Public Health Financing, Remittances, and Inclusive Growth in Resource-rich Countries: Evidence from Nigeria and Mozambique

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Abstract

The persistent challenge of accelerating economic growth via government health expenditure has been widely acknowledged in extant literature. Though such government expenditures have impacted growth in some cases, but the desire to further stimulate growth has brought about the need to explore more options in that regard. Interestingly, remittance has evolved over time as an alternative. Yet, the relative impact of these two covariates in promoting inclusive growth in natural resource rich countries remains understudied in Africa.The study therefore examines the relative impact of both government health expenditure and personal remittances received on inclusive growth in the two resource-rich countries of Nigeria and Mozambique. Utilizing the Fully Modified Ordinary Least Square Method (FMOLS) and the error correction mechanism on time series data for each of the two countries, the results revealed that economic fundamentals like government health expenditure, personal remittances received, and per capita income are of considerable significance in the task of enthroning inclusive growth in theresource-rich countries of Nigeria and Mozambique

INTRODUCTION

Over the years, the importance of good health has come to be widely acknowledged in economic literature. Apart from the fact that good health constitutes the source of happiness and well-being of the citizens, it also determines the level of productivity of the labour force and, by extension,promotes growth as well as reduces poverty (Boachie, 2017;Weil, 2007).In a bid to realize these potential benefits of good health, many African countries have expressed their willingness through such actions as the 2001 Abuja Declaration, the 2006 Addis Ababa Declaration and the 2008 Quagadougou Declaration, all geared largely towards increasing government funding for health. In support of these declarations, there is the common belief by many development economists that public healthcare financing is equally critical in ensuring equity in

healthcare consumption and income distribution (Boachie, Ramu&Polajeva, 2018).

However, healthcare can also be partly financed by the private sector, especially through household remittances. In this regard, several studies such as Chauvet, Gubert&Mesple-Somps (2008) andIgbinedion (2020) have reported the vital role that remittances play in the financing of health among households. Specifically, Drabo&Ebeke (2011), noted that the increasing importance of remittances as a veritable source of financing healthcare among developing countries stems from the fact that, remittances, compared to other types of funds received by developing nations, go straight to households, possess some relative stability and its volume has been on the increase over the years.

Among many African countries, the desire to establish viable health financing system has been partly constrained by the rising cost of healthcare and by their poor economic performances (Piabuo&Tieguhong, 2017).However, given the fact that in sub-Saharan Africa many of the countries are richly endowed with one type of natural resource or the other and also given the enormous revenues that have accrued from the sales of such natural resources over the years, one would have expected that, on the average, government health expenditure as a percentage of the GDP would have risen considerably compared to other continents of the world. Unfortunately, this has not been the case.For instance, in the years 2000, 2005, 2010, 2015 and 2018, while the average domestic general government health expenditure as a percentage of the gross domestic product (GDP) were 1.7, 1.8, 1.9, 1.9 and 1.9 respectively in sub-Saharan Africa, they were 2.5, 3.1, 3.5, 4.2 and 4.3,inLatin America and Caribbean, and 4.3, 4.3, 4.4, 4.5 and 4.3,in East Asia and Pacific (World Bank, 2022).

At the country-level, especially for resource-rich countries like Nigeria and Zimbabwe, government health expenditure as a percentage of the GDP has been abysmally poor. In Nigeria for instance, health expenditure for 2000, 2005, 2010, 2015, 2018 and 2019 were respectively 0.53, 0.68, 0.45, 0.59, 0.53 and 3.02,while is Zimbabwe the figures were 3.07, 3.16, 0.43, 0.42, 0.42 and 7.70 for the same years (World Bank, 2022).

Similarly, the inflow of personal remittances received for the two resource-rich countries have been markedly different. In Nigeria, the value rose significantly from 1.39 in 2002 to about 24.31 in 2018, while in Zimbabwe it was 0.04 in 2000, but rose moderately over the years to peak at 0.30 in 2018. This, again, has implications for inclusive growth in these two countries (World Bank, 2022).

From the literature, there are a number of ways remittances can positively impact growth. At the household level, remittances can ease credit constraints of household as well as encourage entrepreneurial activities (Yang, 2004). Remittances could help finance education and health, which are major variables in promoting economic growth. At the aggregate level, remittances could improve the country's creditworthiness and, by extension, its access to international capital markets. Unarguably, such access could increase the physical and human capital investment in a country, thereby enhancing growth.

What becomes evident from the foregoing country-specific figures is that, while government expenditure as a percentage of the GDP for Nigeria has remained relatively stable over the period under consideration despite the rise in

population, that of Zimbabwe obviously declined over the years (except for the year 2019), a development that has severe consequences for inclusive growth in these resource-rich countries (World Bank, 2022). Laudable as the foregoing benefits maybe, empirical studies on the nexus between public health expenditure and economic growth on the one hand, and that between remittances and economic growth on the other, have produced mixed and inconclusive results, an indication that the debate is still evolving.

The present study however contributes to this ongoing debate in three significant dimensions.First, unlike previous studies like Ogundipe and Lawal (2011), Ahmad (2015) that separately attempted to investigate the nexus between public expenditure on economic growth and the impact of remittances on economic growth respectively, this study attempts to simultaneously investigate the impact of both (i.e. public expenditure and remittances) on economic growth using two resource-rich countries (Nigeria and Mozambique) as case studies.The study is crucial given that revenue from natural resources exploration when judiciously expended, have the tendency of raising national savings, investment profile andpromoting sustainable economic growth (World Bank, 2009).

Second, majority of the empirical studies on the impact of domestic health expenditure on economic growth (e.gHalici-Tuluce, Dogan &Dumrul 2016; Piabuo&Tieguhong, 2017) and external health expenditure (remittances) on economic growth (e.g. Meyer & Shera, 2016; Sutradhar, 2020) arelargely cross-sectional studies.According to Igbinedion(2019) and Nembot, Melachio and Kiss (2021), such cross-sectional studies not only tend to obscure significant country-specific characteristics and dynamics but such lumping up of countries with distinct socio-economic features tend to make it cumbersome to appreciate the vital roles of country-specific conditions across varying time horizons.It follows therefore that applying policy recommendation from such cross - sectional studies to countries like Nigeria and Mozambique may not produce the desired results.

Lastly, the study utilizes the Fully Modified Ordinary Least Square Method (FMOLS)and the Error Correction Modeling(ECM) estimation techniques. While the FMOLS technique helps to provide reliable long run estimates, the ECM helps to account for the short-run dynamics.

To accomplish the above task, the rest of this paper is structured as follows: Section two provides a review of relevant/related literature. Section three presents the research methodology, while the empirical findings of our study along with the policy implications are taken up in section four. Section five concludes the paper with some policy recommendations.

LITERATURE REVIEW
Conceptual/Theoretical Review

International remittances ormigrants remittances are largely cross-border earnings, representing household income from foreign economies arising majorly from the temporary or permanent movement of people to those countries (IMF, 2009).Remittances may also be viewed as those private savings of workers and families which are usually expended in the home country on such items as food, clothing and other expenditures which may help to spur the home economy (Oguntomi and Igbinedion, 2021)

Although migrant remittances can be conceived as a form of wage, but unlike other wages, it has its own distinct characteristics. First, unlike wages, remittances are counter-cyclical, that is, they constitute a form of insurance which can help mitigate economic shocks (Yang and Choi, 2007); they can alter household spending behaviour by increasing the quantum of short-term investments (Chopra, Civilized, and Frenk, 2009) and have potential to positively impact on many welfare measures.

In economic literature, growthis often conceived as positive changes in gross domestic product (GDP) and/or its per capita measure overtime. It is computed as a percentage increase in real GDP, that is, GDP adjusted for inflation. However, such growth is considered inclusive if it comprises outcomes and processes as well as participation and benefits sharing (Ranieri and Ramos, 2013). In other words, inclusive growth is a concept that promotes equitable opportunities for economic participants during economic growth with benefits there from shared among the various sectors of the economy.

According to Organisation for Economic Cooperation and Development (OECD, 2001), public health expenditure describes those expenditures on health funded by public funds. They include publicly financed investments in health facilities as well as capital transfers to the private sector for the construction of hospital and for the acquisition of equipment.World Health Organisation(WHO) (2022) also explained that such health expenditure involves expenditure for the provision of health services, including family planning and nutrition services as well as all emergency aid designated for health.

Such public expenditures on health are usually calculated as a percentage of total government expenditure. This ratio reveals the weight of government spending on health in public sector operations.A number of theoretical models (micro) based on different perspectives, levels and assumptions have been put forward to explain why an individual migrant remits.

At the micro-level, there are theories of (i) Altruism (ii) Self-interest and (iii) Tempered Altruism.

Altruism

According to this theory, migrants remit simply because they care about the well-being of those left behind in the home country. This altruistic remittance tends to increase with the migrants income and his degree of altruism and, conversely, decrease with the recipient's income and the recipient degree of altruism (Funkhouser, 1995).

Self-Interest

The theory of remittances sees the family as a business outfit or as a nexus of contract that allows the family members to enter in Pareto improving exchanges (Chami, Fullenkamp, &Jahjah, 2003).

In this instance, remittances could be used to buy various types of services like taking care of the migrants' assets such as land, cattle or relatives at home.

Tempered Altruism

Under this arrangement the migrant and the household left behind mutually benefit from migration throughan informal contractual arrangement. Here, the migrant sends remittances home when, say, the household experiences economic downturns, while the household supports the migrant by paying the costs of migration.According to Agarwal&Harowitz (2002), such contractual

agreements reduces risk and uncertainty as the family serves as insurance company that helps provide members with protection against unexpected income shocks.

Empirical Review

A number of scholarly studies based on cross-country or time series data have aimed at investigating the nexus between public health spending and economic growth on the one hand and that between remittances and growth on the other. Besides, while some have recorded a positive relationship between these variables in each case,others have reported an inverse relationship. In what follows, we briefly review some of such related studies.

On the nexus between public health expenditure and economic growth, studies such asArisoy, Unlukaplan and Ergen (2010), Bloom, Canning, and Sevilla (2004),Eryigit, Eryigit and Selen (2012), Hashmati (2001),Ibe&Olulu-Briggs (2015);Lusting (2006), Mahapatra (2017), Matthew and Adeboye (2015), and Ye and Zhang (2018) reported that health expenditure and economic growth tends to grow together, implying that, increases in health expenditure impact positively on economic growth. Specifically, Halici-Tuluce, Dogan and Dumrul (2016), in a panel study of twenty-five high incomes and nineteen low incomes countries, investigated the impact of health expenditure on economic growth between 1995-2012 and 1997-2009.

The results revealed that public health expenditure has a positive impact on economic growth.In another related study, Piabuo and Tieguhong (2017) examine the connection between health expenditure and economic growth in Economic Community Central African States (CEMAC) and some selected African countries. The results showed that health expenditure has positive and significant relationship with economic growth, suggesting that the healthier the workforce, the greater the efficiency and growth of the economy.

On the other hand, a number of studies have failed to establish a positive relationship between health expenditure and economic growth. For instance, Kar and Taban (2003), Yumusak and Yildirum (2009) reported an inverse relationship between health expenditure and economic growth.

In a similar vein, Ogundipe and Lawal (2011) investigated the impact of health expenditure on economic growth within the Nigerian context, using time series data on life expectancy at birth, fertility rate, recurrent and capital expenditures for the period 1985 - 2009. The results revealed that total expenditure on health had a negative relationship with economic growth for the period 1985-2009. Also, Sefa, Siew and Mehmet (2015) used meta-analysis to investigate the nexus between government expenditure on education or health and economic growth, using a sample of 306 estimates obtained from 31 primary studies. Their findings reveal among others that government health expenditure has a negative impact on economic growth.

Furthermore, on the nexus between remittances and economic growth, empirical evidence has remained mixed and inconclusive. On the one hand, a number of empirical studies suggest that there is a positive effect of remittances on economic growth. With an increase in remittances in an economy, economic growth is enhanced.

In this regard, Ahmad (2015),Chami, Barajas, Cosimano,Fullenkamp, Gapen and Montiel (2008),Fayissa and Nsiah (2010), andGlytsos (2005)all establish a positive relationship between remittance inflow and economic growth. Specifically, Meyer and Shera (2016), using panel data set of six countries for the period 1999 to 2013, examined the impact of remittances on economic growth in those countries. Their results revealed that remittances have a positive impact on economic growth in those countries.

In another study, Olusuyi, Adebayo, Agbolade and Ebun (2017) investigated the dynamic impact of remittance on economic growth within the Nigerian context using the Generalized Method of Moments (GMM) estimation technique. Their results confirmed the positive impact of remittances on economic growth. Specifically, a unit increase in remittance caused the GDP to rise by about 0.7817 units.

Conversely, studies such asNyamongo, Misati, Kipyegon and Ndirangu (2012) and Spatafora (2005)failed to establish a positive relationship between remittances and economic growth. Specifically, Sutradhar (2020) investigated the impact of remittances on economic growth in four South Asian emerging economics for the period 1997 to 2016, utilising balanced panel data. The results revealed that remittances impacted negatively on three of those four countries, namely Bangladesh, Pakistan and Sri Lanka. In another study on the nexus between remittances and economic growth in Nigeria,Igbinedion (2020) results confirm the negative impact of remittances on economic growth in Nigeria within the period 1981 to 2017, both in the short-run and long-run.

However, studies such as Rao and Hassan (2011) on the impact of remittances on economic growth for forty countries over the period of 1960 to 2007 reported that remittances did not have any meaningful or significant impact on the economy of those countries in their study.

METHODOLOGY
Data
The study utilised annual time series data from 2000 to 2020 for both Nigeria and Mozambique. The data were obtained from the World Development Indicators (WDI) published by the World Bank. This sample was chosen because of non-availability of data for some of the variables utilized prior to the year 2000.

Theoretical Framework
The theoretical foundation of this study is predicated on the aggregate Health Production Function (HPF) with total government health expenditure as an input. Essentially, the output of the HPF is described as the result of utilising healthcare and health related services financed by the government and/or that financed via private expenditures. Following Baro and Sala-i-Martin (1992), Boachie, Ramu&Polajeva (2018),Grossman (1972), Wagstaff (1986) as well as other relevant empirical studies on the relationship between public health expenditure and health outcomes, we specify our health outcome model as:

$Yt = f(THE_t, Zt), t = 1,2,....$ ………………………………………………....(1)

Where Yt = dependent variable, i.e., health outcome measures at time t. The health outcome measure is real gross domestic product (RGDP) (a proxy for economic growth), THE is total health expenditure and Z_t is a vector of other variables affecting health outcome at time t. Thus, re-specifying equation (i), we have:

$$Yt = \Psi THE_t + \alpha Zt + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(2)$$

Where Ψ and α are the coefficients of public health expenditure and other related variables. ε is the error term, with zero mean, constant variance and zero covariance. Given that our task is assessing the impact of health spending on health outcome, we therefore disaggregate total health expenditure intototal government health expenditure (TGHE) and private health expenditure (proxied by personal remittances received by households (REM)). Both are measured as a percentage of the Gross Domestic Product (GDP).
Equation (2) can be re-specified in inestimable form as:

$$Yt = \psi_1 TGHE_t + \psi_2 REM_t + \alpha Zt + \varepsilon_t \ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots\ldots(3)$$

Model Specification and Estimation Procedure

Based on the theoretical framework as contained in subsection (3.1), though with some modifications, we specify a simple model with four covariates including total government health expenditure and personal remittances received as follows:

$$RGDP_t = \beta_0 + \psi_1 TGHE_t + \psi_2 REM_t + \alpha_3 PCI_t + \alpha_4 HODA_t + \varepsilon_t \ldots\ldots\ldots\ldots\ldots(4)$$

where $\psi_1, \psi_2, \alpha_3 \text{ and } \alpha_4$ are the parameters to be estimated, ε_t is the Gaussian white noise, RGDP is the real gross domestic product (a proxy for economic growth and a measure of health outcome), PCI is per capita income, while HODA is health-oriented official development assistance.

The study will adopt the Fully Modified Ordinary Least Square (FMOLS) and the Error Correction Modeling (ECM) techniques to analyze the data. The choice of the FMOLS developed by Phillips and Hansen (1990) is premised on the fact that it has the ability to cater for long-run endogeneity in the variable, while the ECM as put forward by Engel and Granger (1987) provides for the short-run dynamics. These techniques will be complemented by some preliminary and post estimation tests for robustness purposes.

PRESENTATION OF RESULTS AND DISCUSSION OF FINDINGS

This section presents the various results obtained from the empirical assessment during the estimation period. Specifically, the preliminary analyses as well as the regression estimates are reported for both Nigeria and Mozambique, while post-estimation checks are carried out to further corroborate the main empirical outcomes.

Estimation Results for Nigeria
Summary Statistics

The summary statistics for Nigeria are reported in table 1. From the results, health-oriented official development assistance, per capita income, personal remittances received, real gross domestic product and total government health expenditure (% of GDP) had their average values reported as 2.39, 2095.43, 14.94, 334.94 and 0.58, respectively, during the estimation period. Also, per capita income, personal remittances received and real gross domestic product exhibited negative skewness, while health-oriented official development assistance and total government health expenditures were positively skewed in their behaviour. Similarly, health-oriented official development assistance had excess kurtosis value, implying a leptokurtic trend, while per capita income, personal remittances received, real gross domestic product and total government expenditure on health were platykurtic in their distributions. Likewise the Jarque-bera statistic reported that all the series (except health-oriented official development assistance) were normally distributed in the period under review.

Table 1. Summary Statistics for the Nigeria's variables (2000 - 2020)

Statistic	Health Oriented Official Development Assistance	Per Capita Income	Personal Remittances Received	Real Gross Domestic Products	Total Government Health Expenditures
Mean	2.39	2095.43	14.94	334.94	0.58
Std. Dev.	2.58	383.71	8.54	104.39	0.14
Skewness	2.39	-0.48	-0.90	-0.12	0.54
Kurtosis	8.68	1.94	2.05	1.61	2.54
Jarque-Bera	43.63	1.62	3.30	1.58	1.08
Probability	0.00	0.45	0.19	0.45	0.58
Observations	21	21	21	21	21

Source: Data processed by E-Views 13

Testing for Stationarity

A number of studies such as Breitung and Meyer (1994); Granger and Newbold (1977);Hall, Lazarova and Urga (1999);Maddala and Wu (1998) as well asQuah (1994), have found that, most time series variables do not always trend in a stationary fashion overtime. The consequences of employing such data in regression analysis lie in the production of estimates that cannot merit policy attention. It is against this backdrop that this study examined the stationarity status of the variable utilized, with the aid of Augmented Dickey-Fuller test and the Philips-Perron test. From both tests results all the series were found to be stationary, though, not at level but at first difference, implying first-order integration among the series employed in the study. Thus, this validates the appropriateness of the choiceof estimation technique for the study as the data were employed at first difference. Table 2 however reports the unit root test result for Nigeria.

Table 2. Unit Root Tests Results for Nigeria (2000-2020)

Series	t-Statistic	1% Level	5% level	10% level	t-Statistic	1% level	5% level	10% level	Order of integration	Remark
	Augmented Dickey-Fuller Test Statistic at Levels				**Augmented Dickey-Fuller Test Statistic at First Differences**					
HODA	-280	-3.86	-3.04	-2.66	-4.20	-3.89	-3.05	-2.67	1(0/1)	Stationary
PCI	-2.95	-3.86	-3.04	-2.66	-3.54	-4.62	-3.71	-3.30	1(0/1)	Stationary
REM	-1.39	-4.57	-3.69	-3.29	-4.30	-4.80	-3.79	-3.34	1(1)	Stationary
RGDP	-1.77	-3.89	-3.05	-2.67	-4.46	-4.67	-3.73	-3.31	1(1)	Stationary
TGHE	-2.24	-4.57	-3.69	-3.29	-4.86	-4.67	-3.73	-3.31	1(1)	Stationary

Series	Phillips-Perron test statistic at Level				Phillips-Perron test statistic at First Difference				Order of integration	Remark
HODA	-2.58	-3.86	-3.04	-2.66	-6.98	-3.89	-3.05	-2.67	1(1)	Stationary
PCI	1.31	-4.57	-3.69	-3.29	-3.56	-4.62	-3.71	-3.30	1(1)	Stationary
REM		-4.57	-3.69	-3.29	-3.41	-3.89	-3.05	-2.67	1(1)	Stationary
RGDP		-4.57	-3.69	-3.29	-7.73	-4.67	-3.73	-3.31	1(1)	Stationary
TGHE		-4.57	-3.69	-3.29	-6.31	-4.62	-3.71	-3.30	1(1)	Stationary

Note: *1(0)- stationary at level 1(1) – stationary at first difference*
Source: Data processed by E-Views 13

The Fully Modified Least Square (FMOLS) Estimate for Nigeria

This study examined the impact of public health expenditure (TGHE) and remittances (REM) on inclusive growth in Nigeria using the Fully Modified Ordinary Least Square (FMOLS). The result as contained in table C reveals that TGHE is negatively and statistically related to RGDP at the 1% level of significance. This finding is in consonance with those of Adeyemi and Ogunsola (2019), Wang, Asghar, Zaidi and Wang (2019) but in contrast with those of Eryigitand Selen (2012) and Ibe and Olulu-Briggs (2016). Essentially, this inverse relationship is a clear negation of the health-led growth hypothesis. This development may be partly explained by the misappropriation of funds meant for healthcare financing (Keghter,Oliver and Afemefuna, 2020) as well as poor health care delivery system (Strauss and Thomas, 1998).

On the other hand, personal remittances, income per capita and health-oriented official development assisted were positively related to inclusive growth in Nigeria.This result is in consonance with that of Igbinedion (2020). Besides, the coefficients of these variables were statistically significant at 1%, 5% and 10% levels of significance.

Lastly, the adjusted coefficient of determination (R^2) revealed that about 75% of the systematic variations in RGDP in Nigeria are explained by the mutual effects of four explanatory variables in the model implying that the model is well fitted.

Table 3: Method: Fully Modified Least Squares (FMOLS)
Dependent Variable: RGDP (Nigeria)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	157.19	47.20	3.33	0.01***
TGHE	-249.99	24.85	-10.06	0.00***
REM	10.63	1.09	9.72	0.00***
HODA	9.46	1.46	6.47	0.00***
PCI	0.07	0.02	2.77	0.02**
R-squared	0.85	Adjusted R-squared		0.75
Long-run variance	169.55	S.D. dependent var		99.16

Note: **(***) imply significant at 5% (1%) respectively
Source: Data processed by E-Views 13

RGDP Forecast for Nigeria

In a bid to lend further credence to the foregoing empirical results, we simulated the actual behaviour of RGDP with changes in total government health expenditures, health-oriented official development assistance, personal remittances received and per capita income, using the forecasting procedure and the result is shown in figure 1. The figure (1) suggests that the forecasted RGDP (i.e., RGDP FORECAST) for Nigeria remains within the critical lines, thus corroborating the accuracy and strength of the forecast. This helps to provide some measure of confidence regarding the predictive power of the estimated empirical results obtained.
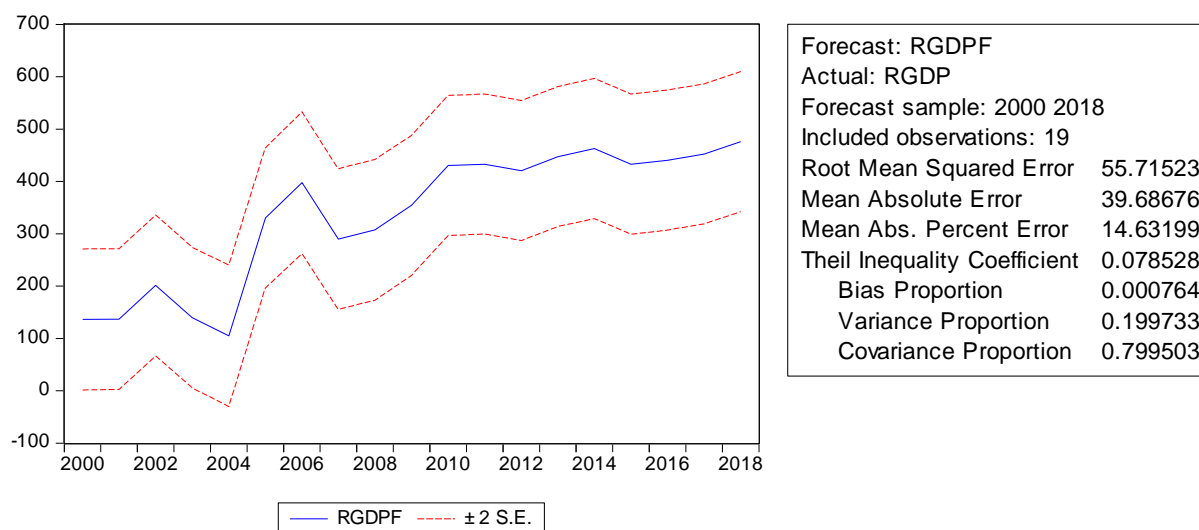

Figure 1. RGDP Forecast for Nigeria
Source: Data processed by E-Views 13

Estimation Results for Mozambique
Summary Statistics of the Mozambique's Variable

The summary statistics for Mozambique's series are reported in table 4. From the results, health- oriented official development assistance, per capita income, personal remittances received, RGDP and total government health expenditures averaged 1.75, 455.67, 0.12, 10.89 and 1.82, respectively. Likewise,

all the series (except per capita income) were positively skewed in their behaviour. Similarly, health-oriented official development assistance and personal remittances received had excess kurtosis values, suggesting a leptokurtic distribution, while per capita income, real gross domestic product and total government health were platykurtic in their behaviour. The results are reported in table 4.

Table 4. Summary for the Mozambique's variables 2000-2020

Statistic	Health Oriented Official Development Assistance	Per Capita Income	Personal Remittances Received	Real Gross Domestic Product	Total Government Health Expenditures
Mean	1.75	455.67	0.12	10.89	1.82
Std. Dev.	0.41	100.68	0.07	4.01	1.20
Skewness	1.86	-0.07	1.17	0.21	0.01
Kurtosis	7.71	1.68	3.90	1.74	1.44
Jarque-Bera	28.52	1.39	4.97	1.41	1.92
Probability	0.00	0.50	0.08	0.49	0.38
Observations	21	21	21	21	21

Source: Data processed by E-Views 13

Testing for Stationarity

Essentially, the results of the unit root test (stationarity test) are reported in table 5. Specifically, the augmented Dickey-Fuller test and the Phillips-Perron test results indicate that, all the series were stationary at first difference. Table 5 further presents the unit root tests results for the Mozambique's variables.

The Fully Modified Square Estimate for Mozambique

Table 6 reports estimates from the regression analysis for the Mozambique growth model. From the results, the coefficient representingtotal government health expenditures was positive and statistically significant at 5% per level. This is a significant variant of earlier finding for Nigeria, but in line with those of Piabuo and Tieguhong (2017), De Mendonca and Baca (2018), and Odhiambo (2021). The positive coefficient implies that as the government increases the budgetary allocation to the health sector with proper implementation strategies in place, there will be a significant improvement in health outcomes, and this will further raise productivity through the availability of healthy and able manpower ready to engage in meaningful economic activities in the country. Also, the result shows that, about 0.35 units rise in the country's RDGP is attributed to a unit increase in total government health expenditures.

On the other hand, health-oriented official development assistance exerted a negative, though, statistically insignificant impact on inclusive growth in Mozambique. This finding is in line with that of Williamson (2008), a development that contradicts earlier finding for Nigeria. The result however denotes that, a unit rise in health-oriented official development assistance will cause a decline in inclusive growth in Mozambique by about 0.15 units.

Table 5. Unit Root Tests Results for Mozambique's variables

Series	t-Statistic	1% Level	5% level	10% level	t-Statistic	1% level	5% level	10% level	Order of integration	Remark
	Augmented Dickey-Fuller Test Statistic at Levels				**Augmented Dickey-Fuller Test Statistic at First Differences**					
HODA	-4.76	-4.57	-3.69	-3.29	-5.24	-4.73	-3.76	-3.32	1(0/1)	Stationary
PCI	-2.45	-4.67	-3.73	-3.31	-4.41	-4.67	-3.73	-3.31	1(0/1)	Stationary
REM	-5.25	-4.73	-3.76	-3.32	-5.45	-4.80	-3.79	-3.34	1(1)	Stationary
RGDP	-2.77	-4.62	-3.71	-3.30	-4.17	-4.67	-3.73	-3.31	1(1)	Stationary
TGHE	-2.91	-4.57	-3.69	-3.29	-7.04	-4.62	-3.71	-3.30	1(1)	Stationary
Series	**Phillips-Perron test statistic at Level**				**Phillips-Perron test statistic at First Difference**				Order of integration	Remark
HODA	-5.05	-4.57	-3.69	-3.29	16.32	-4.62	-3.71	-3.30	1(1)	Stationary
PCI	-0.91	-4.57	-3.69	-3.29	-4.51	-4.67	-3.73	-3.31	1(1)	Stationary
REM	-1.37	-4.57	-3.69	-3.29	-4.69	-4.62	-3.71	-3.30	1(1)	Stationary
RGDP	-1.72	-4.57	-3.69	-3.29	-4.21	-4.67	-3.73	-3.31	1(1)	Stationary
TGHE	-3.00	-4.57	-3.69	-3.29	-7.04	-4.62	-3.71	-3.30	1(1)	Stationary

Note: *1(0)*-stationary at level *1(1)* – stationary at first difference
Source: Data processed by E-Views 13

Table 6: Method: Fully Modified Least Square (FMOLS)

Variable	Coefficient	Std. Error	t-statistics	Prob.
C	-7.64	0.99	-7.70	0.00***
THE	0.35	0.13	2.74	0.02**
REM	9.22	2.63	3.51	0.00***
HODA	-0.15	0.25	-0.62	0.55
PCI	0.04	0.00	20.23	0.00***
R-squared	0.89	Adjusted R-squared		0.88
Long-run variance	0.17	S.D. dependent var		3.87

Note: **(***) imply significant at 5% (1%), respectively
Source: Data processed by E-Views 13

Furthermore, the results further demonstrated that personal remittances received and per capita income impact positively and significantly (at 1% test level, respectively) on inclusive growth in Mozambique. The above findings further corroborate similar outcomes for Nigeria. Obviously, the result implies that about 9.22 units and 0.04units boost in inclusive growth in Mozambique is attributed to a unit increase in personal remittances received and per capita income in the country, respectively. The coefficient of determination (R^2) further revealed that, about 89 per cent of the systematic variations in inclusive growth in Mozambique is accounted for by the joint impacts of all the independent series in the estimated model, indicating that the model has a good fit. Table 6 however reports the estimates from the regression analysis for the Mozambique's growth relations.

RGDP Forecast for Mozambique

The focus result is reported in the figure 2 below. Obviously the result shows that, the forecasted real GDP (RGDPFORESCAST) for Mozambique remain inside the two standard error critical lines.In other words, figure (2) reveals the outcome when we simulated the actual behaviour of RGDP with changes in total government health expenditures, health-oriented official development assistance, personal remittances received and per capita income. Also, the Theil inequality index was 0.015, this, corroborating the correctness of the forecast using the forecasting procedure

And like in the case of Nigeria, figure (2) equally provides some measure of confidence regarding the predictive power of the estimated empirical results obtained.
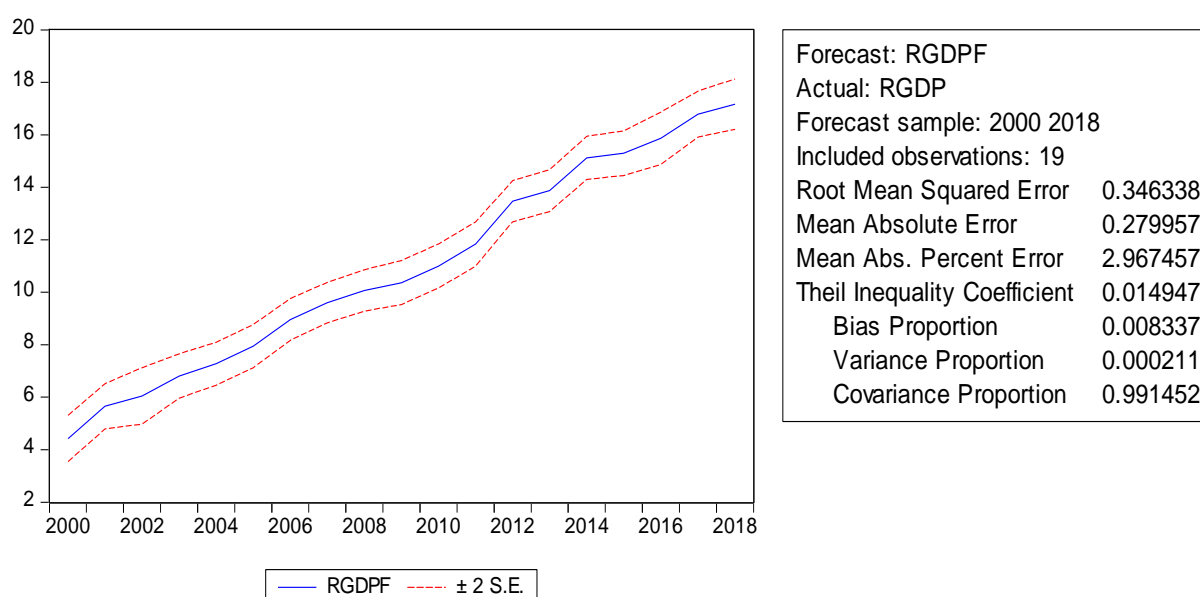

Forecast: RGDPF	
Actual: RGDP	
Forecast sample: 2000 2018	
Included observations: 19	
Root Mean Squared Error	0.346338
Mean Absolute Error	0.279957
Mean Abs. Percent Error	2.967457
Theil Inequality Coefficient	0.014947
Bias Proportion	0.008337
Variance Proportion	0.000211
Covariance Proportion	0.991452

Figure 2. RGDP Forecast
Source: Data processed by E-Views 13

Recommendations

Arising from the empirical results obtained in the preceding sub-sections, this study recommends that government of both countries should step up their spending on the health sector as such spending have the potential of enthroning inclusive growth in both countries. Such increase will help make essential equipment and drugs available in healthcare facilities.

Second, efforts should be made by the relevant authorities in both countries to raise the income levels. The governments can achieve this by providing the enabling environment that will raise exports sector productive capacity which will in turn, generate more jobs, raise incomes and, by extension, the real per capita GDP.

Lastly, given the significant impact of remittances on ensuring inclusive growth in both economies, the relevant authorities in both countries should put in place policy measures aimed at ensuring that only minimum charges are allowed

by financial institutions on remittances. This will go a long way in encouraging remitters to step up their remits to their domestic economies.

CONCLUSION

This study examined the relative impact of public health expenditure and remittances on inclusive growth in the resource-rich countries of Nigeria and Mozambique using time series data spanning 2000 - 2020.

Utilising the Fully Modified Ordinary Least Square (FMOLS) and the Error Correction procedure, the results obtained have a number of implications for both Nigeria and Mozambique in the area of policy analysis. Total government health expenditure, personal remittances received and per capita income were found to be of huge relevance to both countries, suggesting that, for both countries to reap the maximum benefits associated with inclusive growth, significant policy attention must be accorded the economic fundamentals employed in the study. In other words, total government health expenditure, personal remittances received and per capita income are very crucial in analyzing the determinants of inclusive growth in these two countries.

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