African Journal of Business & Development studies Volume 2 Issue 1 2025

ISSN: 3079-6903

DOI: https://doi.org/10.70641/ajbds.v2i1.157

AFRICAN JOURNAL OF BUSINESS AND DEVELOPMENT STUDIES

AJBDSresearchjournal@usiu.ac.ke

journals.usiu.ac.ke

Does External Public Debt Affect Health Status in Kenya? Evidence from Time Series Data

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Cite: Wafula G.M., (2025). Does External Public Debt Affect Health Status in Kenya? Evidence from Time Series Data. *African Journal of Business & Development Studies*,*2(1),*458-470. https://doi.org/10.70641/ajbds.v2i1.157

Abstract

Kenya's health system continues to face persistent budget deficits due to increasing demand for medical services. Consequently, the government has been compelled to seek alternative sources of finances, leading to a bulging national debt burden. In the 2021/2022 fiscal year, public debt reached 67 percent of GDP, surpassing the 55 percent debt ceiling, with external debt accounting for 52 percent of the total debt stock in 2022. This paper investigates the effect of external public debt on health status in Kenya. Morbidity rates are used as a proxy for health burden. The study used annual time series secondary data from national and international sources spanning 2001 to 2021. The study's theoretical framework was based on the consumer utility maximization model of a merit good morbidity (health burden) constrained by government funding. Time series and diagnostic tests were done on the dataset, and an Auto-Regressive Distributed Lag model was estimated using ordinary least squares. The findings were statistical significant that rising foreign debt negatively affects health outcomes in Kenya. A one percentage point increase in external debt relative to GDP was associated with a 0.5512 and 0.3048 percentage point rise in morbidity (health burden) in the long run and short run respectively. The study recommends prudent management of external debt while safeguarding health sector allocations to ensure preparedness for unforeseen emergencies such as the Covid-19 pandemic.

Keywords: Health Status, Health Economics, External Debt, Morbidity

Introduction

Health economics allows the application of economic theories and concepts to investigate challenges faced in the health sector. It focuses on how the limited resource can be distributed among different sections of a health system to provide and promote health services. The study of health economics is important to ensure that the available resources are allocated in such a manner as to have a direct or indirect effect on preventing, rehabilitating or curing the health challenges faced in a community (Jack, 1999). The right to healthcare is a fundamental human right that guarantees access to health services for all Kenyans as outlined in the

Sustainable Development Goals (SDGs) 2030 target 3.8 for Universal Health Coverage (UHC). UHC also emphasises the need for access to health by all without barriers due to financial constraints. According to the constitution of Kenya Article 43 (1) (a) quality healthcare services should be attainable, acceptable and accessible. Health literacy has also been identified as of interest to the Kenyan population. This again is firmly rooted on the notion that health is a human right and it is to be accessed by any individual(Republic of Kenya, 2010).

Health is a key component of the human development index (HDI). HDI is a statistical instrument used to compute a country's social-economic attainment underscoring an individual's quality of life conditions which includes education and health indices (United Nations Development Programme, 2022). Health can be defined as not only the absence of sickness but also complete mental, social and physical well-being. Health status can be said to be the measure of how people perceive either their physical, psychological or mental state. Mortality, life expectancy and morbidity are outcomes that can be used to predict health status. Morbidity is the measure of prevalence of a disease in a region such as a sub-location, county government or nationally. It indicates the health burden in a region. The use of morbidity as a measure of health status has increased in importance due to different experiences with life expectancy and mortality rates across world economies. In health economics, morbidity data is useful in estimating the burden of diseases, assessing healthcare interventions, understanding trends and patterns of specific illnesses, and providing recommendations that help a country's treasury allocate resources efficiently in the health sector (Jack, 1999).

A government has the responsibility to provide adequate social and health care systems to its people. In spite of the Kenyan government's efforts to reduce foreign debt through parliament legislation where domestic debt was proposed to be the main source of the total public debt, formulation of relevant policies and institutional framework through extended debt facility arrangements and sustainability assessments. The expanding budgetary demand to improve healthcare and provide other social amenities in Kenya have led to pressure on the limited resources available and as a consequence the government has resorted to various channels of financing her expenditure such as increase in taxation and external borrowing which may in turn affect the overall health of the economy and human development(Wafula & Njaramba, 2024).

External Public Debt in Kenya

A report by CBK indicates that the government has resorted to rescheduling of debt and debt interest repayment, with the IMF hence possibilities of debt distress (Republic of Kenya, 2022). Approximately 80 percent of the Kenyan population is dependent on the government to finance their healthcare needs thereby exacerbating the government's financial strain (Muthuri, Senkubuge & Hongoro , 2020). In figure 1 below, there was a significant rise of external debt as a percentage of GDP since 2013.

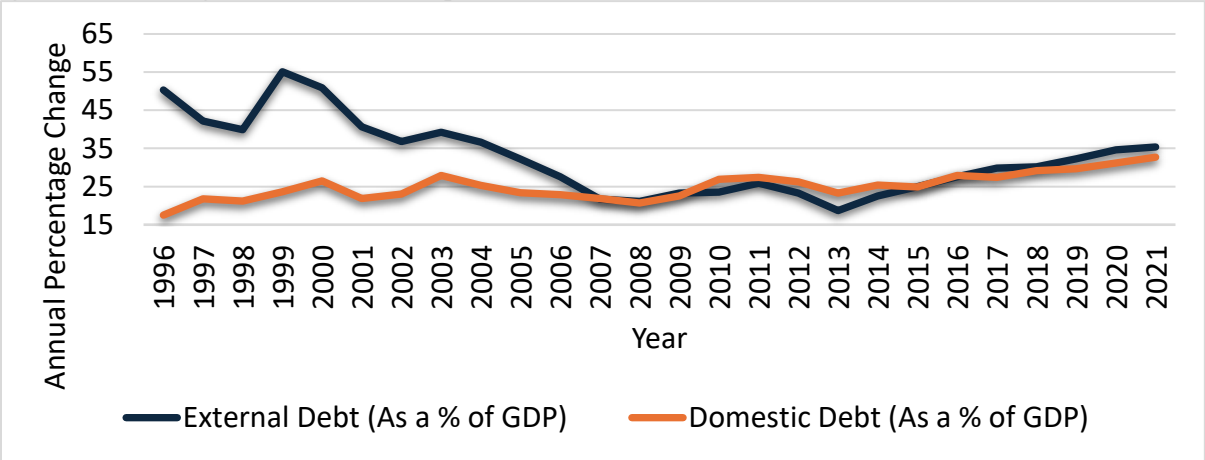

Figure 1 Switch from Domestic Debt to Foreign Debt as a % of GDP in Kenya
Source: Annual Public Debt Management Report (Several Issues)

External debt surpassed domestic debt in 2016 and has since accounted for a larger share of total public debt at approximately 52% by 2022. This marked a switch in the public debt landscape where foreign debt surpassed domestic debt in 2016 and its impact on human wellbeing needs examination. The share of external debt as a percentage of GDP started to record higher percentages than domestic debt as a percentage of GDP from 2014 to 2022. Foreign debt has since overtaken domestic debt as a percentage of GDP recording 37.9 percent in 2021 against 32.7 percent.

The burden of servicing this external debt has effects on the current and future generation if the uses of the debt cannot generate enough to repay the same. The implication of this trend is that the country increasingly requires foreign currency for expanding imports of drugs and medical equipment. This increases health expenditure. The country's high dependence on foreign currency has its exchange rate highly prone to external shocks respectively (Wafula & Njaramba, 2024). Figure 2 below shows health expenditure (% GDP) in Kenya.

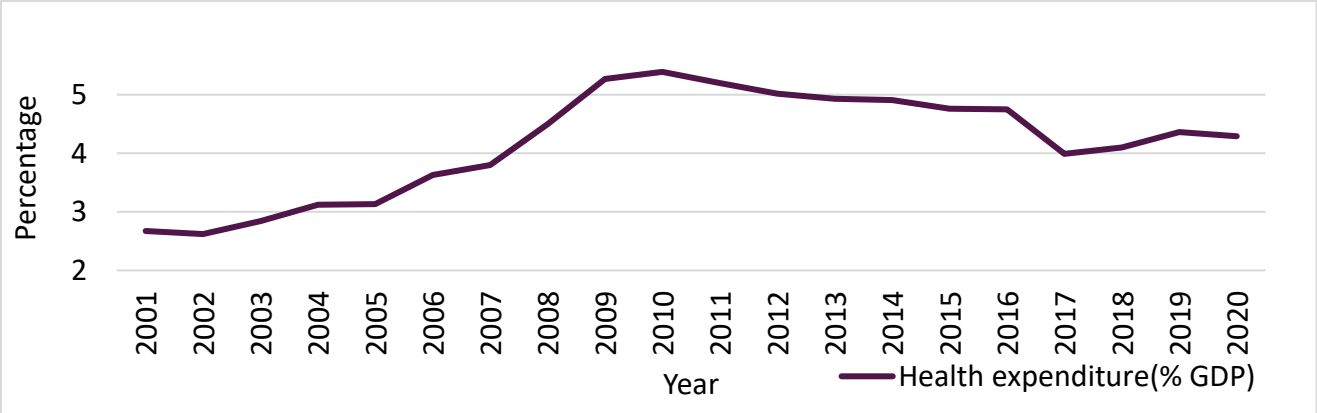

Figure 2 Health Expenditure (% GDP)
Source of Data: (World Bank, 2025)

Figure 2 shows rising health expenditure as a percentage of GDP in Kenya. The data on health expenditure is relevant in identifying weaknesses and strengths and areas that need investment, for instance additional health facilities, better health information systems, and better trained human resource. Health financing is also critical for reaching universal health coverage (UHC) in Kenya.

Healthcare Challenges in Kenya

Attainment of good health is pivotal to enhancement of human development. Healthy people play an important role towards economic development and a healthy population go hand in hand with economic productivity (Jack, 1999). Healthcare can be taken as an investment good and also as a consumer good. As an investment good, it improves human capital development which directly affects labor productivity. Healthcare also improves the general welfare of a society hence a consumer good (Ghorbani, 2022).

In Kenya, over 48 percent of the total population lives in poverty, healthcare challenges are high and include; maternal and child mortality, the burden of infectious diseases such as HIV, malaria, tuberculosis and a ratio of around 17 health care workers per 10,000 people which is below the WHO recommended ratio of 23 health care workers per 10,000 people (Njuguna & Wanjala, 2020). The health index also measures the extent people can access the necessary facilities and services that help in maintaining good health. The health systems among countries are compared using the health index score. Health index comprises indicators that are quantifiable from a population which are used as supporting evidence for describing the health of a population. The overall Health Index score is broken down into healthcare facilities, healthy people, healthy lives and healthy places (United Nations Development Programme, 2022).

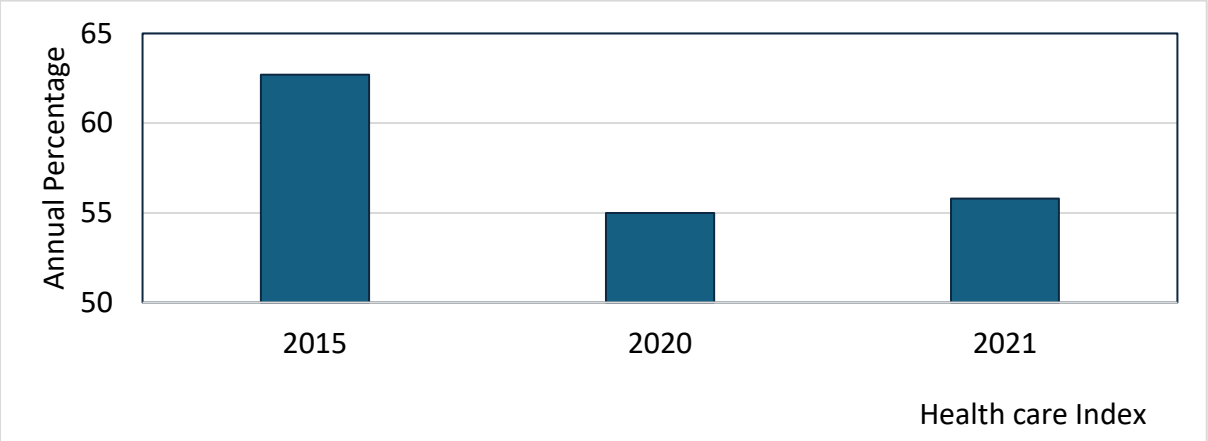

Figure 3 Health care Index
Source: (Numbeo, 2022)

Figure 3 shows that the healthcare index dropped from 62.7 in 2015 to 55.8 in 2021. This indicates challenges in areas such as; environmental related health hazards, morbidity rates, vaccinations, infant and maternal mortality rate. In the same period foreign debt was increasing above internal debt as the health index was declining. Another study on the global health security index indicated a drop of the score from 23.9 to 21.5 in 2019 to 2021 respectively and concludes that Kenya remains unprepared to handle future pandemics. The drop in the health index score and an increase in external debt since 2016 may be interconnected and affect health outcomes.

A series of drastic changes and reforms have been instituted in the Kenyan health sector. In the year 1982 and in 1989 a cost sharing approach between the Kenyan government and private individuals was initiated. Later, the government initiated various programs like the 1994 Kenya Health Policy Framework (KHPF) as a blueprint for development and management health services, the National Health Sector Strategic Plan (NHSSP-I) 1999-2004, the Second Health Sector Strategic Plan (NHSSP-II): 2005-2010, the Kenya Health Policy 2014–2030 and the Kenya Health Sector Strategic Plan for 2018–2023 to improve the health sector. Kenya also adopted the UN SDGs targets of which promoting healthy lives and

Universal Health Coverage are among the main agendas. The Kenya Vision 2030 social pillar also highlights the healthcare system as a key sector. The 2010 constitution through the Bill of Rights heavily emphasizes a strong health sector and attainment of high health standards.

Kenya's health sector is facing a number of challenges mainly due financing the healthcare system, technology and innovations. The objective of the research was to analyse the effect of foreign debt on health outcomes in Kenya. The empirical modelling was based on the concept of utility maximization. The study employed time series data and morbidity was used as a proxy for health status.

Theoretical Literature

Research on health systems has been done using economic theories of production, efficiencies, competition and regulations to better inform a cost effective equitable course of action. The appropriate health costs and optimal public private investment have been derived from economic theories. Adam Smith, in (Smith, 1776) postulated that a country's economic progress was dependent on its citizen's ability to learn and utilize available resources. Adam Smith growth theory was in favour of free markets and specialization of the labor market. Simply put, Smith advocated for investments into human capital (health and education) to improve labour productivity (Smith, 1776).

Later, (Mill, 1848) popularized the philosophy, arguing for limited government interference in the economy. The free market debate has been heard in health policy debates with propositions for non-government interference. The argument on free markets by (Smith, 1776) is based on the assumption of a perfect market which is not the case in the real world. It is difficult to achieve a perfect market because of the problem of asymmetric information in health care therefore need for government interventions. That is, doctors know about illnesses and the required treatments and patients rely on doctors to act in their best interest.

Other classical economists like Ricardo, unlike Smith, had reservations about economic growth due to rapid increase in population growth. Ricardo argued that population growth leads to increased supply of labour which can cause labour prices to rise or fall (Ricardo, 1817). Furthermore, Smith did not conceptualize today's unemployed intellectual population, He did not treat utility maximization from a social point of view but rather from a political-economics perspective (Spengler, 1997). Later, in 1929 during the great depression, Keynes criticized Ricardo and other classical economists who did not foresee the lack of demand could result in high unemployment rate (Keynes, 2009).

Full employment arguments have been overlooked in health equity discussions. Income distribution has a direct effect on health equity. Furthermore, a welfare state is based on the principles of supply and demand for goods and services. Neoclassical economists regard health as a "normal good" whose demand increases as the level of income or economic development accelerates. However, this is not the case because nearly all healthcare services are considered essential, and patients seek the highest possible standard of care (Berkowitz, 2024).

For a long time, other theories of economic growth have also been preoccupied with human capital accumulation. The commonly used economic models to interrogate human capital include; Lewis, Harrod-Domar, Rostow, Solow model and Romer growth theories. The theoretical discourse is hinged on the assumption that capital accumulation is necessary for transformational growth. This will facilitate developing countries to bridge the gap with t(Lweis, 1951)he developed world. (Lewis, 1951) in his book "Principles of Economic

Planning" theorized that in a capitalist economy, economic growth requires accumulation of capital and continuously using profits to train and expand the employment sector.

Harrod-Domar (H-D) used the Keynes model to explain economic growth. He explained economic growth to be dependent on savings and capital accumulations. The capital here include fixed capital and human capital "health and education" (Harrod, 1939). Later neoclassical economists criticized the H-D model for its inability to be employed in the developing world. This led to the development of economic models such as the Solow-Swan model (Swan, 1956). The criticisms were on the H-D model assumptions that savings and capital output ratio were constant. The theory also ignored non-economic factors in a country such as the sociological setting which are equally important in achieving health equity (Solow, 1956). Social determinants of health may include items like food security, job security and non-discrimination. Additionally,(Mankiw et al., 1992) argued that Solow failed to precisely predict the outcomes of population growth and savings in the world. Subsequently, an augmented Solow model was developed which includes human capital.

Later, (Schultz, 1961) expanded the theoretical literature on human capital theory. The theory advocated for investment in health facilities, on-job training and acquisition of skills. (Uzawa, 1965) introduced the concept of education in the Solow growth model. This led to the formation of the Uzawa-Lucas endogenous growth model. Arguments in Uzawa-Lucas model state that human capital plays a central role in driving economic growth (Uzawa, 1965). Human capital in the healthcare sector that is doctors, nurses and other medical practitioners are crucial for improving the health status and technologies. Health care, advancement in medical knowledge and technologies can lead to healthier workforce therefore higher economic productivity, which creates a feedback loop for further investments in health (Lucas, 1988).

New endogenous growth theories also emphasize investments in human capital (Romer, 1989) and (Lucas, 1988). Building on (Lucas, 1988), as cited in (Chakraborty & Gupta, 2006) the argument is that human capital accumulation plays two key roles in that it is a factor of production and also a measure of wellbeing. In their argument human capital enters both the production function and utility function in contradiction to (Lucas, 1988) assumption that utility can only be derived from consumption.(Bosi, Camacho, & Desmarchelier , 2023) further argue that to investigate the effect of health and education on wellbeing it would be prudent to increase a household's bundle of preferences. They add that theoretically, introduction of human capital in the utility function needs careful consideration.

(Arrow, 1963) contributed the theoretical advancement in health economics through his works on "uncertainty and the welfare economics of medical care". He primarily endeavoured to provide a distinction between health and other goods. The main distinctions between health and other goods was the extent of government intervention, uncertainty in various dimensions, information asymmetry, externalities and presence of third parties agents. Insurance providers in the health care system are third party agents financially responsible for provision of goods and services consumed by patients.

Some economic theories such as (Sarr & Ba, 2017) capability approach provided a welfare argument for policy formulation where people's freedom is a core value. However,(Alkire, 2002) supplemented the capability approach with the concept of human development stemming from a belief that freedoms such as the right to health make up human capital. To operationalize Amartya Sen's approach, human development which is made up of education and health is then incorporated in the consumption utility function. Based on previous studies (Schroyen, 2005) in (Besley, 1988) arguments to model consumer behaviours given government opinion on merit goods.

Empirical Literature

A study by (Coccia & Benati, 2024), explored the association between public debt and healthcare expenditure in 27 European countries with comparable socio-economic variables. The study measured the fatality rates during pandemics, citing Covid-19 as an example. The data employed spanned from 2009 to 2019. The study examined the change in economic variables and the health system before the 2019 pandemic and the associated fatality rates between 2020 and 2022. The OLS method was used to determine unknown parameters and IBM SPSS used for statistical analysis. The findings suggested that public debt weakens healthcare and the socio-economic conditions of countries especially during pandemics such as Covid-19. The correlation analysis was significant in this case.

Other studies that used life expectancy and mortality rates as a measure of health status have also been done.(Ma et al., 2022) studied the effect of FDI and external debt on health outcomes in emerging seven Asian economies; Malaysia, Philippines, Bangladesh, China, Thailand, Sri Lanka, and India. The dataset was from 1991 to 2019. Their study employed the panel ARDL (PARDL) model for empirical analysis. The study revealed that debt increased infant mortality and decreased life expectancy in the emerging economies in the long run. On the contrary, FDI caused a decrease in infant mortality and an increase in life expectancy. Additionally, health expenditure reduced infant mortality, while the effect was insignificant on life expectancy. Causal analysis revealed two way causality between health expenditure and infant mortality, health expenditure and debt.

(Igudia, 2021) also examined the effects of external debt on human capital development in Nigeria from 1960 to 2019. The OLS regressions results indicated that foreign debt servicing had negative correlation to human capital development. Whereas GDP, inflation and other variables led to an increased spending on education and health. The study further reveals that a non-political approach should be employed to guide accusation of foreign debt so that the funds can be used productively

Aladejare, (2023) study assessed the impact of external debt on longevity in developing countries, particularly in West Africa, from 1981 to 2020. Longevity was a proxy of life expectancy at birth. The study evaluated effects from external debt from the perspective of sustainability, liquidity, and solvency. Furthermore, outcomes from macroeconomic volatility were controlled through inflation and exchange rate variability. Methodologically, the robustness of inferences was ensured by using estimated outcomes from the cross-sectional augmented autoregressive distributed lag (CS-ARDL), dynamic common correlated effects (DCCE), and the Driscoll–Kraay (D–K) methods. Empirically, the study showed that unsustainable, illiquid, and insolvent external debt and macroeconomic volatility shorten longevity in the long-term in West African countries. Therefore, longevity will decline when weak external debt management leads to poverty in developing countries.

Research Methodology

In line with (Chakraborty & Gupta, 2006)discussion of human capital (health and education) and (Schroyen, 2005) representation of a merit good (health), this study takes a merit good (x) to represent health measured by morbidity. When the government finances the provision of merit goods, there is a burden to be borne by the citizens through taxes now or borrowed funds that will be paid by an additional interest rate. Consequently, when there are numerous public goods to be provided for in an economy the variable T in Equation 1.1 represent the various methods of financing merit good (health) in a country.

From the above discussions, the effect of foreign debt on health (morbidity) was determined by the equation derived from (Schroyen, 2005) study of human development below.

$$HDI = f(X_i, T_i) \ldots\ldots\ldots\ldots 1.1$$

HDI is human development representing the dependent (response) variable. Ti represents HDI financing options and X_{it} represents other independent (explanatory) variables determining HDI. The empirical literature reviewed gives a clear merit on several socio-economic indicators to be used in analysis of morbidity/ health burden. For this reason domestic debt, lending interest rates, FDI, and population growth rate, were some of the explanatory variables used in this study. Equation 1.1 can be expanded further to include morbidity and other social-economic variables.

$$h = \alpha + \beta_1 ed + \beta_2 dd + \beta_3 fdi + \beta_4 li + \beta_5 pg + \mu \ldots\ldots\ldots\ldots 1.2$$

Where the dependent variable h is health index measured by morbidity (health burden), α is a constant, ed is the external debt, dd is the domestic debt, fdi is the foreign direct investment ,li is the lending interest rate, , pg is the population growth rate and μ is the error term.

Findings

To establish the effect of foreign debt on health in Kenya, morbidity was treated as a dependent variable while external debt, domestic debt, lending interest rates, foreign direct investments, and population growth were used as independent variables. The ARDL model was used for estimation employing OLS in the long-run and short run analysis as shown in table 1 belew.

Table 1 ARDL Regression Results

Dependent variable: Morbidity (Proxy of health)

Estimation Method: Ordinary Least Squares

Long run relationship		**Coef.**	**Std. Err**	**T**	**P > t**
ADJ Prevalence (Morbidity)		-1.009591	.0677433	-14.90	0.000
External debt (%GDP)		-0.5511832	.0681612	-8.09	0.001
Domestic debt (%GDP)		-0.7679487	.1946358	-3.95	0.017
Foreign direct investment		-0.0890433	.0173542	-5.13	0.007
Lending interest rate		-1.501996	.1245739	-12.06	0.000
Population growth		-2.158291	.0895633	-24.10	0.000
Short Run relationship					
Prevalence rate morbidity		-0.304818	.0530631	-5.74	0.005
External Debt	DI	-0.3623489	.0983799	-3.68	0.021
Domestic debt	D1	1.21662	.1791093	6.79	0.002
	LD	-0.1235694	.1212962	-1.02	0.366
Population growth	D1	-3.283634	.3601744	-9.12	0.001
Foreign direct investment		0.0597067	.0157756	3.78	0.019
Cons		14.74608	.8600894	17.14	0.000

ARDL(2,2,2,0,2,1) regression	Sample : 2003 - 2021
Number of obs = 19	R-squared = 0.9980
Adj R-squared = 0.9911	Log likelihood = 60.440698
Root MSE = 0.0219	

Source, Author

The error correction term (ECT) was greater than one but with a negative sign and was statistically significant. A magnitude of -1.009 implies that there is a high speed of adjustment with oscillatory convergence to the long run stable state to correct a previous disequilibrium

after an economic shock. D1 is the current period while LD is the previous period. In the long run, a percentage point change in external debt led to a 0.5512 percentage increase in morbidity. The results indicate that in the long foreign debt negatively affects the health outcomes in the country. A percentage point change in domestic debt led to a 0.7679 percentage increase in morbidity. A percentage increase in foreign direct investment led to a 0.08904 increase in morbidity. A percentage point change in lending interest rate led to a 1.501996 increase in morbidity. A percentage increase in population growth led to a 2.158291 increase in morbidity. The results show that external debt increases the health burden thus negatively associated with morbidity.

In the short-run, a percentage point change in external debt was associated with a 0.3048 increase in morbidity at the current period .This implies that an increase in external debt leads to an overburden health system in the country. Other independent variables showed the following results: in the short run, a percentage change in domestic debt led to a 1.2166 decline in morbidity which implies an improvement in health outcomes. A percentage change in population growth led to a 3.284 increase in morbidity in the current period which shows that population growth strains the health system in the country. In the short-run a percentage change in foreign direct investment led to a 0.0597 decline in morbidity which implies that FDI improves health outcomes in the short-run.

Discussions

This study's finding are in line with (Ma et al., 2022) study where it revealed that there was a negative association between debt and health outcomes in the emerging economies in the long run. This study finds that, over time, rising foreign debt worsens disease prevalence across the country's healthcare system. Servicing this debt limits government capacity to invest in healthcare and vital services such as clean water, sanitation, and hygiene, deepening existing health challenges. Both external and domestic borrowing undermine long-term health outcomes, as repayment obligations reduce resources available for timely health interventions. Aladejare, (2023) study on external debt also revealed that it reduced life expectancy in West African countries. Empirically, the study showed that unsustainable, illiquid, and insolvent external debt shorten longevity. Increase in morbidity then may be associated with reduced life expectancy. Prevalence of diseases (morbidity) increases the health burden. External debt may undermine the necessary interventions needed in the health sector, due to debt servicing.

Theoretically, the debt overhang theory postulates that when the debt is too high an entity will not be able to easily take additional debt to finance new investments (Hennessy, 2004). Debt in Kenya is beyond its ceiling of 55 percent and most of the revenues are going into debt servicing instead of investments into health sector and providing other social amenities that will ease the health burden in the country. This implies that most of the tax revenues are absorbed through the interest repayments. Commercial loans that attract high interest rates could be avoided. The government could seek concessional loans that have lower interest rates to invest in the health system.

Population growth has a negative effect on health outcomes. This was in line with (Perrott & Holland, 2005) study that high population growth rates not only increases demand for health services but also accelerates urbanization, which is also associated with lifestyle changes and a higher prevalence of diseases. Rural to urban migration further compounds this challenge on limited resources, contributing to overcrowded health facilities and diminished quality of

care. Population growth also poses a significant challenge to achieving Sustainable Development Goal (SDG) 3.8 on universal health coverage, as the increasing demand for healthcare often pushes households to rely on out-of-pocket expenditures.

Lending interest rates had a negative association with health outcomes in the long run. Higher lending rates reduces the borrowing capacity of the country to access the much needed finances and increase the cost of borrowing to investment in the health sector leading to increase health burdens. High lending rates can also create liquidity issues especially when the repayment period are short thus siphoning capital meant for investment in the health system. According to (Annual Public Debt Management Report for financial year 2021/2022, 2022) borrowing beyond the set ceiling of 55% of GDP implies that any additional borrowing will be subject to higher interest rates due to increased risks and lower credit rating from multilateral lenders.

In the long term, foreign direct investment (FDI) has a negative effect on health outcomes, partly because it may create job insecurities and expose recipient countries, such as Kenya, to external shocks. For example, the sudden withdrawal of U.S. aid illustrates how reliance on foreign capital can undermine the well-being of employees dependent on FDI-related industries. This aligns with (Nagel et al., 2015), study which found that FDI negatively affects health at higher income levels compared to lower ones. Conversely, in the short run, FDI can have positive effects by generating employment opportunities, enhancing human capital, and contributing to tax revenues. (Ma et al., 2022) similarly reported that in the emerging Seven Asian economies, highlighting temporary short-term benefits of foreign debt on health outcomes.

Conclusion and Recommendations

If wisely used, foreign debt through investments are expected to create employment, where the populace can earn income which in turn will facilitate improvements in sectors such as health and education. The study findings imply that foreign debt should be used prudently so as to promote healthcare provision in the country. Policies that discourage wasteful expenditures and overpricing of government projects will also help improve the access and provision of healthcare facilities, compensation of health workers and investment in research.

The study recommends that public debt management policies and objectives be geared towards fulfilling the stipulated mandates of minimizing the cost of total public debt. Debt needs to benefits both the current and future generations or else the already existing objectives and policies will remain tacit if their implementation is not actualized. Nonetheless, resource allocations to the health sector should be embraced so as to prepare for unforeseen emergencies such as the Covid-19 pandemic or natural disasters.

Future Studies

Future studies should broaden the range of health indicators beyond morbidity rates to capture multidimensional outcomes such as life expectancy, maternal and infant mortality. Expanding the analysis to other Sub-Saharan African countries and employing panel data methodology would improve generalizability and allow for cross-country comparisons. Future studies could also identify threshold effects of external debt on health outcomes. This shall provide insights for public debt management to optimal levels for desired health outcomes in developing countries.

Limitation of the Study

Frist, This study is limited by its reliance on secondary data and a narrow set of health indicators, primarily relying on morbidity rates to reflect health outcomes. Second, the theoretical framework is linking public debt and health outcomes is still evolving and the focus

on Kenya restricts generalizations. Finally, while the policy recommendations are relevant, they remain broad and would benefit from more precise operationalization.

Conflict of Interest Statement

The author declares no conflicts of interest

Acknowledgements

The author has no acknowledgement to declare

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