

Does Investment Incentives Mediate the Relationship Between Government Revenue Management Practices and Financial Sustainability? Evidence from Oil Resources in South Sudan

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Abstract

The financial sustainability of oil resources is a critical issue for resource-rich developing countries like South Sudan, where the management of oil revenues plays a pivotal role in national economic stability and growth. The study's objective was to determine the mediating effect of investment incentives on the relationship between government revenue management practices and financial sustainability of oil resources in South Sudan. A descriptive longitudinal research design was adopted, utilizing secondary data collected from 2012 to 2023 from sources such as the Central Bank of South Sudan, the Ministry of Petroleum (MOP), the Ministry of Finance and Planning (MOFP), the World Bank Report and the International Monetary Fund (IMF) and analysis by regression models. The findings revealed that investment incentives mediates the relationship between government revenue management practices and financial sustainability of oil resources in South Sudan, suggesting that strategic incentives enhance the benefits of revenue management practices ($R^2 = 0.3412$, $p < 0.05$). The study concludes that effective government revenue management, supported by strategic investment incentives are essential for the financial sustainability of oil resources in South Sudan. This study aids industry stakeholders in developing best practices that ensure the sustainable extraction and sale of oil resources, the findings can shape the development and refinement of national strategies and regulations pertaining to the oil sector and the study enriches

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academic literature on the dynamics of resource-rich economies. Based on the findings, the study recommends that policymakers in South Sudan prioritize the implementation of robust fiscal policies that enhance the efficiency of revenue collection and ensure transparency in public expenditure. Specifically, the government should establish an independent fiscal oversight body tasked with monitoring oil revenue management and ensuring that revenues are allocated and spent in a manner that supports long-term economic stability.

Keywords: Government revenue management practices, investment incentives, financial sustainability, oil resources in South Sudan.

1. Introduction

Government revenue management practices which is a component of fiscal policy, play a pivotal role in shaping investment opportunities within nations. By default, progressive fiscal policies act as incentives for investment opportunities while a contrary position may lead to opportunities for investment either stagnating or resulting in investment flight. Policymakers of a country should endeavor to be transparent and efficient with matters related to fiscal policies as this can attract investors by providing a stable and predictable business environment (Adan et al., 2023). Particularly, the alignment of tax incentives with prudent financial management can contribute to the overall economic stability and long-term financial sustainability of a country's resources, and this has the potential to incentivize investment opportunities (Mataba et al., 2023).

Government revenue management practices serve as the foundation upon which the other variables either thrive or falter. Government revenue management practices play a pivotal role in shaping investment incentives, as transparent and efficient fiscal policies can attract investors by providing a stable and predictable business environment (Tashevskva et al., 2020). As a sign of economic health, these investment incentives can bolster economic stability by reducing financial strains that might contribute to political tensions or unrest. Ultimately, with a combination of effective revenue management and investment incentives, the long-term financial sustainability of the country's resources is more likely to be achieved (Rotimi et al., 2021).

Regarding investment incentives and financial sustainability, South Sudan's over-reliance on oil has made its economy highly vulnerable to global oil price volatility. When prices are favorable, there's a surge in revenues, but downturns have had severe repercussions on the nation's fiscal health (Saturlino, 2023). Coupled with the aforementioned challenges in revenue management, this has often led to economic hardships, hindering consistent investments in the oil sector (Greco, 2023). The interplay between these factors—revenue management, investment incentives, and financial sustainability—forms a complex web that defines the state of oil resources in South Sudan (Ali et al., 2023).

South Sudan, having declared independence in 2011, is one of the youngest nations

globally and holds significant oil reserves, with oil accounting for approximately 60% of its GDP and nearly 98% of its exports by the end of the 2020s (Berdal & Shearer, 2021). However, the nation's heavy reliance on this singular resource, coupled with internal political conflicts, infrastructural challenges, and periodic tensions with Sudan over oil transit, has led to economic vulnerabilities (Niyitunga & Wamaitha, 2023). In South Sudan, the government revenue management practices concerning oil resources have historically been fraught with challenges. As the nation's primary revenue source, the management of oil revenues has been pivotal in shaping its fiscal policy and economic trajectory (Pal et al., 2023). Regarding investment incentives and financial sustainability, South Sudan's over-reliance on oil has made its economy highly vulnerable to global oil price volatility. When prices are favorable, there's a surge in revenues, but downturns have had severe repercussions on the nation's fiscal health (Saturlino, 2023). While the global average dependency on oil for export revenues stands at around 24%, South Sudan's near-total reliance is alarmingly high. Given this backdrop, a comprehensive study of oil resources in South Sudan is paramount (International Crisis Group, 2021).

1.1 Objective of the Study

To determine the mediating effect of investment incentives on the relationship between government revenue management practices and the financial sustainability of oil resources in South Sudan.

1.2 Research Hypothesis

There is no statistically significant mediating effect of investment incentives on the relationship between government revenue management practices and the financial sustainability of oil resources in South Sudan.

2. Literature Review

This entails reviewed theories and empirical investigations that explain the association between government revenue management practices, investment incentives and financial sustainability.

2.1 Theoretical Literature

This study is anchored on the public choice theory which was developed by Buchanan and Tullock in 1962 (Buchanan, 1992, 2003; Buchanan & Tullock, 1999). The theory postulates that individuals in the public sector, including politicians, bureaucrats, and voters, act rationally to maximize their self-interests. This theory challenges the traditional notion that government actors always act in the public interest. Instead, it assumes that public officials and voters are driven by their personal preferences and incentives. The theory contends that politicians may prioritize re-election and personal gain over the welfare of society, bureaucrats may pursue budgetary and bureaucratic expansion, and voters may vote based on

individual benefits rather than the broader societal good (Oudenampsen & Mellink, 2022).

In this study, public choice theory offers a viable explanation of how nations adjusted to the political economy where policies are made by the ruling elite from the political cycles to cater for adjustments that may be needed as a result of conflict, for instance, immediately after World War II. During the adjustment period, economist devoted their energies towards the quest of understanding the allocation matrix of political institutions and the market sector (Buchanan, 2003). The theory further provides a basis that helps to explain how government officials make decisions based on their self-interests.

Effective revenue management might be pursued if it aligns with the personal or political interests of those in power, thereby affecting investment incentives and financial sustainability. In stabilizing the economy, the tools of investment incentives neutralize any negative economic impact in the country's economic cycle. Thus, the theory directly connects government revenue management practices, investment incentives and financial sustainability. Moreover, this theory can help elucidate how government actors may be influenced by their own self-interests and the pursuit of political or personal gains when it comes to managing oil revenues. By understanding the incentives and motivations driving these decisions, the study can shed light on why certain revenue management practices are adopted or neglected and how these choices impact investment incentives and ultimately, the financial sustainability of oil resources in South Sudan.

2.2 Empirical Literature

Under the empirical studies section, various types of research correlated to government revenue management practices, investment incentives and financial sustainability, which have been undertaken by various authors around the world, were reviewed. Subying and Yoopetch (2023) aimed to explore the impact of government revenue management practices and investment incentives on the financial sustainability of oil-dependent economies in the Middle East. The researchers employed a quantitative methodology, utilizing a time-series analysis to examine the relationship between revenue management practices and investment incentives over 15 years. The findings revealed a significant positive correlation between transparent and efficient revenue management practices, increased investment incentives, and enhanced financial sustainability in the studied economies.

Myoda et al. (2023) aimed to assess the impact of government revenue management practices and investment incentives on the financial sustainability of oil-dependent economies in Southeast Asia. The study focused on a sample of countries in the region known for their reliance on oil revenues. The researchers adopted a quantitative approach, utilizing a combination of regression analysis and simulation modelling. The study's findings indicated that countries with more transparent and efficient revenue management practices and well-designed investment incentives

experienced higher levels of financial sustainability. However, the study identified a research gap in the lack of consideration for geopolitical factors influencing financial sustainability, suggesting the need for future research to explore the geopolitical dimensions that may impact the effectiveness of revenue management practices and investment incentives in the region.

Garcia and Martinez (2020) aimed to analyze the interplay between government revenue management practices, investment incentives, and the financial sustainability of resource-rich countries in Latin America. The study utilized a mixed-methods approach, combining qualitative case studies with quantitative analysis of economic indicators. The study found that countries with transparent and accountable revenue management practices attracted higher levels of investment in their natural resource sectors, leading to improved financial sustainability. However, the research identified a gap in understanding the behavioral aspects of investors and policymakers in responding to changes in revenue management practices and investment incentives.

3. Methodology

A descriptive longitudinal research design was used. A descriptive longitudinal research design was appropriate as the current study purposed to have a precise description of government revenue management practices, investment incentives and financial sustainability and the association between these study constructs. This study focused on oil resources in South Sudan. This context was chosen as South Sudan, since its independence in 2011, has been heavily reliant on oil resources, which account for a significant portion of its GDP and foreign exchange earnings (Kibe et al., 2023).

3.1 Data

The study relied on secondary data. Quarterly data was obtained from Central Bank of South Sudan, the South Sudan Ministry of petroleum, the Ministry of Finance and Planning, International Monetary Fund (IMF), and the World Bank reports for the period between January 2012 and December 2023 on a quarterly basis. The researcher adopted measures of tax collection efficiency and public expenditure transparency to gauge government revenue management practices, investment incentives was measured by tax and infrastructure incentives and financial sustainability was measured by diversity of revenue. The data obtained was analyzed using descriptive statistics (mean, standard deviation and coefficient of variation). Regression analysis was used to test the hypothesized relationship.

3.2 Empirical Model

The data obtained was analyzed using descriptive statistics (mean, standard deviation and coefficient of variation). Regression analysis was used to test the hypothesized relationship. Baron and Kenny (1986) mediation process was employed.

Four Step Test for Mediation: (Baron and Kenny (1986).

$$\text{Step 1: } Y = \alpha + \beta_1 X_1 + \varepsilon$$

$$\text{Step 2: } X_2 = \alpha + \beta_1 X_1 + \varepsilon$$

$$\text{Step 3: } Y = \alpha + \beta_1 X_1 X_2 + \varepsilon$$

If the relationship is significant then proceed to:

$$\text{Step 4: } Y = \alpha + \beta_1 X_1 + \beta_2 X_2 + \varepsilon$$

Where: Y= Financial sustainability

X₁ = Government revenue management practices

X₂= Investment incentives,

ε =Error term

4. Main Results

In this section, the study presents the descriptive results, correlation analysis and regression analysis which are critical in understanding the relationships among the study variables.

4.1 Descriptive Statistics

Descriptive statistics provide a summary of the data, offering insights into the central tendency, dispersion, and variability of the variables as shown in Table 1.

Table 1: Summary of Descriptive Statistics

Stats	Tax Collection Efficiency	Public expenditure transparency	Investment Incentives	Financial Sustainability
Obs	48	48	48	48
Min	0.000862	0	5.23	0.772409
Max	0.009699	1	21.29	0.999765
Mean	0.005811	0.583333	17.83	0.943233
SD	0.003285	0.498224	2.25	0.054273
CV	0.565307	0.854099	0.13	0.057539

Table 1 provides a summary of descriptive statistics offering insights into the central tendency, dispersion, and variability of the variables. By analyzing these statistics, we can better understand the distribution and characteristics of the data, which sets the foundation for further analysis and interpretation of the relationships among the study variables. The descriptive statistics indicate that tax collection efficiency, measured as the ratio of tax to GDP, varied significantly among the data points. With 48 observations, the minimum tax collection efficiency was 0.000862, and the maximum was 0.009699. The mean value of 0.005811 suggests that, on average, tax collection was moderately efficient. However, the standard deviation of 0.003285 and a coefficient of variation (CV) of 0.565307 indicate a moderate level of dispersion around the mean, reflecting some variability in tax collection

efficiency over the study period.

Public expenditure transparency was measured as a binary variable, with a minimum value of 0 and a maximum of 1 across the 48 observations, signifying that transparency was either absent or fully present. The mean value of 0.583333 suggests that transparency was observed in slightly more than half of the cases. The standard deviation of 0.498224 and a high coefficient of variation (0.854099) indicate substantial variability in public expenditure transparency among the observations, suggesting inconsistent application of transparency practices.

The descriptive statistics for investment incentives, based on 48 observations, indicate a substantial range, with values spanning from 5.23 to 21.29, and an average of 17.83. The relatively low standard deviation of 2.25 and a coefficient of variation of 0.13 suggest that investment incentives were fairly consistent over the study period, with minimal fluctuations. This stability implies that the government maintained a relatively steady approach in offering tax and infrastructure incentives to attract investment in the oil sector.

4.2 Correlation Analysis

The correlation analysis in this study examines the strength and direction of the linear relationships between the dependent variable, financial sustainability (FinSustainability), independent variable government revenue management practices (GovtRevenue) and mediating variable, investment incentives (Lntaxandins).

Table 2: Pearson's Correlation Analysis Results

	FinSus~y	Publicexpe~y	Taxcollec~y	Lntaxa~s
FinSustain~y	1			
Publicexpe~y	0.1231*	1		
Taxcollec~y	0.3656*	0.4596*	1	
Lntaxa~s	0.5280*	0.0603	0.5480*	1

From Table 2 above, the correlation between financial sustainability (FinSustain~y) and public expenditure transparency (Publicexpe~y) is 0.1231. This positive and statistically significant correlation suggests that as public expenditure transparency increases, financial sustainability tends to increase. The correlation between financial sustainability (FinSustain~y) and tax collection efficiency (Taxcollec~y) is 0.3656. This positive and statistically significant correlation implies that effective tax collection is associated with a more diversified and sustainable revenue base, which is crucial for the financial health of oil resources in South Sudan.

Investment incentives (Lntaxandins) have a positive and statistically significant correlation with financial sustainability, with a coefficient of 0.5280. This indicates a strong relationship where higher levels of investment incentives, such as tax breaks and infrastructure incentives, are associated with improved financial

sustainability. This relationship highlights the importance of incentivizing investments to ensure a steady and diverse revenue stream, which contributes to the overall financial sustainability of the oil sector.

4.3 Regression Results

Table 3: Independent Variable and Dependent Variable

Source	SS	df	MS	Number of obs	=	48
				F(2, 45)	=	7.15
Model	0.000125494	2	6.2747E-05	Prob > F	=	0.0020
Residual	0.000394915	45	8.7759E-06	R-squared	=	0.2411
				Adj R-squared	=	0.2074
Total	0.000520409	47	1.11E-05	Root MSE	=	0.00296
FinSustain~y	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Taxcollection~y	0.0222883	0.0060884	3.66	0.001	0.0100257	0.0345509
Publicexpe~y	0.0024652	0.0009766	2.69	0.015	0.0044321	0.0000498
_cons	0.9813665	0.0044633	219.87	0.000	0.9723769	0.9903561

The finding confirms that the first condition for mediation is met, as the independent variable significantly affects the dependent variable.

Table 4: Independent Variable and Mediating Variable

Source	SS	Df	MS	Number of obs	=	48
				F(2, 45)	=	11.95
Model	82.4566631	2	41.2283315	Prob > F	=	0.0001
Residual	155.22356	45	3.44941245	R-squared	=	0.3469
				Adj R-squared	=	0.3179
Total	237.680223	47	5.05702603	Root MSE	=	1.8573
Lntaxandin~s	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Publicexpe~y	1.096689	0.6122528	2.79	0.040	2.32983	0.1364515
Taxcollection~y	18.56451	3.817046	4.86	0.000	10.87658	26.25243
_cons	4.208045	2.798243	1.50	0.140	-1.427906	9.843996

The result from Table 4 fulfills the second condition for mediation, as the independent variable significantly affects the mediator.

Table 5: Mediating Variable and Dependent Variable

Source	SS	Df	MS	Number of obs	=	48
				F(1, 46)	=	17.78
Model	0.000145	1	0.000145056	Prob > F	=	0.0001
Residual	0.000375	46	8.1598E-06	R-squared	=	0.2787
				Adj R-squared	=	0.2631
Total	0.000523	47	1.11073E-05	Root MSE	=	0.00286
FinSustain~y	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Lntaxandin~s	0.0007812	0.0001853	4.22	0.000	0.0004083	0.0011542
_cons	0.9831199	0.0033285	295.37	0.000	0.97642	0.9898197

The findings from table 5 confirms that the mediator significantly affects the dependent variable, meeting the third condition for mediation.

Table 6: Independent Variable, Mediating Variable and Dependent Variable

Source	SS	df	MS	Number of obs	=	48
				F(3, 44)	=	7.63
Model	0.0001781	3	0.000059352	Prob > F	=	0.0003
Residual	0.0003424	44	7.780E-06	R-squared	=	0.3421
				Adj R-squared	=	0.2973
Total	0.0005204	47	0.000011129	Root MSE	=	0.00279
FinSustain~y	Coef.	Std. Err.	T	P>t	[95% Conf.	Interval]
Publicexpe~y	-0.00183	0.000952	-1.92	0.061	-0.003745	0.000091
Taxcollection~y	0.011485	0.007081	1.62	0.112	-0.002786	0.025756
Lntaxandin~s	0.000582	0.000224	2.60	0.013	0.0001307	0.001033
_cons	0.978918	0.004307	229.38	0.000	0.9702377	0.987598

Finally, in the fourth step, Table 6 shows the regression results when both government revenue management practices and investment incentives are included as predictors of financial sustainability. The results indicate that the coefficient for investment incentives remains positive and significant (0.000582, $p = 0.013$), while the effect of public expenditure transparency on financial sustainability becomes non-significant (-0.00183, $p = 0.061$) and the effect of tax collection efficiency on financial sustainability becomes non-significant (0.011485, $p = 0.112$). Given the findings across these four steps, the hypothesis that there is no significant mediating effect of investment incentives on the relationship between government revenue management practices and financial sustainability is rejected. The results demonstrate that investment incentives play a significant mediating role, indicating that the positive effect of government revenue management practices on financial

sustainability is, in part, channeled through the provision of investment incentives. This underscores the importance of investment incentives in enhancing the financial sustainability of oil resources in South Sudan.

5. Conclusions

This study concludes that effective government revenue management practices are vital for the financial sustainability of oil resources in South Sudan. The findings demonstrate that efficient tax collection and transparent public expenditure significantly contribute to sustaining the financial health of the oil sector. Therefore, strengthening these practices is essential for ensuring the long-term viability of the sector, which is critical for the country's economic stability and growth.

The study also concludes that investment incentives play a crucial mediating role in enhancing the impact of government revenue management on financial sustainability. By providing tax breaks, infrastructure support, and other incentives, the government can attract and retain investments that bolster the financial stability of the oil industry. This highlights the importance of a supportive investment environment in maximizing the benefits of effective revenue management practices.

References

- [1] Adan, H., Atsebi, J.-M. B., Gueorguiev, N., Honda, J., & Nose, M. (2023). Quantifying the Revenue Yields from Tax Administration Reforms (WP/23/231, November 2023).
- [2] Ali, S., Murshed, S. M., & Papyrakis, E. (2023). Oil, export diversification and economic growth in Sudan: evidence from a VAR model. *Mineral Economics*, 36(1), 77–96.
- [3] Baron, R. M., & Kenny, D. A. (1986). The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations. *Journal of Personality and Social Psychology*, 51(6), 1173–1182.
- [4] Berdal, M., & Shearer, D. (2021). Hard lessons from South Sudan. *Survival*, 63(5), 69–96.
- [5] Buchanan, J. M. (1992). Public Choice: The Origins and Development of a Research Program.
- [6] Buchanan, J. M. (2003, May). What Is Public Choice Theory? *Economic Education Bulletin: American Institute for Economic Research*, XLIII. www.hillsdale.edu
- [7] Buchanan, J. M., & Tullock, G. (1999). *The Calculus of Consent: Logical Foundations of Constitutional Democracy* [1962]. The Online Library of Liberty, 3.
- [8] Garcia, M., & Martinez, A. (2020). The Nexus of Government Revenue Management Practices, Investment Incentives, and Financial Sustainability: Evidence from Latin American Resource-Rich Countries. *Journal of Economic Policy*, 30(4), 567–589.

- [9] Greco, E. (2023). Keeping eyes on Sudan—keeping eyes on austerity. *Review of African Political Economy*, 50(175), 1–8.
- [10] International Crisis Group. (2021). *Toward a Viable Future for South Sudan*.
- [11] Kibe, E., Nzomo, M., & Jonyo, F. (2023). Citizen Participation in Natural Resource Governance: A Case of Oil in South Sudan. *European Journal of Development Studies*, 3(5), 39–47.
- [12] Mataba, K., Lassourd, T., Readhead, A., & Nikièma, S. (2023). Revisiting Tax Incentives as an Investment Promotion Tool Q&A for investment policy-makers.
- [13] Myoda, Y., Park, D., Jinjarak, Y., Tian, S., Estrada, G., Breunig, R., Gupta, S., Hill, S. C., & Jalles, J. T. (2023). *Mobilising Tax Revenue for Sustainable Development in Asia (T20 Policy Brief)*.
- [14] Niyitunga, E. B., & Wamaitha, E. K. (2023). Key Factors influencing conflict relapse in South Sudan: A conceptual analysis. *African Journal of Peace and Conflict Studies*, 12(1), 25–46.
- [15] Oudenampsen, M., & Mellink, B. (2022). The roots of Dutch frugality: the role of public choice theory in Dutch budgetary policy. *Journal of European Public Policy*, 29(8), 1206–1224.
- [16] Pal, D. G., Ungaya, G. C., & Odhiambo, E. O. S. (2023). The relationship between political administrative interface and leadership performance in the Ministry of petroleum of the Republic of South Sudan. *Open Access Library Journal*, 10(05), 1–19.
- [17] Rotimi, C. O., John, N., Rotimi, M. E., & Doorasamy, M. (2021). Assessment of the Impact of Government Revenue Mobilisation on Economic Growth in Nigeria. *Journal of Economics, Business, & Accountancy Ventura*, 24(2), 310–325.
- [18] Saturlino, M. M. A. (2023). Oil exploration and its effects on the environment and pastoralist communities in the Upper Nile region of South Sudan (Policy Brief, 2023/19). STG Policy Papers; European University Institute.
- [19] Subying, C., & Yoopetch, C. (2023). A Bibliometric review of revenue management in the Tourism and Hospitality Industry, 1989–2021. *Sustainability*, 15(20), 15089.
- [20] Tashevskaja, B., Trenovski, B., & Trpkova - Nestorovska, M. (2020). The Government revenue–expenditure nexus in Southeast Europe: A Bootstrap Panel Granger-Causality Approach. *Eastern European Economics*, 58(4), 309–326.