Income Elasticity Of Health Expenditure: Implications for Sustainability of Economic Growth across Sub-Saharan Africa

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Abstract

The role of health in economic growth sustainability cannot be overemphasized. Generally, good health is recognized as a basic human right and an essential element of human welfare which sustained social and economic development. Healthy children attain more education, high labour efficiency as adults and therefore enhance income growth. Thus, investment in health improves human capital, which enhances labour efficiency, increases output and income. In literature, evidence abound that countries with low health expenditure and catastrophic health status are associated with poor economic growth trajectory. In the light of this, this paper used pooled-panel (1995-2016) of selected Sub-Saharan African countries examines the income elasticity of health expenditure and its implication for sustainable growth in the region. The study employed the homogenous and heterogenous panel unit roots and cointegration approaches to test the mean reversion and cointegration properties among the selected variables. Due to the inherent presence of cross-section dependence and endogeneity of studies like this paper, Pooled Cross-Section SUR estimation model,which estimates a feasible GLS specification correcting for both cross-section heteroskedasticity and contemporaneous correlation will be adoptedThe findings of this paper are expected to show that very low income elasticity of health expenditure exists across Sub-Saharan African countries and across different health expenditure types. It is also expected that low income countries exhibits negative income elasticity of health expenditure compared with upper middle and high income countries. Also a country with very low income elasticity of health expenditure is expected to experience low or poor growth sustainability trajectory. The study recommends that governments of SSA should invest on health in order to gain a sustainable growth trajectory. They should design a regional robust and sustainable model that will help to improve health system performance across member countries, and in effect reverse the negative income- health spending linkages for sustainable growth.
Keywords: Income, Health Expenditure, elasticity in health spending, Sustainability Growth, Sub-Saharan Africa

INTRODUCTION

The fragility and unsustainable income growth in Sub-Saharan Africa (SSA) have remained a major challenge to the growth prospects of the region for many decades. The region has consistently lagged behind most developing regions of the world in terms of the level of per capita income (Elmi & Sadeghi, 2012). An increasing number of countries in SSA, especially the low-income block, have consistently shown declining per capita income for the last few years. Statistics from the World Bank development indicator show that from 2007 to 2016, countries such as Chad, Guinea Bissau, Liberia, Sierra Leone, and Uganda among others have had their GNI per capita growth falling from positive to negative growth rate (World Bank, 2017). While those with positive GNI per capital growth have witnessed, rather, declining growth over the years (Fig 1.1).
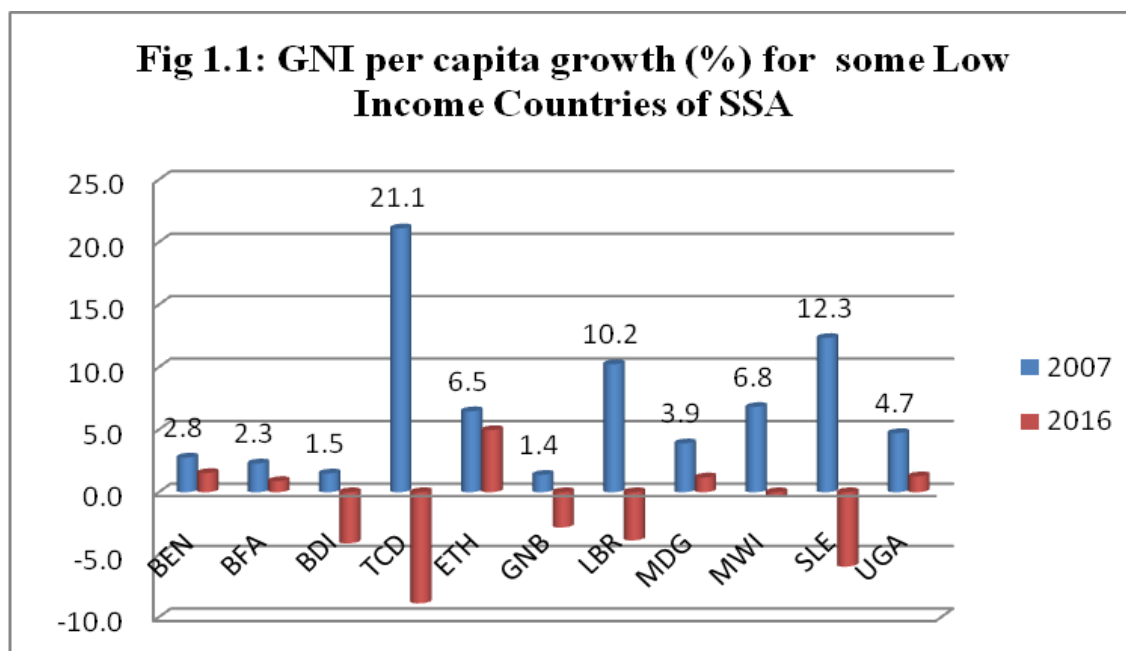
Source: Authors' plot from World Bank statistics (2017)

Countries such as Ethiopia, Uganda, Benin and Bokinafaso, among others, that have made some positive growth have been on the declining side. Very few countries in SSA have records, in not

sustainable fashion, of improved national income growth. Several studies have pointed out, that has sustained and substantial increase in real per capita GDP growth rate in most countries in SSA may be difficult given the high-income elasticity of health expenditure in the region (Elmi & Sadeghi, 2012). Health care expenditure in the SSA varies substantially over time and across countries.

Pattern and level of health expenditure in SSA have attracted much research discourse with its attendant policy implications for the financing and distribution of health care resources. A United Nations health report has blamed poor health expenditure in many developing regions, including SSA to low household incomes, governments' allocations of insufficient shares of budgets to the health sector, mismanagement of resources allocated to the health sector, poor health care systems, among other things (UN, 2016). This suggests that the performance of the health sector reflects in the size of the income elasticity of health expenditure. Health financing is important for the improvement of health status as well as income in an economy. On the other hand, the level of health expenditure is attributable to the quality of health and level of income in a society. Better health enhances the effective and sustainable use of the knowledge and skills that individuals have acquired. In the Alma-Ata Declaration signatories, health was noted to have contributed both to a better quality of life, global peace and security (World Health Organization, WHO, 2010). Bloom and Canning (Anyanwu & Erhijakpor, 2007) established four ways through which healthier individuals might affect the income level of an economy. First, healthier individuals might be more productive at work and so earn higher incomes. Second, they may spend more time in the labour force, as fewer healthy people fall sick or retire early. Third, healthier individuals may invest more in their education, which will increase their productivity.

Lastly, they may save more in expectation of longer retirement life and by so doing increase the funds available for investment in the economy (Bloom & Canning, 2000).

Despite the progress made from 1990 to 2015 under the Millennium Development Goals, on health, Sub-Saharan Africa (SSA), according to a UN (2016) report, has by far the highest Maternal Mortality Rate (MMR) at 546 maternal deaths per 100,000 live births while the average MMR in developed regions is just 12 maternal deaths per 100,000 live births (UN, 2016). In 2015, statistics show that the under-5 mortality rate in SSA still doubles the global average of 43 deaths per 1,000 live births. The mortality rate for children under age 5 in SSA is still as high as 84 in 2015 from 154 deaths per 1,000 live births recorded in 2000 (figure 1:2).

Figure 1.2: Under-5 Mortality rate (Death per 1,000 live births) in 2015
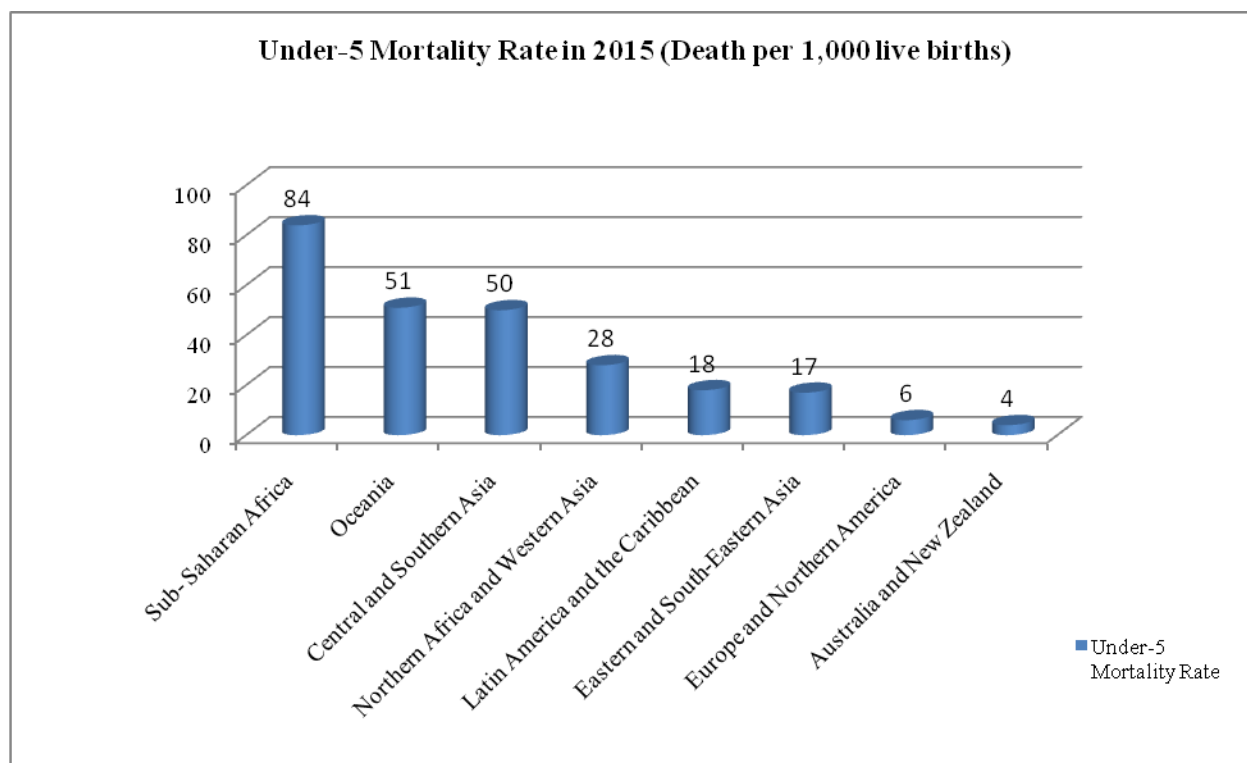
Source: Statistics from UN Sustainable Development Goals (2016)

For a nation's economic growth to be sustained improvement in health expenditure is required. Healthy children attain more education, and high labour efficiency as adults and therefore enhance national income growth (Amiri & Grdtham, 2013). This prospective gain provides a drive for the provision of adequate health services to human life. Therefore, health is generally recognized as a basic human right and an essential element of human welfare which sustained social and economic development. Therefore, in every attempt to improve human welfare, good health, which can only be released by improved health expenditure, acts both as an important means and a basic end. One of the priorities under "Goal 3" of the Sustainable Development Goals (SDGs), is ensuring healthy lives and reducing maternal mortality, by increased health expenditure (United Nations, 2016).

The major focus of this paper is to examine the income elasticity of health expenditure in SSA, as an implication for sustainable growth of the region. Earlier studies that attempted to explain the relationships between income and health expenditure with its attendant policy implications for growth ended with conflicting results (Olaniyan et al 2013). Studies such as Hartwig (2008) and Okunade et al (2004) found positive effects between income and health expenditure. Gerdtham et al (1992) and Murthy and Ukpolo, (1994) found no effects. Gbesemete & Gerdtham, (1992) found unity income elasticity of health expenditure from 30 African countries. Vasudeva (2004) on the other hand, found greater than unit health care-income elasticity. Okunade (2005) reported large variances in both per-capita GDP and per capita health expenditure shares of national incomes among countries in Africa. Olaniyan et al (2013) found below unity elasticity between income and health expenditure for 32 Sub-Saharan African countries. The current paper is motivated by this unresolved research issue, to examine the magnitude of national income elasticity of health expenditure across Sub-Sahara Africa.

Literature Review and Theoretical Framework

Previous works on the income elasticity of health were conducted by employing country-level data which proved that there is a strong correlation between aggregate health spending and the level of domestic income. Farag, NandaKumar, Wallack, et al, (2012) investigated several developed countries and found that income-flexibility projection was more than unity meaning that utilization of health services is an expensive good. Nevertheless, their study was basically for poor, average and rich income nations or countries respectively. They observed that poor income economies were the minutest in terms of their responsiveness to income levels and the average income nations were more receptive.

The National Health Expenditure Data from Distributed Lag (ARDL) technique is used by Hughes and Kaya (2022) to estimate the long-run dynamics and short-run adjustment of health care expenditure to changes in government insurance enrollment while controlling for income, health, uninsured, and other factors. The study covers insurance coverage in the United States and the long-run dynamics of health care expenditure over the period 1991–2014.In particular, increases in Medicaid enrollment result in higher per capita expenditure levels relative to other insurance groups and the uninsured, while increases in Medicare enrollment result in lower per capita expenditure levels. The results show that the instance and type of insurance have an impact on per capita expenditure.

Barkat, Sbia, and Maouch (2018) use recently developed panel cointegration techniques to empirically examine the determinants of health care spending for 18 Arab world countries for the period 1995–2015.To lessen the heterogeneity among them, they also carried out the same estimations for three sub-samples, namely high-income, upper-middle-income, and

lower-middle-income countries.The results showed that there is a long-term relationship between the variables and that health care spending and its determinants are not stationary.Furthermore, the estimation results imply that, over the long term, health spending in the countries of the Arab world is not solely influenced by income. The expansion of health care spending is being significantly influenced by other factors, including medical advancement and an aging population, which will have significant long-term policy implications for the region.The findings also confirm that spending on health care is necessary for all three income groups.

Finally, for the entire sample as well as for the group's income, the Pairwise Dumitrescu-Hurlin panel causality test demonstrates evidence of a bidirectional causal relationship between health care costs and income.

Casas,Gao and Peng (2021) consider time-varying coefficient panel data models, with interactive effects, using a non parametric kernel smoothing technique.They adopted a newly developed methodology to analyze the dynamics of the income elasticity of healthcare expenditure in the OECD and Eurozone.It was also looked into how aging and public funding affected healthcare costs.In this issue, a consistency test that supports the use of time-varying coefficient models was also taken into account.Their findings demonstrate that, like a necessary good, healthcare spending per capita rises at a slower rate than income per capita.Additionally, there is a strong correlation between healthcare spending and demographics related to age and government funding levels. Actually, the amount spent on healthcare per person rises as the proportion of older people in the population rises.Additionally, there is a positive correlation between public funding and healthcare spending; over time, it is stable for the OECD and slightly declining for the Eurozone.The analysis of the factor estimates reveals the existence of individual effects for each nation as well as a second factor that increases healthcare spending per capita

monotonically over time.One could argue persuasively that this factor accounts for the rise in healthcare costs associated with new medical technology.

With consideration for the non-linear relationship between income level and expenditure, the income elasticity of spending on various healthcare services and medications in Russia was calculated.Estimating the elasticities at the household level using RLMS-HSE data from 2006 to 2017.The findings demonstrate that these elasticities have remained constant over time.Furthermore, they demonstrate that households with different income levels exhibit varying degrees of elasticities, which is consistent with the fact that healthcare is more expensive for the underprivileged.According to the study, medication and healthcare are almost on par with luxury costs for low-income households, while they are almost entirely unaffected by household income for wealthy households.The findings may help identify which services are most out of reach for the general public.(Aistov & Aleksandrova.(2021)

 Newhouse (2006) argued in favour of the fact that factors that are inherent in the delivery of healthcare services and its financing parameters play a pivotal role in determining the quantum of the expenditure on healthcare. Getzen (2000) attempted to resolve the lingering dichotomous issue on the nexus between health-elasticity by adopting a nested multilevel approach and found that using country-level parameters, healthcare is an expensive good while at the individual level, it is a necessity

Vargas and Shimoga (2018) explore a group of 27 significant middle-income economies' growth in per-capita healthcare spending and GDP and contrast their findings with those of 24 high-income economies from the Organization for Economic Cooperation and Development (OECD) group.They assumed that the aggregated income elasticity of health expenditure in middle-income countries would be less than one using national accounts data from 1995 to 2014.

(meaning healthcare is a normal good).A preliminary analysis was performed to compare models with fixed effects and those with random effects.The relationship between the two measures is evaluated using a fixed-effects model with time-fixed effects.To assess model fit, unit root, Hausman, and serial correlation tests are used. To test the reliability of our regression findings, additional explanatory variables were added to various model specifications.

To investigate the potential value of financial protection in our sample of high- and middle-income countries, they incorporate the out-of-pocket (OOP) share of health spending into each model.The outcome demonstrates that among the sampled middle-income countries (51 per unit-growth in GDP) and high-income countries, the elasticity of per-capita health expenditure and GDP growth is positive and statistically significant (50 per unit-growth in GDP).In contrast to earlier studies, which discovered that middle-income countries have higher income elasticity of health spending than high-income ones. The results demonstrate that elasticity estimates can vary depending on the selection criteria used to create a more homogeneous group of middle-income nations.However, differences in financial protection between middle- and high-income countries are not related to their individual income elasticity of health spending.

It is pertinent to note that majority of the research on the issue of income-elasticity and health expenditure used advanced countries in their exposition while few considered less developed countries. Fager et al (2012) using data from 173 countries for the period covering 1995-2006 found that healthcare was an indispensable good in lower and rich-income economies with income elasticity of 0.515 and 0.644 respectively. Xu and Saksena (2011) examined the data cutting across 143 countries that were divided into different income categories spanning the period 1995-2008 and opined that healthcare in poor income- countries is regarded as an expensive commodity that is sometimes beyond their reach while in the average and rich income

countries it is seen and taken to be an indispensable commodity.   Many of the studies mentioned above generally controlled for several variables, such as cited above incorporated some controlled variables like sex, distribution of people of various ages, organization of people, institutions, resources that deliver healthcare, the unmeasured difference between the study participants or samples that are associated with the variable of interest were considered when income elasticity of healthcare is being estimated (Fagar et al 2012).

In Pakistan's rural areas, the income elasticity of health was examined by Magsi, Memon, Sabir, Magsi, and Anwar (2021).The study, which took place in 2019–20, sought to determine how well health costs responded to rural Americans' incomes.180 respondents were recruited using a multistage sampling technique, and they came from the districts of Toba Tek Singh in the Punjab province and Tando Allahyar in the Sindh province.To determine what percentage of each group's income has a direct or indirect impact on their health and wellness, the respondents were divided into three income groups: low, medium, and high. The results demonstrate that, respectively, the low-, medium-, and high-income groups spent about 17.7, 7.7, and 4.2 percent of their income on health and wellness.Furthermore, it was found that the low income group will spend an additional 8.8% of their income on health care, whereas the medium and high income groups will experience a 0.6 and 0.09 percent decrease in health care costs, respectively, with an increase in income.9.7 people per family, which is a large number, meant that the majority of them were unable to meet their daily nutritional needs. Additionally, low-income groups either use homemade medicines or visit unauthorized doctors known as hakeem in times of emergency.Due to inadequate healthcare facilities at public hospitals, medium- and high-income groups prefer to visit private hospitals

Bhalotra (2007) argued that there is a strong correlation between the level of income and healthcare spending, however, he opined that some research findings suggest that healthcare is an indispensable good. Others conclude that it is an expensive "commodity" that is not usually affordable to poor-income countries. Interestingly, only not many of these researches obtained and made use of data from less developed.

In an Engel curve framework, Jetoo and Jaunky (2022) estimate the income elasticity of out-of-pocket healthcare spending using Mauritian household data.The study suggests using cross sectional Household Budget Survey waves from 1996/97 to 2017 to apply the pseudo-panel approach in the absence of longitudinal data on out-of-pocket healthcare expenditure trends.Healthcare out-of-pocket spending is estimated to have an income elasticity of 0.938, or just under unity.This suggests that Mauritius views the need for out-of-pocket medical expenses as a necessity rather than a luxury.Separate regressions are estimated for each income quartile over various years to show the variations in income elasticity by income groups.The findings show that out-of-pocket medical expenses are not monotonically influenced by income.

Jahangri and Rashidule (2015) studying the income elasticity of healthcare in SSA economies which consist of both poor and middle-income countries adduced that healthcare is an indispensable good which out to be provided by the government. Using a static model, Xu and Sakensa (2011) noted that the income elasticity of out-of-pocket spending, that is expenses incurred by a private individual in seeking healthcare was above unity(1.098) in poor-income countries and nearly to a unity(0.842-0.869 as found in average income countries. Nevertheless, income-elasticities declined drastically in the ever-changing techniques in both the poor and average-income nations. Vasudeva (2004) on the other hand, found greater than unit health

care-income elasticity. Okunade (2005) reported large variances in both per capita GDP and per capita health expenditure shares national income among countries in Africa. Olaniyan et al., (2013) found below unity elasticity between income and health expenditure for 32 Sub-Sahara African countries. Ichoku and Fonta (2009) utilized the Aronson, Johnson, & Lambert (1994) decomposition framework to analyze the redistributive effects of healthcare financing in terms of vertical and horizontal inequalities in Nigeria. They find a disproportionate health care financing system in Nigeria, such that, it pushes the burden and risk of obtaining health services to the poor.

Theoretical Framework

Most studies relating income to health expenditure often based their theoretical framework on the "health production function" approach, which relates measures of health and its dominants. The underlying framework for analyzing issues in this paper follows the 'Health Capital (HC) Model' by Grossman (1972). In the Grossman HC model, health utility is maximized subject to income and time constraints and a health depreciation function. This model followed health production function, with inter-temporal utility in the following form;

$$U = U(\varphi_t H_t, Z_t),\ t = 0,\ 1,...,n,$$ -- (2.1)

where

H_t = the stock of health at period t,

ϕ_t = the service flow per unit stock,

$h_t = \phi_t H_t$ = total consumption of "health services," and

Z_t = consumption of another commodity.

The stock of health in the initial period (H_0) is given, but the stock of health at any period is endogenous. The length of life as of the planning date (n) also is endogenous. In particular, death takes place when $H_t \leq H_{min}$. Therefore, length of life is determined by the quantities of health capital that maximize utility subject to production and resource constraints (income).

1. Data and Methodology

Analysis in this paper is conducted based on a sample of 42 SSA countries using pooled time series data retrieved from the World Health Organization (2017) and Word Bank Development Indicator (2017) databases for the periods 1995-2016.

This paper augments health production function with the income and health expenditure following the Grossman health capital model in a simple linear heterogeneous panel;

$$h_{it} = \alpha_i + \beta_i y_{it} + u_{it}, \quad i = 1,...,N; \ t = 1,...,T \quad \text{-- (2.2)}$$

where

h_{it} = the logarithm of public and private health expenditure respectively, in the ith country, at time t;

y_{it} = the logarithm of GNI per-capita in the ith country, at time t,

α_I = a country-specific intercept, and

u_{it} = the error term.

Thus, the relative magnitude of income elasticity of health expenditure in SSA is measured as the ratio of the percentage change in health expenditure to the percentage change in income across the cross-sectional unit.

This can be specified as:

$$\xi_{inc_{i,j,t}} = \frac{\%\Delta hx_{i,j,t}}{\%\Delta ny_{i,j,t}}, i = 1,...,n; j = 1,...,3; t = 1,...,T;$$

-------------------------- (2.3)

where

ξny_{ijt} = income elasticity of health expenditure for country i, and at time t.

$\%\Delta hx$ = percentage change in health expenditure for country i, at time t, and

$\%\Delta hx$ = percentage change in income for country i, at time t.

Note that j represents the income level, and health expenditure can be income elastic, where health expenditure is very responsive to income changes, or income inelastic, where income changes have very little effect on health expenditure. The characteristics of health expenditure can help to predict the magnitude of income elasticities across SSA. Theoretically, health expenditure is expected to be relatively income inelastic, whereas health status is expected to be relatively responsive to changes in income. However, the study's interest is in health expenditure responsiveness to changes in national income. Therefore, whether health expenditure is elastic or inelastic concerning national income is an empirical question that the present study will proffer an answer to, as it concerns SSA.

2. Findings

The estimated result on the magnitude of income elasticity of health expenditures in SSA shows that public health expenditure exhibits 0.32 income elasticity, while the private health expenditure exhibits 0.22 income elasticity, respectively. This indicates that they are positively correlated since a proportionate increase in gross national income per capita leads to a 32 per cent proportionate increase in public health expenditure and a 22 per cent increase in private health expenditure respectively. However, it is expected that nations must spend a certain amount

of money for keeping a minimum health stock in the case of zero income via other means (borrowing, transfers etc.). Since the elasticity coefficient for the whole cross-sectional units (SSA countries) is significantly lower than 1, for both health expenditures, it implies that health expenditure is a necessity good across the region. On the other hand, the estimated result of income elasticity of health expenditures for each of the 42 countries indicates a wide variation in how health expenditures respond to changes in income.

Table 4.1: Result of Income Elasticity of Health Expenditures

Cross-section unit	Random Effects (RE)			Fixed Effects (FE)			
	PHX	GHX	RE-Variation	PHX	GHX	FE-Variation	Total Variation
AGO	0.80	0.67	0.14	0.87	0.85	0.03	0.16
BEN	-0.40	-0.08	-0.32	-0.62	-0.07	-0.55	-0.87
BWA	0.86	0.80	0.06	1.90	1.89	0.01	0.08
BFA	-0.25	0.15	-0.40	-0.09	-0.15	0.07	-0.34
BDI	0.95	0.95	-0.01	-0.22	-0.27	0.05	0.04
CPV	-0.72	0.85	-1.57	-0.18	0.99	-1.17	-2.74
CMR	0.79	-0.87	1.66	0.99	-0.58	1.57	3.23
CAP	-0.51	-0.15	-0.36	-0.70	-0.59	-0.11	-0.47
TCD	-0.41	-0.31	-0.10	-0.63	-0.10	-0.53	-0.63
COM	-0.29	-0.11	-0.18	-0.51	-0.41	-0.10	-0.28
COG	-0.83	-0.15	-0.68	-0.11	-0.06	-0.06	-0.74
ZAR	-0.33	-1.14	0.81	-0.55	-1.72	1.18	1.99
CIV	0.73	0.93	-0.20	0.92	-0.15	1.06	0.86
GIQ	0.84	0.78	0.06	0.97	1.93	-0.96	-0.90
ETH	-0.48	0.82	-1.30	-0.70	-0.30	-0.40	-1.70
GAB	0.81	-0.12	0.92	0.96	0.92	0.04	0.96
GMB	0.70	0.85	-0.15	0.99	0.85	0.14	-0.01
GHA	-0.35	0.73	-1.08	-0.25	0.82	-1.07	-2.15
GIN	-0.33	-0.14	-0.20	-0.55	-0.19	-0.36	-0.56
GNB	0.83	-0.46	1.28	0.96	-0.17	1.13	2.42
KEN	-0.42	-0.24	-0.18	-0.69	-0.49	-0.21	-0.39
LBR	0.57	-0.12	0.69	0.97	-0.10	1.07	1.75
MDG	-0.52	-0.14	-0.38	-0.13	-0.37	0.24	-0.13
MWI	-0.03	0.89	-0.92	-0.28	0.89	-1.17	-2.09

MLI	0.73	0.84	-0.11	-0.05	-0.25	0.20	0.08
MRT	0.07	0.94	-0.87	0.92	0.95	-0.03	-0.90
MUS	0.80	-0.15	0.95	0.82	0.87	-0.06	0.89
MOZ	0.85	0.89	-0.04	1.85	1.99	-0.14	-0.18
NAM	0.93	0.87	0.05	1.96	0.85	1.11	1.17
NER	0.14	-0.10	0.24	-0.09	-0.43	0.34	0.58
NGA	0.15	-0.50	0.65	0.80	-0.54	1.34	1.99
RWA	0.90	0.49	0.42	1.83	0.87	0.96	1.38
STP	0.82	0.78	0.04	-0.07	-0.08	0.01	0.05
SEN	-0.36	-0.18	-0.17	-0.61	-0.43	-0.17	-0.35
SYC	-1.49	0.80	-2.28	-1.36	1.24	-2.60	-4.88
SLE	0.90	0.01	0.88	2.93	-0.40	3.32	4.21
ZAF	0.74	0.03	0.71	1.48	1.92	-0.44	0.27
SWZ	0.97	0.97	0.00	-0.07	-0.01	-0.06	-0.06
TZA	-0.14	-0.01	-0.13	-0.08	0.87	-0.95	-1.08
TGO	-0.17	-0.33	0.16	-0.42	-0.63	0.21	0.36
UGA	0.40	-0.22	0.62	0.94	-0.91	1.85	2.47
ZMB	-0.29	0.09	-0.38	-0.56	-0.22	-0.34	-0.72
Aver.	**0.19**	**0.23**	**-0.04**	**0.32**	**0.22**	**0.11**	**0.07**

Note: GHX represents public/government health expenditure, and PHX represents private health expenditure

Discussion on Result

This result further revealed that the majority of the countries present an income elasticity of health expenditure that is lower than unity, confirming that health expenditure across numbers of SSA countries is a necessity good. Coincidentally, the results indicate that about 23 SSA countries exhibit negative income elasticity of government health spending and individual health expenses, respectively. Interestingly, all the low-income countries with very few lower middle incomes in SSA exhibit negative income flexibility of public healthcare spending. SSA countries

that exhibit negative income elasticity of government health expenditure are Cameroon, Mauritania, Senegal, Benin, Burkina Faso, Burundi, Central African Republic, Chad, Comoros, and Congo, Democratic Republic, Ethiopia and Guinea. Others are Guinea Bissau, Kenya, Liberia, Madagascar, Malawi, Mali, Niger, Sierra Leone, Togo, Uganda and Zambia.

This result implies that low-income countries have a negative fixed effect, sometimes due to unobserved cross-border movements of recipients that alter the relationship between gross national income per capita and public health expenditure at the country level. This problem is more pronounced when estimating a country by country elasticity than when considering the average relation since averaging is likely to cancel out the estimated error due to movements.

Similarly, the income elasticities of private health expenditure across the cross-sectional units indicate negative significant elasticities. Unlike income elasticities of public health expenditure, the result of income elasticities of private health expenditure exhibits different trending. This time around the upper middle-income countries indicated more significant negative elasticities than the low and lower-middle-income countries, respectively. The SSA Countries such as Equatorial Guinea, Angola, Botswana, Gabon, Mozambique, Rwanda, Mauritius, and Namibia classified as upper-middle-income countries exhibit high positive income elasticities of public health expenditure. Others with negative elasticity are Ghana, Cabo Verde, formal Cape Verde, Congo Republic, Mauritania, Tanzania, Gambia, Senegal, Swaziland and Benin. Three SSA countries such as Senegal, Benin and Mauritania indicate negative income elasticities of both public and private health expenditures, while countries like Nigeria, Sao Tome and Principe, Cote D'Ivoire and South Africa all indicated positive significant income elasticities of both public and private health expenditures.

Overall, the income elasticities of health expenditures analyzed above indicate that gross national income per capita influences health expenditures (public or private) across SSA countries differently, (negatively or positively). However, the influence on public health expenditure for low-income countries rises less than proportionally compared with low middle or upper-middle-income SSA countries. This supports the postulation that healthcare expenditure is an indispensable good, confirming findings by Okunade (2005) when he used a dynamic OLS approach and obtained income elasticity of healthcare of 0.60 for 32 SSA countries. On the other hand, the relatively low-income elasticity of private health expenditure indicated by the result supports the idea that the ability to pay is a determinant of private health expenditure. The above result has clearly shown that national income per capita has a differential impact on health expenditures across SSA countries. Thus, the policy implication that can be deduced from the result is that the relationship between health expenditure and income is highly influenced by income across SSA countries.

Conclusion

There is a general recognition in the literature that Health is an essential element of human welfare and sustains growth in every nation. Based on this, improved health expenditure is a serious challenge in many countries especially the developing ones that experience the worst form of health outcomes. Therefore, critically evaluating and estimating the income elasticity of health expenditure across SSA countries is timely. Knowledge of cross-sectional variation in income elasticities of health expenditure in SSA will help planners/policymakers of various countries in their health policy decisions. The finding that health expenditures in SSA countries are necessarily good and not a luxury is very informative since health quality is highly correlated with economic growth.

This is because health is wealth and increased budgetary spending is crucial for sustainable growth for the Sub-Saharan African countries since the knowledge of this

Sometimes, an increase in national income per capita reduces public health expenditure in low-income countries and slowly improves private health expenditure, while in middle-income countries, an increase in national income per capita reduces private health expenditure and improves, slightly, the public health expenditure in SSA countries.

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