Journal of Economics, Finance and Management Studies

ISSN (print): 2644-0490, ISSN (online): 2644-0504

Volume 08 Issue 10 October 2025

Article DOI: 10.47191/jefms/v8-i10-15, Impact Factor: 8.317

Page No: 6711- 6722

Economic Drivers of Public Health Expenditure in Kenya

Dr. Matundura Erickson[1], Dr. Naftaly Mose[2], Katungu, Sam W.[3], Nyaboga Cynthia Kwamboka[4]

[1,2,4]Department of Economics, University of Eldoret,P.O Box 1125-30100, Eldoret Kenya

[3]Department of Agricultural and Resource Economics, Kangwon National University, Chuncheon City, South Korea.

ABSTRACT: Health spending is a major concern in low and middle income countries due to less financing to the health sector. One of the main goals of the Kenyan government's "big four" development strategy, which is scheduled for completion by 2022 and was achieved in some few counties in 2023 is universal health care. Health has consistently been prioritized over time and has occupied a central position in political campaign platforms. The government has consistently spent huge amount of money into the health sector. In Kenya, majority of people depend on public insurance and only a very small portion of Kenyans can afford to have access to the private insurance and out of pocket payment, this has led to increased level of poverty and higher dependency ratio. Despite these efforts, Kenya continues to face challenges in effectively allocating public health expenditure with macroeconomic factors playing a significant role in influencing spending patterns. However, existing studies have not adequately examined how corruption, unemployment, and fiscal deficit impact public health expenditure in the country. This study sought to fill this gap by providing empirical evidence on these relationships. The purpose of this study was to ascertain how macroeconomic factors affected Kenya's public health spending. This study aimed to establish effects of GDP per capita, corruption, unemployment fiscal deficit and tax revenue on in Kenya. The key theoretical anchors of the study are Public Expenditure theory and Wagner's theory. Explanatory research design was used. Secondary data from the Kenya National Bureau of statistics (KNBS) was used with annual time series data spanning from 1990 to 2023. The data was subjected to stationarity test using Augmented Dickey Fuller (ADF) test, Phillips and Perron (PP) and Kwiatkowski–Phillips–Schmidt–Shin (KPSS) for unit root test. The study employed Autoregressive Distributed Lag model (ARDL) to evaluate the relationship among the variables. The long run ARDL analysis revealed that the coefficients public health expenditure of; corruption -2.231 (p-value 0.002<0.05), per capita gross domestic product 0.001(p-value 0.02<0.05), tax revenue 0.075(p-value 0.025<0.05), and unemployment 0.227(p-value 0.03<0.05) significantly affected public health expenditure in Kenya. However, the fiscal deficit was found to be insignificant in the long run 0.008(p-value 0.914>0.05).To ensure prudent public health expenditure in Kenya, the study recommends strengthening anti-corruption laws, maintaining fiscal discipline through effective budgeting, promoting per-capita economic growth by boosting productivity and investments. Optimizing tax revenue through efficient policies and broadening the tax base is vital to fund public services. Addressing unemployment by creating jobs and investing in education is crucial for effective use of the labor force.

KEYWORDS: public health expenditure, GDP per capita, Corruption, Unemployment, Fiscal deficit, Tax revenue, ARDL

INTRODUCTION

Global Public Health Expenditure Overview

According to the World Health Organization (WHO) report, there is still a significant disparity in health spending across the globe, with over 80% of people living in low- and middle-income countries while only making up 20% of global health spending. Low- and middle-income countries (LMICs) have significant obstacles in attaining Universal Health Coverage due to allocation of less health financing. This results in high out-of-pocket health expenditure and poor health services (Behera & Dash, 2019)

WHO global expenditure report (2018) on health, shows that in low-and middle-income countries, out-of-pocket payments have remained high, accounting for more than 40% of total health spending in 2018. The rapid growth of public health expenditure has become a great concern for both household and governments. Both governments and households are growing more concerned about the rapid increase in health costs.

According to Jakovljevic et al. (2020), global health spending has increased over the last two decades by double in real terms, reaching US$ 8.5 trillion in 2019 and 9.8% of GDP which is up from 8.5% in 2000. The distribution of health spending is still more

uneven than that of the global GDP. The United States alone represented over 40% of global health expenditure, with high-income nations making up around 80% of this amount.

On average, their per capita spending on health was more than four times higher than the GDP per capita of low-income countries. About half of the health spending in low- and middle-income countries went toward primary healthcare, accounting for roughly 3% of GDP on average. About one-third of primary healthcare spending came from government sources, and the other half came from external aid.

Africa Public Health Expenditure Overview

According to World Health Organization (2010), Africa is increasing its investments in healthcare to improve health outcomes and progress toward achieving the Sustainable Development Goals (SDGs). Initiatives like the 2001 Abuja Declaration highlight the commitment of African leaders to prioritize health in national development. However, despite these efforts, the continent faces challenges such as inadequate funding, with health spending in African countries far behind that of high-income nations. In 2010, Africa's average health spending was just US$ 135 per capita, significantly lower than the US$ 3,150 in high-income nations. The global economic crisis has added further strain on health spending, especially in low- and middle-income countries, making it difficult to meet health expenditure targets.

The main obstacle to improving healthcare in Africa is the insufficient funding and ineffective health financing systems. In many African nations, household out-of-pocket expenses account for a large portion of healthcare costs, often leading to financial hardship for individuals. While some countries, like Malawi, have received substantial foreign assistance, overall, less than 20% of health funding in most African countries comes from external sources. The continent's healthcare systems are underdeveloped, and a significant budget gap for public health, estimated at $66 billion annually, remains. To address these challenges, African governments must increase domestic healthcare funding and reduce reliance on out-of-pocket payments. Efforts like the Abuja and Maputo Declarations have set targets for health sector funding, but many countries are still struggling to meet them Mouteyica and Ngepah (2023)

Public Health Expenditure in Kenya

Kenya's public health expenditure plays a crucial role in healthcare financing accounting for 46% of total health spending, while private sector and donor contributions make up the rest. Despite the existence of public healthcare coverage through the National Hospital Insurance Fund (NHIF), inefficiencies such as weak administration, low claim settlement rates, and limited accessibility for the economically disadvantaged hinder its effectiveness. Out-of-pocket (OOP) expenditures remain a major concern, making up a significant portion of private health spending, which has increased over time (Barasa et al., 2017).Health financing challenges have led to fluctuating user fee policies in public hospitals, impacting access to healthcare, particularly for low-income populations. Kenya's healthcare system remains underfunded, with public health spending falling well below the Abuja Declaration's recommended 15% of GDP, standing at just 1.5% in 2012 (Nyamwange (2012).

The government has recognized healthcare as a fundamental right, prioritizing universal health coverage (UHC) in national development plans, including Vision 2030 and the Big Four Agenda (Moon et al., 2016). However, macroeconomic factors such as GDP per capita, fiscal deficits, unemployment, and corruption continue to influence healthcare funding and accessibility (Organization, 2013). Donor funding for health has declined, while reliance on OOP payments has increased, exacerbating financial hardships for citizens. Addressing these challenges requires a more sustainable health financing model, increased government investment, and better resource allocation to ensure equitable access to quality healthcare services for all Kenyans (Seitio-Kgokgwe et al.)

1.2 Statement of the Problem

Kenya's high reliance on out-of-pocket (OOP) healthcare payments remains a significant challenge with 26.1% of total health financing coming from OOP expenses in 2017, compared to much lower rates in countries like Seychelles, Botswana, and South Africa (World Bank, 2018). Such spending forces many households into poverty by reducing their ability to afford other essential goods and services (Nkatha, 2019). Despite efforts to improve public health expenditure, factors such as corruption, fiscal policies, unemployment, GDP per capita, and tax revenue continue to limit resource mobilization and hinder the development of the health sector (Osoro, 2015). While healthcare is a fundamental right, many low- and middle-income countries, including Kenya, allocate insufficient government funding to public health, leading to inadequate service provision and increased financial burdens on citizens (Bein, 2020).

Achieving Sustainable Development Goal (SDG) 3, ensuring healthy lives and well-being for all requires addressing Kenya's persistent healthcare financing gaps. Despite progress in improving health outcomes, limited government funding and high OOP payments continue to restrict access to quality healthcare services. The failure of the National Hospital Insurance Fund (NHIF) to

provide comprehensive coverage further exacerbates the issue, leaving many uninsured and vulnerable (World Bank, 2018; (Nkatha et al., 2020).

To address these challenges, this study seeks to examine the impact of macroeconomic drivers; fiscal deficit, unemployment, GDP per capita, corruption and tax revenue on public health expenditure in Kenya, providing insights into strategies for sustainable health financing.

1.3.2 Specific Objectives of the Study

The specific objectives of the study were;

i. To evaluate the effect of GDP per capita on public health expenditure in Kenya
ii. To determine the effect of tax revenue on public health expenditure in Kenya
iii. To establish the effect of fiscal deficit on public health expenditure in Kenya
iv. To assess the effect of corruption on public health expenditure in Kenya
v. To determine the effect of unemployment on public health expenditure in Kenya

1.5 Significance of the Study

This study will benefit policymakers, insurance providers, and other health industry stakeholders by guiding the development of strategies to increase the uptake of insurance services in Kenya. It will also help insurance companies create plans to boost enrollment, particularly among individuals in the formal sector.

The findings will support the Kenyan government in formulating policies that promote medical insurance uptake. Further, the study will contribute to health economics literature, providing insights that can enhance existing research and inform future studies.

LITERATURE REVIEW

2.1.1 Public Expenditure Theory

Public expenditure refers to government spending on essential services, including public health, infrastructure, and social welfare. Lewis (1952) emphasized the need for optimal fund allocation to ensure maximum returns while Keynes later highlighted the role of macroeconomic factors in influencing government expenditure trends. Over time, public spending has increased as governments recognize its importance in addressing market failures and supporting economic development. However, Brennan (2008) argues that correcting market failures is complex and cannot always be achieved solely through direct public provisions Brennan (2008).

Brennan (2008) noted that despite its significance, the theory of public expenditure has limitations. The external impacts on consumption challenge its core premise, the world policy decisions involve more than simple binary choices and economists lack the authority to assign definitive social welfare weights. This underscores the need for a structured approach to public health spending, ensuring that resource allocation balances economic efficiency and social well-being.

Fiscal Deficit and Public Health Expenditure

Behera and Dash (2019) found that in the short term, Kenya's public health expenditure (PHE) benefits from economic growth and domestic borrowing, as borrowing helps expand health sector investments. However, other studies suggest that increased debt can reduce current public health spending over time. Unfavorable macro-fiscal policies have limited resource mobilization, slowing PHE growth and hindering health sector development. In as much as wealthier nations prioritize health spending under stable fiscal policies, economic crises often lead to reduced allocations. Some countries, like those in the former Soviet Union, have mitigated such impacts by securing external grants and optimizing health budgets, preventing budget cuts even during financial crises.

Kenya’s health sector has struggled due to unfavorable macro-fiscal policies that limit economic resource mobilization and slow overall sector development. The fiscal deficit has strained health spending, as the gap between total revenue and expenditure forces the government to rely on borrowing. While borrowing may provide short-term relief, Behera and Dash (2019) caution that long-term debt obligations like interest payments reduce available funds for essential services like healthcare threfore weakening PHE sustainability.

2.2.2 GDP per capita and Public Health Expenditure

Rono (2013) found that GDP significantly influences public health spending in Kenya, with a unit change in GDP increasing health expenditure by 0.011 units, while external financing decreases it by 0.304 units. GDP per capita plays a crucial role in determining healthcare spending growth, as seen in OECD countries, where income elasticity is consistently above one. Behera and Dash (2019) also confirmed a positive correlation between GDP per capita and public health expenditure (PHE), noting that a 1% increase in income per capita leads to a 0.020% rise in PHE. However, economic slowdowns often result in reduced budget allocations for

healthcare due to fiscal constraints. (Nyamwange, 2012) further supports this view, showing that GDP per capita accounts for over 92% of changes in primary healthcare expenditure (PHCE) in developing countries, with income being the strongest determinant of health sector allocations.

Okunade (2005) emphasizes that healthcare spending is highly income-elastic, meaning that as incomes rise, health expenditures grow proportionally or even more. Using data from 30 African countries, Okunade found that income elasticity of health spending is close to unity, highlighting disparities in health expenditures across nations due to variations in economic structures, demographics, and governance. These disparities contribute to differences in health outcomes among countries. Overall, the studies suggest that economic growth positively influences public health spending, but external financial dependence and fiscal constraints can hinder sustainable healthcare investment.

Unemployment and Public Health Expenditure

Unemployment in Kenya significantly affects health expenditure, as those without jobs often lack access to private insurance, which covers most out-of-pocket healthcare costs. The country's small formal employment sector, low savings, and underdeveloped financial infrastructure limit options for both public and private health (Manda et al., 2020).As a result, many unemployed individuals are unable to afford medical care, increasing reliance on inadequate public healthcare services.

Employment status plays a crucial role in acquiring health insurance. Fronstin (2007) found that unemployed individuals were less likely to have medical coverage, with a household survey in Kenya revealing that 41% of retail and wholesale workers lacked health insurance. Similarly, Baek and DeVaney (2005) determined that households with a formally employed head were more likely to have insurance. Limited insurance coverage among unemployed and informal sector workers is primarily due to their lower disposable income, making healthcare access a challenge for a significant portion of Kenya's population.

Corruption and Public Health Expenditure

Corruption significantly affects public health expenditure in Kenya, reducing the efficiency and effectiveness of healthcare delivery. Kagotho et al. (2016) found that Kenya ranked 139 out of 168 countries in the global Corruption Perceptions Index (CPI), with 43% of respondents perceiving corruption in the healthcare sector. Bribery is widespread, with 35% of Kenyans reporting having bribed healthcare providers. Such corruption leads to the misallocation of resources, increased healthcare costs, and poor health outcomes, particularly for low-income citizens who cannot afford alternative healthcare options.

Corruption occurs when public officials misuse their power for personal gain, often reducing transparency in governance and worsening healthcare quality. (Munywoki et al., 2023) argue that corruption causes inefficiencies by increasing healthcare costs, lowering care standards, and widening disparities in access to services. When funds intended for healthcare are misappropriated, the system loses critical resources, making healthcare less accessible and unaffordable for many. Ultimately, corruption remains a significant barrier to achieving equitable health expenditure and improving public health outcomes in Kenya.

Tax revenue and Public Health Expenditure

Behera and Dash (2019)found a significant positive correlation between tax revenue and Public Health Expenditure (PHE), with a 1% increase in tax income leading to a 0.057% rise in PHE. Direct taxes had a positive impact, while indirect taxes negatively affected PHE, with a 1% increase in direct tax increasing PHE by 0.025% and a 1% rise in indirect tax decreasing PHE by 0.061%. Manda et al. (2020) emphasized that adequate healthcare funding improves service quality and health outcomes, but limited tax bases and inefficient collection restrict government healthcare budgets. Similarly, Chipunza and Nhamo (2023)found that Zimbabwe's fiscal capacity and GDP growth positively influenced PHE, but economic crises significantly reduced tax revenue and healthcare funding.

In Kenya, tax revenue is the primary source of government funding for healthcare, yet allocations remain insufficient. Over 70% of the Ministry of Health's recurrent budget is spent on salaries, leaving minimal funds for supplies and services (Seitio-Kgokgwe et al., 2016) Ndajiwo (2020) noted that tax-to-GDP ratios in African nations have increased but are hindered by weak tax compliance, illicit financial flows, and inefficient incentives, limiting public health spending. Despite these challenges, tax revenue remains crucial for sustaining and expanding healthcare services in developing nations.

Knowledge Gap

The government has reduced health sector funding, straining public hospitals. Over 80% of Kenyans depend on public healthcare funding, while only 20% can afford private medical care and few have private insurance. This study examines the impact of macroeconomic factors on public health expenditure (PHE) in Kenya, addressing a gap in existing research which, primarily focuses on developed countries.

Conceptual Framework

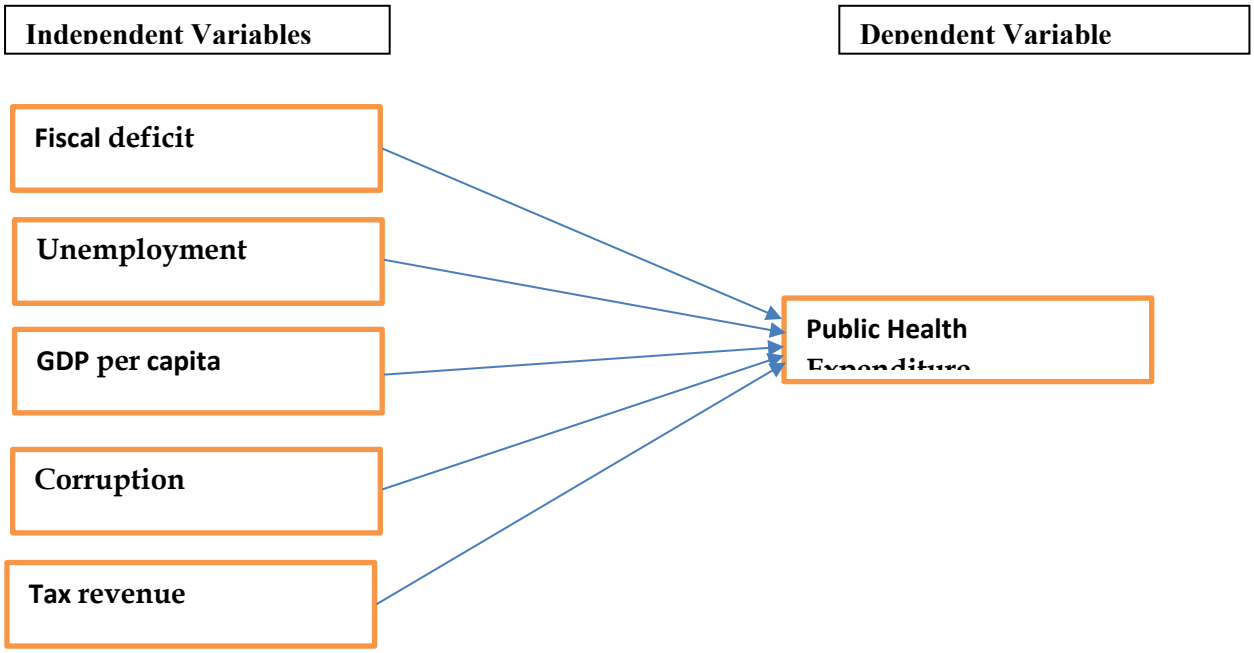

Figure 2. 1 Conceptual Framework

Source: Researcher 2025

RESEARCH METHODOLOGY

Study Area

The study determined the effect of macroeconomic drivers on public health expenditure for the period 1990 – 2023.

Research Design

According to Schoonenboom and Johnson (2017) a research design refers to the arrangement of methods established to gather and analyze data in a way that is relevant to the research question. This study used an explanatory design to determine macroeconomic drivers and public health expenditure.

Data Source

This study used secondary time series annual data, from the period 1990 to 2023 on public health expenditure, fiscal deficit, GDP per capita, unemployment, corruption and tax revenue. Data was generated from Kenya National Bureau of Statistics and World Bank.

3.6 Model Specification

The study adopted a multivariate model that include fiscal deficit, GDP per capita, unemployment, corruption and tax revenue written as

PHE = f ($\mathcal{FD}$, **GDP,** $\mathcal{UNM}$, $\mathcal{CRT}$, $\mathcal{TR}$) Where;

PHE- Public Health Expenditure, **FD**- Fiscal Deficit, **GDP**- GDP Per Capita, **UNM**- Unemployment, **CRT**- Corruption, **TR**- Tax Revenue

The study employed Autoregressive Distributed Lag (ARDL) Model because ARDL model accommodates different orders of co-integration hence it is consistent and efficient. Above Equation was modeled in ARDL as;

$$\nabla Y_t = \alpha + \sum_{i=1}^{p} \beta_i \Delta Y_{t-i} + \sum_{j=0}^{q} \gamma_j \Delta X_{t-j} + \phi Y_{t-1} + \Lambda X_{t-1} + \varepsilon_t \quad \text{.....3.5}$$

Where;

∇Y_t= The change in the dependent variable Y at time t.

α = alpha, the constant term (intercept).

β_i =The coefficient of the lagged difference of the dependent variable ΔY_{t-1}.

ΔY_{t-i}= The change in the lagged dependent variable.

p = The maximum lag length of the dependent variable.

Δ = Denotes the first difference, capturing short-run changes.

Φ = the coefficient that represents the speed of adjustment towards the long-run equilibrium. It indicates how quickly the dependent variable returns to its long-run equilibrium after a change.

Λ = The coefficient of the lagged level of the independent variable X_{t-1}

Operationalization of Variables

Table 3. 1: Description and Measurement of Variables

Abbreviation	Name of the Variable	Description and Measurement	Expected Sign	Source
PHE	Public Health Expenditure	The provision of health services is known as health expenditure, and it encompasses all costs related to nutrition, family planning, and health care. It will be measured by total expenditure on health as a percentage of gross domestic product (GDP)		KNBS
FD	Fiscal Deficit	Fiscal Deficit is the sum of domestic debt and external debt. It is measured as a percentage of the Gross Domestic Product	Negative	KNBS
GDPP	Gross Domestic Product per capita	It is a measure of GDP divided by midyear population of the country. It is measured by taking real GDP divided by population	Positive	KNBS
UNM	Unemployment	Refers when people who want to do work and are actively seeking jobs but cannot find employment measured by the number of unemployed as a percentage of the labor force.	Negative	KNBS
CRT	Corruption	Refers to engaging in dishonesty or committing a crime with the intent of obtaining illegal benefits or abusing the position for their personal gain. It is measured by the Corruption Perceptions Index (CPI)	Negative	KNBS
TR	Tax Revenue	Income that is collected by governments through taxation which is a source of government revenue. It is measured as a percentage of GDP.	Positive	KNBS
μ_t	is the stochastic error term	Factors that affect health expenditure but not captured in the model		

Source: Author's Conceptualization, 2025

Unit Root Test

Augmented Dickey-Fuller procedure was employed

Model Diagnostic Tests

A diagnostic test is crucial in examining a suitable model for establishing the relationship among the independent and dependent variables and how well the model fits. The following diagnostic tests were performed;Normality , Portmanteau, Multicollinearity and Heteroscedasticity Test

RESULTS, ANALYSIS AND INTERPRETATION

Descriptive Statistics

Table 4. 1 Descriptive statistics

Variable	Observations	Mean	Std. dev	Minimum	Maximum
PHE	34	14.05328	15.08679	3.627142	42.73556
GDPACA	34	2874.668	1326.507	1704.031	6323.534
TAXR	34	16.89563	6.017338	13.26486	49.9
FD	34	-.8498235	2.524945	-4.661	3.495
CRPT	34	-1.010077	.1315275	-1.165813	- .7358834
UNMP	34	3.311647	.9807833	2.6	5.69

Source: Author (2025)

Whereby;

PHE=Public Health Expenditure, FD=Fiscal Deficit, GDPPACA= Gross Domestic Product Per Capita UNM= Unemployment, CRT=Corruption, TR=Tax Revenue

Public health expenditure over a period of time has a mean of 14.05 percent and a standard deviation of 15.09 percent. Its minimum value is 3.63 percent and the maximum of 42.74 percent. Over the years, the rise in public health expenditure has effect on the economy's ability to mobilize resources, thereby hindering the growth of the health sector. The less financial resources allocated towards the health sector would lead to high out of pocket spending and hence poverty.

GDP Per Capita parity had a mean of 2874.668 current US dollars with a standard deviation of 1326.507 US dollar. Its minimum has been 1704.031 current US dollars and a maximum of 6323.534 US dollars. Tax Revenue (TAXR) being one of the significant sources of funding for health has discovered a standard deviation of 6.02 percent with a minimum of 13.26 percent and a maximum of 49.9 percent. Tax revenue has a mean of 16.90 percent. Unemployment (UNMP) recorded a mean of 3.31 percent, minimum of 2.6 percent and a maximum of 5.69 percent. Fiscal deficit (FD) and corruption (CRPT) have the mean of negative values such as -.850 percent and -1.01 percent and a minimum of -4.67 percent and -1.17 percent respectively. While borrowing could seem like a brilliant idea in the short term, it might not be so good for Public Health Expenditure in the long run. This is due to the knowledge that paying down debt interest lowers the amount of funds available for the current government spending, such as healthcare as the mean showed a negative (-.850) percent (Behera & Dash, 2019)

4.2.1 Augmented Dickey-Fuller (ADF) Root Test

Table 4. 2: Augmented Dickey Fuller Test for Unit Root at Levels and at First Difference

Unit Root Test at Level						
			Critical Values			
Variables	Mackinnon p-values	Test Statistic	1%	5%	10%	*Remark*
PHE	0.3310	-1.893757	-3.646342	-2.954021	-2.615817	*Unit root*
GDPACA	0.9922	0.782055	-3.646342	-2.954021	-2.615817	*Unit root*
TR	0.0927	-2.658485	-3.661661	-2.960411	-2.619160	*Unit root*
UNM	0.5634	-1.413426	-3.653730	-2.957110	-2.617434	*Unit root*
CRPT	0.6752	-1.170493	-3.646342	-2.954021	-2.615817	*Unit root*
FD	0.2380	-2.121405	-3.653730	-2.957110	-2.617434	*Unit root*
Unit Root at First Difference						
PHE	0.0005	-4.816504	-3.653730	-2.957110	-2.617434	*I (1)*
GDPACA	0.0153	-3.479141	-3.653730	-2.957110	-2.617434	*I (1)*
TR	0.0000	-6.372384	-3.661661	-2.960411	-2.619160	*I (1)*
UNM	0.0003	-5.077843	-3.661661	-2.960411	-2.619160	*I (1)*
CRPT	0.0000	-6.035626	-3.661661	-2.960411	-2.619160	*I (1)*

FD	0.0026	-4.181539	-3.653730	-2.957110	-2.617434	*I (1)*

Source: Authors Compilation from STATA Output, 2024

Upon first difference all Mackinnon p-values for the variables in the study were found to be below 0.0500, indicating stationarity: PHE (0.0005 < 0.0500), GDPACA (0.0153 < 0.0500), UNM (0.0003 < 0.0500), TR (0.0000 < 0.0500), CRPT (0.0000 < 0.0500), and FD (0.0026 < 0.0500). As a result, we fail to reject the alternative hypothesis and the null hypothesis of a unit root was rejected, demonstrating that the variables are stationary and integrated of order one (1).

Determination Optimum Lag Length

Table 4.7 identifies four lags as the optimal lag length, as it minimizes the selection criteria value. A lag that is too short may lead to autocorrelation in the error terms, which can distort statistical significance, making estimators appear relevant when they are actually inefficient. Proper lag selection ensures reliable and meaningful estimation results (Tiriongo, 2019).

Table 4. 3: Optimum Lag Selection Criteria

Lag	LL	LR	Df	P	FPE	AIC	HQIC	SBIC
0	-451.605				1.4e+06	31.2052	31.2948	31.4854
1	-292.879	338.4	36	0.000	210.724	22.3253	22.9528	24.2869
2	-240.498	104.76	36	0.000	96.9158	21.2332	22.3986	24.8763
3	-162.509	155.98	36	0.000	15.9622	18.4339	20.1373	23.7585
4	493.651	1312.3*	36	0.000	3.6e-16*	-22.9101*	-20.6688*	-213.916*

Source: Research Data, 2024

4.5 Bounds Test

Based on this study's results in Table 4.8, it is evident that a long-run relationship exists between the variables. The calculated F-statistic of 9.179 exceeds the upper bound critical values at the 10%, 5%, 2.5%, and 1% significance levels, which are 3.35, 3.79, 4.18, and 4.68, respectively, at $I(1)$. Hence, the null hypothesis of no level relationship was rejected.

Table 4. 4: Bounds Test

	Critical Values (0.1-0.01), F-statistic, Case 3			F = 9.179, t = -4.763
	[I_0] [I_1]	[I_0] [I_1]	[I_0] [I_1]	[I_0] [I_1]
	L_1 L_1	L_05 L_05	L_025 L_025	L_01 L_01
k_5	2.26 3.35	2.62 3.79	2.96 4.18	3.41 4.68
	accept if F < critical value for *I (0)* regressors			
	reject if F > critical value for *I (1)* regressors			
	k: # of non-deterministic regressors in long-run relationship			

H_0: no levels relationship

	Critical Values (0.1-0.01), F-statistic, Case 3			
	[I_0] [I_1]	[I_0] [I_1]	[I_0] [I_1]	[I_0] [I_1]
	L_1 L_1	L_05 L_05	L_025 L_025	L_01 L_01
k_5	-2.57 -3.86	-2.86 -4.19	-3.13 -4.46	-3.43 -4.79
	accept if F < critical value for *I (0)* regressors			
	reject if F > critical value for *I (1)* regressors			

Source: Authors' Compilation from STATA Output, 2024

Diagnostic Checks

Various diagnostic checks were conducted to ensure its reliability of the ARDL model used in the study

Multicollinearity

Both the Breusch–Godfrey LM test and White's test for heteroscedasticity yielded p-values greater than 0.05, leading to the rejection of the null hypothesis. This indicates the absence of heteroscedasticity, autocorrelation, and multicollinearity in the model.

Table 4.5: Auto Regressive Distributed Lag Model with Error Correction Term

Sample 1994 – 2023				Number of observations = 30	
Log likelihood = 35.961934				R-squared= 0.9436	
				Adj R-squared = 0.8366	
				Root MSE= 0.1264	
	D.exp	Coef.	Std. Err	T	P > |t|
ADJ	EXP				
	L1	-.8834715	.1854703	-4.76	0.001
LR	**CORPN**	-2.230679	.5558094	-4.01	0.002
	FD	.00849	.0763173	0.11	0.914
	GDPPACA	.001268	.000458	2.77	0.020
	TR	.0754945	.0286606	2.63	0.025
	UNM	.2270987	.2182744	3.48	0.003
SR					
	GDPPACA				
	D1	-.0023892	.0008904	-2.68	0.023
	LD	.0001231	.000921	0.13	0.896
	L2D	-.0018797	.0006879	-2.73	0.021
	TR				
	D1	-.0531652	.013212	-4.02	0.002
	LD	-.0418354	.0109544	-3.82	0.003
	L2D	-.0240576	.0089636	-2.68	0.023
	L3D	-.0108146	.0054286	-1.99	0.074
	UNM				
	D1	-.0531652	.013212	-4.02	0.002
	LD	-.0418354	.0109544	-3.82	0.003
	L2D	-.0240576	.0089636	-2.68	0.023
	L3D	-.0108146	.0054286	-1.99	0.074
	UNM				
	D1	-1.144307	.270047	-4.24	0.002
	LD	-.4314789	.2580528	-1.67	0.125
	L2D	.1813071	.2716653	0.67	0.520
	L3D	-1.126417	.3012742	-3.74	0.004
	TOT				
	D1	-0.1115034	0.2285363	-0.49	0.632
	LD	-0.3114052	0.1853075	-1.68	0.111
	FIR				
	D1	0.0112124	0.0053738	2.09	0.052
	LD	0.0089802	0.004639	1.94	0.070
	CONS	-4.821517	.895747	-5.38	0.000

Source: Authors' Compilation from STATA Output, 2025

DISCUSSIONS AND FINDINGS

The Effect of GDP per Capita on Public Health Expenditure in Kenya

In the long run, GDP per capita has a positive and significant impact on public health expenditure, with a coefficient of 0.001268 (p-value 0.020). This means that a unit increase in GDP per capita leads to a 0.001268 unit rise in public health spending. The

findings suggest that economic growth enhances the government's ability to allocate more resources to healthcare, aligning with previous studies on the role of economic growth in public sector spending (Alqadi & Ismail, 2019).

A study by Younsi et al. (2016) across low and middle-income countries confirms a strong correlation between GDP per capita growth and increased public health expenditure. The researchers recommend policies that promote economic growth to improve health outcomes. However, Velenyi (2016Velenyi (2016) health spending, its impact varies based on government priorities and budget constraints. The study concludes that merely increasing GDP per capita is insufficient without targeted investments in the health sector.

The Effect of Fiscal Deficit on Public Health Expenditure in Kenya

In the short term, the fiscal deficit does not significantly affect public health spending, as shown in Table 4.12. However, a past fiscal deficit may reduce current health expenditure due to budget constraints carried over from previous periods.

Fiscal deficit (FD) had a positive coefficient of 0.00849 but was not statistically significant (p-value 0.914 > 0.05), indicating that it does not significantly impact public health expenditure in the long run. This suggests that fiscal deficits may be balanced by other budgetary adjustments, leaving health spending largely unaffected.

The Effect of Tax Revenue on Public Health Expenditure in Kenya

Tax revenue does not have a significant impact on public health expenditure (PHE), as indicated by a p-value of 0.225 (> 0.05) in Table 4.12. This suggests that immediate tax revenues may not directly affect health spending, possibly due to delays in budget allocations. However, revenues from previous periods positively contribute to public health expenditure over time.

Tax revenue (TR) has a positive and significant impact on public health expenditure, with a coefficient of 0.0754945 (p-value 0.025 < 0.05). This indicates that a unit increase in tax revenue leads to a 0.0754945 unit rise in public health spending. The findings highlight the role of higher tax revenues in providing the government with more resources for healthcare. Efficient tax collection is crucial for enhancing public services. These results align with Berembo and Igonikon (2020), who studied tax revenue and public expenditure in Nigeria and recommended improving tax collection mechanisms to ensure adequate funding for public services.

The Effect of Unemployment on Public Health Expenditure in Kenya

In the short run, unemployment has a significant negative effect on public health expenditure (PHE), as indicated by a p-value of 0.014 (< 0.05) in Table 4.12. However, in the long run, unemployment (UNM) has a positive and significant impact, with a coefficient of 0.2270987 (p-value 0.003 < 0.05), meaning that a unit increase in unemployment leads to a 0.2270987 unit rise in public health spending. This positive correlation suggests that higher unemployment rates increase the demand for public healthcare, requiring greater government expenditure to meet these needs. These findings align with studies linking economic downturns to increased public health spending.

Ilori (2015)examined the determinants of public health expenditure in Nigeria using an Error Correction Mechanism approach (1981–2014). The study found that higher unemployment rates generally lead to increased public health spending, as governments intervene to mitigate adverse health effects. It recommended the adoption of counter-cyclical fiscal policies to stabilize public health expenditure during economic downturns

The Effect of Corruption on Public Health Expenditure in Kenya

Corruption has a significant negative impact on public health expenditure (PHE) in the short run, as higher corruption levels divert resources away from healthcare. The coefficient of -2.230679 (p-value 0.002 < 0.05) indicates that a unit increase in corruption leads to a 2.230679 unit decrease in PHE. This negative relationship reflects inefficiencies and resource misallocation caused by corrupt practices.

These findings align with studies highlighting the adverse effects of corruption on public spending efficiency (Ernst, 2020). Malyniak et al. (2019) also found that higher corruption levels are linked to lower spending on health and education. However, Reinikka and Svensson (2006) offer a contrasting view, suggesting that transparency and accountability measures can mitigate corruption's impact, indicating that its effect on public spending may not always be straightforward.

Conclusions from the Study Findings:

Corruption had a significant negative impact on public health expenditure, highlighting the need for strict anti-corruption measures to improve healthcare funding.

Fiscal deficit was found to be statistically insignificant, suggesting that its effect on public health expenditure in Kenya is negligible within the study period.

GDP per capita had a significant positive influence on public health expenditure, emphasizing the importance of increasing individual income levels to enhance healthcare spending.

Economic Drivers of Public Health Expenditure in Kenya

Tax revenue positively affects public health expenditure, underscoring the role of effective tax policies and revenue collection in strengthening public health systems.

Unemployment unexpectedly showed a positive effect on public health expenditure, possibly due to increased government spending on health programs like Linda Mama or increased labor availability.

These recommendations provide a clear and actionable strategy for improving Kenya's health sector through a combination of policy reforms and international best practices. Here's a more structured presentation:

Implement Strong Anti-Corruption Policies

- **Recommendation**: Adopt an integrated electronic management system for procurement, similar to Rwanda's system.
- **Justification**: This system enables real-time monitoring of expenditures, helping to reduce corruption and improve the efficient use of health sector funds.

Maintain Fiscal Discipline

- **Recommendation**: Implement fiscal policies like Germany's "debt brake" to control new debt.
- **Justification**: By limiting deficits, Kenya can ensure the sustainability of fiscal policies and guarantee consistent funding for public health.

Encourage Policies that Enhance Productivity, Investments, and Income Levels

- **Recommendation**: Emulate Singapore's strategy of economic diversification to encourage innovation and attract global investments.
- **Justification**: This will drive economic growth, expand resources, and ultimately improve healthcare funding and resource allocation.

Ensure Efficient Tax Collection and Management

- **Recommendation**: Implement a digital tax administration system similar to Estonia's.
- **Justification**: This would reduce administrative costs, enhance compliance, and increase tax revenue, providing more resources for public health.

Focus on Job Creation and Skills Development

- **Recommendation**: Adopt skills development programs like those in Canada, aligning training with labor market needs.
- **Justification**: Enhancing job creation and developing the workforce would increase productivity, contributing to better economic outcomes and improved health expenditure.

REFERENCES

1) Alqadi, M., & Ismail, S. (2019). Government Spending and Economic Growth: Contemporary Literature. *Growth*, *6*, 20-22.
2) Barasa, E. W., Maina, T., & Ravishankar, N. (2017). Assessing the impoverishing effects, and factors associated with the incidence of catastrophic health care payments in Kenya. *International journal for equity in health*, *16*(1), 1-14.
3) Behera, D. K., & Dash, U. (2019). Impact of macro-fiscal determinants on health financing: empirical evidence from low- and middle-income countries. *Global health research and policy*, *4*(1), 1-13.
4) Bein, M. (2020). The association between medical spending and health status: A study of selected African countries. *Malawi Medical Journal*, *32*(1), 37-44.
5) Berembo, A., & Igonikon, D. (2020). An Empirical Analysis of Government Revenue and Economic Growth in Nigeria: Implications for Leaders. *International Journal of Institutional Leadership, Policy, and Management*, *2*(1), 36-53.
6) Brennan, G. (2008). Market Failure: Compared to What? *Éthique et économique= Ethics and economics*, *6*(1).
7) Chipunza, T., & Nhamo, S. (2023). Fiscal capacity and public health expenditure in Zimbabwe. *Cogent Economics & Finance*, *11*(1), 2175459.
8) Ernst, E. D. (2020). *How corruption affects growth* Ohio Dominican University].
9) Fronstin, P. (2007). Employment-based health benefits: access and coverage, 1988-2005. *EBRI Issue Brief*(303).
10) Ilori, A. (2015). Determinant of public health care expenditure in Nigeria: An error correction mechanism approach (1981-2014). *Journal of Economics and Sustainable Development*, *6*(24), 7-17.
11) Jakovljevic, M., Timofeyev, Y., Ranabhat, C. L., Fernandes, P. O., Teixeira, J. P., Rancic, N., & Reshetnikov, V. (2020). Real GDP growth rates and healthcare spending–comparison between the G7 and the EM7 countries. *Globalization and Health*, *16*, 1-13.
12) Kagotho, N., Bunger, A., & Wagner, K. (2016). "They make money off of us": a phenomenological analysis of consumer perceptions of corruption in Kenya's HIV response system. *BMC health services research*, *16*, 1-11.

13) Malyniak, B., Martyniuk, O., & Kyrylenko, O. (2019). The impact of corruption on the efficiency of public spending across countries with different levels of democracy. *Financial and credit activity problems of theory and practice*, *1*(28), 290-301.
14) Manda, D. K., Mugo, M. G., & Murunga, J. (2020). Health expenditures and health outcomes in Kenya.
15) Mouteyica, A. E. N., & Ngepah, N. (2023). Health expenditure convergence and the roles of trade and governance in Africa. *Archives of Public Health*, *81*(1), 77.
16) Munywoki, J., Nyawira, L., Musiega, A., Gathoni, R., Tsofa, B., Hanson, K.,…Barasa, E. (2023). How does corruption influence health system efficiency? A case study of two counties in Kenya. *medRxiv*, 2023.2006. 2027.23291949.
17) Ndajiwo, M. (2020). The taxation of the digitalised economy: An African study.
18) Nkatha, L. (2019). *Macroeconomic Determinants Of Health Insurance Demand In Kenya* University of Nairobi].
19) Nkatha, L., Wanjala, K., & Machio, P. (2020). Macroeconomic determinants of health insurance demand in Kenya: An autoregressive distributed lag modelling. *The International Journal of Humanities & Social Studies*, *8*(2), 65-74.
20) Nyamwange, M. (2012). Economic growth and public healthcare expenditure in Kenya (1982-2012).
21) Okunade, A. A. (2005). Analysis and implications of the determinants of healthcare expenditure in African countries. *Health Care Management Science*, *8*, 267-276.
22) Rono, I. J. (2013). *The determinants of public health care expenditure in Kenya* Unversity of Nairobi].
23) Schoonenboom, J., & Johnson, R. B. (2017). How to construct a mixed methods research design. *Kolner Zeitschrift fur Soziologie und Sozialpsychologie*, *69*(Suppl 2), 107.
24) Seitio-Kgokgwe, O. S., Gauld, R., Hill, P. C., & Barnett, P. (2016). Understanding human resource management practices in Botswana's public health sector. *Journal of health Organization and Management*, *30*(8), 1284-1300.
25) Tiriongo, S. (2019). *Credit allocation schemes: Perspectives from credit providers and regulatory regimes in Kenya*.
26) Velenyi, E. V. (2016). Health care spending and economic growth. In *World Scientific Handbook of Global Health Economics and Public Policy: Volume 1: The Economics of Health and Health Systems* (pp. 1-154). World Scientific.
27) Younsi, M., Chakroun, M., & Nafla, A. (2016). Robust analysis of the determinants of healthcare expenditure growth: evidence from panel data for low-, middle-and high-income countries. *The International journal of health planning and management*, *31*(4), 580-601.