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GOVERNMENT HEALTH CARE FINANCING AND WORKFORCE PRODUCTIVITY: EMPIRICAL EVIDENCE FROM NIGERIA

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ABSTRACT

The study examined empirically, Government Health Care Financing and Workforce Productivity. The variables examined are workforce growth rate as a proxy for workforce productivity, government capital, recurrent and total expenditure, GDP and the total government expenditure as a percentage of GDP. A Vector Autoregressive (VAR) model was estimated using the Nigerian annual time series data from 1980 to 2010. Results from the VAR estimate and Granger causality revealed that; government capital expenditure on health care in Nigeria had a negative effect on workforce productivity over the period of study. Government recurrent expenditure on health care in Nigeria impacted positively on workforce productivity over the period of study although the impact was weak; government capital expenditure and government recurrent expenditure on healthcare caused workforce productivity over the period of study, meaning that changes in these form of expenditures could also account for changes in workforce productivity. The study shows that government health care financing has made a little or no positive impact on workforce productivity in Nigeria over the period of study, although a positive change in financing could lead to a positive change in workforce productivity. Therefore, government should expedite action towards providing qualitative health infrastructures; boosting recurrent expenditure to maintaining them and increasing spending to finance the national health insurance scheme. This will provide a conducive working environment for the workers to improve in their productivity; and ensure that productive time on thinking of how to pay for out of pocket health care is channeled towards productivity.

Keywords: workforce, productivity, government, expenditure, health care

INTRODUCTION

A healthy workforce is an important economic asset. Health is a core contributor to an individual's productivity. Improved health supports labour productivity by augmenting life expectancy, and enhancing workers' productivity by increasing both physical and mental capacities. Sick people are unproductive and with an increased number of sick people, the number of workforce is reduced. Health financing involves the basic functions of revenue collection, pooling of resources, and purchase of interventions.

World Health Organization Commission on Macroeconomics and Health in their 2001 report made a strong economic case for investing in health, which they said, will increase workforce productivity and eventually economic growth (WHO, 2001).

It is in view of the above that financing health is significant to making health charged with the task of strengthening workforce for increased productivity. Financing Health in Nigeria is from a variety of sources that include budgetary allocations from Government at all levels (Federal, States and Local). The Federal Government's role is mostly limited to coordinating the affairs of the university teaching hospitals, while the State Government

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manages the various general hospitals and the Local Government focus on health centers and dispensaries (Vogel, 1993). Loans, grants, private sector contributions, donor contributions - bilateral, multilateral, NGOs, and out of pocket expenses form the other part of health financing (Public Expenditure Review, 2009).

Financing for health care comprises multiple sources of funding, methods of allocating funds and modes of paying providers. Different sources of funding health care affect the economy and society differently. Government spending on health from domestic sources is an important indicator of a government's commitment to the health of its people, and is essential for the sustainability of health programs (Lu *et al*, 2010).

The purpose of health financing has been seen not only as making funding available, but also as ranging from setting the right financial incentives for providers, to ensuring that all individuals have access to effective public health and personal health care. To ensure that individuals have access to health care services, three interrelated functions of health system financing are crucial: revenue collection, pooling of resources, and purchasing of interventions. Categories of health care financing sources include, taxation, donor funds, social health insurance, private health insurance, other private sources like NGOs own resources and out-of-pocket (OOP) expenditures. Reliance on private OOP spending remains significant, constituting over 40% of total health expenditure in 31 countries in sub-Saharan Africa (WHO, 2006).

Investment in health indicates the expenditure on facilities and provision of drugs to cure diseases, safeguard and maintain people's mental and physical health in a given period. Extensively, investment in health care also includes the expenditure that is used in entertainment, job training etc. Therefore, investment in health care is a productive investment (Xiaoqing, 2005).

Problem Statement

Problems linked to Health care in developing countries especially Nigeria where most of the financing is from the private sector with the government playing a supportive role instead of the other way round. At first glance, it may seem that a lot is being done as regards financing, with many donor agencies financing many health related projects.

Available statistical data reveals that between 1980 and 2000, Nigeria spent an average of 0.35 percent of its gross domestic product on health. Available evidence has shown that improved health has been weighed down not only with persistent under-funding over the years but also by slow economic growth, which has led to reduced productivity (CBN, 2000). In some parts of Nigeria, public spending per capita for health is less than USD 5 and can be as low as USD 2 in other parts (World Bank, 2011). This is a far cry from the USD 34 recommended by World Health Organization for low-income countries as reported by the Macroeconomics Commission Report (which translates to about 5.0percent of national budget expenditure) (World Bank, 2011).

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In the 2001 Abuja Declaration on HIV/AIDS, tuberculosis, and other related infectious diseases, African leaders pledged to increase health spending to 15 percent of their government's budgets (Haines and Cassels, 2004; UNECA 2001). Low Income Countries' ability to raise enough revenue to meet needs and demands for publicly financed health is highly constrained (Gupta et al, 2004; Schieber and Maeda, 1997).

Government is not doing enough to increase productive investment in health care, or in cases where there is willingness to invest, the tendency is for policies to be fragmented, poor execution, and interventions focused on addressing short-term problems rather than long term challenges. Some governments consider the funds allocated to health to be costs rather than investments not considering the fact that in the long run will lead to increased productivity and economic growth (Atun and Fitzpatrick, 2005).

Aim

The aim is to investigate government health care financing and workforce productivity.

Objectives of the Study

i. To examine effectiveness of government financing of health care and its impact on workforce productivity.

ii. To assess the direction of causality between workforce productivity and health care expenditure in Nigeria.

LITERATURE REVIEW

Health care financing

Health care financing is the process by which revenues are collected, pooled, and allocated (Murray and Frenk, 2000). The collection of revenue is from primary sources, such as households, firms, and secondary sources, like governments and donor agencies. The pooling of financial resources means a system where all that contributors share financial risk. Purchasing is the process through which revenues are disbursed to institutional or individual providers to deliver interventions. These lead to the delivery of healthcare services (Yadav *et al*, 2009). WHO views health financing as concerned with how financial resources are generated, allocated and used in health systems. Examples of health financing issues include:

i. How and from where to raise sufficient funds for health;

ii. How to overcome financial barriers that exclude many poor from accessing health services; or

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iii. How to provide an equitable and efficient mix of health services.

Out of Pocket Spending

Direct payment for services is the most common way to pay for health services worldwide (Savedoff, 2004). In 60% of countries with incomes below $1000 (£683; €754) per capita, out of pocket spending is 40% or more of the total expenditure. In contrast, only 30% of middle and high-income countries depend to such extent on this kind of financing (World Health Organization, 2000). In this system, poor people may be unable to pay for their health care or will be impoverished because of trying to pay for their health care needs from their pockets (Yadav *et al*, 2009).

Tax Based System

In this system, revenue from taxation is the predominant source of healthcare spending. One of the advantages is that it pools risks across a large population. However, the revenues collected may not be used for health alone but may be shared with other public services sectors. So complaints about under allocation of resources to health are common (Savedoff, 2004). National taxes are the main source of revenue in Greece, Poland, Portugal, Spain, and the United Kingdom (Mossialos and Dixon, 2002). Part of the tax revenue from the sale of tobacco has also been used to finance health care in Belgium and the United Kingdom (Yadav *et al*, 2009).

Funds are usually generated through taxation or other government revenues. Although the Nigerian government generates revenue through taxation, the bulk of the revenue is derived from the sale of oil and gas, which is unevenly shared amongst all sectors of the economy.

Social Insurance

The Nigerian government established the National Health Insurance Scheme (NHIS) under Act 35 of 1999 with the aim of improving access to health care and reducing the financial burden of out-of-pocket payment for health care services. The NHIS became operational in 2005. The NHIS is organized into the following social health insurance programs (SHIPs): Formal Sector; Urban Self-employed; Rural Community; Children Under-Five; Permanently Disabled Persons; Prison Inmates; Tertiary Institutions and Voluntary Participants; and Armed Forces, Police and other Uniformed Services (NHIS Program, 2011). It is only the formal sector SHIP that is currently operational. Membership with the formal sector SHIP is mandatory for federal government employees and about 90% coverage has been achieved. The formal sector SHIP is presently extending to include all state and local government employees with Bauchi and Cross River having achieved full coverage (Kannegiesser, 2011)

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Ghana, Nigeria, Japan, South Korea, Taiwan, Switzerland, Germany, and France have social health insurance systems (Yadav *et al*, 2009).

Private Health Insurance

Premiums are paid directly from employers, associations, individuals, and families to insurance companies, under this type of scheme. Generally, private insurance is voluntary and social insurance programs are compulsory. The problems of adverse selection and risk selection are higher with this system. Adverse selection is the tendency for insurance to attract only people at higher risk, raising the average cost of insurance beyond the reach of many people (Savedoff, 2004). Risk selection is the process by which insurers screen potential clients and try to enroll people who present health risks that are below average. The United States is a good example of a health system that relies predominantly on private health insurance. In many other countries private health insurance coexists with another type of health system (Yadav *et al*, 2009).

Typically, between 20–40% of health spending is wasted, depriving many people of badly needed care. Overpaying is one form of waste, for example, in some places medicine prices are up to 67 times the international average price leading to less money for other health services. More efficient spending increases health coverage. (WHO fact file, 2010).

2.1.2. Productivity

Productivity is commonly defined as a ratio between the output volume and the volume of inputs. In other words, it measures how efficiently production inputs, such as labour and capital, are being used in an economy to produce a given level of output. In addition, production capacity is used to assess demand and inflationary pressures (OECD, 2008).

Workforce productivity is the amount of goods and services that a worker produces in a given amount of time. It can be measured for a firm, a process, an industry, or a country. It was originally (and often still is) called labor productivity because it was originally studied only with respect to the work of laborers as opposed to managers or professionals. The three most commonly used measures of input are:

i. Hours worked;
ii. Workforce jobs; and
iii. Number of people in employment (OECD, 2002).

It is one of several types of productivity that economists measure. It is defined as the ratio of a volume measure of output to a volume measure of input.

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RESEARCH METHODOLOGY

Analytical Technique

The aim of this research work is to determine if there is a causal effect between Public financing of health and productivity in Nigeria. That is whether using the data gathered it could be determined if government's financing of health has had any effect on the productivity of Nigeria's workforce. On the other hand, if the nation's workforce productivity had affected the way the Nigerian government had been financing health.

Granger's Causality Test

The standard Granger causality test examines whether past changes in one variable affects the other variable. It tests if a variable - X (e.g. public financing of health) helps to explain the current changes in another variable -Y (e.g. workforce productivity). If, otherwise, then one concludes that X (government financing of health) does not granger cause Y (workforce productivity). To determine whether causality runs in the other direction, from Y to X (or workforce productivity to government financing of health), one simply repeats the experiment, but with variables X and Y interchanged.

Y and X could stand for either of the variables under consideration (in this case workforce productivity, government financing of health). The test is usually run in bivariate regression forms for all possible pairs of X and Y (EViews, 2001).

$$Y_t = \alpha_0 + \alpha_1 Y_{t-1} + \ldots + \alpha_1 Y_{t-1} + \beta_1 X_{t-1} + \ldots + \beta_1 X_{-l} + \varepsilon_t$$

$$X_t = \alpha_0 + \alpha_1 X_{t-1} + \ldots + \alpha_1 X_{t-1} + \beta_1 Y_{t-1} + \ldots + \beta_1 Y_{-l} + \mu_t$$

The null hypothesis usually is that X does not granger-cause Y in the first regression equation and that Y does not granger-cause X in the second regression. If ßi = ß2 = ... = ßk = 0 then, X does not granger cause Y, hence, we accept the null hypothesis (Obadan and Odusola, 2005).

Model Specification

The VAR Model

All variables are defined as above. The *a-priori* expectation is that all coefficients (β_1, β_2,…β_6) are expected to be positively related to Work force productivity. Thus, it is expected that the ratio of health financing, which is the percentage expenditure on health care from total expenditure on health care, will increase when there is an actual increase in

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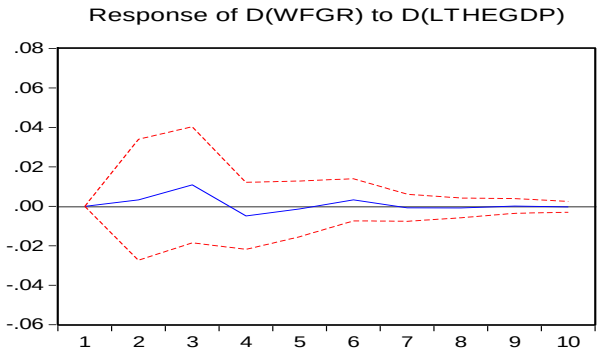
the total amount government expends on health care. In addition, that if there is an increase in the Government's expenditure on health, there will improve performance, which will translate to positive impact on the workforce productivity. Thus; $\beta 1, \beta_2, \beta_3, \beta_4, \beta_5, \beta_6 > 0$

FINDINGS AND DISCUSSION

Due to fluctuations and inconsistencies that occur in virtually all time series data, unit root test was conducted based on equations 3.1 and 3.2 to ascertain the stationarity and order of integration of the series used for the analysis. The unit root test confirmed that all the series were I (1). This meant that all the series were stationary at first difference or integrated of order one.



Source: Author's computation

Figure 1: Impulse Response of Workforce Productivity to Total Health Expenditure as a Percentage Gross Domestic Product

Figure 1 represents the dynamic response of workforce productivity to a generalized one standard deviation (SD) shock of total health expenditure as a percentage of GDP within a horizon of 10 periods. The response of workforce productivity to shocks from total health expenditure as a percentage of GDP showed an increasing trend from about 0.000 in horizon 1 to about 0.001 in horizon 3. Between horizons 3 and 4, there was a decline from 0.001 to about -0.0001 respectively. Between horizons,4 and 6 there was an increase from -0.0001 to 0.0001 respectively. Between horizons 6 and 10, the shock dies down to 0 and moved around 0.0001 to -0.0001. The implication of this finding is that total health expenditure as a percentage of GDP has affected workforce productivity negatively over the period of study. This supports the findings of (Ichoku *et al*, 2009).

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Table 1: Variance Decomposition of Workforce Productivity

Period	S.E	WFGR	CGEH	RGEH	TGH	GDP	THEGDP
1	0.0552	100.00	0.0000	0.0000	0.0000	0.0000	0.0000
2	0.0598	98.8418	0.0380	0.0327	0.6134	0.1767	0.2994
4	0.0629	91.6751	1.3357	0.4042	2.4403	0.2914	3.8533
6	0.0637	98.5137	2.1567	1.3741	2.5971	0.2956	4.0628
8	0.0640	89.0002	2.1684	1.3835	3.0741	0.3113	4.0625
10	0.0641	88.8515	2.1658	1.4016	3.2077	0.3169	4.0565

Source: Author's computation

Table 1 shows the variance decomposition or the relative contribution of all the variables in the model to the source of variation in workforce productivity forecast error. From the table, it is observed that own shocks constitutes the highest source of variation in workforce productivity forecast error declining from 100% in horizon 1 to 88.85% in horizon 10 over the period of study. Total expenditure on health as a percentage of GDP (THEGDP) shocks constituted between 0.29% and 4.0% of the source of variation in workforce productivity forecast error in horizons 2 and 10 respectively. This is followed by total government expenditure on health (TGH) which constituted between 0.61% and 3.20%, in horizons 2 and 10 respectively, followed by government capital expenditure on health (CGEH) which constituted between 0.03% and 2.16% in horizons 2 and 10 respectively. Government recurrent expenditure on health (RGEH) constituted between 0.03% and 1.40% in horizons 2 and 10 respectively, followed by GDP, which constituted between 0.17% and 0.31% in horizons 2 and 10 respectively.

Discussion of findings

In order to test for causality between the key variables and the independent variable – workforce productivity, ten models were analysed. The first 2 models showed a unidirectional causality between LCGEH and workforce productivity. LCGEH caused workforce productivity showing that past changes in LCGEH could predict or forecast future changes in WFGR, meaning that the hypothesis that LCGEH did not cause WFGR was accepted, but the hypothesis that WFGR did not cause LCGEH was not accepted.

In the models that focused on GDP and WFGR, the causality was bi-directional, showing that GDP caused WFGR with a probability value of 0.00242, which is less than the 5%

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level of significance, and WFGR caused GDP whose p value of 0.00554 less than the 5% level of significance. The last 2 models that tested for causality between LTHEGDP and WFGR and WFGR caused LTHEGDP was not accepted. There was no causality, meaning that the hypothesis that LTHEGDP caused WFGR and WFGR caused LTHEGDP was not accepted.

The results of the granger's causality test conducted showed that the variables closely linked to government health care financing – LCGEH, LRGEH and LTGH caused WFGR. Meaning that they could be used to predict the past and also forecast the future in workforce productivity meaning that government financing in the past caused productivity and that for there to be workforce productivity, there had to be government financing. Thus, in the past, to increase productivity, government financing had to be increased. The one direction of the causality noted between healthcare financing in Nigeria and workforce productivity showed that for workforce productivity to increase, health care financing had to increase.

The key problem being examined in this study is the poor level of government's financing of health and its effect on workforce productivity over the years. The results were able to show that government financing played a key role in boasting workforce productivity. It is evident that for workforce productivity to increase, government's financing of health had to increase.

The second objective of this study was to use VAR to determine if over the years there has been any kind of relationship between workforce productivity and the independent variables. The impulse response of workforce productivity to government capital expenditure on health care was negative. This showed that government capital expenditure had a negative on workforce productivity in Nigeria. On the other hand, government's recurrent expenditure on healthcare had a positive impact on workforce productivity; this can be attributed to the government's high recurrent expenditure on health as compared to capital expenditure. The effect of government's total expenditure on health on workforce productivity is negative. Over the years of study, the total government expenditure on health although has been increasing has not been enough to create any impact.

The impact of GDP on workforce productivity was positive. While the impact of the total government health expenditure, as a percentage of the GDP was negative. This showed that the percentage of the GDP that was spent on health was not significant enough to create any impact.

CONCLUSION

This study attempted to determine empirically, the impact of government health financing on workforce productivity in Nigeria over the period spanning from 1980 to 2010, using

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different methods. The outcome of the study suggested that the with the negative impact of government capital expenditure on health over the years, the focus of capital expenditure which is to finance infrastructure although has been existing has not been enough neither has it been positively channeled towards developing health care infrastructures. Recurrent government expenditure on health over the period under study had a positive impact on workforce productivity, although the variance decomposition showed that the impact was small and weak. This could mean that it had not significantly had a positive impact on workforce productivity.

The outcome of the study suggested that government financing of health care was not enough to create a significant impact on workforce productivity over the period of study.

Recommendations

Base on the findings, the following recommendation(s) were made;

i. Government should expedite action towards providing qualitative health infrastructures and boosting recurrent expenditure to maintain them. The workers will thus be provided with the conducive working environment that will boost their productivity in the long run.
ii. Better attention should be given to health personnel's remuneration in order to motivate them to give out their best.
iii. Government also needs to give more attention to sustaining the National health insurance schemes, this will ensure that the burden of payment for health care services is reduced on workers which will go a long way in ensuring that the can concentrate on being productive.

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