An Empirical Analysis of GDP Growth on Non-Income Welfare Indicators in Nigeria

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Abstract

This research work is conducted to analyze empirically the impact of economic growth (income) on some selected basic non-income welfare indicators (health, education and household amenities) in Nigeria. That is, to bring out whether income (GDP) growth leads to increase in access to such basic Non-income welfare indicators. The main objective of the study is simply to disintegrate economic growth into income and non-income growth and observe the extent of their relations. An Autoregressive Distributive Lag (ARDL) Regression Analysis, using Bound Test was conducted to test the long run statistical relationship and its significance between the selected variables under observation. Based on this, annual time series data on the GDP growth and the selected health (infant mortality), education (primary school enrolment) and household amenity (electricity access) dimension indicators were selected from the period 1981 to 2020 from World Bank Development Indicators (2020). Based on the empirical result of this study, it is suggested that economic growth demonstrates long run and significant with health and household dimension indicators, but the relationship does not exist with education dimension indicator. This indicates that, the assertion of positive correlation between income and non-income growth is evidently not supported by the study, despite the fact that, the relation is positive but statistically not significant. In this regard therefore, a very strong inclusive and multi-dimensional growth policy is highly needed in the country.

Keywords: Economic development, capabilities, poverty growth, income distribution and human development.
JEL Classification: O15

Contribution to/Originality Knowledge
The study has contributed to the body of knowledge by providing fresh insight in the area.

1.0 Introduction

Economic growth has long been the goal of virtually every society, but the question that arises at this point of debate is how such a growth impacts on the lives of individuals in society, if achieved? The impact measurement (assessment) would indicate increasing social welfare such as; access to education, health, and other household amenities and assets instead of just an increase in rates of national or per capita income growth (pro-poor growth) value. Pro-poor growth is simply a growth that ensures distribution of the growth equitably in an economy, and also increases access to basic social welfare indicators which can always be seen as a major benchmark for the evaluation of growth that benefits poor. Pro-poor growth is also seen as growth that increases human development, mostly through human capital development. And human capital is seen and recognized by most of the development economists as an agent of

national development in many countries in the modern World. The advocate for pro-poor growth is to ensure that what accrues as growth is distributed equitably to enhance and benefit the poor. Thus, according to Ishola and Alani (2011) "providing education and health facilities to people is of the major importance in improving quality of human resources and welfare, as both provide an economy with healthy and trained human resources required for economic growth and development." Several empirical studies on growth show that, economic growth in Nigeria has always not been translated into the betterment of the life of Nigerians. For example, Udo and Ayara (2017) posited that, "one of the most central economic problems in Nigeria today is that, there is a sharp disconnection between the level of economic growth and the distribution of such growth (development)." Thus, what is in existence is normally growth without development. This is because development is a transformation process that is fully achieved in most aspects of human life (social, political, cultural and economic). However, one of the important arguments that evolve in recent time is, can growth assessment be income driven only or on non-income aspect?

According to the National Bureau of Statistics (NBS) 2018, Nigeria Gross Domestic Product (GDP) expanded by 1.9% (year on year) in December 2018. The average growth rate between 2010 and 2018 was estimated at 4%, with highest rate within the period of 11.3% in 2010 and lowest of -1.6% in 2016. However, human development report (2017) shows Nigeria was ranked 152nd in human development index, while poverty index was estimated at 67.1% with unemployment rate of about 14.2% (NBS 2016). These estimates show that since 2010, Nigerian growth and development indices have suffered a great setback, with deteriorating growth rate, worsen poverty and unemployment. Thus, the economy has not witnessed growth transformation. As in normal circumstance, a growing economy translates into reduction in poverty level, increases employment and ensures more equitable income distribution. Furthermore, despite government effort to close the infrastructure deficit gap across the country, recent studies such as United State Agency for International Development (USAID 2019) still shows access to clean water and improved sanitation facilities in Nigeria as a daily challenge, and the problem is particularly severe in the northern part of the country where only about 30% of the population is estimated to have access to safe drinking water and adequate sanitation.

The main objective of this study is to examine the behaviours of some non-income welfare indicators using time series data from World Bank reports (1981-2020) with specific focus on access to; education, health facilities and household amenities and assets, as relates to GDP growth in Nigeria. Specifically, this study aims to; Examine the trend and pattern in the key non-income welfare indicators as relates to income growth in Nigeria. And to also analyze the significance of non-income welfare indicators in the growth process of Nigeria

This paper is organized as follows; section two provides trends in economic growth and an overview on poverty in Nigeria, while section three reviews the literature. The section four presents estimation technique used in the analysis, section five is results and discussion while section six is conclusions and policy recommendations.

Stylized Facts on GDP Growth on Non-Income Welfare Indicators in Nigeria

Nigeria having the largest population and one of the fastest growing economies in Africa, with an average growth rate of 4% between 2010 and 2018, while the growth rate increased with an average of about 2.06% from 2018 to 2019. From 1960 to date, the major drivers of economic growth in Nigeria have been largely from agricultural, industrial and service sectors. The economic growth performance since then is largely attributed specifically to the agricultural, oil as well as services sectors. For instance in the early 1960s to early 1970s agriculture was the main stay of the Nigerian economy contributing of about 55.8% to the total GDP and providing employment to about 60% of the total population. Since the late 1970s Nigerian economy has primarily been based on oil industry. With the realization of the petroleum products in 1970s, agricultural activities in the country continued to experience setback. Between 2001 and 2009 for instance, agricultural sector contribution to GDP declined to about **40.3%**. The productivity from the sector declined continuously from 2010 to 2019 where annual contributions between the two periods declined to less than **24%**. On the other hand, since 1960 the service sector had nearly been stagnant, in the sense that, from 1960 to 1970 the sector contributed an estimated average of about **15.3%** to national income and declined to **9.8%** (1981-1990) and **11.5%** (1991-2000). Between 2001 and 2009 the sector relatively improved to **15.5%**. According to World Bank data the sector improved to an average of **24.25%** between 2000 and 2019.
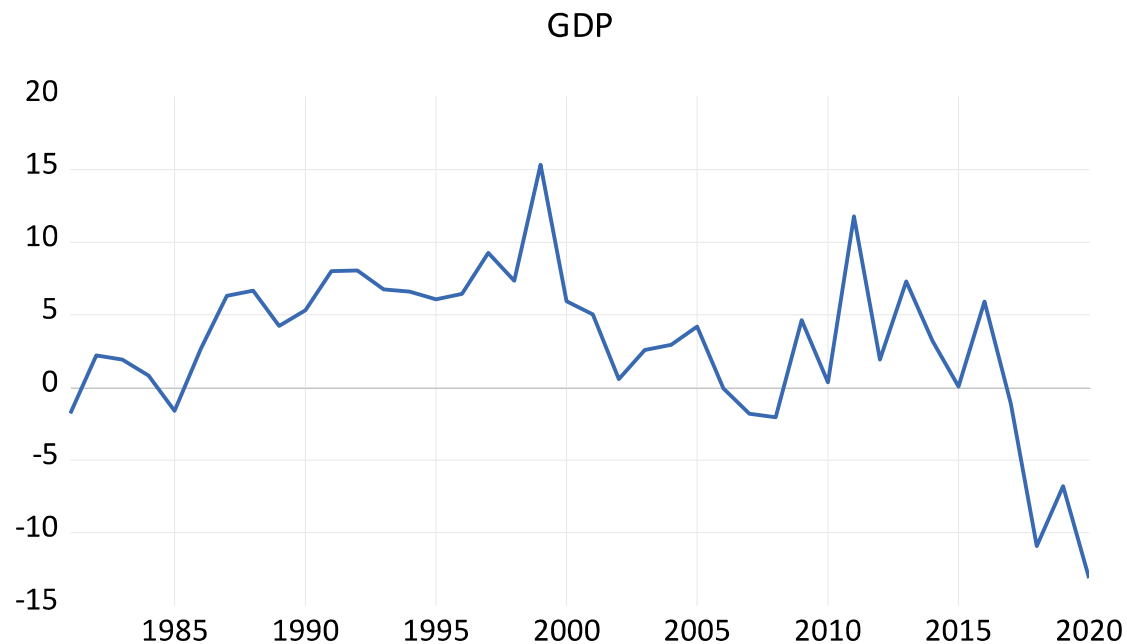
Fig. 1: Trend in Nigerian Real GDP Growth 1961-2020

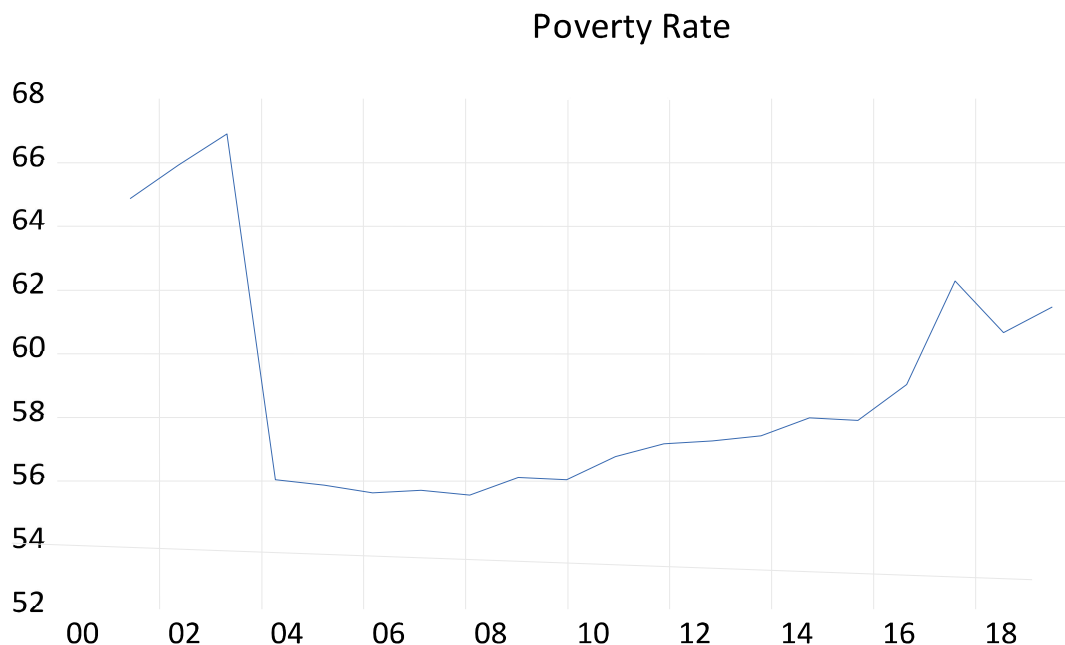**Source:** Author's Computation using World Bank Annual Data (2020)
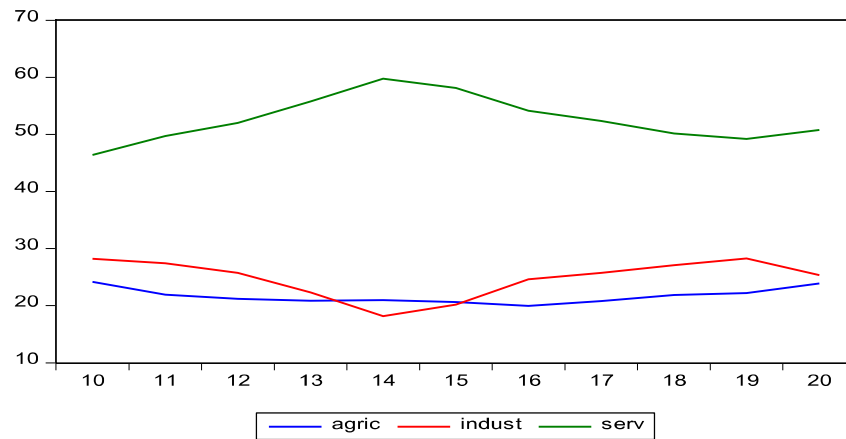
Fig 2: Sectoral Trend of Economic in growth Nigeria 2010-2020

Source: Author's Computation using World Bank data

On the other hand, poverty situation in Nigeria has long been a social problem, despite the growth rate that the economy has been experiencing for decades. The Nigerian economic growth according to Sunusi (2010) has not been inclusive, broad-based and transformational. i.e the growth does not bring the desired change in the structure of the economy in terms of more employment generation, technological advancement and induced poverty alleviation. Hence, modern Economics and other social fields of studies conceptualised poverty as multidimensional phenomenon, hence, economic growth should also be seen as multidimensional concept.

Since poverty is multidimensional, use of access to other non-income welfare indicators such as health, education and household amenity and assets in measuring and analyzing poverty is of major importance in this study. According to International Fund for Agricultural Development (IFAD 2012), about half of the rural population of Nigeria lack access to safe drinking water and sanitation. Furthermore, according to NBS households' survey (2018), **83.6%** of the urban households have access to electricity, compared to the rural households with just **34.4%** accessibility, showing more than twice disparity. According to NDHS 2018 data, primary school enrolment in the urban and rural areas was **80.2%** and **52.5%** respectively. Showing 9 and **0.70** percentage point increase compared to 2013 report. Hence, focusing on inequality in terms of growth distribution should entail financial and non-financial aspects. This is because, the extent of the disparity between the income and non-income growth is so wide. Hence, these show the need to expand the analysis of growth beyond income increase towards enhancing basic social welfare services. And show the need to provide a means on how to bridge the gap between income and non-income growth that have been a major subject of debate and concern in many fora.

Poverty Rate

Fig 3: Trend in Nigerian income poverty 2000-2020

Source: Author's Computation using World Bank data

Furthermore, according to World Bank historical data (2020), the average population with access to clean water supply in Nigeria between 2000 and 2010 stood at **16.95%** with the all time high between the periods of **18.40%** in 2010 and low of **15.38%** in 2000. Also, between 2011 and 2020, the access increased on average to **19.61%**. Though, throughout the study period, the percentage population with access kept on increasing but at a very slower rate, where not more than **0. 40%** annual increased was recorded. On the other hand, according to the data, percentage of population with access to electricity between 2000 and 2010 stood on average of **47.38%** with all time high of **52.2%** in 2003 and lowest of **42.86%** in the year 2000. Also, between 2011 and 2020 the average population with the access increased to **55.6%** with all time high of **59.3%** in 2016 and lowest of **52.5%** in 2015. Another variable of interest in the non-income growth study is school enrolment, According to World Bank historical data (2020), the average population enrolled in school between 2000 and 2010, stood at **32.9%** with all time high of **43.8%** in 2010 and low of **24.5%** in 2000. Also, between 2011 and 2020 the enrolment increased on average to 51.3% with all time high of **55.7%** in 2013 and low of **45.15%** in 2011. It should be observed that, between 2000 and 2020, the enrolment though has been positively increasing but not that reasonable.

From these explanations, it could be clearly seen that, income and non-income growth rates are not strongly in commensurate. Hence, the study of growth from non-income perspective is of great interest.
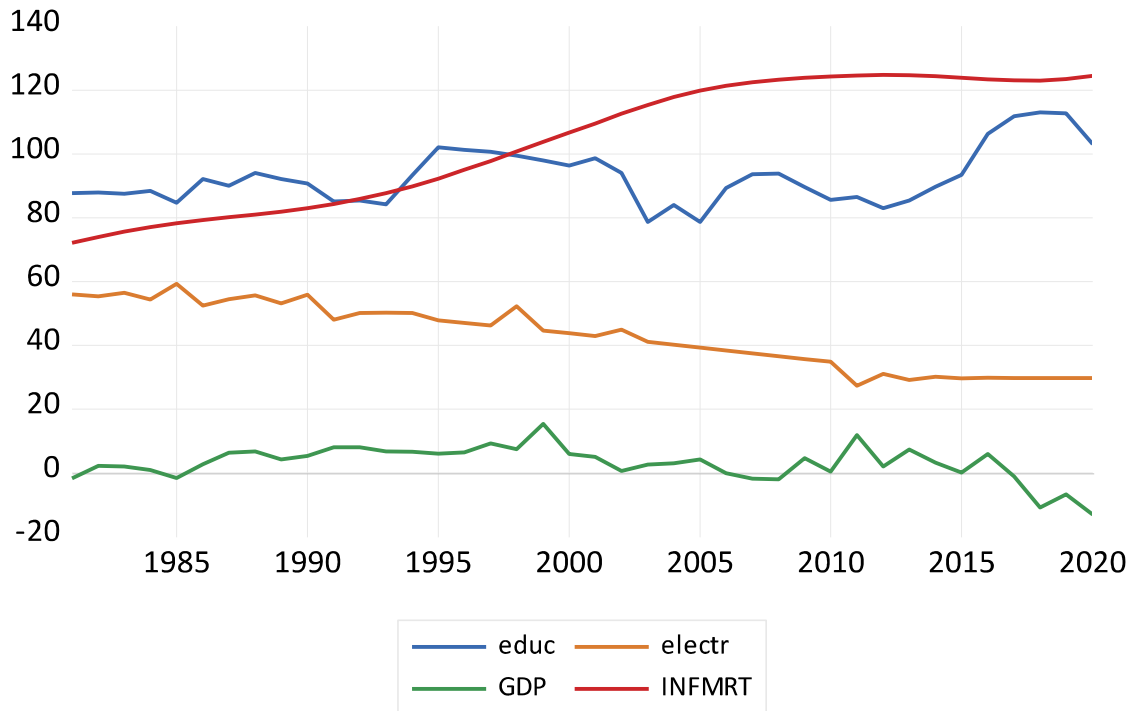
Fig 3: Trend in Nigerian Non-income growth World Bank Data 1981-2020

Source: Author's Computation using **(World Bank Annual Data 2020)**

2.0   Literature Review

This study reviews some theories which relate economic growth and living standard, with much emphasis on human capability and development approaches.

2.1   Conceptual Review

2.1.1   Non-income Welfare Indicators

Using an income per capita alone, as a measurement yardstick is always seen as insufficient and inadequate in measuring welfare of individuals in an economy, this is because; it ignores other factors such as income distribution and other physical indicators of human welfare. Hence, per capita income as an indicator of economic development and welfare does not have special features which social indicators such as health, education, poverty and unemployment rates may have, especially in developing countries. According to Zaman (2015), non-income indicators are to some extent free from distributional effect as income does have, as these social indicators are to the large extent direct measures of development and welfare of society. In addition, Klasen (2008) cited that, indicators such as length of life, health, housing, nutritional conditions, and educational attainment, are relatively direct and more effective measures that provide information about living standard and welfare of individuals in an economy. In a nut shell, the composite indices should be used as measure of economic welfare and development, because they take into cognizance different aspects of human welfare and development.

2.1.2   Theoretical Review

Sen's (1992) capability approach argues that, economic development should be conceived and measured directly in terms of human functionings and capabilities, instead of resources or utility. According to capability approach, the central feature of economic wellbeing should be assessed based on the ability to achieve valuable functionings individuals are able to achieve. Sen (1992) further extended to the analysis of functionings as beings that people value and have reasons to value, which includes elementary achievements such as being safe, well nourished, and literacy, and other quite complex achievements such as performing freely in social life activities. Hence, the evaluation of a person's well-being has to take the form of an assessment of these constituent elements. Sen (1983) further emphasizes that the growth of economic activities and the expansion of goods and services in an economy are necessary for human and capital development. On the other hand, Growth Elasticity of Poverty (GEP) tries to explain how a given economic growth rate at a given period of time affects poverty rate. GEP explains that economic growth has a direct relation to income distribution. And when economic growth leads to an increase in income per capita of the poor more than the rich, such a growth could lead to poverty reduction in an economy. Hence, income distribution is crucial for a growth to reduce poverty. However, some economists agree that increased economic growth is essential for poverty reduction; particularly, long-run sustained growth. According to Bourguignon (2002) GEP is the relative change in the poverty headcount for one percent growth in mean income, and for constant relative inequality. GEP therefore provides a means to measure the extent to which growth reduces poverty though it varies across countries and methods of measurement.

2.1.3   Theoretical framework

This study is guided by capability approach. This is because capability approach allows the inclusion of number of components that fall into valuable functioning and it centres in human development. The central concept of capability approach is human development and its quality. It suggests the analysis and measurement of human development and its quality directly in terms of human functioning and capabilities at the expense of resources or utility. The central feature of human well-being According to Sen (1992) is the ability of individuals to achieve valuable functionings (beings and doings that people value and have reason to value).

Sen (1985) further explained that, human well-being is multidimensional, which includes material and non-material aspects. In line with this, this study has related non-material aspect of human development such as, education access, health, sanitation and household amenities and assets to material aspects (income) of human development. These key variables are used to measure the magnitude of human welfare in paradigm of capabilities in Nigeria over time as against the income indices that many studies have employed. Though, the argument is that both income and non-income indices matter in accessing development. However, this study emphasized on non-income, so that performance of government is not only limited and considerate in terms of growth in GDP rate. The point of entry in this study is to establish the existence of growth (income and non-income) inequality in Nigeria as well as poverty in various dimensions. The implication of this shows economic growth distribution is not accruing

more to poor, hence, can generate discontent among the deprived groups or individuals. Thus, the theoretical framework focuses on the key issues or elements of non-income growth in terms of education, health access as the major determinant of pro-poor growth.

2.1.4   Empirical Review

There are various studies that used different approaches as well as different variables in the studies of non-income growth and its distribution and measurements across the world.

Oyakale, Lawal, and Onu, (2016), assessed pro-poor growth in Nigeria from non-income perspective, using 1999, 2003 and 2008 Demographic and Health Survey (DHS) data where some non-income welfare variables of improved water and sanitation were selected, using factor analysis, the results showed that asset index growth was termed as pro-poor at the national level between 1999/2003 and in 2003/2008. However, access to improved drinking water and sanitation declined over the study period. Access to sanitation in rural areas was worse than that of urban areas. Urban poor were also more deprived in access to improved sanitation than their rural counterparts within the study period and the poorest households were more deprived in access to these household amenities, with more impact on the urban poor. The study concludes that, adequate maintenance of water pipes and availability of water for the people should be ensured. But this study is supported by the results from the studies of Samulel (2008), Oyakele (2012), Klasen and Gunther (2007), Oyakele and Oyakele (2013) and Ugwu (2012), which also found a decline in non-income welfare indicators as the economy grows within different and various periods of studies used by the authors.

Aylward, Laurence Audrey, Reynolds, Biscaye, Mia, Anderson (2016), studied elasticity of poverty in Nigeria and found that the elasticity was generally positive from the study period of 1992-1996, indicating rising poverty rate as the economy grows. But was negative from 1996-2003, indicating fall in poverty level. Furthermore, between 2003and 2009, the elasticity was closed to 0, indicating that, growth did not reasonably reduce poverty level within the study period. The Findings suggested that change in per capita income may not be a reliable and valid or consistent proxy for poverty assessment in Nigeria. The study concluded that poverty levels did not appear to have fallen even as GDP and GNI per capita indices have increased. This result is also supported by the studies carried out by Aigbokhan (2000), Samuel (2008), Mckay (2013), which shows that growth, does not have positive impact on poverty reduction and income inequality at some point in time. It is also similar to the results of Obunoluwa (2018), Doumbia (2018), Rasaki (2017). Rasaki (2017) examined the issues surrounding the paradox of poverty rising amidst of high economic growth. Samuel (2008) in a study conducted to empirically analyse the impact of economic growth on poverty, found that, economic growth in Nigeria does not have a significant and positive impact on poverty reduction. The study further, found that, the relationship between economic growth and poverty in Nigeria depends on the period of the study but from 1992 to 2009, poverty rate has only fallen by 6%, despite a 70% of increase in per capita GDP.

Furthermore, Boccanfuso, Bosko Ki, Menard (2009) analyzed and measured pro-poor growth in monetary terms and included non-monetary dimensions of poverty in Senegal found that,

irrespective of which indicator was used, poverty rate reduced in Senegal and its regions within the study period (between 1994/95 and 2001/02), with a sharper decline when the multidimensional indicators were used, with the exception of the rural zone. The study also found a significant effect of growth on poverty when viewed in multidimensional perspective. Furthermore, over the same period, the study observed that the rural environment showed the lowest decrease in the ratios of monetary and non-monetary poverty. But using pro-poor growth curve (PGC), the measurement shows pro-poor monetary and non-monetary growth with a decrease in inequalities for all percentiles, diverging from the findings yielded by other relative inequalities measurements during the period. Furthermore, the monetary and non-monetary growth incidence curves confirmed a sharp reduction in poverty in both dimensions of poverty in the Senegalese capital. The study concluded that, analysis of pro-poor growth from the monetary and non-monetary aspects demonstrates the importance of conducting a multidimensional analysis of pro-poor growth. Although pro-poor growth analyzed from both the monetary and non-monetary aspects of poverty is positively correlated. This result is supported by Doumbia (2018), Kahsu and Nagaraja (2017). Contrary to all these, Mallick (2014) evaluated different economic variables on the impact of poverty in India's agricultural and non-agricultural sector. The results show that, sectoral growth exerted a positive impact on decreasing the poverty level; in addition, there is substantial decrease in rural poverty by increasing the non-agricultural per capita income. This is also supported by the works of Zaman (2015), Kacem (2012) and Akram (2012).

From the above studies reviewed, it could be seen that, pro-poor growth studies and poverty-growth related studies, showed in so many studies a positive impact of growth on poverty and inequality. The gap that can be identified from the studies reviewed apart from period of the study, could be most out of relatively few studies on non-income growth analysis used income distribution, poverty reduction, employment generation and so on, as indices for measuring welfare and development; but very few used some dimension indicators that directly affect human welfare such as; health, education and some household amenities like access to sanitation, electricity, water supply (non-income welfare indicators) and so on. In line with this study, education, health and household amenity indicators are used in the analysis. This is because these indicators are still the factors that could be of major problems in the Nigerian economy, and could be the major factors that determine and directly affect welfare of households. Hence, they are of importance in the analysis of pro-poor growth. The choice of these indicators is still relevant in the analysis within the context of the Nigerian economy. In line with the discussion and argument in the literature, capability approach provides theoretical foothold for this study (pro-poor growth evaluation). This is because of its flexibility and broader perspective for incorporating potential consideration into human capability set.

3.0   Data and Methodology

3.1   Data

Data used in this study are annual figures covering the period 1981-2020 and the variables used in the study are gross domestic product (GDP), education access (EDUC), health access

(HLTH) and household amenity AMN). Data were selected from World Bank Development Indicators (World Bank, 2020).

3.2   Methodology

To allow for causality and dynamics and given that not all of time-series data used in the study may be stationary to the same order (some are I(0) while others are I(1)), the cointegration technique suggested by Pesaran et al. (2001), the autoregressive distributed lag model (ARDL) procedure was used. The major advantage of this approach is, it can be implemented regardless of whether the variables are integrated of order (1) or (0) and can also be applied to small finite samples. For the analysis of long run relationship between economic growth and the selected non-income welfare indicators, the following model can be specified as adopted from the study conducted by Hussain and Saeed (2018) "Relationship Between GDP And GDS In The UAE: ARDL Bound Testing Approach" as:

$$EDU_t = \alpha_0 + b_1 GDP_t + \varepsilon_{1t} \qquad (1)$$

$$HLTH_t = \alpha_1 + b_2 GDP_t + \varepsilon_{2t} \qquad (2)$$

$$AMN_t = \alpha_2 + b_2 GDS_t + \varepsilon_{1t} \qquad (3)$$

Where GDP is Gross Domestic Product, e_i (i=1,2) is a stationary error term, α_i (i-1,2) stand for intercept terms, b_i (i=1,2) All variables are expressed in natural logarithm.

To examine long run relation among the series an ARDL Bounds testing approach to cointegration developed by (Pesaran et al., 2001) [16] was employed and implemented.

In an ARDL Co-integration Approach several methods are available for conducting co-integration tests. But the commonly used method and which this study has also adopted is the residual based (Engle-Granger 1987) test. The ARDL according to Hussain and Saeed (2018)has several advantages over other techniques of cointegration, because it can be applied irrespective of whether the variables under observation are in order of I(0), or a combination of both. It also takes a sufficient number of lags to capture the data generating process in general to specific modeling frameworks, The error correction model (ECM) can be derived from ARDL, which integrates short run adjustments with long run equilibrium without losing long run information. The ARDL method can distinguish between dependent and explanatory variables.

ARDL is normally conducted under two key assumptions guiding it, that all variables are I (0) and all variables are I (1). The null hypothesis of no cointegration will be rejected if the calculated F-statistic is greater than the upper bound critical value. If the computed F-statistics is less than the lower bound critical value, then we cannot reject the null of no cointegration. For the purpose of this study, the following sets of ARDL error correction models for GDP and the selected non-income welfare indicators also adopted from Hussain and Saeed (2018) is given in the form of equation as follows:

$$DLEDUC_t = \alpha_0 + \beta_1 DEDUC_{t-1} + \beta_2 DLGDP_{t-1} + \delta_1 LEDUC_{t-1} + \delta_2 GDP_{t-1} + \varepsilon_{1t} \qquad (4)$$

$$DLHLTH_t = \alpha_1 + \beta_3 DHLTH_{t-1} + \beta_4 DLGDP_{t-1} + \delta_3 LHLTH_{t-1} + \delta_4 LGDP_{t-1} + \varepsilon_{2t} \qquad (5)$$

$$DLAMN_t = \alpha_2 + \beta_5 DAMN_{t-1} + \beta_6 DLGDP_{t-1} + \delta_5 LAMN_{t-1} + \delta_6 GDP_{t-1} + \varepsilon_{3t} \qquad (6)$$

Here D denotes first difference, t-1 denotes one-period lag, αi (i=1,2) shows constants, denotes ε_i the sum from i = 1,2,3, … n; and n signifies the maximum lag length. The coefficients δi where (i = 1, 2,3,4) are the corresponding long-run multipliers, while the parameters βi(i=1,2,3,4) are the short-run dynamic coefficients of the underlying ARDL model.

Again, in equations (4), (5) and (6), the F-test is used for investigating one or more long-run relationships between and among the variables. The main reason for specifying ECM in this study is In the case of co-integration based on the bounds test, the Granger causality tests should be done under vector error correction model (VECM) when the variables under consideration are co-integrated. By doing so, the short-run deviations of series from their long-run equilibrium path are also captured by including an error correction term. Therefore, error correction models of co-integration can be specified as follows:

$$DLGDP_t = \alpha_1 + \beta_1 DLGDP_{t-1} + \beta_4 DEDUC_{t-1} + \delta_1 EC_{t-1} + \varepsilon_{1t} \qquad (7)$$

$$DLGDP_t = \alpha_2 + \beta_2 DLGDP_{t-1} + \beta_5 DHLTH_{t-1} + \delta_2 EC_{t-2} + \varepsilon_{2t} \qquad (8)$$

$$DLGDP_t = \alpha_3 + \beta_2 DLGDP_{t-1} + \beta_6 DAMN_{t-1} + \delta_3 EC_{t-3} + \varepsilon_{3t} \qquad (9)$$

EC_{t-1} is the lagged error correction term derived from the long-run co-integration model. e_{1t}, e_{2t} and e_{3t} are serially independent random errors with mean zero and finite covariance matrix. Finally, according to the VECM for causality tests, having statistically significant F and t ratios for EC_{t-1}, EC_{t-2} and EC_{t-3} in equations (7), (8) and (9) respectively would be enough condition to have causation from the non-income indicators to GDP and from GDP to the non-income indicators respectively.

4.0   Results and Discussions

4.1   Results of Augmented Dickey Fuller unit root tests

The Augmented Dickey-Fuller (ADF) test was applied in checking the order integration of the series. And the results are summarized in (Table 1.0). The ADF statistical value is for the test of the 40 observations, and the Eviews reports the critical (p-values) at 1%, 5% and 10%. And if the t-value is greater than the critical value, we do not reject the null hypothesis. Therefore, the ADF test results show that both variables GDP and the selected non-income welfare indicators (education, health and household amenity) are stationary in their first difference. Hence, none of the series are not in order higher than one, and they can be used in the ARDL bound Test method.

Table 1: Results of Augemented Dicky Fuller unit root tests

	Variable at levels	Variables at first difference	Order of integration
Variable	ADF Statistics	ADF Statistics	
LGDP	-0.666760 (0.8431)***	-9.916664 (0.0000)***	I(0), I(1)
LEDUC	-3.474514 (0.0144)***	-5.186167 (0.0001)***	I(0), I(1)
LHLTH	-1.065758 (0.7185)***	-3.255618 (0.0248)***	I(0), I(1)
LAMN	-0.429486 (0.8938)***	-11.38988 (0.0000)***	I(0), I(1)

Note: Values in parenthesis are p-values. *** indicates significance at 1 percent

4.2 short-run Elasticities of GDP Growth Based on the Estimated Equations

Results of short run Granger causality tests are shown in Table 2. In the short-run, since the P-value (0.4469) on the explanatory variable is greater than 0.05, we reject the null hypothesis and suggest that GDP has short-run relationship with EDUC, but insignificant. And EDUC on the other hand, granger causes GDP. Similarly, there is weak Granger causality between GDP and EDUC at 10% level of significance. This shows strong long run Granger causality from EDUC to LGDP at 1% level.

Furthermore, for relationship between GDP and HLTH is also depicted from the Table 2. From the result it could be seen that, according to the P-value (0.9902), which is greater than 0.05, we also reject null hypothesis and conclude that, GDP granger causes HLTH and HLTH on the other hand Granger causes GDP (P-value 0.2756). And the relationship both in the short and long run is insignificant. Another variable under observation in this study is AMN. From the same table, it is also depicted that, comparing the P-value (0.9686) which is greater than 0.05, we reject the null hypothesis and suggest that, GDP granger causes AMN and also AMN granger causes GDP.

Table 2: Granger Causality Tests

Pairwise Granger Causality Tests Date: 05/13/22 Time: 19:26 Sample: 1981 2020 Lags: 2			
Null Hypothesis:	Obs	F-Statistics	Prob.
GDP does not Granger Cause EDUC 0.4469	38	0.82535	
EDUC does not Granger Cause GDP		2.59444	0.0899
GDP does not Granger Cause HLTH 0.9902	38	0.00981	

HLTH does not Granger Cause GDP		1.34054	0.2756
GDP does not Granger Cause AMN 0.9686	38	0.03192	
AMN does not Granger Cause GDP		2.52055	0.0958

Source: Author calculation using EVIEWS software 9.

4.3 Bound Test

Table 3: Bounds Test Results for Cointegration

Critical value	Lower Bound Value	Upper Bound Value
1%	5.77	6.48
5%	3.96	4.53
10%	3.22	3.76

Notes: DLGDP is the first difference lag of GDP and DLEDUC is the first difference lag of EDUC respectively etc. *, ** Significance at 5% and 10% significance levels

4.4   Long-run Analysis based on ARDL Bound Test Estimated Equations

To investigate the presence of long-run relationships among the variables, testing of the bound under Pesaran, et al. (2001) procedure is used. Given a relatively small sample size (40) observations and the use of annual data, a lag length of 1 is used in the bounds test. The results of the bound test are given in Table 3. Based on Table 3 above, the results suggest the existence of cointegration, when LEDUC is the dependent variable as the computed F= 1.193913 is less than the upper bound critical value (3.76) at 10% level, meaning that we can accept the Null Hypothesis that the two variables DLGDP and DLEDUC do have long run relationship over the period of 1981-2020 in Nigeria. However, there is also no evidence of cointegration when DLGDS is taken as dependent variable as the computed F= 2.825039 lower than the lower bound critical value at 5% level. In other words, these results suggest that DLEDUC and DLGDP have no long run relationship when both LGDP is a dependent variable and also when LEDUC is dependent variable.

Furthermore, from other variables in the test, LGDP and LHLTH are also variables of interest. The result from this point of view suggests the existence of cointegration when LEDUC is the dependent variable as the computed F= 26.44514 is greater than the upper bound critical value at 10% level, meaning that we can reject the Null Hypothesis, that the two variables DLGDP and DLHLTH have long run association ship over the period of 1981-2020 in Nigeria. However, but there exists no evidence of cointegration when DLGDP is taken as dependent variable as the computed F= 2.759854 is lower than the lower bound critical value at 5% level. In other words, these results suggest that DLHLTH and DLGDP have long run relationship when LHLTH is a dependent variable but do not depict any when LEGDP is dependent variable.

On the order hand, LAMN and LGDP result suggest the existence of no co-integration when also the LAMN is the dependent variable as the computed F= 1.009167 is greater than the upper bound critical value at 10% level, meaning that we accept the null hypothesis of no

existence of long run relationship between LAMN and LGDP over the study period (1981-2020) in Nigeria. However, there exists also no evidence of association ship between the variables since calculated F=3.428389 is less than the lower bound value at 5% level. In other words, the result suggests that, LAMN and LGDP have no long run association ship when GDP is the dependent variable the same conclusion when LAMN is the dependent variable. These results are consistent with the findings of Samulel (2008), Oyakele (2012), Klasen and Gunther (2007), Oyakele and Oyakele (2013) and Ugwu (2012), which also found improvement in some non-income welfare indicators as the economy grows within different and various periods of studies and in relation to the variables used by the authors, despite the fact that the improvement in many of the studies has been to extent relative and statistically insignificant.

Table 5: Long-run Elasticities of GDP Growth Based Error Correction Model

The next stage of the procedure would be to estimate the coefficients of the long-run relations and the associated error correction model (ECM) using the ARDL approach.

ARDL Cointegrating And Long Run Form
Dependent Variable: LGDP
Selected Model: ARDL(1, 0)
Sample: 1981 2020
Included observations: 40

Cointegrating Form				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
Cointeq = LGDP -0.309602		0.090718	-3.412798	0.0016
Cointeq (-1) = LEDUC -0.183642		0.094446	-1.944409	0.0597
Cointeq (-1) = LHLTH -0.017921		0.001958	-9.151114	0.0000
Cointeq (-1) = LAMN -0.005687		0.003179	-1.788995	0.0016

Source: Author calculation using EVIEWS software 9.

The appropriate lag on variables is automatically selected using Schwartz Bayesian Criterion (SBC) tests, and turned out to be the ARDL (1,0). The long-run estimated coefficients are presented in the Table 5, and the results show that economic growth does not significantly contribute to the growth of the selected non-income welfare variables (LEDUC, LHLTH, LAMN).

Table 5 shows that the result of ECM of selected ARDL (1,0) When LGDP as a dependent variable the ECM (-1) = -0.309602 (negative) and P-value=0.0016 less than 0.05, meaning that there is short run relationship. And it is significant at 5%. The coefficients of ECM terms present the speed of adjustment in the long-run due to a shock in the variables concern is effective. The results of ECM of selected ARDL (1,0) were analyzed in Table 5. The estimated values of error correction coefficient were all negative (-0.183642, -0.017921, -0.005687); with the p-values of all the variables less than 0.05, showing the significance of each short and long run association. It established that there exists an association between LGDP and independent variables of all the selected non-income welfare variables (LEDUC, LHLTH, LAMN).

From this analysis, it could be observed that, despite the fact that numerous empirical studies show that, economic growth in Nigeria has been jobless, and characterized by high poverty,

inequality levels, the growth contributes to the improvement in some non-income welfare indicators, but the impact has not to some extent been statistically and empirically significant. From the result we conclusively accept, that growth does not have significant impact on the selected non-income indicators. And this study is supported with similar results and studies of Samulel (2008), Oyakele (2012), Klasen and Gunther (2007), Oyakele and Oyakele (2013) and Ugwu (2012), which also found a decline in non-income welfare indicators as the economy grown within different and various periods of studies and in relation to the variables used by the authors. From the literature it could also be observed that, most of the studies reviewed show statistically insignificant and sometimes negative relation between income (GDP) growth and non-income welfare indicators growth, and mostly used variables such as; employment generation, income inequality, poverty reduction to analyse the impact of GDP growth and social welfare. That is GDP growth does not significantly improve these variables. Example of those studies includes; Aigbokhan (2000), Mckay (2013), Anderson (2016) and so on.

5.0   Conclusion and Recommendations

This study examines the empirical analysis of of GDP growth on non-income welfare indicators in Nigeria. The study employed the autoregressive distributed lag (ARDL) cointegration framework to test the long run relationship between economic growth and the selected non-income welfare indicators. Prior to the Cointegration test, test for stationarity of the variables using Augmented Dickey-Fuller (ADF) was conducted. The variable proved to be integrated of the order one I(1) at first difference. The ARDL cointegration approach (using Bound Test) was employed to determine the long-run relationship of LGDP and (LEDUC, LHLTH, LAMN). The F-statistics indicate that the null of no cointegration cannot be rejected both when GDP is the dependent variable and when any of the selected welfare indicators is a dependent variable. The study also estimates the long-run and short-run between LGDP and (LEDUC, LHLTH, LAMN) which brings out the conclusions that LGDP and any of the selected indicators (LEDUC, LHLTH, LAMN) have no long run relationship when LGDP is a dependent variable and have no long run association ship when any of the selected indicators (LEDUC, LHLTH, LAMN) is a dependent variable.

These results suggest that there exist econometric evidence that LGDP causes (LEDUC, LHLTH, LAMN) and they also on the other individually cause LGDP throughout the study period in Nigeria. This evidently shows that improve and more access to these selected non-income welfare indicators could be a driver of economic growth in Nigeria. Similarly, there is strong long run Granger causality from ECM to all of the indicators.

Also, the study showed a negative and significant error correction term when any of the selected viable is a dependent variable which implies the adjustment process to restore equilibrium is effective. i.e, there is negative (-0.309602) and significant error correction term (0.0016) which less than 5 percent level of significance. This implies the adjustment process to restore equilibrium in the long run by 30.96 percent, meaning that there is shot run association ship between variables.

Based on the results of the study, it could be established that, economic growth in Nigeria does not significantly translate into the betterment of Nigerians, if it were assumed that these selected non-income indicators were the major determinants of welfare in Nigeria. That is, there is no strong and significant link between the GDP growth and the selected basic non-income welfare indicators such as education, health and household amenity. The analysis is more pronounced in extracting the statistical insignificance of growth to the indicators, despite the fact that, the descriptive or the raw data have shown some level of improvement in the indicators within the study period as it relates to GDP growth. Conclusively, GDP growth and other socio-economic and basic welfare indicators are empirically not always positively and significantly correlated.

In line with the findings of this study, the following recommendations are offered.

i. In view of the significant influence of the welfare of society in growth process, authority should consider equity in terms of provision of basic social infrastructure across the country. And also, a realistic policy option towards pro-poor growth should be at the fore-font. And also, economic growth should be seen beyond an income increase, rather other basic social welfare services such as; health, education, household amenity, should also be seen as part of indicators of economic growth.

ii. Finally, the main objective of public actions should be to ensure that people get minimal conditions of access to basic human needs until levelled to the so-called poverty line that might be defined in terms of a general amount of money, or certain amount of calories in a diet. This simply entails that policy makers should accept the multidimensionality of growth, poverty and welfare, and consider incorporation of income and non-income welfare indicators in policy designation and analysis.

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