Income Inequality, Health Care Expenditure and Economic Performance in Nigeria

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ABSTRACT: *This paper examined the impact of income inequality and healthcare expenditure on economic performance in Nigeria over the period 1990-2020 using the Autoregressive Distributed Lag (ARDL) estimation technique. The findings reveal the existence of a positive and a statistically significant relationship between income inequality and economic performance as well as health care expenditure and economic performance in Nigeria. In addition, the results show that health care is a necessity rather than a luxury in Nigeria. The study recommends that government should implement programs and policies that will alleviate the inequality in income distribution as well as appropriate policies at the macroeconomic level targeted at public health expenditure to enhance economic performance*

Keywords: income inequality, health care expenditure, economic performance, ARDL, Nigeria

INTRODUCTION

The increased incidence of income inequality is one of the most pressing issues affecting developing countries. Increased income disparity is commonly one of the unfavourable results of economic growth without development in the Nigerian economy, for example; this necessitates a macroeconomic and development policy framework that can help bridge the large inequality gap in this fast-growing era.

In the course of an economy's growth, income disparity rises to a point, and then stabilizes before falling. The seminal work by Kuznets, 1955 focused on the association between economic growth and income inequality, and the study showed that income inequality rises during the agrarian phase of economic development, slows down during the industrial development, and declines during the rise of the service sector. Therefore, the study by Kuznets, 1955 hypothesized an inverted U-shaped association between economic development and income inequality. Increased income inequality has significant implications for growth and macroeconomic stability because it can concentrate political and decision-making power in the hands of a few people, resulting in inefficient use of human resources, political and economic instability that discourages investment, and an increased risk of a crisis Makuachukwu, 2020.

As a result, increasing levels of economic disparity are likely to have a negative impact on economic growth, become a source of socio-economic instability, limit human capital investment, hinder technical advancement, and so on. Some scholars suggest, however, that rising economic disparity can also promote economic and technological growth because it stimulates people to enhance their education and take greater financial risks. A high level of economic inequality can lead to political, social, and economic shocks in the long run. Investors are at danger as a result of social and political volatility, which hampers legislative reforms aimed at preserving economic agents' rights. Economic inequality, in this opinion, can actually be a role in a country's technological slowness and even economic recession Dorofeev, 2021.

Income inequality can be a major source of concern for a country when it concentrates in the hands of a few people who have an incentive to divert their efforts toward obtaining preferential treatment and protection, resulting in resource misallocation, corruption, and nepotism, all of which have negative social and economic consequences. Citizens' trust in institutions, in particular, can erode social cohesion and hope for a better future.The issue with income inequality is that it stifles economic growth, contributes to a rise in criminal activity, and causes a reduction in the health of a country's poor population owing to increased stress and a lack of access to decent medical care and proper nourishment Kurt, 2015; Birdsong, 2015. It can become a destabilizing factor for a financial system if low income households use credit as the main way to improve their standard of living, health care and thoughtlessly use it to finance current consumption.

The state of health of the population of a country is also a major factor driving productivity as only a healthy labour force can make meaningful contributions to production and growth of national output. As is the case in a typical production function, the level of inputs has a corresponding effect on the level of output depending on the scale of production and returns to scale. Hence, this make the health of the citizens of a country imperative and as such adequate provision for health should be one of the primary goals of government as it has a positive impact on economic performance, one of the macroeconomic goals of every government.

A healthy population means higher productivity, thus higher income per head. The importance of human capital to economic growth cannot be over emphasized because it serves as a catalyst to economic development. When labour is healthy, their incentive to develop new skills and knowledge is higher because they expect to enjoy long term benefits. The health led growth hypothesis stressed this by considering health to be capital; therefore investments on health can lead to an increase in labour productivity, thus increase in incomes and subsequent increase in the wellbeing of the population. Thus, health is a key component of an individual's welfare and standard of living

The effect of health on economic performance cannot be overemphasized. A key premise of the literature is that good health enhances worker productivity and stimulates growth. Healthcare expenditure can result in better provision of health opportunities, which can strengthen human capital and improve the productivity, thereby contributing to economic performance.

However, when the labour force is characterized by workers with poor health, they turn to have an adverse effect on productivity; this explains the disparity in development in different regions of the world. Fifty percent of divergence in economic growth between developing countries and developed countries is attributed to ill-health and low life expectancy WHO, 2005. Sickness and ill health, and the risk of death, are central issues in shaping human capabilities and behavior. There is therefore a strong argument for health spending on the grounds that it has a direct effect on human wellbeing and happiness.

It is one of the major duties of every government to provide funds for the provision of social welfare of which health care is an integral part. Thus, government devotes public fund to the provision of health care services in a bid to improving the health of the citizenry so as to enable them make significant contributions to economic growth and development in the country. It is believed that an increase in budgetary allocation to social services and redistribution of income should enhance service delivery which in turn improves the performance of the economy, but this is not the case in Nigeria.

The influence of health spending and income inequality on a country's economic performance is currently attracting a lot of attention from development experts, academics, economists and policy makers, at both the international and national levels. The defining challenge of our time is widening income inequality. Income inequality stifles economic growth, contributes to a rise in criminal activity, and causes a reduction in the health of a country's poor population owing to increased stress and a lack of access to decent medical care and proper nourishment. Kurt, 2015; Birdsong, 2015. An important aspect of inequality that has also been pointed out to be influencing the citizen and consequently the performance of economy especially in Nigeria is health inequality Makuachukwu, 2020.

It is therefore important to assess income inequality, the phenomenon of healthcare spending and the performance of the economy in Nigeria. This paper emphasizes on health as not only a consumption good that adds to individual well being, but also an investment good that increases the future productive power of individuals and the economy. Health has a direct effect on the productivity of workers. Workers productivity is the main mechanism put forward by the World Health Organization, 2005 to justify increased transfers to developing countries for health spending. However, there are also more indirect mechanisms through which health can influence productivity; Health can be a complementary input to other forms of human capital also the prospective lifespan of healthier workers is longer.

Our contributions to the existing studies are in two forms. First, the available extant literature only captured a part of the whole picture as they either concentrate on the relationship between income inequality and health expenditure Yunqian, 2017; (Frank, *et al.,* 2017) or income inequality and economic growth Boachie and Ramu, 2015; (Becchetti *et al.,*2015); Ogbeide and Agu, 2015. Consequently, the tripartite relations between income inequality, health expenditure and economic performance seem missing in the body of literature to the best of our knowledge. This study, therefore, investigates the impact of income inequality and health care expenditure on economic performance in Nigeria. We focused on Nigeria economy on account of the following reasons among others: (i) The deteriorating rate of human health (high mortality rate and low life expectancy is on increasing Boachie and Ramu, 2015; Akazili,

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2010; Kurt, 2015; Birdsong, 2015 resulting from catastrophic health expenditure as majority could not afford suitable health care Aregbeshola and Khan 2018; Makuachukwu, 2020; (Edeme, *et al.,*2017); Kulkarni , 2016 compared to other advanced countries of the world, (ii) being a region with high number of low and lower middle income countries, about 95% of her population still found it difficult to earn the world recommended minimum daily per capital income making it difficult to afford proper and adequate food and proper nutrition Makuachukwu, 2020; (Edeme, *et al.,* 2017); hence productivity is adversely affected.

LITERATURE REVIEW

Economic performance: Scholars found it difficult to provide a precise and concise definition for economic performance; However, White and Anderson, 2001 stated that economic performance is the efficiency of those issues dealing with the amount and value of money, wealth, debt, and investment in an economy. The attainment of economic objectives is frequently used to evaluate an economy's performance. These goals can be long-term, such as achieving sustainable growth and development, or short-term, such as restoring economic stability in the face of rapid and unpredictable events known as economic shocks.

Economists use a variety of economic indicators to determine how well an economy is performing in relation to these goals. Economic indicators are macroeconomic variables that economists use to determine whether economic performance has improved or decreased, either directly or indirectly. Policymakers can use these indications to determine whether or not to interfere, as well as whether or not the intervention was successful. It is significant because it reflects economic production growth, whether measured by GDP (gross domestic product), GVA (gross value added), or any other metric. Assessing economic production also aids investors in gaining a better understanding of what drives a country's economy.

Health care expenditure

Healthcare expenditure refers to aggregate healthcare spending in an economy, including all expenditure relating to hospitals, home health agencies, prescription drugs, nursing facilities and personal healthcare. It is an important determinant of the health status and economic development of a nation. It consists of all expenditures or outlays for medical care, prevention, promotion, rehabilitation, community health activities, health administration and regulation and capital formation with the predominant objectives of improving health.Health expenditure is the amount of money spent on citizens and public sector out of total income. It is the sum of public and private health expenditure. It covers the provision of health services, family planning activities, nutrition activities and emergency aid designated for health but does not include provision of water and sanitation.

Income inequality

Kopp, 2019 defines income inequality as an extreme disparity of income distribution with a high concentration of income usually in the hands of a small percentage of a population. When income inequality thus occurs, there is a large gap between the wealth of one population segment in comparison to another. Income disparity analysis segmentations are used to analyze various types of income distributions; as a result, income distributions by demographic segmentation serve as the foundation for studying income inequality and disparity.

THEORETICAL LITERATURE

Social exclusion theory
The Social Exclusion Theory popularized in the 1960's finds its root in the economic crisis of France at the time Silver, 1994. Social exclusion is conceived as multi-dimensional, operationalized as a combination of material deprivation, insufficient access to social rights, a low degree of social participation and a lack of normative integration Jehoel-Gijsbers and Vrooman, 2007. The theory emphasizes the lack or denial of resources, rights, goods and services, and the inability to participate in the normal relationships and activities, available to the majority of people in a society, whether in economic, social, cultural or political arenas. The relevance of the theory stems from the fact that income inequality could result to social exclusion which exacerbates poverty in the long run.

The theory recognizes that there are groups of people in our societies who are systematically disadvantaged because they are like discriminated against due to their poverty state. Discrimination occurs in public institutions, such as the legal system or the education and health services, as well as in the household and in the community making it difficult for them to have access to deserved health care services. In other words, individuals were understood to suffer social exclusion when: they suffered general disadvantage in terms of education, training, employment, housing, financial resources, etc ; their chances of gaining access to the major social institutions (such as hospital for health care) which distribute these life chances were denied.

Social capital theory
Theorized by Bourdieu, 1983 and Coleman, 1988, the social capital theory contends that social relationships are resources that can lead to the development and accumulation of human capital. Social capital is a broad term encompassing the norms and networks facilitating collective actions for mutual benefits. Consequently, Portes, 1998 submitted that this broad definition of social capital makes it susceptible to multiple interpretations and usage spanning multiple theoretical traditions. While Mohan and Mohan, 2002 sees it based on the premise that social relations have potential to facilitate the accrual of economic or non-economic benefits to individuals, Coleman (1988) on the other posited that social capital can be seen to reside in the relations and not in the individuals themselves. Following Mohan and Mohan's, 2002 submission, the theory is relevant because it emphasizes how social capital affects an agent's economic fortune.

Kuznet's Theory of Inequality
Kuznets, 1955 pioneering study on o income inequality and economic growth explored the historical evolution of income distribution and per capita output to demonstrate that income inequality widens in the early phase of economic growth and narrows in the later stage of development. Thus, an inverted-U relationship exists between income and inequality. This implies that if income or economic growth increased, the degree of disparity increased first, then decreased. However, the Kuznets theory has been called into question by the apparent economic progress seen in most emerging and developing countries, as well as rising inequality and high-profile poverty incidence.

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Empirical literature

Kennedy, 2019 examined the effect of governance on income distribution and income inequality in Nigeria, using the federal government social intervention policy programme of Trader Moni. Employing content analysis, the study analyzed the scheme between 2018 and 2019. It was found that the implementation of the Trader Moni social intervention policy failed to address its aim of income re-distribution, stating that it was skewed in such a way to generate vote for the ruling party during the Osun governorship and 2019 general elections.

On a contrary situation, comparing Africa with other regions (Chancel *et al* 2019) estimated the evolution of income inequality in Africa from 1990 to 2017 using content analysis that combined surveys, tax data and national accounts in a systematic manner. Findings suggest that income inequality in Africa is quite high, standing at par with Latin America or India. It revealed that Southern and Central Africa is particularly unequal. In addition, the bulk of the continent-wide income inequality comes from the within country component, while between country component was slightly reduced in the last two decades, resulting from a higher growth in poorer countries. Furthermore, inequality was rather stable over the period, with the exception of Southern Africa. Lastly, dualism between agriculture and other sectors which include mining rents were important determinants of inequality.

Lucky and Achebelema, 2018 examined poverty and income inequality in Nigeria using NBS 2010 survey. Food poverty line, absolute poverty line, subjective poverty measure and the dollar per day poverty line were used to measure poverty while the Gini coefficient was used to measure income inequality. Findings revealed that significant proportions of the Nigerian population are living below the poverty line. In addition, it also found that there is wide gap between the rich and the poor in Nigeria. Taking a closer look at the pattern of income distribution on monthly budgetary allocation of households under certain socio-economic characteristics in Akwa Ibom State, Nigeria

Brown and Ogbonna, 2018 examined the relationship between income inequality and poverty in Nigeria within the period spanning 1980 to 2017. The study employed the Error Correction Model (ECM) and the Granger Causality techniques, using the variables of inequality, poverty, unemployment, and life expectancy at birth. Findings revealed that national poverty index increased inequality but was however statistically insignificant. In a similar study, (Ajibola, *et al.,* 2018) empirically examined poverty and inequality in Nigeria with respect to its implications for inclusive growth between 1980 and 2013. The study used multiple regression and the Granger Causality techniques on the variables of poverty, GDP growth rate, government expenditure on health, inequality (measured by per capita income), government expenditure on education, and unemployment. No causality was found between poverty and inequality, in addition, per capita income had a negative impact on poverty.

Using Kuznet curves for inequalities, Azam and Raza, 2018 analyzed the influence of financial sector development on income inequality in ASEAN-5 countries over the period 1989–2013, and using fixed-effect model, they found the evidence of financial Kuznets curve. Financial development was measured by domestic credit by the banking sector, domestic credit to the private sector, money supply, and stock market capitalization. Similarly, Park and Shin, 2017 analyzed the association in 162 countries over the period 1960–2011. By following pooled and

panel modelling approach, the researchers found that financial development contributes to reducing inequality up to a point, but as financial development proceeds further, it contributes to greater inequality. However, in the presence of positive social indicators, financial development becomes more effective in reducing inequality. In the study, financial development was measured by liquid liabilities as a percentage of GDP, private credit by deposit money banks as a percentage of GDP, and stock market capitalization as a percentage of GDP. Likewise, (Liu *et al.* 2017) investigated this association for the case of 23 Chinese provinces over the period 1996–2012. Using GMM, the researchers found the association to be linear and inverted U-shaped, thereby, validating the evidence of financial Kuznets curve. Income inequality was segregated for rural and urban area districts.

(Frank *et al,* 2017) used descriptive statistics to analyze respondents selected from high, medium and low-income earners areas of Uyo metropolis. Household's budget was assessed based on occupation, household size, educational and income status. Household income distribution pattern showed that 68% of the households in the study were found to be low income households. Household budgeted expenditure as assessed by different socio-economic characteristics revealed that except for the high-income earners, all other groups spent more than half their income on food.

(Edeme *et al.* 2017) investigated the effect of public health expenditure on health outcomes in Nigeria and found that an increase in public health expenditure improves life expectancy and reduces infant mortality rates. Piabuo and Tieguhong, 2017 conducted a comparative analysis on the impact of health expenditure between countries in the CEMAC sub-region and five other African countries that achieved the Abuja declaration. The results showed that health expenditure has a positive and significant effect on economic growth in both samples. In addition, a long-run relationship also exists between health expenditure and economic growth for both groups of countries.

Jauch and Watzka, 2016 analyzed a similar association in 138 developed and developing countries over the period 1960–2008. Taking private credit to GDP as the measure of financial development and using fixed-effect two-stage least-squares (2SLS) estimation, the researchers found financial development to have a positive effect on income inequality. Seven and Coskun, 2016 analyzed this association in 45 emerging economies over the period 1987–2011 and using the generalized method of moments (GMM), the researchers found that financial development impacts income inequality majorly in low-income emerging economies. In the study, the researchers used a total of eight indicators for financial development.

Kulkarni, 2016 used the panel data regression with fixed effects model to examine the differences in the health care systems of Brazil, India, China, Russian Federation and South Africa, the emerging economies of BRICS. The results show a positive relation between health outcome and the GDP per capita, adult literacy rate, and out-of-pocket expenditure; environmental pollution has a negative relation with health outcomes; and age dependency ratio and public health expenditure also show a positive elasticity with infant mortality rate. Matthew *et al.* (2015) adopted the vector error correction model to examine government spending on health and its effect on health outcomes in Nigeria and found that public spending

on health has a significant relationship with health outcomes in Nigeria and that environmental factors such as carbon dioxide emissions affects individuals' health.

Wahiba and Wariemni, 2014 examined the relationship between income inequality and economic growth in Tunisia over the period 1984-2011. The study reveals that there is a negative non- significant relationship between income inequality and economic growth. Law, *et al.* (2014) investigated this association for a total of 81 countries over the period 1985–2010. Using threshold cointegration approach, results of the study indicate that the association between financial development and income inequality is significantly moderated by institutional quality, and better institutional quality helps the channels of financial development to reduce income inequality. Tiwari *et al.*,2013 analyzed the impact of financial development on rural–urban income inequality in India over the period 1965–2008. Using the ARDL approach, the researchers found financial development to aggravate rural–urban income inequality in the long run.

Novignon *et al.* (2012) employed the fixed and random effects panel data regression model estimation techniques to assess the effect of health care expenditure on population health status and to examine the effect by public and private expenditure sources. The results show that health care expenditure significantly influences health status through improving life expectancy at birth, reducing death and infant mortality rates. Both public and private health care spending showed strong positive association with health status even though public health care spending had relatively higher impact.

Ogbeide and Agu (2015) in a study tried to establish whether or not there is a causal relationship between poverty and inequality in Nigeria adopting the Granger causality technique on a data set that covers 1980 to 2010. Variables employed in the analysis were inequality (Gini index), poverty (national poverty index), unemployment rate, and life expectancy rate at birth. Findings revealed that a direct line of causality exist between poverty and inequality as well as an indirect channel through unemployment and low life expectancy.

THEORETICAL FRAMEWORK

The mechanism through which public health investments affect economic growth and economic development is inscribed in the endogenous growth models. It distinguishes itself from neoclassical growth by emphasizing that economic growth is an endogenous outcome of an economic system, not the result of forces that impinge from outside. Endogenous growth theory holds that investment in human capital, innovation, and knowledge are significant contributors to economic growth. They stress the need for strong government and private sector institutions to nurture innovation, and provide incentives for individuals and businesses to be inventive.

Solow, 1956 highlighted that countries with higher savings will have higher per capita income every other thing being equal. In Solow's model, the rate of savings and population are the principal determinants of per capita income across countries. Buchanan developed a theoretical model in 1965, encouraging public authorities to increase public spending on health independent of demand. This theory highlights that inefficiency in the provision of health care

should be observed not by lack of supply of health care services but by reduced quality such as congestion, infrastructure, and unequal distribution of staff.

Theoretical Framework and Model Specification
The theoretical model developed in this study highlights a functional relationship between income inequality, health expenditure and economic growth. The annual data spanning 1990–2020 were collected from the CBN statistical bulletin and the World Bank Development Index (WDI) to examine this relationship. The sample size and time period are based on the availability of data.

Thus the empirical model for this study is the Barro (1990) model that adds public spending to the Romer, 1896 AK aggregate production function which is attributed to the works of Aboubacar and Xu, 2017 and (Narayan *et al* 2010), stated as:

$$Y = f(k, g) = AK^{\propto}G^{1-\propto} \dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots\dots (1)$$

The above model was adapted and our variables of interest are included to avoid the problem of omitted variables due to their importance. The model includes real gross domestic product (RGDP) as a proxy for economic performance, consumer price index (CPI) as a proxy of inflation, Gini Coefficient (GINI) as a proxy of income inequality, public capital health expenditure as a proxy for health expenditure (HExp).
To account for the heteroskedastic characteristic of variables through variance in measurement and errors, we transformed the variables into linear-log model as specified below:

$$lnRGDP = \beta_0 + \beta_1 \, lnCPI_t + \beta_2 \, lnGINI_t + \beta_3 \, lnHExp_t + u_t \dots\dots\dots\dots\dots (2)$$

RESULTS

Table 1 Unit Root Test Result

Variables	Unit root in levels			Unit root in first difference			Order of Integration
	ADF statistics	Critical Value	P-value	ADF statistics	Critical Value	P-value	
logRGDP	-1.1737	-4.2967	0.8980	-3.6891	-4.3098	0.0394	I(1)
lnCPI	2.1513	-4.3393	1.0000	-5.5066	-4.3393	0.0007	I(1)
lnGINI	-4.3222	-4.2967	0.0094				I(0)
lnHExp	-3.5821	-4.2967	0.0486				I(0)

Source: Author's Computation 2022

The table above presents the result of the Augmented Dickey-Fuller (ADF) statistic was employed to test for the existence of unit roots in the data using trend and intercept. The test results indicate that RGDP and CPI are not stationary at level but integrated at order one I (1), while GINI and Hexp are integrated at level I (0) at 5% level of significance.

However, the appropriate estimation technique of analysis according to (Pesaran *et al.,* 2001), is the ARDL model. ARDL does not require that all the variables under study be of the same

order of integration; it accommodates series which are I (0) or I(1) or both, it is relatively more efficient using small sample sizes. Also, it obtains unbiased estimates of the long-run model.

Short-run relationship among income inequality, health expenditure ad economic performance in Nigeria

Table 2 ARDL short-run relationship result

Dependent Variable: RGDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
RGDP(-1)	0.872990	0.266943	3.270326	0.0114
CPI	-0.001156	0.000631	-1.831074	0.1045
GINI	-0.008870	0.002715	-3.266870	0.0114
HEXP	0.015363	0.016517	0.930141	0.3795
C	-0.682356	0.633522	-1.077083	0.3128
R-squared	0.999362	**Akaike info criterion**		-4.612827
Adjusted R-squared	0.997926	**Schwarz criterion**		-3.700842
F-statistic	695.8799	**Durbin-Watson stat**		2.579895
(Prob)	0.000000			

Source: Author's Computation 2022

The table above presents the estimated results of the short-run relationship among income inequality, healthcare expenditure and economic performance in Nigeria between 1990 and 2020. In the short-run, consumer price index has a negative and insignificant relationship with economic performance, income inequality also has a negative but significant relationship while health expenditure has a positive and insignificant relationship with economic performance at 5% significance level within the study period. The independent variables explained approximately 99.8% of the total variations in the dependent variable indicating that the model had a very high goodness of fit in the short-run. Also, the probability value of the F-statistic (0.0000) was statistically significant at 1% level indicating that the model was significant

Table 3: ARDL long-run relationship result

Dependent Variable: RGDP				
Variable	**Coefficient**	**Std. Error**	**t-Statistic**	**Prob.**
CPI	0.009891	0.001902	5.200305	0.0008
GINI	0.123571	0.047894	2.580063	0.0326
HEXP	0.841224	0.233913	3.596319	0.0070
C	3.513412	1.990367	1.765208	0.1155

EC= RGDP - (0.0099*CPI + 0.1236*GINI + 0.8412 *HEXP + 3.5134)
Source: Author's Computation 2022

Table 4: ARDL Bound test result

F-Bounds Test relationship		Null Hypothesis: No levels		
Test Stat	**Value**	**Significance**	**I(0)**	**I(1)**
F-statistic (k)	5.891555	10%	2.37	3.2
		5%	2.79	3.67
		2.5%	3.15	4.08
		1%	3.65	4.66

Source: Author's Computation 2022

Table 3 and 4 above shows the estimated result of the ARDL long-run relationship and bound test. From table 3, all the independent variables (CPI; GINI; HEXP) have a positive (0.009891; 0.123571; 0.841224) and significant (0.0008; 0.0326; 0.0070) relationship with economic performance in the long run for the period under study respectively at 5% level of significance. This implies that a percentage increase in CPI will lead to 1percent increase in economic performance; also percentage rise in GINI will lead to 12.3 percent increase in economic performance. If health expenditure is increased by 1 percent, the performance of Nigeria economy will increase by 84.1 percent within the study period.

Also, the bound test result affirms the long run relationship that exists among the variables of this study. The value of F-statistics (5.891555) is greater than the upper bound I (1) values. Thus we reject the null hypothesis that says no relationship exists.

POST-ESTIMATION RESULTS

Diagnostics Statistics
Table 5: Serial Correlation LM Test Result

Breusch-Godfrey Serial Correlation LM Test:			
F-statistic	4.882464	**Prob. F(4,4)**	0.0769
Obs*R-squared	22.41009	**Prob. Chi-Square(4)**	0.0002

Source: Author's Computation 2022

Null Hypothesis: No serial correlation in the residuals
Alternative Hypothesis: There is serial correlation in the residuals

From the table above, given the probability value of 0.0002 percent, we fail to reject the null hypothesis and conclude that our model is free from serial correlation.

Table 6: Heteroscedasticity Test Result

Breusch-Pagan-Godfrey Heteroscedasticity Test:			
F-statistic	0.394242	**Prob. F(18,8)**	0.9519
Obs*R-squared	12.69192	**Prob. Chi-Square(18)**	0.8095
Scaled explained SS	2.504061	**Prob. Chi-Square(18)**	1.0000

Source: Author's Computation 2022

Null Hypothesis: Homoskedasticity
The table above presents the heteroscedasticity test result. With the p-value (0.9519), we cannot reject the null hypothesis. Which implies that: residuals do have a constant variance which is desirable. That is, residuals are homoscedastic.

DISCUSSION OF FINDINGS

The pre-estimation technique to determine the stationarity level of the variables employed for this study showed the combination of I (0) and I (1) variables. This propels us to estimate the model with the autoregressive distributed lag technique as propounded by (Pesaran *et al.,* 2001). In the short run income inequality had a negative but significant relationship with economic performance while health expenditure had a positive but insignificant relationship for the period of study.

However, the long-run result shows that income inequality had a positive and significant relationship with economic performance at 5 percent level of significance. This result is consistent with the studies of; Scholl and Klasen, 2019; Barbara and Veronika, 2017 and negate the findings of Breunig and Majeed, 2020: (Braun *et al.,* 2019). The positive relationship of income inequality and economic performance can be as a result of a non-linear relationship that exists between the variables, higher incomes may also be a reflection of higher productivity and it might be as a result of technological progress.

Also, health expenditure had a positive and significant relationship with economic performance within the period under study. This result is consistent with Raghupathi and Raghupathi, 2020; Ogunjinmi and Adebayo, 2018. The bound test result indicates that all the independent variable had a long-run positive and significant relationship with economic performance in Nigeria.

CONCLUSION AND RECOMMENDATIONS

This study utilized the auto regressive distributed lag technique to examine the effect of income inequality and health care expenditure on economic performance in Nigeria between 1990 and 2020. The result of the study indicated that both income inequality and health care expenditure had a positive impact on the performance of Nigeria economy within the study period. Based on the findings, this study recommends that government should implement programs and policies that will alleviate the inequality in income distribution. Having established that health care is a necessity, to enhance economic performance it is important that policy makers implement appropriate policies at the macroeconomic level targeted at public health expenditure.

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