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Investment Allowances and Financial Performance of Energy and Petroleum Companies Listed at the Nairobi Securities Exchange in Kenya

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Abstract:

Purpose: *This study examined the effect of investment allowances on the financial performance of energy and petroleum companies selected for a Nairobi Securities Exchange sector study in Kenya.*

Material/methods: *The study was anchored on Neoclassical Investment Theory and adopted an explanatory longitudinal design. A balanced panel of four firms observed over 2006–2025 yielded 80 firm-year observations. Secondary data from annual reports, audited financial statements and tax-related publications were analysed using descriptive statistics, Pearson correlations and fixed-effects regression.*

Findings: *Investment allowances showed a negative and statistically significant association with financial performance in the reported fixed-effects model ($b = -0.328$, $p = .003$). The within-firm R^2 was .1179, indicating that the model explained 11.79% of the within-firm variation in financial performance.*

Conclusion: *The findings indicate an adverse contemporaneous association rather than evidence that investment allowances themselves reduce financial performance. Large capital projects may generate returns after the year in which an allowance is recorded, but this timing explanation was not tested.*

Value: *The study provides firm-level panel evidence on investment allowances and financial performance in Kenya's energy and petroleum sector. It informs the assessment of qualifying investments using expected cash flows and long-run returns, while highlighting the need for further analysis of lagged relationships and verification of variable construction and scaling.*

Keywords: *Investment Allowances, Financial Performance, Energy and Petroleum, Nairobi Securities Exchange, Fixed Effects, Kenya*

Paper Type: Research Article

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Introduction

Investment allowances permit deductions for qualifying capital expenditure when taxable income is computed. In Kenya, the Income Tax Act provides for specified deductions on assets such as machinery and petroleum or gas storage facilities, with the applicable provisions depending on the asset and year of income (Income Tax Act, Cap.

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470). By reducing the after-tax cost of capital, an allowance can make an investment more attractive. Its effect on a firm's reported financial results, however, depends on when the asset becomes productive, how it is financed and whether the project earns an adequate return.

This question is particularly relevant to energy and petroleum businesses. Generation plants, distribution networks, transport infrastructure and storage facilities require substantial upfront spending, while revenues and efficiency gains may arrive over several years. An allowance may offer tax relief in the investment year, yet financing charges, installation costs and underused capacity may coincide with weak current performance. The accounting relationship between the allowance and performance can therefore differ from the policy objective of encouraging productive capital formation.

Evidence from other sectors does not settle the issue for Kenyan energy and petroleum firms. Marieta et al. (2024) reported a significant negative association between investment allowances and financial performance among deposit-taking SACCOs in Nairobi County. Mutuku et al. (2022) found that tax incentive policy only marginally influenced investment and export decisions in a large Kenyan firm panel. Nganyi et al. (2024) found that investment incentives predicted effective corporate tax rates among Kenyan manufacturers, but an effective tax rate is a different outcome from financial performance. The differing populations and outcomes support a separate examination of listed energy and petroleum companies.

This study examined investment allowances alongside value added tax (VAT) exemptions and customs duty incentives over 2006–2025. Its first objective was to establish how investment allowances relate to the financial performance of four selected energy and petroleum firms. The present article focuses on that objective and interprets the investment allowance coefficient from the joint fixed-effects model while retaining the other two incentives. It addresses the following question: Were changes in the investment allowance measure associated with changes in financial performance within the same firm?

Theoretical Review

Neoclassical Investment Theory provides the central explanation for the expected relationship. Jorgenson (1963) modelled investment decisions in terms of the user cost of capital and the return from additional capital. A tax allowance can reduce that cost, encouraging a firm to undertake projects that might otherwise be postponed. If the new capital increases output or lowers costs, financial performance may improve. The theory does not require the tax deduction and the productive return to occur in the same accounting year. This distinction matters when major energy projects have long construction and commissioning periods.

Tax Expenditure Theory treats preferential tax provisions as public support delivered through forgone tax revenue rather than direct budgetary spending (Surrey, 1973). The rationale for an investment allowance therefore rests on a subsequent productive benefit, not merely on the value of the claim. Agency Theory adds a managerial consideration: those who choose and implement capital projects may not always allocate resources in ways that maximize the owners' returns (Jensen & Meckling, 1976). Together, these perspectives suggest that an allowance can promote investment while contemporaneous performance remains weak if projects take time to mature or are poorly selected. The present model observes associations; it cannot distinguish these mechanisms directly.

Empirical Review and Hypothesis Development

Klemm and Van Parys (2012) analysed tax incentives across more than 40 Latin

American, Caribbean and African countries. They assessed whether incentives attracted investment and whether countries used them strategically. Their cross-country approach is informative about investment responses, but it does not directly measure the accounting performance of energy and petroleum firms receiving investment allowances.

In Kenya, Mutuku et al. (2022) analysed a large firm panel covering 2014–2019 and concluded that investment and export decisions were only marginally affected by the tax incentive policy studied. The outcome was an investment or export response, rather than profitability. Nganyi et al. (2024) used data from 278 manufacturing firms over 2010–2020 and found investment incentives to be statistically significant predictors of the effective corporate tax rate. Their finding supports a tax-burden channel, but whether the lower burden becomes higher financial performance requires a separate test.

Marieta et al. (2024) examined deposit-taking SACCOs in Nairobi County and reported a significant negative relationship between investment allowances and financial performance. This result shows that an adverse association is possible even when an allowance provides tax relief. The SACCO setting, however, differs markedly from capital-intensive energy infrastructure. Nduati (2020) investigated investment deduction and other capital allowances in listed Kenyan manufacturing firms, providing a closer listed-firm setting but a different sector and set of assets. Sector-specific evidence remains important because the size, gestation period and utilization of qualifying investments can change the timing of reported returns. The expected direct tax benefit implies a possible positive relationship, while delayed project returns and investment costs make the contemporaneous sign uncertain. The following null hypothesis was tested at the 5% significance level:

H01: Investment allowances have no statistically significant effect on the financial performance of energy and petroleum companies listed at the Nairobi Securities Exchange in Kenya.

Research Methodology

The study used an explanatory longitudinal design and secondary firm-year data. Repeated observations enabled the estimation of within-firm changes while accounting for firm characteristics that remained constant over time. The analysis was performed in Stata.

Target Population

The study selected four firms: TotalEnergies Marketing Kenya, Kenya Electricity Generating Company, Kenya Power and Lighting Company, and Kenya Pipeline Company. Umeme was excluded because its main operations were in Uganda. Each selected firm contributed 20 observations from 2006 through 2025, producing a balanced panel of 80 firm-years. The NSE currently classifies all five companies in its energy and petroleum sector (Nairobi Securities Exchange, n.d.). Kenya Pipeline Company joined the exchange in 2026, after the last observation year (Nairobi Securities Exchange, 2026). Thus, the dataset contains its prelisting financial years and should be understood as a panel of firms selected for the sector study, not a panel in which every company was listed throughout 2006–2025.

Data Collection and Variable Measurement

Annual financial and tax information was extracted from audited statements, annual reports and relevant government publications through a structured data sheet. Financial performance (FP) was described in the analysis as a composite incorporating return on assets, return on equity, profit margin and current ratio, while the initial measurement

plan specified return on assets and return on equity. The available documentation does not establish how the composite was weighted or normalized. The FP score is used as reported, without describing its regression coefficient as a percentage-point change.
Investment allowances (IA) were operationalized as accelerated tax depreciation or capital allowance less a standard depreciation allowance. A difference of this kind can take a negative value, as the descriptive results do; it is not interchangeable with the monetary amount of tax saved. VAT exemptions (VAT) and customs duty incentives (CDI) were entered as other tax incentive predictors in the same model. The coefficient scale is reported without a documented conversion between the large descriptive amounts and regression units, so coefficient magnitudes are interpreted by sign and statistical evidence rather than as shillings per unit.

Table 1 Measurement of Study Variables

Research variable	Code	Operational measurement	Data source
Financial performance	FP	Composite score described as incorporating ROA, ROE, profit margin and current ratio; aggregation rule not given	Audited annual reports and financial statements
Investment allowances	IA	Accelerated tax depreciation or capital allowance minus standard depreciation allowance	Annual reports; tax disclosures; Income Tax Act

Data Analysis and Model Specification

The analysis first summarized the variables and estimated Pearson correlations. It examined variance inflation factors and reported normality, serial-correlation, heteroscedasticity and panel unit-root tests. A Hausman comparison was presented as the basis for selecting a fixed-effects specification. The estimated model includes investment allowances and the two other tax incentive measures; year indicators and firm-clustered standard errors were not reported. The model was:

$$FP_{it} = \beta_0 + \beta_1 IA_{it} + \beta_2 VAT_{it} + \beta_3 CDI_{it} + \alpha_i + \varepsilon_{it}$$

In the equation, i identifies a firm and t a year; α_i represents time-invariant firm effects and ε_{it} the remaining error. The coefficient β_1 is the within-firm association between the recorded IA measure and FP, conditional on the VAT and CDI measures. The estimated model did not include lagged variables, other firm-level controls or year effects.

Results

The results summarize the overall descriptive, correlation and fixed-effects estimates for 80 firm-year observations. Values are presented in their reported units.

Descriptive Statistics

Table 2 presents the descriptive statistics for financial performance (FP) and investment allowances (IA). Financial performance recorded a mean of 6.428 with a standard deviation of 5.060, indicating considerable variation in financial performance across the sampled firm-year observations. The values ranged from −3.260 to 32.500. The positive skewness of 1.980 indicates that the distribution of financial performance was moderately skewed to the right, while the kurtosis value of 10.903 suggests the presence of relatively extreme observations. Investment allowances recorded a mean of -6.93×10^8 and a standard deviation of 8.58×10^9, with values ranging from -5.31×10^{10} to 1.77×10^{10}. The relatively large standard deviation indicates substantial variation in investment allowances across firms and over the study period. Furthermore, the skewness value of −4.832 indicates a strongly negatively skewed distribution, while the kurtosis value of 29.949 shows that the distribution was highly leptokurtic. This suggests the presence of a small number of extremely negative observations that

substantially influenced the distribution of investment allowances. The observed distribution therefore indicates the need for appropriate diagnostic and sensitivity tests when estimating the effect of investment allowances on financial performan.

Table 2 Descriptive Statistics

Variable	N	Min	Max	Mean	SD	Skewness	Kurtosis
FP	80	−3.260	32.5	6.428	5.06	1.98	10.903
IA	80	−5.31E10	1.77E+10	−6.93E8	8.58E+09	−4.832	29.949

Correlation Results

Table 3 presents the Pearson correlation between investment allowances and financial performance. The results indicate that investment allowances were negatively and statistically significantly associated with financial performance ($r = -.264$, $p < .05$). This finding implies that higher values of investment allowances were associated with lower levels of financial performance within the sampled observations. However, the magnitude of the correlation was relatively weak, suggesting that investment allowances alone explained only a limited proportion of the variation in financial performance. The negative correlation provides preliminary evidence of an association between investment allowances and financial performance but does not establish causality. The relationship was therefore subjected to further panel regression analysis to control for unobserved firm-specific characteristics and other factors that could influence financial performance.

Table 3 Pearson Correlations among Study Variables

Variable	Financial performance	Investment allowances
Financial performance	1	
Investment allowances	−.264*	1

* $p < .05$. ** $p < .01$ (two-tailed).

Diagnostic Tests

Diagnostic tests were conducted before estimating the fixed-effects regression models. The variance inflation factor (VIF) values ranged from 1.00 to 1.18, well below conventional thresholds, indicating no evidence of problematic multicollinearity among the predictor variables. The Wooldridge test for first-order serial correlation produced a p-value of .623; therefore, the null hypothesis of no first-order serial correlation was not rejected. This suggests that serial correlation was not evident in the panel residuals. The Breusch–Pagan/Cook–Weisberg test for heteroscedasticity produced a p-value of .057. Since this value was slightly above the .05 significance level, the null hypothesis of constant error variance was not rejected at the 5% level. However, because the result was close to the significance threshold, potential heteroscedasticity should still be treated cautiously. Residual normality tests also produced p-values greater than .05, providing insufficient evidence to reject the assumption of normally distributed residuals. The diagnostic results did not reveal serious violations of multicollinearity, serial correlation, heteroscedasticity, or residual normality assumptions. Nevertheless, these tests do not eliminate concerns arising from the highly skewed investment-allowance observations, possible influential outliers, unmodelled time-specific effects, and the reliability of standard-error estimates based on only four firms. The regression findings should therefore be interpreted with appropriate caution, particularly with regard to statistical inference.

Panel Unit Root Test

The panel unit root test results indicate that both financial performance and investment allowances were stationary over the study period. For financial performance, the inverse chi-squared statistic was 28.474 ($p < .001$), the inverse normal statistic was

−3.123 (p = .001), the inverse logit statistic was −3.683 (p = .001), and the modified inverse chi-squared statistic was 5.119 (p < .001). Similarly, investment allowances recorded an inverse chi-squared statistic of 46.706 (p < .001), an inverse normal statistic of −4.105 (p < .001), an inverse logit statistic of −6.107 (p < .001), and a modified inverse chi-squared statistic of 9.677 (p < .001). Since all the reported p-values were below the .05 significance level, the null hypothesis that all panels contained unit roots was rejected for both variables. The findings therefore provide evidence that financial performance and investment allowances were stationary, indicating that their statistical properties were sufficiently stable over time for subsequent panel regression analysis

Table 4 Unit root test Results

		Inverse Chi-Squared P	Inverse Normal Z	Inverse Logit L*	Modified Inv. Chi-Squared Pm
financial performance	Statistic	28.474	-3.123	-3.683	5.119
	p-value	0.000	0.001	0.001	0.000
Investment allowances	Statistic	46.706	-4.105	-6.107	9.677
	p-value	0.000	0.000	0.000	0.000

Hypothesis Testing

The fixed-effects regression model examining the effect of investment allowances on financial performance was statistically significant, F(1, 71) = 9.49, p = .003. The within-firm R^2 was .1179, indicating that changes in investment allowances explained approximately 11.79% of the variation in financial performance within firms over the study period. Investment allowances had a negative and statistically significant effect on financial performance (b = −0.328, SE = 0.107, t = −3.08, p = .003, 95% CI [−0.541, −0.116]). This implies that, holding firm-specific time-invariant characteristics constant, a one-unit increase in investment allowances was associated with a 0.328-unit decrease in financial performance. Since the p-value was below .05 and the 95% confidence interval did not include zero, the null hypothesis (H01) that investment allowances have no significant effect on financial performance was rejected. The findings therefore indicate that investment allowances had a statistically significant negative effect on the financial performance of the sampled firms during the study period..

Table 5 Fixed Effects Regression of Financial Performance on Tax Incentives

Fixed-effects (within) regression				Number of obs	=	80
Group variable: id				Number of zgroups	=	4
R-sq:	**Within**	0.1179		Obs per group	min	20
	Between	0.9441			avg	20.0
	Overall	0.1443			max	20
				F(1, 71)	=	9.49
corr(u_i, Xb)= 0.1754				**Prob > chi2**	=	0.0029

FP	**Coef.**	**Std. Err.**	**Z**	**P>z**	**[95% Conf.**	**Interval]**
IA	−0.328	0.107	−3.08	0.003	−0.541	−0.116
_cons	2.745	0.142	19.36	0.001	2.462	3.027
sigma_u	0.798					
sigma_e	1.209					
Rho	0.304					

F test that all u_i = 0: F(3, 71) = 8.42, p = .0001.

Discussion of Findings

The negative IA coefficient qualifies the expectation that a lower user cost of capital

will be reflected immediately in stronger financial performance. The result is compatible with a timing explanation: a large qualifying project may create tax deductions and current costs before the associated assets generate adequate earnings. The study did not observe project completion dates, capital spending efficiency or lagged returns, so that explanation remains a hypothesis rather than a demonstrated mechanism. A negative allowance difference also has a different meaning from a larger positive tax benefit, making the exact operational measure central to interpretation.

The finding agrees in direction with Marieta et al. (2024), who reported a negative association for Nairobi deposit-taking SACCOs, although those institutions hold different assets and face different operating conditions. It cannot be treated as a contradiction of Nganyi et al. (2024), whose outcome was the effective tax rate: lower tax liabilities and stronger contemporaneous profitability are distinct propositions. The relatively limited investment response reported by Mutuku et al. (2022) likewise cautions against assuming that tax relief alone produces large real or financial gains.

The fixed-effects estimate compares each firm with itself over time and removes stable firm characteristics. It does not establish that investment allowances caused lower performance. Investment decisions may respond to expected profits, common policy or economic shocks may affect all firms, and very large allowance differences may dominate the result. Moreover, the FP composite rule and the transformation connecting descriptive amounts to coefficient units were not documented, and the analysis contains only four firm panels. These limits matter when translating the statistically significant coefficient into a policy or managerial claim.

Conclusions

The evidence shows a negative contemporaneous association between investment allowances and financial performance in the four-firm energy and petroleum panel over 2006–2025, after accounting for VAT exemptions, customs duty incentives and fixed firm characteristics. The first null hypothesis was rejected. The result does not show that the tax provision itself damages firms, nor does it establish the longer-run return from the qualifying assets. It indicates that the financial benefit of an allowance should be evaluated alongside the full cost, timing and productivity of the investment that generated it.

Recommendations

Theoretical Implications

Applications of Neoclassical Investment Theory in capital-intensive sectors should distinguish the immediate reduction in the user cost of capital from the later earnings generated by installed assets. Research models should measure the tax benefit and capital outlay separately and allow the effect on performance to unfold over multiple years. Tax Expenditure Theory also calls for assessment of whether the forgone revenue yields productive investment and durable economic benefits.

Policy Implications

The National Treasury and Kenya Revenue Authority should evaluate investment allowances with evidence on the performance of the qualifying projects over their full life cycle. An annual allowance claim is an incomplete measure of policy success. Reporting guidance that distinguishes qualifying expenditure, deduction claimed and estimated tax saving would make the benefits easier to assess in the energy and petroleum sector.

Managerial Implications

Managers should appraise qualifying projects using expected cash flows, cost of capital,

sensitivity to delays and post-commissioning asset utilization. Tax relief should be incorporated into the investment appraisal, together with financing, maintenance and compliance costs. Boards should review whether projects that generate allowances subsequently produce the anticipated operational and financial returns.

Further Research

Future work should recheck the firm-year data and establish the exact FP composite, the IA variable's units and the treatment of negative values before re-estimating the relationship. It should test one- and multi-year lags, year effects, alternative profitability measures and the influence of extreme observations. A wider sample, including nonlisted energy firms, would improve precision. Replication should also define the listing-based study population by year, because Kenya Pipeline Company's 2006–2025 observations preceded its 2026 NSE listing.

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