practice

First, the positive significant effect of tax holiday indicates that government should retain a carefully targeted holiday regime for qualifying agricultural investment. Such incentives should be linked to transparent eligibility criteria and measurable investment or employment outcomes so that tax expenditure produces observable economic benefits.

Second, annual allowance appears to be an important channel through which tax policy supports firm performance. Tax authorities and policy makers should ensure that qualifying firms understand the documentation and compliance requirements needed to claim the allowance. Administrative delays or uncertainty can reduce the practical value of an incentive even when its statutory design is favourable.

Third, the insignificant effects of investment tax allowance and tax-rate reduction suggest the need for periodic policy evaluation. Rather than expanding every incentive uniformly, government should assess whether the form, timing and size of each incentive are appropriate to the investment constraints faced by agricultural firms.

Fourth, the negative significant association for loss relief indicates that the administration and targeting of loss-related incentives require attention. Firms should receive clear guidance on eligibility and utilisation, while policy makers should distinguish between incentives that support temporary business shocks and incentives that subsidise persistent inefficiency.

For managers of listed agricultural firms, the findings suggest that tax planning should be integrated with investment and asset-management decisions. The availability of an incentive does not guarantee improved performance; its value depends on whether the resulting tax savings are converted into productive activity.

6.1 Contribution to Knowledge and conclusion

The study contributes to the literature in three main ways. First, it provides firm-level evidence on listed agricultural firms in Nigeria, a sector that has received less attention in the reviewed tax-incentive literature than manufacturing, consumer goods and foreign direct investment. Second, it disaggregates tax incentives into five components rather than treating them as a single construct. Third, it demonstrates that the performance implications of tax incentives are heterogeneous: tax holiday and annual allowance are positive and significant, while investment tax allowance and tax-rate reduction are insignificant and loss relief is negative and significant.

This study examined the effect of tax incentives on the performance of listed agricultural firms in Nigeria using 55 firm-year observations covering 2013–2023. The results show that tax holiday and annual allowance are positively and significantly associated with ROA, while investment tax allowance and tax rate reduction are negative but statistically insignificant. Loss relief is negative and statistically significant.

Overall, the findings indicate that the effectiveness of tax incentives depends on their design, timing, utilisation and firm-level circumstances. The evidence supports maintaining targeted tax holidays and effective annual allowance mechanisms while reviewing the design and administration of investment tax allowance, tax-rate reductions and loss relief. Because the study is based on an ex-post facto design, the findings should be interpreted as statistical associations rather than definitive causal effects.

6.2 Limitations and Directions for Future Research

The study is limited by the small number of listed agricultural firms and the availability of comparable audited financial data. The census approach addresses the population limitation but does not permit broad generalisation to unlisted agricultural businesses or the entire agricultural sector. Future studies should extend the analysis to a longer period, incorporate unlisted agribusinesses where reliable data are available, and consider panel-data techniques that control for firm-specific and time-specific effects. Future research could also examine whether tax incentives affect investment, productivity, employment and market valuation in addition to ROA, and whether firm size, leverage, age and corporate governance moderate the relationships.

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