FINANCIAL DEVELOPMENT, PUBLIC HEALTH EXPENDITURE AND HEALTH OUTCOMES: EVIDENCE FROM NIGERIA

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ABSTRACT
This study examined the link among financial development, public health expenditure and health outcomes in Nigeria between 1981 and 2020. Annual time series data was extracted from the Central Bank of Nigeria (CBN) statistical bulletin and the World Development Index (WDI), and the data was analysed using the Autoregressive Distributed Lag Model (ARDL) with Bounds Testing. The result showed that government expenditure on health worsens health outcome (life expectancy) in the short run while it improves life expectancy in the long run. Also, the result showed that the effect of financial development on health outcome is sensitive to the financial development indicator employed while inflation negatively and significantly influenced health outcomes in Nigeria. The study recommends increased spending on the health sector by the government and a stable financial sector, in order to significantly drive the desired level of health outcome in Nigeria.

Keywords: Financial Development, Health Expenditure, Health Outcome, Autoregressive Distributed Lag, Bounds Test Cointegration.
JEL Classification Code: C22, E44, H51, I15

1. INTRODUCTION
The role of finance in the growth process of any economy cannot be trivialized, both in developed and developing countries. This view was particularly championed by the early theoretical works of Schumpeter (1911), McKinnon (1973) and Shaw (1973) in what they referred to as the finance-led growth theory, where they pointed out that financial sector performance drives overall macroeconomic performance. This comes in the form of capital accumulation, increased access to financial services, risk diversification, corporate governance control, savings mobilization and better resource allocation in the economy (see Bhatta, 2013; Chireshe & Ocran, 2020).

Economists over time, especially the advocates of the endogenous growth model have pointed out that the government should focus on the development of human capital (health and education) in developing countries in order to drive overall macroeconomic performance (see Kur, Ogbonna & Eze, 2020). This is because investment in human capital, especially the health of the citizens increases their productivity and the productive capacity of the economy, and this necessitates the need for the government to increase its expenditure on health in the economy. Empirical evidences have shown that countries that invest extensively in human capital tend to achieve rapid economic growth and development as well as an improvement in the health outcome of their citizens. (see Kim & Lane, 2013; Edeme, Emecheta & Omeje, 2017; Ogunjimi, 2019; Adesina and Akintunde, 2020).

The foregoing suggests that one pertinent indicator of macroeconomic performance in any economy is the health sector. Economists have argued that a large chunk of a nation's resources should be channeled to the health sector in order to increase the health outcomes of its citizens (see Arthur & Oaikhenan, 2017; Akintunde, Oladipo & Oyaromade, 2019). However, the health sector of developing countries especially in Africa and particularly Nigeria (in this case) is still largely hindered by scarcity, cost and access to adequate financing, thereby hindering the efficiency of the health sector. For instance, the World Health Organization (WHO) in 2014 and recently in 2019 pointed out that most African countries still operate below the regional average of about US$100 in terms of their health care expenditure per capita (see Alam & Mahal, 2014; Asongu & Nwachukwu, 2015; Arthur & Oaikhenan, 2017; Chireshe & Ocran, 2020). Furthermore, the total spending on the health sector as a percentage of GDP is still generally quite low when compared with that of developed countries (UNECA, 2019).

Furthermore, some authors in the empirical literature have argued that the financial sector of an economy plays a vital role in determining the health outcome of the citizens (see Hakeem and Oluitan, 2012; Akintunde, Oladipo & Oyaromade, 2019). They pointed out that the link between financial development and health outcomes is theoretically hinged on health expenditure in the empirical literature (see Bhatta, 2013; Nwachukwu & Besong, 2015; and Chireshe & Ocran, 2020). The reason for this stems from the fact that financial development raises the flow of funds to all sectors of the economy, including the health sector in the form of health expenditure. The implication of this is that an increase in health expenditure increases the health outcomes of the citizens and vice versa. For instance, in Nigeria, less than 5% of the Nigerian fiscal budget is allocated to the health sector in the last five years (National Bureau of Statistics, 2021), thereby giving credence to the poor level of health outcomes in Nigeria. This is also evident in the report of WHO in 2018 that stated that infants and children under five had a high mortality rate of about 70 and 104 deaths respectively per 1000 live births in Nigeria (WHO, 2018).

The foregoing thus creates the need to examine the relationship between financial development and health outcomes in Nigeria, while also considering the effect of financial development on health expenditure in Nigeria. Our motivation is driven by the need to help policymakers in the health sector and its financing, on how to improve the efficiency of the health sector and health outcomes in Nigeria, in the face of high disease burden in recent times such as Covid-19, Lassa and yellow fever etc., low health care expenditure and high out-of-pocket health care expenditures by the citizens (see Basong, 2016; and Oluwaseun, 2020)

This study is a departure from previous studies in the following ways: first, we examine the link between financial development and health outcomes in Nigeria, by incorporating the role of government expenditure on health in Nigeria. Secondly, we adopt different dimensions and indicators of financial development for robustness such as financial depth (ratio of broad money supply and private sector credit to GDP), capital market development indicator (ratio of stock market capitalization to GDP) as well as financial openness which will be measured by the Chinn-Ito index), unlike previous studies that adopted only a single measure of financial development. Furthermore, we adopt life expectancy as our proxy for health outcome.

The rest of the paper is structured as follows: section two contains the literature review, section three presents the methodology, section four presents the discussion of findings while section five presents the conclusion.

2 LITERATURE REVIEW

2.1 THEORETICAL LITERATURE REVIEW

On the issue of health in the empirical literature, extant studies mostly adopted public expenditure and growth theories as the theoretical basis, due to the fact that health expenditure and health outcome are expected to drive overall macroeconomic performance positively. Some of such theories are reviewed as follows:

2.1.1 Wagner's Law of Public Expenditure

Wagner's Law argued that economic growth is a function of increased industrialization and economic development. Wagner stated that during the industrialization process, as the real income per capita of a nation increases, the share of public expenditure in total expenditures increases. Particularly, for economic growth to be achieved, governments need to provide services like education, public health, old age pension or retirement insurance, food subsidy, natural disaster aid, environmental protection programs and other welfare functions

2.1.2 ENDOGENOUS GROWTH THEORY

The theory argued that economic growth can primarily be achieved endogenously using internal forces within the economy, rather than external influences or forces. It pointed out that improvement in productivity and overall economic performance can be driven by faster innovation and technological improvement, increased investment in human capital (health and education), government activities and private sector institutions. The theory comes in different versions ranging from the one championed by Arrow (popularly known as the AK model) which is used to explain economic changes driven by innovation and technology.

Other versions include the Uzawa-Lucas version of the endogenous growth theory and another version championed by Romer. The endogenous growth theory will serve as the theoretical basis or framework for this paper.

2.2 EMPIRICAL LITERATURE

In the literature, while many studies have investigated on the nexus between health expenditure and health outcomes, not so many studies have looked at the relationship among financial development, health expenditure and health outcomes especially in Nigeria. Some studies examined the link between financial development and health outcomes in developed and developing countries, for instance": Claessens & Feijen (2007) examined the effect of financial development on some Millennium Development Goals, which included health outcomes in developing countries from 1980 to 2007. The study adopted the Ordinary Least Square Regression and instrumental variable approach. Findings revealed that financial development improves education, gender equality and health by increasing the availability of private credit, money and deposits in the economy. Similarly, Hakeem and Oluitan (2012) in South Africa investigated the link between financial development and human capital indicators (health and education) using time series data from 1965 to 2005. The study showed a significant but weak relationship between financial development and human capital indicators. However, the relationship between financial development and life expectancy at birth, and secondary school enrolment was statistically significant.

In the same vein, Chireshe & Ocran (2020) examined financial development and healthcare expenditure in 46 Sub Saharan African countries using data between 1995 and 2014. Using the Haussmann test as well as the fixed and random effect model, the study found out that financial development improves healthcare expenditure in SSA countries during the period of study. Also, Akintunde, Adagunodo, Aderajo & Akanbi (2021) examined the effect of population and financial development on environmental health in Nigeria between 1980 and 2019. The study

adopted the Autoregressive Distributed Lag model (ARDL) and they found out that population and financial development positively and significantly drives environmental quality in Nigeria, both in the short and long run. However, by adopting micro and macro data, Chireshe & Ocran (2020) examined the financial development-health outcome connection using broad money supply to GDP ratio as a proxy for financial sector development in selected countries and found a negative connection between financial development and infant and child mortality in these countries.

In 2016, Basong adopted the Vector Error Correction Model (VECM) methodology for 29 SSA countries between 1990 and 2010, and examined the nexus between financial development and human development index (which serves as a proxy for health outcomes). The study found a significant inverse relationship between human development index and financial development both in the short and long run, during the period of study. Furthermore, some studies explored the nexus between health expenditure and health outcomes in developed and developing countries. For instance: Olakojo and Nonvignon (2012), adopted random and fixed effects modelling to analyse the link between total healthcare expenditure and health outcomes from 1995 to 2010 for 44 countries in SSA. The findings revealed that total health care expenditure (public or private) significantly reduces the number of deaths per 1000 people and the infant mortality rate per 1000 live births in Sub Saharan African countries.

Similarly, in a study of 17 OECD countries, Kim and Lane (2013) examined the effect of health care expenditure and health outcomes using panel data between 1973 and 2010. The cross-country panel data is analysed using a mixed-effect model with infant mortality rate and life expectancy at birth as endogenous variables. An inverse relationship between government health care expenditure and infant mortality rate and a positive relationship between government health care expenditure and life expectancy at birth was found. In the same vein, Ogunjimi (2019) examined health expenditure, health outcomes and economic growth in Nigeria between 1981 and 2017. Using Toda Yamamoto and the Autoregresive Distributed Lag Model. The results showed a unidirectional causality running from health expenditure to infant mortality and no evidence of causality between real GDP and infant mortality. Also, the study found a unidirectional causal relationship running from health expenditure and real GDP to life expectancy and maternal mortality in Nigeria.

Furthermore, Oluwaseun (2020) investigated public health expenditure and infant mortality rate in Nigeria between 1991 and 2018. The study adopted the Fully Modified Ordinary Least Square (FMOLS) and the result showed that public health expenditure positively influenced infant mortality rate, but negatively influenced female literacy rate in Nigeria, during the period of study. However, Edeme, Emecheta & Omeje (2017) examined the effect of public health expenditure on health outcomes in Nigeria, as captured by life expectancy at birth and infant mortality rates. The result showed that public health expenditure and health outcomes have long-run equilibrium relationship. Furthermore, the results showed that an increase in public health expenditure improves life expectancy and reduces infant mortality rates. In line with the above, Akintunde *et. al.* (2019) also investigated the socioeconomic determinants of health status in Nigeria between 1980 and 2014. The study adopted the Vector Error Correction Mechanism and the result showed that carbon dioxide emission, gross capital formation, health expenditure and unemployment rate worsened the health status (life expectancy) of Nigerians during the period of study.

Another strand of researchers examined the relationship between health indices and macroeconomic performance in Nigeria. For instance, Kur *et. al.* (2020) examined the nexus between health expenditure and economic growth, while also considering the role of institutional quality in Nigeria between 1984 and 2019. The study adopted the Autoregressive Distributed Lag (ARDL) model and found out that health expenditure and institutional quality negatively influenced economic growth in Nigeria, though only institutional quality was statistically significant. Similarly, Adesina & Akintunde

(2020) investigated the effect of health shocks on poverty level in Nigeria between 1981 and 2017. The study adopted the Vector Error Correction Model (VECM) and found out that increased Out of Pocket spending on health and death rate significantly worsens poverty level in Nigeria.

In the same vein, Ayoola, Jimoh & David (2012) tested the cointegration relationship between healthcare expenditure and economic growth in Nigeria between 1981 and 2010. By adopting a multivariate cointegration model, the study found evidence of long run relationship between healthcare expenditure and economic growth during the period of study. In a similar study, Udeorah & Onachukwu (2019) explored the relationship between healthcare expenditure and economic growth in Nigeria using time series data between 1990 and 2018. The study found that health care expenditure statistically influenced economic growth during the period of study.

Thus, the review above revealed that different countries and regions have adopted different methodologies and data to examine the relationship between financial development and health expenditure or health expenditure and health outcomes. However, this study comes in with the innovation of examining the influence of financial development on government health expenditure and health outcomes in Nigeria.

3 METHODOLOGY

3.1 THEORETICAL FRAMEWORK

The theoretical framework for this study as stated earlier on is the Endogenous growth theory. This is because the theory is premised on the fact that an economy can grow over time endogenously by using its internal forces and resources, such as investing in its human capital, government activities and private sector participation. The private sector participation is mostly felt in the financial sector, and human capital includes education and health in the economy, and this paper focuses on the health sector. Specifically, we shall adopt the AK model in its Cobb Douglas form because it is flexible and modifiable to examine the link between financial development, public health expenditure and health outcome in Nigeria.

The general form of the model is specified as:

$$Y = AK^{\alpha} L^{\beta} \quad (1)$$

Where Y is output, A is technology, K is capital, L is labour and α and β are the elasticity coefficients.

3.2 MODEL SPECIFICATION

This paper modified the model above in line with the study of Kur *et. al.* (2020) such that we take capital and labour as exogenous, and introduced financial development, health expenditure and inflation as explanatory variables. We also replaced output with health outcome since it is the output of the health sector. Thus, equation 1 can be re-specified as:

$$HOUT = FD^{\alpha} HEXP^{\beta} \quad (2)$$

The assumption here is that technology augments the financial and health sectors of the economy. By log-linearizing equation 2 above and introducing the stochastic term, we have

$$HOUT = \alpha \ln FD + \beta \ln HEXP + e_t \quad (3)$$

By re-writing equation 3 explicitly in an econometric form, we have

$$HOUT = \beta_0 + \beta_1 FD + \beta_2 HEXP + \beta_3 INFL + e_t \quad (4)$$

Where HOUT is health outcomes proxied by life expectancy. HEXP is government expenditure on health, FD is financial development proxied by financial depth (the ratio of broad money supply and private sector credit to GDP, capital market development indicator (ratio of stock market capitalization to GDP) and financial openness which is measured by the Chinn-Ito index. Data on these variables were sourced from the Central Bank of Nigeria (CBN) statistical bulletin and the World Development Indicators (WDI) for the period between 1981 and 2020.

To investigate the relationship between the dependent and explanatory variables, the unit root test as well as the Autoregressive Distributed Lag Model with Bounds test is adopted. This is because the model is suitable for variables with different order of integration (I1 & I0) and the short run and long run relationships are presented within this framework.

The ARDL specification for equations 2 and 3 are presented as follows:

$$\Delta LEXP_t = \alpha_o + \sum^{\rho}_{i=1}\mu_t\Delta LEXP_{t-1} + \sum^{\rho}_{i=1}\beta_t\Delta FD_{t-i} + \sum^{\rho}_{i=1}\pi_t\Delta INFL_{t-i} + \Psi_1 LEXP_{t-1} + \Psi_2 FD_{t-1} + \Psi_3 INFL_{t-1} + e_t \quad (5)$$

Where Δ is the difference operator, α is the drift component, e_t is white noise, γ are the long run multipliers. The estimation of the ARDL equations above will be preceded by the unit root test, in line with standard practice in the estimation of time series modelling. Also, appropriate diagnostics test will be included to establish the reliability of the estimated models.

4 RESULTS AND DISCUSSION OF FINDINGS

4.1 Descriptive Statistics

We present our descriptive statistics in table 1. The descriptive analysis of the data revealed that the mean and median values of all the observed variables fell between their maximum and minimum values, indicating a good level of consistency. Also, all the observed variables were nearly symmetrical since their mean and median values are not too far from each other. In terms of volatility, government expenditure on health is the most volatile, followed by private sector credit to GDP ratio, while market capitalization to GDP ratio is the least volatile in the series. Furthermore, all the variables are positively skewed except for financial liberalization during the period of study. Finally, the Jargue-Berra statistics for all the variables fell below 10% (except for RGDP), indicating that the series is normally distributed and random in nature. Furthermore, it is expedient that we know the time series properties of both the dependent and explanatory variables, hence the unit root test was conducted.

Table 1: Descriptive Statistics

	LEXP	HEXP	M2_GDP	CPS_GDP	MKT_GDP	LNRGDP	FINLIBOPENNESS
Mean	48.43900	80.98573	15.23321	11.29330	0.105585	10.38826	-1.061772
Median	46.38850	20.58052	12.64095	8.089291	0.021584	10.17245	-0.851744
Maximum	54.88500	388.3671	24.89526	22.75484	0.545046	11.18573	-0.650852
Minimum	45.63700	0.041315	8.464230	5.806165	0.000253	9.693476	-1.923948

Std. Dev.	3.156845	112.0602	5.284174	5.477719	0.137549	0.525254	0.497257
Skewness	0.826316	1.330176	0.614716	0.766911	1.217993	0.313149	-0.869636
Kurtosis	2.113740	3.613201	1.731911	1.849357	3.779621	1.541791	2.179291
Jarque-Bera	5.861085	12.42249	5.199253	6.127652	10.90306	4.197702	6.164384
Probability	0.053368	0.002007	0.074301	0.046709	0.004290	0.122597	0.045859
Sum	1937.560	3239.429	609.3285	451.7318	4.223388	415.5303	-42.47089
Sum Sq. Dev.	388.6611	489741.8	1088.977	1170.211	0.737875	10.75979	9.643299
Observations	40	40	40	40	40	40	40

Source: Author's Computation, 2022

4.2 Unit Root Test

For the Unit root test, we adopt both the Augmented Dickey Fuller (ADF) unit root test and the Phillip-Peron tests to ascertain the stationary of the variables. The result as shown in table 2 revealed that all the variables are stationary at their first difference, thereby giving credence to the appropriateness of the Autoregressive Distributed Lag Model (ARDL) adopted in this study.

Table 2: Unit Root Test

Variable	Test	Level	First Diff	P-value	Decision
LEXP	ADF	-0.726419	-4.76258	0.0082**	I1
	PP	-0.758837	-4.76276	0.0000**	I1
HEXP	ADF	3.207223	-6.57638	0.0001**	I1
	PP	2.702241	-7.17638	0.0033**	I1
m2/GDP	ADF	0.832544	-5.61847	0.0000**	I1
	PP	-0.430924	-5.95116	0.0000**	I1
cps/gdp	ADF	-1.037334	-5.76448	0.0000**	I1
	PP	-0.914691	-6.58222	0.0000**	I1
mktcap/gdp	ADF	1.281515	-4.79655	0.0000**	I1
	PP	2.650602	-4.80084	0.0000**	I1

finlib/open	ADF	-1.567444	-5.51014	0.0000**	I1
	PP	-2.844571	-5.45671	0.0000**	I1
Infl	ADF	-2.974740	-5.746742	0.0000**	I1
	PP	-2.844571	-10.10707	0.0000**	I1

Source: Author's Computation, 2022

4.3 Cointegration Test

We went further to examine the bounds test cointegration analysis to verify the existence of long run relationship among the variables, as expected in the practice of time series modelling. The result of the Bounds test by Pesaran (2001) is presented in table 3, and it revealed that the F-statistics value has a value of 4.168621, which is higher than the 5% critical value bounds of the Pesaran (2001) table. This indicates that there is long run relationship among the variables.

Table 3: Bounds Test Cointegration

ARDL Bounds Test		
Included observations: 36		
Null Hypothesis: No long-run relationships exist		
Test Statistic	Value	K
F-statistic	4.168621	4
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.45	3.52
5%	2.86	4.01
2.50%	3.25	4.49
1%	3.74	5.06

Source: Author's Computation, 2022

4.4 Auto Regressive Distributed Lag Model

In order to achieve the main objective of this study which is to examined the effect of government expenditure on health (HEXP), financial development indicators and inflation (as a control variable) on health outcomes (proxied by Life Expectancy) in Nigeria. As presented in table 4, the ARDL result revealed that government expenditure on health (in the short run) in its first and second lag had a negative and significant effect on health outcomes in Nigeria, but in the long run, government expenditure on health had a positive and significant effect on health outcomes in Nigeria. This implies that life expectancy (health outcomes) improved in the long run with increased expenditure on health. The reason for the significant negative short run result may be a pointer to the fact that investment on health is a long term mechanism, which may not necessarily yield the desired result in the short run. It could also imply that the government spending on health is mostly recurrent and not capital in nature, and that people mostly spend out of their pockets on health services in the short run. However, in the long run, government spending would have been adequate enough improve health outcomes in Nigeria. The findings of this study is in tandem with the study of Oluwaseun (2020) and Olakojo and Nonvignon (2012) but runs contrary to the findings of Edeme *et. al.* (2013) and Akintunde *et. al.* (2019)

In the case of financial development indicators, we found out that financial depth, measured by the ratios of broad money supply and private sector credit to GDP (while other measures of financial development were excluded in the model), insignificantly influenced health outcomes in Nigeria both in the short and long run. Specifically, the effect of broad money supply to GDP ratio on health

outcome was positive while private sector credit to GDP ratio had a negative effect on health outcomes in Nigeria. This could be as a result of the fact that banks rarely prioritize health investment as they prefer to channel funds to productive business activities or infrastructures and education in their corporate social responsibility acts. In the case of financial openness (measured by the Chinn-Ito index) and capital market development indicator (measured by market capitalization to GDP ratio), we found that they both had a positive and significant effect on health outcomes in Nigeria in the short run. However, the effect of market capitalization to GDP ratio became significantly negative in the long run.

Table 4: ARDL Result (Dependent Variable LEXP)
Source: Author's Computation, 2022

This finding supports the views of Hakeem & Oluitan (2012), Basong (2016) and Chireshe & Ocran (2020) but runs contrary to the result of Claessens & Feijen (2007).

Also, it was revealed that inflation (which is a control variable) negatively and significantly influenced health outcomes in Nigeria, both in the short and long run. The implication of this is that inflation

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(LEXP(-1))	0.749096	0.408249	1.834899	0.0914*
D(LEXP(-2))	1.541458	1.320334	1.167476	0.2657
D(LEXP(-3))	-0.97182	0.953437	-1.01928	0.3282
D(HEXP)	-0.00001	0.00034	-0.02989	0.9766
D(HEXP(-1))	-0.00112	0.000357	-3.14622	0.0084**
D(HEXP(-2))	-0.00155	0.000368	-4.21036	0.0012**
D(M2_GDP)	0.006398	0.007037	0.909171	0.3812
D(M2_GDP(-1))	0.009265	0.00546	1.696859	0.1155
D(M2_GDP(-2))	0.003478	0.005974	0.582144	0.5712
D(M2_GDP(-3))	-0.00944	0.008052	-1.17257	0.2637
D(CPS_GDP)	-0.00125	0.006551	-0.19032	0.8522
D(CPS_GDP(-1))	-0.0049	0.006868	-0.71277	0.4896
D(CPS_GDP(-2))	-0.01384	0.006027	-2.29636	0.0405**
D(CPS_GDP(-3))	0.01262	0.008812	1.432152	0.1776
D(MKT_GDP)	-0.23606	0.122598	-1.92545	0.0782*
D(MKT_GDP(-1))	0.48108	0.150158	3.203821	0.0076**
D(MKT_GDP(-2))	0.438253	0.200964	2.180754	0.0498**
D(FINLIBOPENNESS)	0.03439	0.015192	2.263695	0.0429**
D(FINLIBOPENNESS(-1))	-0.02261	0.018471	-1.22414	0.2444
D(FINLIBOPENNESS(-2))	-0.05331	0.018957	-2.81229	0.0157**
D(FINLIBOPENNESS(-3))	-0.03271	0.02099	-1.55849	0.1451
D(INFL)	-6.96017	2.602232	-2.67469	0.013**
CointEq(-1)	-0.14404	0.03708	-3.88467	0.0022**
HEXP	0.027553	0.003973	6.935657	0.0000**
M2_GDP	-0.01382	0.116745	-0.11841	0.9077

CPS_GDP	0.117182	0.161115	0.727318	0.481
MKT_GDP	-13.922	6.591346	-2.11216	0.0463**
FINLIBOPENNESS	1.956228	0.555284	3.52293	0.0042**
INFL	-21.4607	7.14218	-3.00478	0.006**
C	53.84292	14.67887	3.668057	0.0032**

worsens the value of money, which in turn increases the cost of health services to citizens since they are required to pay more, which in turn worsens health outcomes in the economy. As regards the error correction term which depicts the speed of adjustment towards long run equilibrium, it is observed that about 14.4 % of the errors committed in the short run is accounted for in the long run.

4.5 Diagnostics Test

According to the Breusch-Godfrey test for serial correlation presented in table 5, the Obs*R-squared has a value 1.894001, while its corresponding p-value has a value of 0.3879. Since the probability value is greater than 5%, we accept the null hypothesis that there is no evidence of serial correlation in the model.

Also, to test for the presence of homoscedasticity in the model, the study chooses the Arch Test. In the Arch test, the Observed R-squared value is checked with its corresponding probability value. The null hypothesis here is that the model is homoscedastic, while the alternative hypothesis here is that the model is heteroskedastic. We reject the null hypothesis if this probability value is less than 5%. From Table 6, since the probability value of 0.6236 is greater than 0.05, at the 5% significance level, we accept the null hypothesis of homoscedasticity and reject the alternative hypothesis of presence of heteroscedasticity. Hence, the model is homoscedastic and this means the model has goodness of fit and the results are desirable.

Table 5: Breusch-Godfrey Serial Correlation LM Test:

F-statistic	0.277664	Prob. F(2,10)	0.7632
Obs*R-squared	1.894001	Prob. Chi-Square(2)	0.3879

Table 6: Heteroscedasticity Test: ARCH

F-statistic	0.228678	Prob. F(1,33)	0.6357
Obs*R-squared	0.240868	Prob. Chi-Square(1)	0.6236

5 CONCLUSION AND POLICY RECOMMENDATION

This paper examined the effect of financial development and government expenditure on health on health outcomes in Nigeria. The study adopted the endogenous growth theory as the basis for modelling and the Autoregressive Distributed Lag Model was also employed for empirical analysis. The study found out that government expenditure on health worsened health outcome in the short run while it improves health outcome in the long run. We also found that the effect of financial development on health outcome is sensitive to the financial development indicator employed and that inflation negatively drives health outcome in Nigeria (and the results are statistically significant). The study recommends increased expenditure on health, particularly in terms of increasing the proportion of the fiscal budget that is allocated to the health sector, as this will improve health infrastructure nationwide,

and reduce out-of-pocket spending on health services by the citizens. We further recommend a more efficient and stable financial sector, since proceeds from the financial system by financial market actors, as well as financial institutions (in terms of their credit facilities and corporate social responsibilities) can help increase the performance of the health sector and the health outcomes of the citizens.

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