Reversing The Covid-19 Setback on Income Poverty Reduction: What Policy Options for Nigeria?

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ABSTRACT

Empirical studies have shown that the outbreak of COVID-19 globally has drastically created a reversal in the successes earlier recorded by governments' efforts across nations. This study, therefore, investigated the sources of pre-COVID reduction in poverty and determined the policy options that could best enable the reversal of the setback to poverty reduction in Nigeria. The study employed the Autoregressive Distributed Lag (ARDL) model to analyze time-series data from Nigeria for a period from 1990 to 2020. The result found that while growths arising from ARGDP (share of agriculture to real GDP) and IRGDP (share of industry to real GDP) have negative relationships with growth in the incidence of poverty, growth from SRGDP (share of services to real GDP), though statistically significant at a 5% level, was found to be poverty enhancing. The result also revealed that growth in Human Capital (HC), Inequality (INQ), INQ_{t-1}, INF_{t-1} were found to be statistically significant. INQ and INF (Inflation) were found to be positively related to growth in the poverty rate, thus implying that growth in any or both of these can be poverty-enhancing. Also, growth in HC was found to exhibit an inverse relationship with growth in POR. The result further revealed that all the variables Government Social Recurrent Expenditure (GSEX), Capital Transfer (CT), and Social Transfer (ST) and their lagged values were found to be significant and poverty-reducing in Nigeria. The study, therefore, recommended policies that are aimed at improving the impacts of these variables.

Keywords: Capital transfer, Poverty reduction, Human capital, Inequality, Social transfer,

INTRODUCTION

Although Poverty as a phenomenon is an old phenomenon, its debilitating effect is as recent as the daybreak. The incidence of poverty cuts across geographical, racial, and generational boundaries. World Bank report (World Bank, 2020) revealed that the world poverty rate (WPOVR) as at end of 2017 still stood at an average of 9.2%. The report (World Bank, 2020) further considered Sub-Sahara Africa as "the emerging hot spot of poverty convergence" because it was found to be home to about a third of the world's poorest people. Sub-Saharan Africa had the highest average poverty rate (SSPOVR) of 40.2% as of the end of 2017, while Nigeria, one of the members of the sub-region, had 39.1%. Achieving a reduction in the incidence of poverty globally and within specific economies is no longer an issue of debate. The need for this is spelled out in one of the mission statements of the World Bank (2020) which is aimed at working in collaborations with member nations to reduce poverty incidence to the barest minimum possible and boost shared prosperity.

Arising from this mission, the World Bank was determined to assist nations in every possible way to reduce the world poverty level to a little less than 3% of the total world population by the year 2030 (World Bank, 2020).

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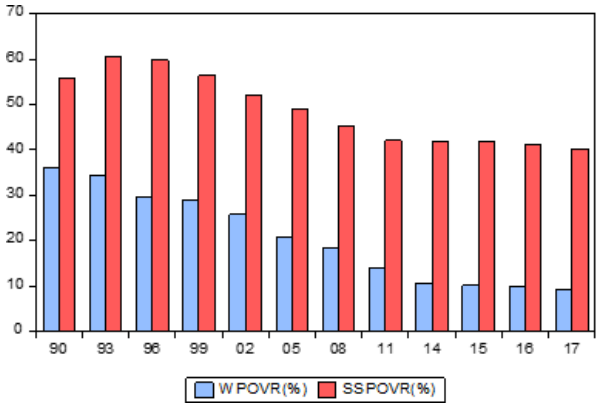
Empirical studies have revealed that the different strategies by member nations, developed and developing inclusive have yielded some tremendously positive results in world poverty reduction as shown in figure 1:

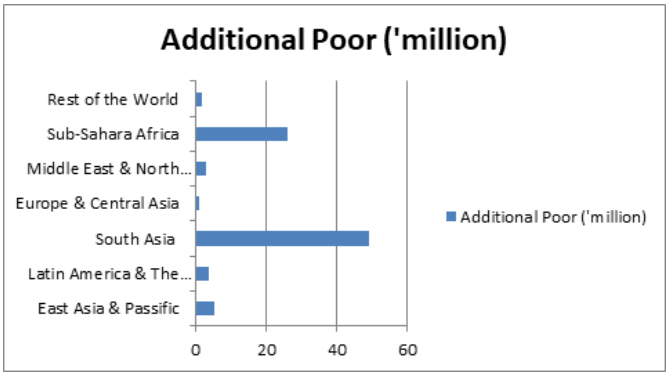
Figure 1: World and Sub-Sahara Africa poverty rate at the US$1.90-a-day poverty line, 1990–2017



Source: Authors' computation from World Bank (2020) report data using EView 10

The above gains notwithstanding, the World Bank report on monitoring poverty at the global level revealed that the outbreak of the coronavirus pandemic (COVID-19) has, among other consequences, created a major setback on the drive towards achieving a reduction in both global poverty and shared prosperity across and within nations (World Bank, 2020). This is consequent upon the effect of the pandemic (i.e. COVID-19) both in worsening the situation of the existing poor and by adding those that the report classified as the 'new poor' with their different profiles. Although these setback effects of COVID-19 are not in exception of any sub-region, the degree varies for the sub-regions. Figure 2 shows that the South Asian and Sub-Sahara Africa sub-regions were most affected with additional 49.3 million and 26.2 million new poor respectively.

Figure 2: Sub-Regional Additional Poor at the US$1.90-a-Day Poverty Line in 2020



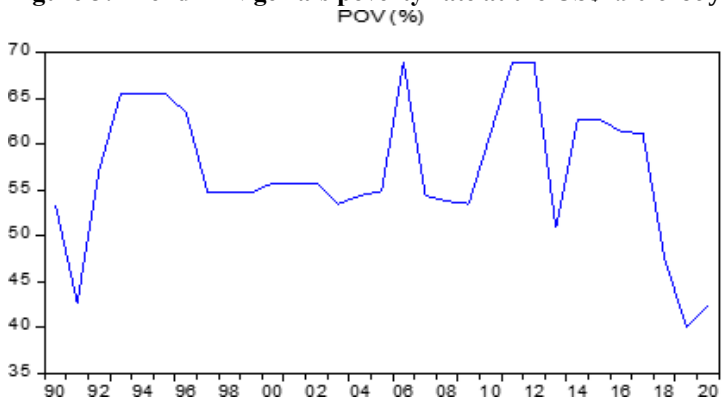
Source: Authors' computation using data from World Bank (2020).

Before the outbreak of COVID-19 in February 2020, several measures had been embarked upon by successive administrations in Nigeria to achieve some levels of reduction in income poverty. Notable among these was the Poverty Alleviation Programme (PAP) which was launched within the framework of Budget 2000. The program was designed to employ 200,000 people and the sum of N10 billion was set aside for it. The program was implemented in every state of the Federation and it provided jobs for 214,367 people who were paid stipends of N3, 500 per month. In January 2001, the Poverty Alleviation Programme was phased out and replaced with the National Poverty Eradication Program (NAPEP), which was responsible for coordinating and monitoring the activities of the core Poverty Eradication Ministries and Agencies (Kasali *et al*, 2016).

The National Poverty Eradication Program (NAPEP) was intended to eradicate absolute poverty in Nigeria by the year 2010. This was based on the premise that about 70 percent of Nigerians live below the poverty line. NAPEP has provided strategies for the eradication of absolute poverty by streamlining and rationalizing the existing poverty alleviation institutions; and coordinated implementation and monitoring of relevant schemes. As the government's response to the worsening condition of the poor continued through expending heavily towards the eradication of poverty in Nigeria, the consequence is presented in figure 3.

A review of the trend in the poverty rate in Nigeria as shown in figure 3 reveals the same pattern as the rest of the world. The period before the outbreak of COVID-19 witnessed some form of reduction in the poverty rate in Nigeria. Although the coronavirus pandemic started in China towards the end of 2019, the first case was reported in Nigeria in February 2020. The outbreak of the pandemic did not only add to the woes of the existing poor in Nigeria, but it also brought about a change in the profile of the people living below the poverty by the addition of those that were regarded as 'new poor' (Sanchez-Paramo, 2020). As identified by Sanchez-Paramo (2020), the COVID-19 created 'new poor' that are educated and urban-based. Because of their nature, they are not likely to take up agriculture as an option for their source of employment. The only option available to such people, according to Sanchez-Paramo (2020), is the service sector. This assertion is corroborated in Figure 3 which reveals that Nigeria witnessed a consistent but slow-paced reduction in the incidence of poverty between 2015 and 2019. However, this slow-paced gain in poverty reduction was reversed as the poverty rate increased from about 39.1% to 42%, thus implying that Nigeria also had her share of the 'new poor' that resulted from the COVID-19 outbreak. This was further buttressed by a World Bank survey in Nigeria (Siwatu, *et al,* 2020). Siwatu *et al* (2020) revealed that 42% of the respondent confirmed that they lost their jobs in May 2020 as a result of COVID-19 in Nigeria, while 80% of the respondents claimed they experienced major reductions in their income since Mid-March of 2020.

Figure 3: Trend in Nigeria's poverty rate at the US$1.90-a-day poverty line, 1990–2020



Source: Authors' computation using E View 10

Given the debilitating effects of increased poverty at the global and national levels on achieving shared prosperity, it behooves economies, developed and developing, to find a way to reverse the setback to poverty reduction through policy measures that can promote pro-poor growth. Our review of the literature shows that several suggestions of policy options have been advanced on how best to achieve poverty reduction. What has constituted a source of serious debate and disagreement among development economists and other economic stakeholders is the trajectory of achieving this onerous task. Early researchers on this topic had opined that a consistent and sustainable growth of an economy's real GDP would bring about a reduction in poverty level (Dursun & Ogunleye, 2016; Ebong & Ogwunike, 2013). The experiences of developing nations, especially in Sub-Saharan Africa, where there were cases of increase in abject poverty in the face of tremendous growth in their economies have removed the matter of poverty reduction from the purview of economic growth. Empirical evidence has, however, laid credence to the fact that it is the pattern or source rather than the quantum of growth that affects poverty reduction (Chuham-Pole, 2014; Fashanu & Kasali, 2020a; Ferreira *et al*, 2007 & Igor, 2016).

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Other researchers have also advocated for policies of socio-economic variables (to control the effects of inflation, unemployment, income inequality, and human capital development) and government social expenditures like social recurrent expenditures, capital transfers, and social transfers.

Iv view of the complexity of the nature of the profile of the 'new poor' as added by the COVID-19 outbreak, Igor (2016) believes that reducing poverty in Brazil, the object of his study required a multifaceted policy that considers all the various variables mentioned above. To Igor (2016), the pattern of growth, socioeconomic variables, and government social expenditures must be considered in investigating the best policy options that can achieve poverty reduction in any given economy. Considering the setback to the reduction in poverty brought about by the outbreak of the COVID-19 pandemic in Nigeria (Sanchez-Paramo, 2020; Siwatu *et al*, 2020), this study attempted to investigate the sources of pre-COVID reduction in poverty incidence and further determine which of these options can best serve as the growth pole for reversing the setback to income poverty reduction in Nigeria.

While the study focuses on the Nigerian economy, the scope shall be for a period from 1990 to 2020. The choice of this period is to enable the study to capture the effects of the various poverty-reducing measures from the post-SAP (Structural Adjustment Measures) that characterized the Military Regime from 1985-1999, up to the present democratic governance characterized by the rebasing of the economy in 2013. Data availability is another factor that advised the study's choice of scope. This study is expected to expand the frontier of knowledge by providing empirical support to the assertion that other factors, apart from economic growth and sources of growth matter in achieving poverty reduction in Nigeria. It is also expected to provide policy tools for policymakers and policy implementers within and outside Nigeria. Researchers and other stakeholders are also expected to benefit from the findings of this study. This study is made up of five sections. Section one considered the introduction, while sections two and three discussed literature review and methodology respectively. Results and discussions are presented in section four. Finally, the summary, conclusion, and policy recommendations are presented in section five.

LITERATURE REVIEW

COVID-19 is a term used in the health sector to describe a respiratory disease caused by a coronavirus that was first discovered in China towards the end of the year 2019. Though it started as a local outbreak within China, it has now taken the status of a pandemic that is currently ravaging the entire nations in the world. This consequently led to a serious lockdown of almost all the economies of the world for a major period of 2020. The first case of COVID-19 in Nigeria was discovered in February 2020, leading to a lockdown of the economy from March 2020 to September 2020.

The pattern of growth is considered to be the decomposition of total output based on the contributions of each economic sector to overall productivity. The main economic sectors consist of the primary (agriculture) sector, the secondary (industrial) sector, and the tertiary (service) sector. The pattern of growth theory considers the sectoral or geographical composition of all economic activities that culminate in the total growth of the economy. It, therefore, refers to the value of the shares of each of the sectors to the overall growth in the nation's real GDP over time.

Socioeconomic variables are regarded as factors of a social and economic nature that affect human status within an economy (Monash Business School, 2020). It includes such variables as inequality, inflation, human capital, and unemployment which are expected to determine the ability of a person to meet his basic social needs (Igor, 2016). Generally, government expenditure refers to all government expenses, federal and/or local, on consumption, investment, and transfers. Government social expenditure, on the other hand, comprises those expenses that are aimed at providing social services to redistribute resources across households. It includes expenses on education and health services, capital transfers, and social transfers (Igor, 2016).

Poverty, on the other hand, has been a difficult concept to define because of its nature and its multi-dimensional effects on individuals and economies. Poverty means a lack of necessities. It widens the gap between individuals and creates economic and social inequality. When people are deprived of some basic needs, they are categorized as being poor. The concept of the poverty line is based on what an individual would need to make a moderate (not lavish) living. Moreover, poverty can also be described as a state of deprivation or lack of resources to meet basic needs. It shows the lack of essential facilities caused by inadequate income. In 2002, the World Bank Group described poverty as a fluid concept that has many definitions. It has social, cultural, economic, political, and more recently environmental dimensions.

It can be seen as hunger, lack of shelter, or being sick and not being able to afford to see a doctor (World Bank, 2014). Poverty is, not being able to afford to go to school and not knowing how to read, not having a job; fear for the future; living one day at a time, losing a child to illness brought about by unclean water; powerlessness; lack of representation and freedom. Poverty means a lack of income and productive resources sufficient to ensure a sustainable livelihood. It manifests in hunger and malnutrition; ill health; limited or lack of access to education and basic services; increased morbidity and mortality from illness; homelessness and inadequate housing; social discrimination and social exclusion; it is also characterized by lack of participation in decision making and civil, social and cultural life (World Bank, 2014).

Because of this multi-dimensional nature, this study considers economic poverty which shall be defined as the economic conditions which prevent people from enjoying certain minimal levels of health, education, food, shelter, and other basic needs because of the paucity of financial opportunities (World Bank, 2014). Hartwell (1972) attempted to draw out the central roles of poverty in the study of economics when he wrote that economics is essentially the study of poverty. To further lend credence to this assertion, Schultz (1981) opined that "most people in the world are poor. If we knew the economy of being poor, we would know much of the economics that matters". This income poverty has been measured severally in the literature using any headcount (number of people living below the poverty line), poverty gap, or squared poverty gap (Chuhamn-Pole, 2014).

The study is hinged on the pro-poor growth theory. The two main views of this theory were presented by Kakwani and Pernia (2000) and Ravallion (2004). According to Kakwani and Pernia (2000), growth is pro-poor when any growth in a nation's real GDP results in decreasing inequality. Ravallion (2004), on the other hand, considers growth to be pro-poor when the growth in a nation's real GDP results in poverty reduction.

This study, therefore, aligns with Ravallion's theory of pro-poor growth.

While some empirical supports were found in the literature for this theoretical relationship in developed and some emerging economies, studies from developing economies have revealed conflicting results (Dursun & Ogunleye, 2016; Gangas, 2017; Ravallion, 2010). Findings from other empirical studies have also revealed that poverty reduction does not depend on the pace of growth alone, but much more also on the pattern of growth (Christiansen, Demery, & Kuhi, 2010; Christiansen & Kamiviski, 2015; Ferreira *et al* 2007; Loayza & Raddatz, 2010; Montalvo & Ravallion, 2009). Chuham-Pole (2014) opined that the pattern of growth is, however, more significant because of the size of the sectors and differences in the participation of the poor in both the processes leading to the production of and the benefits from the opportunities. Their study further revealed that for Africa and Sub-Sahara Africa, poverty reduction emanated from growth resulting from both the agriculture and services sectors, as against the rest of the world where property reduction has been from growth in the manufacturing and service sectors respectively. However, the country-specific studies of two of the six sub-Sahara Africa countries earlier studied by Chuham-Pole (2014) revealed the relative importance of the agriculture sector (Hill & Tsehaye, 2014; World Bank, 2014 & 2019). In Ethiopia, for instance, an annual growth of 8% in its per capita income resulted in a drastic fall in the nation's poverty rate.

This was further found to have resulted from growth in the agriculture sector (Hill & Tsehaye, 2014). It was for this reason that Chuham-Pole (2014) suggested that further studies be carried out on each of the countries constituting the Sub-Saharan nations.

Extending this study further, Igor (2016) was of the view that while the structure of growth impacts significantly on poverty reduction in most economies studied, this is not a sufficient condition for poverty reduction. He opined that other factors like government social expenditure and other auxiliary covariates like inequality, unemployment, inflation, and human capital also impact significantly on poverty reduction. To investigate this from Brazil, Igor (2016) adapted the model by Ravallion and Chen (2007) by incorporating government social expenditure and auxiliary covariates to analyze panel data for a period between 2002 and 2009. His findings revealed that inequality reduction and increase in human capital attainment were the most important factors in achieving poverty reduction in Brazil. Government social expenditures were also found to have played a marginal role through education and health. However, federal cash transfers were found not to have provided any significant effect.

Several studies have been carried out from the Nigerian economy on various issues relating to economic growth, pro-poor and inclusive growth (Adekoya, 2018; Adelakun, 2018; Ayeni & Omobude, 2018; Becker, 1995; Chikolu, 2016; Chude *et al*, 2019; Ebong & Ogwunike, 2013; Ewubare & Okpani, 2018; Fashanu & Kasali, 2020a; Fashanu & Kasali, 2020b; Ijaiya *et al*, 2011; Obayori, 2018; Obayori *et al*, 2018; Ogbeide and Agu, 2015; Ogunleye *et al*, 2018; Olopade *et al*, 2019; Omodero, 2019; Samuel, 2020; Sylvester and Ugwu, 2012). Ijaiya *et al* (2011) had earlier found that in Nigeria, while economic growth is essential for poverty reduction, results from empirical studies were not significantly in support of this assertion. It was only the initial level of economic growth that favored poverty reduction. They believed that this could be because growth resulted from the rich-dominated sectors. Ewubare and Okpani (2018) applied the OLS technique to investigate how poverty, unemployment, and life expectancy impact inequality in Nigeria. They concluded from their findings that an increase in both poverty and unemployment can lead to a significant increase in income inequality. Their Pairwise causality test results further revealed a bi-directional causality between poverty and inequality over the period of the study. Ayeni and Omobude (2018) also studied the effects of education expenditure on economic growth in Nigeria. With the application of Autoregressive Distributed Lag (ARDL) to time series data for a period from 1987 to 2016, they found that while the recurrent education expenditure is significant and positively correlated to economic growth, capital expenditure is not. Ogunleye *et al* (2018) found a positive significant impact of human capital on economic growth with the application of the OLS technique for their analysis. However, with the application of the Generalised Method of Moment (GMM), Sylvester *et al* (2018) found a positive, but not significant relationship with economic growth. Samuel (2020) attempted to investigate the relationship between a disaggregated government expenditure and poverty reduction in Nigeria using the ARDL techniques. While Samuel (2020) found that government social expenditure and social transfer are inversely related to poverty reduction, government capital transfer was found to be poverty-enhancing in Nigeria. The World Bank report (World Bank, 2020) further revealed the setback effect of the COVID-19 pandemic through the changes in the profile of the post-COVID poor. It is the complexities of the COVID-19 effect that encouraged the study's attempt to investigate the sources of pre-COVID reduction in poverty incidence and determine the policy options that could best enable the reversal of the setback by COVID-19 to poverty reduction in Nigeria.

METHODOLOGY

Empirical researches on the effects of economic growth on poverty reduction and the nexus between the sectoral composition of growth in per capita income and poverty reduction have been conducted by several researchers for the developed, emerging, and developing economies. Analysis of an extension of these studies to include the impact of aggregated socioeconomic variables and government social expenditure on poverty reduction is as recent a phenomenon as the study on sustainable development growth (SDG).

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Thisexplains why there is a paucity of well-developed modeling frameworks in this area of study. The most recent research in this area was carried out by Igor (2016) who adapted the Ferreira model as applied byFerreira, Leite, and Ravallion, (2007), Montavo, and Ravallion (2009), and Chuham-Pole (2014). He expressed his adapted model as in equation 1 below

$$\Delta \boldsymbol{lnP_{it}} = \boldsymbol{\beta_{it}^{A} S_{it-1}^{A} \Delta Y_{it}^{A} + \beta_{it}^{I} S_{it-1}^{I} \Delta Y_{it}^{I} + \beta_{it}^{S} S_{it-1}^{S} \Delta Y_{it}^{S} + \sigma_{it}^{J} X_{it}^{J} + \varphi_{it}^{k} Z_{it}^{k} + \pi_{i}^{J} + \cup_{it}} \quad \textbf{eq 1}$$

Where

$\boldsymbol{\Delta lnP_{it}}$ measures poverty reduction in State or Municipal i at time t.

A, I, and S denote the various sectors (Agriculture, Industry, and Service).

Y^{J}_{it} represents the real GDP per capita of sector j in State/Municipal i at time t.

The error term includes a state fixed effect (**∏I)** and a time-varying effect (∪it), both of which might be autocorrelated.

S^{j}_{t-1} represents the share of sector j in the total real GDP per capita for State/Municipal i in time t.

X is a covariate that represents government expenditures disaggregated with J representing capital transfers and federal transfers.

Z represents the socioeconomic variables, as 'k' stands for each of inequality, inflation, unemployment rate, and human capital.

Since the interest of this study is to investigate the impact of the pattern of growth, socioeconomic variables (X^{j}), and government social expenditures on poverty reduction, equation 1 is, therefore, modified as follows:

$$POR_{it} = \beta_1^A S_{t-1}^A Y_t^A + \beta_2^I S_{t-1}^I Y_t^I + \beta_3^S S_{t-1}^S Y_t^S + \beta_4 GSEX_t + \beta_5 CT_t + \beta_6 ST + \beta_7 INQ_t + \beta_8 INF_t + \beta_9 UNEMP_t + \beta_{10} HC_t + \varepsilon_t \quad \text{eq. 2}$$

Note that the introduction of the share of sector S^{J} in equation 2 is to correct the faulty and unrealistic assumptions that all the sectors impact on poverty reduction in the same proportion (Ravallion and Datt, 1996). Ravallion and Datt (1996) proposed this model as a way of taking into consideration the share of each sector 'J' to the overall growth of the economy. This is based on their assumption that each sector's impact on poverty reduction should be a factor of the sector's size (Ravallion and Datt, 1996 and Ferreira *et al*, 2007). Further still, Ravallion and Datt (1996) used the lagged values of the sector's share to reflect their expectation that the share in the previous period will only affect poverty reduction.

To reduce the variability or skewness of the data employed, and make them conform more closely to the normal distribution, the study takes the log transformation of the data. Taking this into consideration, the study expands equation 2 to reflect each of the three sectors, three components of government social expenditures, and four socioeconomic variables of study to obtain the study's model specification in equation 3.

$$lnPOR_t = \beta_1^A S_{t-1}^A lnY_t^A + \beta_2^I S_{t-1}^I lnY_t^I + \beta_3^S S_{t-1}^S lnY_t^S + \beta_4 lnLSFE_t + \beta_5 lnCT_t + \beta_6 lnST + \beta_7 lnINQ_t + \beta_8 lnINT_t + \beta_9 lnUNEMP_t + \beta_{10} lnHC_t + \varepsilon_t \quad \text{eq.3}$$

Also since the study is considering the growth effects of our variables of the study, we, therefore, take the first-order derivatives of all the data employed. This modification results in the model of the study specified in equation 4

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$$\Delta lnPOR_t = \beta_1^A S_{t-1}^A \Delta lnY_t^A + \beta_2^I S_{t-1}^I \Delta lnY_t^I + \beta_3^S S_{t-1}^S \Delta lnY_t^S + \beta_4 \Delta lnGSEX_t + \beta_5 \Delta lnCT_t + \beta_6 \Delta lnST + \beta_7 \Delta lnINQ_t + \beta_8 \Delta lnINT_t + \beta_9 \Delta lnUNEMP_t + \beta_{10} \Delta lnHC_t + \varepsilon_t \quad \text{eq.4}$$

Where,

ΔlnP_t stands for growth in the poverty rate;

A, I, and S denote the various sectors (Agriculture, Industry, and Service).

ΔY^J_t represents the growth of the real GDP per capita of sector j in time t.

S^j_{t-1} represents the share of sector j in the total real GDP per capita in time t.

INQ represents income inequality; INF stands for inflation; UNEMP is unemployment rate, while HC represents human capital. GSEX represents government social recurrent expenditure; CT is government expenditure on capital transfer, while ST stands for government expenditure on social transfer.

The error term is expressed as ε_t

The *a priori* expectations of the study regarding the behavior of the independent variables' estimated parameters are:

$$\beta_1 - \beta_6, \text{ and } \beta_{10} < 0$$

$$\beta_7 - \beta_9 > 0$$

This implies that the variables, pattern of growth, government social recurrent expenditure, capital transfer, social transfer, and human capital should be negatively related to growth in poverty. That is an increase in any of these should lead to poverty reduction. On the other hand, however, income inequality, inflation, and unemployment are expected to be positively related to growth in poverty. It is expected that an increase in any of these should lead to a further increase in the incidence of poverty.

Measurement of the incidence of income poverty has been done severally in the literature because of the challenges to researchers on the multifaceted nature of poverty. In providing what was considered as a more acceptable measure of poverty, Ravallion (2016) differentiated between absolute and relative poverty. He considered absolute poverty as the measurement of the number of people living below a globally set standard of living. Relative poverty, on the other hand, is considered to include all the people living below the standard of living set by the country of their residence (Ravallion, 2016). He concluded, therefore, that whether in absolute poverty or relative poverty, the major ingredient of poverty measurement is the consideration of household consumption or income. Given all these, three different consumption-based methods have been applied severally. These are headcount index, poverty gap, and squared poverty gap (Ravallion, 2010; Ferreira *et al*, 2007; Loayza *et al*, 2010 and Chuhum-Pole, 2014). This study, therefore, measures poverty incidence by using the headcount gap for the reason of data availability and accessibility. The poverty gap is measured as the proportion of the population living under $1.90 per day. Output growth, on the other hand, is disaggregated into three sectors (agriculture, industry, and services), where each sector's output is the share of the sector from the total real GDP.

In conformity with the general trend in the literature (Igor, 2016), the study proxies income inequality and inflation with the GINI coefficient and Consumer Price Index (CPI) respectively. The unemployment rate is also captured as the percentage of unemployed people to the total population. Human capital has, however, been proxied by different researchers using different factors. Igor (2016) used the addition of education capital expenditures and a total enrolment of people from 25 years and above. This study considers the enrolment figure as improper because it is not all those that enrolled for education that eventually attended and finished, especially in developing countries like Nigeria.

Also, a student's participation in productive activities is the way to measure his effectiveness. The organization for Economic Cooperation andDevelopment (OECD) posited that human capital measurement is closely related to investment in education(Kwon, 2019). Other authors, however, proxied human capital using total government expenditure ineducation and health (Becker, 1995; Olopade *et al* 2019 and Obayori *et al*, 2018). For the above reasons, therefore, this study shall proxy human capital using government expenditures on education and health. Thegovernment social recurrent expenditure (GSEX) is measured as the sum of recurrent expenditures on healthand sanitation, education, culture, and social security. Capital transfer (CT) expenditure is measured as the sum of investment in social infrastructures and social community services. Finally, social transfer (ST) is made up of expenses on pensions, gratuities, subventions, and contingencies.

To investigate both the long-run and short-run relationships between the pattern of growth, socioeconomic variables, government social expenditure, and poverty, equation 4 was estimated using the Augmented Distributive Lag (ARDL) technique to analyze time-series data sourced from the Central Bank of Nigeria (CBN, 2021), World Development Index (World Bank, 2020) and Nigeria's National Bureau of Statistics (NBS, 2012; 2020). The application of the ARDL technique in this study is hinged on its advantage over the Ordinary Least Square method (OLS). The ARDL technique does not require variables to be strictly stationary at levels (1(0)), but is also applicable even to variables that are mixtures of stationarity at levels 1(0) and at first difference 1(1). It also allows for the estimation of both the short-run and long-run relationships between the variables simultaneously.

For our pre-estimation test, the study carried out the unit root test to determine the stationarity of the variables of the study. It is necessary to note that while the ARDL techniques can be used to estimate data with a unit root, it is only appropriate for variables combinations of stationarity at levels 1(0) and at first difference 1(1). This explains the reason for the unit root test. The study also conducted a bond test to establish the presence of a long-run relationship between the dependent and independent variables.

FINDINGS AND DISCUSSIONS

As a form of pre-estimation test, this study carried out a unit root test using the Augmented Dickey-Fuller to test for stationarity level of the variables employed. The result is shown in Table 1 below.

Table 1: Summary of stationarity test

Variables	Levels		First Difference		Decision
	ADF	CRI. VALUE	ADF	CRI. VALUE	
RGDP	-3.039551	(-2.981038)**	–		1(0)
POVR	-2.827766	(-2.621007)***	–		1(0)
HC	-3.261051	(-2.981038)**	–	–	1(0)
GSEX	–	–	-4.149387	(-3.679322)*	1(1)
INQ	–	–	-3.133791	(-2.971853)**	1(1)
INF	–	–	-4.450389	(-3.679322)*	1(1)
UNEMP	–	–	-4.786107	(-3.689194)*	1(1)
CT	–	–	-6.811943	(-3.679322)*	1(1)
ST	–	–	-6.663644	(-3.679322)*	1(1)

Note: * significant at 1%; ** significant at 5%; * significant at 10%**

Source: Authors' computation using eView 10

The results revealed that variables such as POVR, Real GDP, and HC were found stationary at levels. However, INF, UNEMP, GSEX, CT, ST, and INQ were found to be stationary at first difference. This further justifies the application of ARDL for the study's empirical analysis. Thereafter, the study examined the long-run relationship between the dependent and independent variables using ARDL bound test. This is necessitated by the desire to ensure convergence in the model, to prove there is a long-run relationship among the series. Thus, the derivation of the long-run relationship between the pattern of growth, socioeconomic variables, government social expenditures, and the poverty rate is presented in Table 2 below.

Table 2: Long-Run Relationship Using ARDL Bound Test (3,1,1,0,0,1,1,0,1,1,1)

Test Statistic	**Value**	**K**
F-statistics (*POVR* | ARGDP IRGDP SRGDP GSEX CT ST INQ INF HC UNEMP)	4.648372	10
Critical Value Bounds		
Significance	**I0 Bound**	**I1 Bound**
10%	1.76	2.77
5%	1.98	3.04
1%	2.41	3.61

Source: Authors'' Computation using E-view 10.

The F-statistics of the estimated normalized equations (Farb = 4.648372) is greater than the lower and upper critical bound at a 1% significance level. It implies that the null hypothesis of no long-run relationship is rejected at a 1% significance level and that there exists a long-run relationship between the dependent variable (POVR) and the independent variables (Sectoral shares of RGDP, GSEX, CT, ST, INQ, INF, UNEMP, and HC). Having established the existence of a long-run relationship between the dependent and independent variables, the study proceeded to estimate the nature of this relationship using the ARDL technique.

Table 3: Results of Estimated ARDL Model

Dependent Variable: dlnPOR			
Selected Model: ARDL(3, 1, 1, 0, 0, 1, 1, 0, 1, 1, 1)			
Sample: 1990 2020			
Long-Run Estimates			
Variable	**Coefficient**	**Std. Error**	**t-Statistic**
DLNPOR(-1)	-1.312973	0.322970	(-4.065305)*
DLNPOR(-2)	-1.295152	0.374791	(-3.455665)*
DLNPOR(-3)	-0.738770	0.286030	(-2.582837)**
SA__1_DLNARGDP	-64.63452	77.04579	(-0.838910)
SA__1_DLNARGDP(-1)	-122.5142	68.29401	(-1.793924)
SI__1_DLNIRGDP	-84.82518	61.91923	(-1.369933)
SI__1_DLNIRGDP(-1)	-294.9270	103.5296	(-2.848722)**
SS__1_DLNSRGDP	181.3711	67.12922	(2.701821)**
DLNUNEP	-0.306517	0.710316	(-0.431522)
DLNINF	-0.414600	0.381917	(-1.085574)
DLNINF(-1)	0.887605	0.449914	(1.972833)***

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DLNINEQ	37.71862	17.29610	(2.180759)***
DLNINEQ(-1)	-43.79470	14.96566	(-2.926345)**
DLNHC	-50.63300	14.27932	(-3.545898)*
DLNGSEX	6.439397	1.901767	(3.386008)**
DLNGSEX(-1)	-0.181590	0.055346	(-3.280990)**
DLNCT	-3.350974	1.116574	(-3.001121)*
DLNCT(-1)	-6.792446	1.973080	(-3.442560)*
DLNST	-0.709280	0.195778	(-3.622874)***
DLNST(-1)	-0.488579	0.247398	(-1.974872)*
Short-Run Estimates			
D(DLNPOR(-1))	2.033921	0.227241	(8.950494)*
D(DLNPOR(-2))	0.738770	0.122183	(6.046426)*
D(SA__1_DLNARGDP)	-64.63452	18.41271	(-3.510321)*
D(SI__1_DLNIRGDP)	-84.82518	19.44542	(-4.362218)*
D(DLNINF)	-0.414600	0.114478	(-3.621649)*
D(DLNINEQ)	37.71862	4.057817	(9.295299)*
D(DLNGSEX)	6.439397	0.511919	(12.57893)*
D(DLNCT)	-3.350974	0.374237	(-8.954145)*
D(DLNST)	-0.709280	0.060898	(-11.64696)*
ECT(-1)	-4.346894	0.345771	(-12.57158)*
R-Square	0.854907	**F-stat**	(1.767643)
Adj. R-Square	0.371265		

Note: *significant at 1%; ** significant at 5%; * significant at 10%**

Source: Computed by the Authors' using E-view 10

The ARDL approach automatically selected the lag length on all variables to ensure a sufficient degree of freedom based on the automatic selection of the Akaike Information Criterion. The results of both the long-run and the short-run estimates are presented in Table 3.

It should be noted at this point that the results of the estimated parameters $\boldsymbol{\beta_1 - \beta_3}$ expressed in Table 3 are not the true measures of their elasticities of poverty reduction. This is because the specification of the model of study (Eq. 4) considers the weighted sectoral share of the sectors respectively (Igor, 2016), and not the actual share in the RGDP.

The results presented in Table 3 revealed the relative importance of each variable of study in achieving the sustainable development goal of poverty alleviation or reduction in Nigeria. The table presents the relationship between poverty reduction and the variables of study in both the long-run and short-run. Long-run estimates of the coefficients revealed that the relationship between growth in RGDP emanating from IRGDPt-1, SRGDP as well as INQ, GSEX, HC, CT, ST, and POR are statistically significant at various levels of significance respectively. However, though there exists a long-run relationship between growth in UEMP, INF, and POV, this was found not to be statistically significant. The results revealed that for the pattern of growth, growths in ARGDP and IRGDP have a negative relationship with growth in the poverty rate, hence they are found to be poverty retarding. However, growth from SRGDP, though statistically significant at a 5% level, was found to have been poverty-enhancing because of its positive

relationship with growth in the poverty rate. While the results for IRGDP and ARGDP conform to the study's *a priori* expectations and results from other studies (Chuhan-Pole, 2014; Christiansen & Kamiviski, 2015, Igor2016; Fashanu & Kasali, 2020a), the result for SRGDP does not agree with our *a priori* expectations and other similar studies. For socioeconomic variables, the results for growth in HC, INQ, INQt-1, INFt-1 were found to be statistically significant. INQ (inequality) and INF (inflation) were found to be positively related to growth in the poverty rate, thus implying that growth in any or both of these can be poverty-enhancing. On the other hand, however, growth in HC (human capital) was found to exhibit an inverse relationship withgrowth in POR (poverty rate). All these are in tandem with our *a priori* expectations and results from other studies (Igor, 2016). The result for human capital development (HC) also revealed a significantly positive long-run relationship at a 1% significant level. This implies that any increase in HC will result in a reductionin poverty incidence. For the government social expenditure, the results revealed that all the variables GSEX, CT, and ST and their lagged values were found to be statistically significant. Growth in capital transfer (CT, CTt-1) and social transfer (ST, STt-1) have a negative relationship with growth in poverty rate (POR), thus implying that increased government expenditure on any or all of these can lead to a reduction inthe poverty rate. This result agrees with the study's *a priori* expectations and macroeconomic theories. For government recurrent social expenditure (GSEX), the result, though statistically significant at a 5% level ofsignificance, shows that only GSEXt-1 and not GSEX is poverty reducing in Nigeria. This implies that growth in GSEX for the current year's budget will only affect the poverty rate of the following year. Thisresult is in tandem with macroeconomic theories.

Further consideration of the results for the short-run revealed that only the variables ARGDP, IRGDP, SRGDP, INF, INQ, CT, and ST were found to have established any short-run nexus with growth in the poverty rate. Except for inflation (INF), the short-run estimated results of these independent variables(ARGDP, IRGDP, SRGDP, INF, INQ, CT, and ST) are in agreement with the study's *a priori* expectation and were found to be statistically significant at 1% level of significance respectively. However, no short-run relationship was established between growth in human capital (HC) and unemployment (UNEMP). Theresult for HC is quite understandable because investment in it takes a lot while to materialize. The short-run estimation results also show the error correction mechanism which measures the speed or degree of adjustment. This is the rate at which the dependent variable adjusts to changes in any of the independent variables. The coefficient of the ECT is found to be negative and statistically significant at the conventional level.

The coefficient of determination (R2) is high at 0.854907, indicating that about 86% of the total variations in poverty reduction were explained by the variables in the model.

This study is aimed at investigating the sources of growth in pre-COVID-19 poverty reduction in Nigeria. This is to provide empirical tools for identifying the policy option(s) that can drive poverty alleviation in consideration of the profile of the 'new poor' that were added by the outbreak of COVID-19 in Nigeria. Towards this end, the study found from the results that pre-COVID poverty reduction in Nigeria has largely resulted from human capital development (HC), reduction in inequality (INQ), and government expenditure on capital transfer, although with some significant contributions from other variables studied. For the pattern of growth, the result revealed that while growth from ARGDP and IRGDP contributed positively to poverty reduction, the reverse is the case with growth from SRGDP. This result is not surprising because it finds support in the fact that the majority of Nigerians are rural dwellers whose main enterprise is farming and all agriculture-related business. Incidentally, this group of people constitutes the majority poor in the pre-COVID-19 economy in Nigeria. Growth from this sector is expected to result from an increase in economic activities for the poor, which consequently leads to improvement in their income and, hence reduction in poverty.

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SUMMARY, CONCLUSION, AND RECOMMENDATIONS

The incidence of poverty cuts across geographical, racial, and generational boundaries. Although efforts by various governments across the world, backed by several interventions from World Bank have generated some positive results in achieving some reductions in poverty rates across and among nations, the outbreak of COVID-19 has drastically eroded the gains made so far. It did not only worsen the situations of the already existing poor, but it also added a new group of poor people with a different profile (Siwatu *et al*, 2020). Given the debilitating effects of increased poverty at the global and national levels on achieving shared prosperity, it behooves economies, developed and developing, to find a way to reverse the setback to poverty reduction through policy measures that can promote pro-poor growth. This study, therefore, investigated the sources of pre-COVID reduction in poverty incidence and determined the policy options that could best enable the reversal of the setback from COVID-19 to poverty reduction in Nigeria.

The study applied the ARDL technique to estimate both the long-run and short-run relationship between the dependent variable (POR) and the independent variables (ARGDP, IRGDP, SRGDP, INQ, INF, HC, UNEMP, GSEX, CT, and ST) of the study. The result found that while growths in ARGDP and IRGDP have a negative relationship with growth in the poverty rate, growth from SRGDP, though statistically significant at 5% level, was found to have been poverty enhancing because of its positive relationship with growth in the poverty rate. The result also revealed that growth in HC, INQ, INQt-1, INFt-1 were found to be statistically significant. INQ and INF were found to be positively related to growth in the poverty rate, thus implying that growth in any or both of these can be poverty-enhancing. On the other hand, however, growth in HC was found to exhibit an inverse relationship with growth in POR. The result further revealed that all the variables GSEX, CT, and ST and their lagged values were found to be statistically significant. Growth in capital transfer (CT, CTt-1) and social transfer (ST, STt-1) have a negative relationship with growth in poverty rate (POR) and are, hence poverty-reducing. While only GSEXt-1 and not GSEX were found to be poverty-reducing in Nigeria, both results were found to be statistically significant at a 5% level of significance.

The study concluded, therefore, that there is a long-run relationship between the dependent and the independent variables; that pre-COVID poverty reduction in Nigeria has largely resulted from the pattern of growth, human capital development (HC), reduction in inequality (INQ), and government expenditure on capital transfer, although with some significant contributions from other variables studied. For the pattern of growth, the result revealed that while growth from ARGDP and IRGDP contributed positively to poverty reduction, the reverse is the case with growth from SRGDP.

The findings of the study have some important implications for the achievement of the SDGs with particular reference to poverty reduction in Nigeria. Since one of the significances of this study is to provide policymakers with tools for achieving the goals of sustainable development by reversing the setback of COVID-19 in the race towards poverty alleviation in Nigeria, the study made some policy recommendations arising from the findings of this study. The recommendations include the following:

1. The ARDL results from the study revealed that HC (human capital development), reduction in inequality (INQ), and increased government expenditure in capital transfer (CT) have the highest potential for poverty reduction. The study, therefore, recommended:
2. That the government should embark on fiscal policy measures like the provision of more funding to government educational and health institutions to allow for the appointment and training of qualified teachers and health workers, particularly in the rural areas where the majority of the poor in Nigeria resides. This is expected to lead to an increase in the level of HC. Also, improvement in capital investments in education and health will further boost the growth in capital transfer. Tax exemptions, holidays, or subsidies can be applied to encourage the private sector in the provision of these facilities in the rural area at affordable fees. This will lead to a major improvement in human capital development.

3. This must also be complemented by policies that are aimed at reducing income inequality among the citizenry. Such policies include the government employing the use of fiscal policies that place more taxes on some selected luxury commodities to finance pro-poor social services, thus freeing the poor of some resources that could be used for investment purposes. The provision of access to cheap loans and technical support to empower small-scale entrepreneurs (SMEs) can also help to reduce the income gap between the rich and the poor. The government should also prioritize the investment in infrastructural facilities like good road networks, access to cheap and affordable electricity, and good means of transportation in the rural areas where most of the poor in Nigeria reside.
4. The study from our ARDL model estimation revealed that growth emanating from the agriculture sector (ARGDP) has a strong potential for poverty reduction. The study, therefore, recommended that the government should embark on policy measures such as the provision of training facilities, access to modern technology, and easy access to loan facilities to the agricultural sector to enable the farmers, especially the majority rural farmers to add value to their products to improve their earnings and consequently reduce their poverty level. Also, the provisions of infrastructural facilities like a good road network, cheap means of transportation and electricity can encourage most of the jobless youths in the cities to return to farming they left back in the village. This also will go a long way to reduce the general poverty level.
5. The result also revealed that growth from the service sector (SRGDP) has not been contributing positively to pre-COVID-19 poverty reduction. The presence of the 'new poor' arising from the COVID-19 outbreak makes the service sector (SRGDP) to be very important if the desired reversal must be achieved. This is because empirical evidence has shown that these 'new poor' are educated urban dwellers who will not likely be attracted to farming or other agriculture-related jobs (Siwatu *et al, 2020).* To make the service sector (SRGDP) attractive in providing the needed job, this study recommends that efforts should be made by the government to encourage the establishment of small scale enterprises (SMEs) and cottage industries to cater for the employment of those at the lower ladder of the income bracket. Such measures include the repackaging of the existing loan facilities put in place by the government by making it more accessible to those who need it, and not to political stooges. Also, policies that encourage labor-intensive industries, such as tax holidays and subsidies, should be embarked upon by the government to allow for the absorption of more of the low-level laborers in the industrial sector that might have lost their jobs through the COVID-19 outbreak. This will make the sector more amenable to poverty reduction.

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