

GROSS DOMESTIC PRODUCT AND TAX REVENUE PERFORMANCE BY THE KENYA REVENUE AUTHORITY

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ABSTRACT

Tax revenue contributes greatly to government's service delivery, the development of infrastructure, and growth of the economy. The tax revenue consolidation in Kenya is a constitutional responsibility of the Kenya Revenue Authority. However, while tax revenue in Kenya has consistently grown, it has always fallen short of the targeted collection despite the employment of various economic strategies, the use of different fiscal policies, attracting foreign direct investment, and tax reforms. For instance, in the financial year 2022/23, KRA's total collection of Kes 2.166 trillion fell short of the Kes 2.273 trillion target, signifying a deficit of Kes 107 billion. The research intended to determine the effect of Gross Domestic Product on total tax revenue in Kenya. Anchored on the Keynesian theory of economics study adopted the positivist philosophy and an explanatory research design. Its focus was on the Kenya Revenue

Authority as its target population, having been established through an Act of Parliament in the year 1995. Quantitative archival time-series data for Gross Domestic Product and tax revenue were used from the period between 1996 and 2023, considering the availability of the associated relevant research data. The quantitative data were collected, cleaned, coded, and analysed using SPSS version 24 of the Stata software. Both descriptive and inferential statistical methods were important for data analysis. Descriptive analysis focused on mean, percentages, standard deviation, and frequencies. Inferential tests included correlation and multivariate regression. The study found that Gross Domestic Product had a moderate, but statistically insignificant effect on tax performance.

Key words: Gross Domestic Product, Tax Revenue Performance.

INTRODUCTION

Taxation entails the government's authority to collect funds from its jurisdictional residents, which are then utilised to meet various public expenditures (Gituma, 2017). It serves as a compulsory contribution that individuals and businesses are required to pay, ensuring the provision of core utilities necessary in the country. Through the collection of taxes, the government can address societal needs and foster economic growth (Brys et al., 2016). By imposing taxes, the government can generate a steady stream of income that enables it to fulfil its responsibilities and obligations towards the nation and its inhabitants.

Alabede (2018) describes GDP growth as the rise concerning the overall production of goods and services within a defined timeframe. He asserts that such growth leads to increased profits for businesses, providing them with the capital necessary to invest and expand their workforce (Alabede, 2018). The resultant effects of GDP growth in turn leads to a higher standard of

living otherwise referred to as GDP per capita characterized by increased purchases, higher consumption, elevated sense of awareness on tax responsibility, and decreased tax evasion which cumulatively increases tax revenue (Ofori et al., 2018).

Statement of the Problem

Although tax revenue in Kenya has shown a general upward trend over the years, actual collections have frequently fallen short of projected targets. While some financial years have recorded marginal surpluses, such as FY 2020/21 and FY 2021/22, other periods have been marked by notable shortfalls, including FY 2016/17, FY 2017/18, FY 2022/23, and FY 2023/24. These fluctuations indicate inconsistencies in tax revenue performance despite sustained growth in the national budget and increased pressure on KRA to mobilise more revenue. The persistence of revenue shortfalls raises questions about the underlying economic factors influencing tax collection outcomes in Kenya.

Empirical evidence suggests that macroeconomic conditions may play a significant role in shaping tax revenue performance. However, current research on the link between macroeconomic variables and tax revenue in Kenya present mixed and inconclusive findings. Ng'ong'o (2021) observed that interest rates negatively influence tax revenue and that GDP lacks a significant relationship with tax revenue, but the study concentrated on tax reforms and a limited period. Other studies, such as Gisaini (2017) and Nalyanya et al. (2020), examined the effects of individual macroeconomic variables, GDP and inflation, respectively, without considering the combined influence of multiple variables over a longer period.

This study, therefore, aims to remedy these shortcomings by scrutinizing the effect of GDP on tax revenue performance in Kenya over the period 1996 to 2023. By doing so, the study aims to provide clearer and more consistent empirical insights that can inform fiscal policy and enhance the effectiveness of revenue mobilisation efforts by KRA.

Objectives of the Study

The study examined the effect of Gross Domestic Product on total tax revenue in Kenya.

Theoretical Framework

Keynesian Theory of Economics

Markwell (2016) explains that the British economist John Maynard Keynes is credited with the establishment of the Keynesian theory of economics in the year 1936. This was in his seminal work "The General Theory of Employment, Interest, and Money" (Appelt, 2016). Arestis et al. (2018), in their use of the Keynesian theory of economics, detail that it focuses on the total demand for goods and services in the economy and its impact on production, work opportunities, and inflation, denoted by rising prices or currency devaluation. Osuoha (2022) also, in his reference to the theory, posits that at its centrality, the government can and should intervene to stabilise the economy by stimulating consumption through increased government expenditure and lowering of taxes, hence promoting consumption. As such, rapid economic growth should be founded on the expansion of markets and a corresponding rise in consumption levels.

According to the Keynesian framework, one of the proposed interventions that the government can undertake is to lower taxes. With reduced tax rates, the level of demand, hence consumption, goes up as goods and services become affordable with reduced inflation (Liu et al., 2022). In addition, the production of goods and services increases as businesses witness revenue growth and additional capital that would have otherwise been paid up as taxes to reinvest or invest in existing or new enterprises (Benzarti & Carloni, 2019). Notably, an increased demand and consumption base also leads to increased tax revenue volume (Kotlinska et al., 2020).

Critics of the Keynesian theory have chided it for its advocacy for deficit spending by governments, which could further cause inflation and stifle private investment (Lee, 2012). Nonetheless, by adding to this study, the theory provides an understanding of the role of government in encouraging increased trade openness and promoting the demand for goods through spurring GDP and how this influences total tax revenue. As such, the Keynesian theory addresses, GDP growth and tax performance.

Empirical Review

Tax revenue is a crucial tool for managing a nation's GDP. It allows governments to fund essential public services, infrastructure, and economic development initiatives that ultimately impact economic growth. In many instances, GDP associates positively with collected tax revenue. However, the extent to which this occurs or if at all it does still remains debatable. Andrejovska and Pulikova (2018), for instance, in a study investigating how macroeconomic factors affect tax performance, focusing on the 28 European Union member countries and involving time-series data derived from the member states, determined a strong direct dependency between tax revenue and GDP. Thus, GDP had a strong positive correlational influence on tax income. This is because GDP growth translates to economic growth and hence higher standards of living in the country, which in turn fosters increased profits and consumption, consequently translating to increased tax revenues (Andrejovska & Pulikova, 2018).

Gisaina (2019), in adding to this school of thought in a study using time-series data from 1991 to 2019 and seeking to explore how macroeconomic factors influence tax revenue in Kenya, yielded that GDP positively impacted tax revenue. The study specifically holds that a unit change in the GDP contributed a factor of 0.012 change in tax revenue. In contrast to the current study, while Andrejovska and Pulikova (2018) focused on EU member states, the current study focusses on Kenya. On the other hand, while Gisaina (2019) focussed on the years 1991 – 2019 with Government spending, inflation rate, and GDP as its selected predictor macroeconomic variables. the current study is based on the period 1996 to 2023 (28 years) and focusses on GDP.

Notably, studies that established findings contrary to the above also exist. Çiğdem and Altaylar (2021) descriptive study utilizing time-series data over the period 1985-2018 analysed the nonlinear relationship between GDP and tax revenue in Turkey. The study found that with

regard to GDP, there was no synchronous relationship in the shifts in tax receipts arising from a decrease in GDP, suggesting that the variables' response to shocks is not always consistent (Çiğdem & Altaylar, 2021). Çiğdem et al. (2020) in contributing to this discourse in their study done in Turkey to probe the connection between economic crises and consumption trend, determined that GDP growth had a negative impact on tax collection. Specifically, it established that a 1% growth in GDP leads to a 7.6% decline in tax revenues (Çiğdem et al., 2020). In terms of gaps, (Çiğdem et al., 2020)' study was undertaken in Turkey while the current one was conducted in Kenya. Furthermore, Çiğdem and Altaylar (2021) was conducted in Turkey and the only macroeconomic factor focused on in the study was GDP. The current study explores multiple macroeconomic factors and their impact on tax revenue and was carried out in Kenya.

RESEARCH METHODOLOGY

Positivism was the paradigm embraced in this study, which provided a guiding framework for the research process. Park et al. (2020) explain that positivism puts emphasis on the use of scientific techniques and empirical evidence to comprehend and delineate concepts and is the choice philosophy for quantitative research.

This research employed an explanatory research design with the Kenya Revenue Authority as the unit of analysis

This research focused on Kenya Revenue Authority as its target population. The data of interest was drawn from the KRA as well as the CBK and KNBS. This was the corresponding time series data for GDP and tax revenue for the period 1996 to 2023.

The study focused on the period 1996 to 2023, corresponding with the establishment and operationalization of the KRA following its formation by an Act of Parliament in 1995. This period provided 28 annual observations, which are adequate for time-series econometric analysis and sufficient to capture variations in macroeconomic conditions and tax revenue performance over time. The selected time span therefore offers a reliable basis for examining long-run relationships between macroeconomic variables, foreign direct investment, and tax revenue performance in Kenya.

Descriptive Statistics

Examining the annual data in Appendix 1 sourced from KRA, the analysis employed several statistical metrics that included the mean and the standard deviation. Other indicators comprised the variables' min and max values. Furthermore, skewness and kurtosis were examined. The summary descriptive statistics of the variables used in the model are as follows:

Table 1: Descriptive Statistics

		N	Mean	Std. Dev	Min	Max
Total Tax Performance		28	0.9979	0.0704	0.9100	1.2500
GDP (Kes Millions)		28	3.3523×10^6	2.9860×10^6	528739.0000	1.0400×10^7

Note: The table display the descriptive statistics drawn from the variables data showing the sample size (N), Mean, standard deviation, for total tax performance and GDP.

Table 1 provides insights into the descriptive statistics regarding the study variables. The average tax performance ratio (target against actual collection) was determined to be 0.9979 (SD = 0.0704), with a maximum performance ratio of 1.2500 and a minimum of 0.9100. The findings indicate that the average tax performance for the 28 years focused on in this study remained below 100% (99.79%), which reflects a recurring deficit in targeted collection over the studied period. The statistics reveal that GDP averaged Kes 3,352,300 million (SD = 2,986,000 million), with a maximum of Kes 10,400,000 million and a minimum of 528,739 million. This indicates a significant growth in GDP throughout the study period.

Diagnostic Tests

Stationarity Test

The visual inspection plot below shows the Tax Revenue Performance over time along with a 5-period rolling mean and rolling standard deviation. The plot helps to visually determine if the series is stationary (constant mean and variance over time).

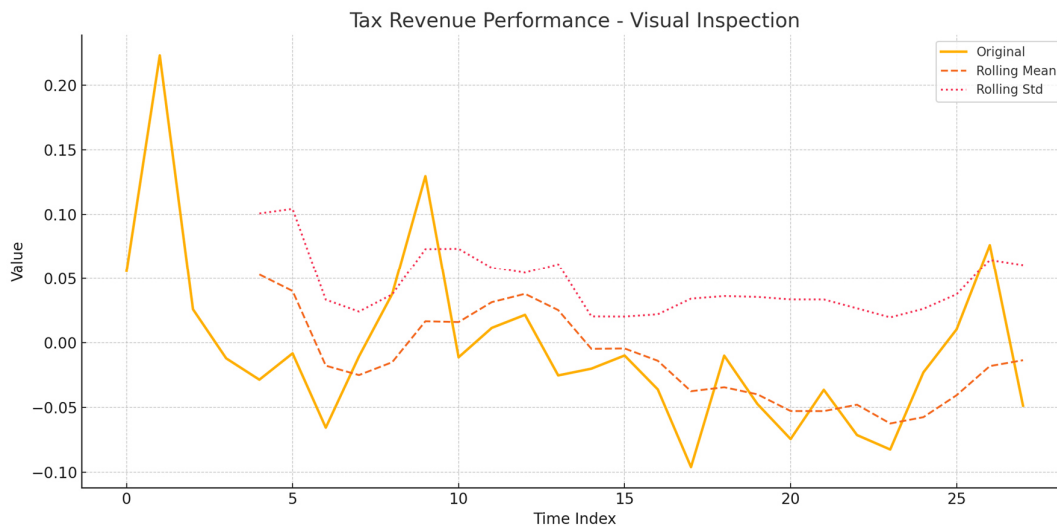


Figure 2: Tax Revenue Performance Visual Inspection

Note: The figure presents a visual stationarity inspection of the trend of tax revenue performance by KRA across time with the figure highlighting the trends between the original/actual values, rolling mean and rolling standard deviation with the graph showing that tax revenue performance was not stationary.

It is evident from Figure 2 that the rolling mean and standard deviation appear to change over time, indicating that the series is likely not stationary. Therefore, to statistically test for stationarity, the researcher further performed the Augmented Dickey-Fuller (ADF) with the results depicted below.

Autocorrelation

To test for autocorrelation, the Durbin-Watson Statistic Test was done and the results highlighted in Table 2 below.

Table 4.2: Autocorrelation Test

Durbin-Watson statistic				
Model	Autocorrelation	Statistic	<i>p-value</i>	
M ₁	0.0830	1.8223	0.2189	

Note: The table presents the results of the Durbin-Watson Autocorrelation Test signifying a mild positive autocorrelation (Durbin-Watson statistic = 1. 8223), that was statistically insignificant (*p-value* > 0.05).

The Durbin-Watson statistic was 1. 8223 as displayed in Table 2, indicating a mild positive autocorrelation. In addition, with *p-value* > 0.05, the outcome showed that the autocorrelation was not severe enough to violate regression assumptions.

Homoskedasticity

To test for homoskedasticity, the researcher conducted the Breusch-Pagan Test with the outcome summarized in Table 3 below.

Table 3: Breusch-Pagan Test

Breusch-Pagan	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>p</i>
Regression	5	0.000168	3.37E-05	0.873547	0.5147
Residual	22	0.000848	3.85E-05		
Total	27	0.001016			

Note: The table presents the results of the Breusch-Pagan test for homoskedasticity. The outcome indicated the absence of heteroscedasticity since *p-value* > 0.05.

From Table 3, the Breusch-Pagan Test p-value was 0.5147 meaning that $p\text{-value} > 0.05$. This in essence, indicated the absence of heteroscedasticity and that and thus the error terms are homoskedasticity.

Normality

By carrying out the Shapiro-Wilk Test, the researcher was intent on assessing the normality and constant variance across the variables' datasets. The outcome is exhibited in Table 4 below.

Table 4: Shapiro-Wilk Test

	Shapiro-Wilk	P-value of Shapiro-Wilk
Total Tax Performance	0.8263	0.0003
GDP (Kes Millions)	0.8173	0.0002

Note: The table presents the results of the Shapiro-Wilk Test for normality. Residual distribution of the data is normal where $p\text{-value} > 0.05$ and not normal where $p\text{-value} < 0.05$. Evident from Table 4 shows that the $p\text{-value}$ for both variables were < 0.05 , Khatun (2021) explains that when $p\text{-value} > 0.05$, then the residual distribution of the data is normal; however, when $p\text{-value} < 0.05$ then the residual distribution of the data is not normal, hence lacking normality. Hence, while the data set for trade openness exhibits normality, that of the remaining variables are lacking in normality.

Inferential Analysis

Multiple Regression Analysis

The regression model without moderation yielded the following results.

Table 5: Base Model Summary - Total Tax Performance

Model	R	R²	Adjusted R²
M ₁	0.4498	0.2023	0.0636

Note: The table presents the highlights the base model summary for Total Tax Performance showing the correlation coefficient R, the coefficient of determination denoted as R², And the Adjusted R-squared (Adjusted R²) and their linked number of predictors in the regression model.

According to Table 5, the correlation coefficient R= 0.4498 signifies the connection between the study variables, demonstrating a moderate relationship of 44.98% at a 5% significance level. The coefficient of determination denoted as R², represents how much changes in the dependent variable is caused by changes in the independent variables. The R² indicated that 20.23% of the variation in tax performance in Kenya is accounted for GDP.

Table 6: Regression Coefficients and Statistics

Model		Unstandardized	Standard Error	Standardized	t	p
M ₁	(Intercept)	0.9609	0.0948		10.1381	0.0000
	GDP (Kes Millions)	-0.0000	0.0000	-0.1872	-0.8192	0.4211

Note: The table displays the results of the regression analysis between the dependent variable (tax revenue performance) and the independent variable GDP (Kes Millions).

From Table 6, the p-values for all predictor variables >0.05. This suggests the absence of a significant connection between GDP and tax performance in Kenya within the study period. GDP and reflected a negative connection with tax performance. Drawing from equation 1, the relationship is fully depicted in the regression equation 5 below.

$$TR_t = 0.9609 - 0.1872GDP_t$$

As such the interpretation of the information depicted denotes that a unit increase in GDP yielded a 0.1872 decrease in tax performance.

CONCLUSION AND RECOMMENDATIONS

Conclusion

The study concluded that while managing an average of 99.79% KRA failed to meet its annual targeted total tax revenue and GDP.

Recommendations

Considering that the study determined that the GDP exhibited statistically insignificant low relationships with tax performance, over reliance on macroeconomic performance would not guarantee that KRA would achieve its annual tax revenue targets. As such the emphasis of the organisation should be on structural reforms such as tax administration efficiencies and tightening the noose on corruption and non-compliance rather than focussing on Gross Domestic Product.

In addition, it is imperative for KRA to implement workable tax reforms within a recognizable legal framework. Therefore, policy makers need to consider putting in place policies that can enhance structural reforms and tax revenue collection efficiencies at KRA. This will ensure that the institution is safeguarded under law to enforce such reforms.

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