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IMPACT OF ECONOMIC PLANNING ON SUSTAINABLE DEVELOPMENT IN NIGERIA

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ABSTRACT

This paper examined the impact of economic planning on sustainable development in Nigeria. The specific objectives were to: examine the impact of planned investments on economic, community and social services on poverty reduction and income inequality. The Fully Modified Least Squares and Granger causality tests were applied in analyzing the data sourced from the Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics and the World Bank. The cointegrating regression results show that planned investments in economic services exert significant positive impact on poverty rate and Gini index. On the contrary, planned investment on community and social services has significant negative impact on poverty rate and Gini index. 1 percent increase in investments in community and social services reduces poverty rate by 0.815 percent and 0.429 percent of income inequality. It therefore follows from the result that investments in community and social services play a key role in achieving sustainable development goals by mitigating the incidences of poverty and inequality. The Granger causality test results show that unidirectional causality runs from planned investment on economic services to both poverty rate and income inequality. Similarly, unidirectional causality flows from planned investment on community and social services to income inequality. The results further revealed that joint causality flows from the explanatory variables to poverty rate and inequality. This finding indicates that the underlying measures of economic planning are jointly important in predicting changes in sustainable development in Nigeria. Accordingly, the study recommends that policy makers should prioritize investment in education, health and other aspects of community and social services in to engender sustainable development.

Contribution/ Originality: The primary contribution of this paper is identifying the channels through which economic planning drive sustainable development Nigeria.

1. INTRODUCTION

Managing progress towards sustainable development rather than focusing on economic growth as an end product has remained at the core of the policy advice of the World Bank and other development agencies for developing economies. This is because sustainable development is believed to offer opportunities for the present population to meet their needs without compromising the future generations' ability to meet their developmental needs. Notably, sustainable development came to the forefront of public interest and national planning process in 1992 at the United Nations Conference (the Earth Summit) on Environment and Development in Rio de Janeiro. As

a follow up to this summit, central and sub-central governments across the globe initiated and implemented various economic programmes with a view to achieving sustainable development.

Most of the economic plans have prioritized sustained investments in socio-economic infrastructure and real sectors of the economy geared towards reducing poverty and inequality as well as reducing unsustainable patterns of production and consumption. In each instance, the goals of sustainable development have inspired the commitment of countries to proactive economic planning process through effective and efficient coordination of fiscal and monetary policy measures. For instance, fiscal policy plan in developing economies tends to be pro-cyclical while its dimension in developed countries often follows a countercyclical path. It is the view of the proponents of economic planning that uncontrolled market economy can, and often does, subject developing economies to economic turmoil in the form of unstable markets, low investment in key sectors, and low levels of employment generation (Kolawole and Ojapinwa, 2013). Hence, economic planning is considered as a roadmap for sustainable development as it helps in addressing the challenges of poverty and inequality.

According to Todaro and Smith (2011) economic planning assumed a prominent position in the development narratives as an essential and pivotal means of shaping and accelerating economic growth in almost all developing economies worldwide. The planning process can be classified as all-encompassing or specific to key sectors of the economy considered to have large positive spill-over or linkage effects on other sectors of the economy. To a large extent, economic planning is tailored towards improving the economic opportunities and quality of life of the population with sustainable development in-view. In most cases, the economic planning strategies tend to prioritize human capital development through investment in education, training, medical treatment given that the marginal productivity of labour depends partly on the rate of return on human capital.

The importance of planning as outlined in economic development literature lies in the fact that it is an instrument through which important socio-economic objectives which seem unachievable under free private enterprise, are likely to be effectively achieved. For this reason, many developing economies including Nigeria rely on economic planning to achieve sustainable development given that it allows for the welfare of the future generations to count positively in the planning process. Successive governments have over the years initiated broad and specialized economic plans that attempt to reduce the level of poverty and increase the pace of economic development. These plans have centralized the long term goals technically referred to as perspective goals.

Between 1962 and 1992, the economic planning in Nigeria took the form of National Developments with emphasis on rapid, diverse and sustained growth of the economy. With the return to democratic government in 1999, several economic plans were initiated such as National Poverty Eradication Programme (NAPEP), National Economic Empowerment and Development Strategy (NEEDS), 7-point agenda of President Yar'adua, Transformation Agenda of President Goodluck Jonathan and the ongoing Economic Recovery and Growth Plan (ERGP) initiated by the President Buhari-led administration. In conjunction with other countries of the world, Nigeria considered and adopted a comprehensive, ambitious and transformational development agenda involving a set of 17 Sustainable Development Goals (SDGs) and 169 targets at the United Nations Headquarters in the New York in September 2015. This was aimed at eradicating poverty in all its forms and shifting the world towards a sustainable and resilient development pathway to increase opportunities for all.

The breadth and depth of the commitment involve a myriad of activities mostly targeted at investments in key sectors and an expansion of partnerships and institutions that increase the opportunities for sustainable development. In spite of the numerous economic plans initiated both in the eight time-bound Millennium Development Goals (MDGs) and ongoing SDGs, the pace of sustainability of development in Nigeria since her political independence has remained a source of concern to policy makers, researchers and other stakeholders in the economy. It is against this backdrop that this paper offered empirical evidence linking economic planning to sustainable development with a focus on reductions in poverty and inequality.

1.1. Statement of the Problem

Economic planning process in Nigeria has evolved overtime as governments strive to put the economy on track in order to improve opportunities for sustainable development. The plans seem to prioritize investments in administration, economic services and community and social services which tend to generate positive spillover effect on the indicators of sustainable development such as reduction in poverty and inequality. It is expected that for economic planning to be effective, it has to be consistent and time-bound. Nigeria's experience in the planning process over the past four decades has been characterized by gross inconsistency, ineffectiveness and diversionary as successive governments are found making a 'U-turn' from the development plans of their predecessor. This has continued to threaten the actualization of the sustainable development goals. In most cases, political undertone, ethnicity, religion and party politics seem to trigger the abandonment of sound and good policy initiatives of past governments by any succeeding government and by so doing undermines the sustainability of planned objectives and overall development plan initiatives. In addition to the above problems, economic planning process in Nigeria is threatened by poor quality, unreliable or non-availability of required data for the planning process. This is not unconnected with the poor data generation process prevalent in the Nigerian economy which seems to undermine the accuracy, effectiveness and reliability of the planning process

Although Nigeria successfully negotiated debt relief from the Paris Club in 2005 which enabled the country to increase and target public investments in pro-poor programmes and projects towards achieving sustainable development, these activities have rolled out budgetary allocations to key sectors of the economy that seem not to impact positively on the income level of the population or help in poverty alleviation. Thus, the gap between the rich and the poor has continued to widen, making inequality and poverty reoccurring incidences. On the basis of the foregoing, this paper examined the relationship between economic planning and sustainable development in Nigeria during 1986-2017. The objective of this paper is to determine how economic planning affects the process of sustainable development in Nigeria. The specific objectives were to: describe the socio-economic dimensions of sustainable development and planned investments in Nigeria, examine how planned investment in economic services affect poverty level and inequality in Nigeria, determine the impact of planned investment in social and community services influence poverty level and inequality in Nigeria and analyze the overall impact of planned investment as a ratio of GDP on poverty level and inequality in Nigeria.

2. REVIEW OF RELATED LITERATURE

2.1. Theory of Sustainable Development

The theory of sustainable development assumes that development and environment are largely related and as such public investment is considered as central in achieving sustainable development. Hence, planned public investments in infrastructure have been advocated in order to protect the environment and reduce the vulnerability of the future generations to changing environmental outcomes. Pearce and Turner (1990) opined that sustainable development focuses on optimizing the net benefits of economic development, subject to maintaining the services and quality of natural resources over time. It is believed that rapid and sustained investments in socio-economic infrastructure provide pathway for achieving sustainable development.

The strategies of sustainable development employed by developing economies have continued to reignite interest in investment, particularly in public infrastructure. In addition, the International Monetary Fund (IMF) and the World Bank have underscored that developing economies can make substantial achievements on the Sustainable Development Goals (SDGs), especially eradicating extreme poverty by channeling large proportions of their investments to infrastructure and human capital. The sustainable development theory provides for balancing the objectives of economic growth and meeting the environmental needs of the society. Ahmad (2017) argues that in determining investment priorities for sustainable development, provisions must be made for possible distortions in the economy, social upheavals and pollution so as to avoid underestimating the associated social costs and benefits.

Overall, economic planning which plays a key role in prioritizing public investments is at the forefront of meeting the sustainable development goals of poverty reduction and equitable income distribution. Accordingly, this paper is anchored on the theory of sustainable development which emphasizes on prioritizing public investments to increase opportunities that bolster sustainable investment in the long run.

2.2. Empirical Literature

The role of economic planning in driving sustainable development has received some attention in the past studies. The studies have shown mixed outcomes both within and across countries. Some of these previous that focus on net effects of planned investments on poverty and income inequality were viewed.

Laabas and Limam (2004) examined how several components of public expenditure policies impact on poverty. It directly focuses on the link between public social policies and poverty rather than indirectly through the impact of these policies on specific social outcomes. It also uses a framework that accounts for the endogeneity of and interactions between growth, income inequality, and poverty using different definitions of poverty and alternative estimation methods applied to a larger sample size and more recent data compiled from various sources. It was uncovered that public policies influence poverty only indirectly through their impact on income distribution and average expenditure. Generally, the result showed that public expenditures, transfers and monetary policy directed to mitigating the effects of inflation, all have positive impact on the extent of poverty. In view of the controversies surrounding the results as regards the impact of public policies on growth, poverty and income distribution, the study recommended for caution in the choice of policy mix with a view to achieving positive results on these three macroeconomic outcomes.

Odubunmi and Omobitan (2014) offered empirical evidence into the relationship between government expenditure and poverty level in Nigeria with a view to determining the extent expansionary public expenditure has contributed in reducing poverty. The Keynesian macroeconomic framework formed basis for the theoretical framework and methodology for examining if increase in in government expenditure has positive and significant impact on economic growth and by implication on the level of poverty. The result of the empirical investigation shows that the level of government expenditure on education targeted on poverty alleviation; power generation and rural roads are significant in stimulating growth and reducing the poverty level. On the other hand, it was found that foreign aid has no impact on poverty alleviation. Thus, inflow of aid from the rest of the world was found to exacerbate the poverty incidence. On the basis of the outcome of the empirical investigation, the study therefore recommended for the establishment of more poverty alleviation programmes and improving upon the existing ones so as to achieve better results.

Valk (2016) examined how investment in public services such as electricity and water provision affect the level of regional poverty rate and average education. The On OLS fixed effect model was adopted in analyzing the data collected from the Afrobarometers over the period 2010-2015. The result showed no evidence of significant effect of additional water or electricity in lowering the regional poverty rates in the Sub-Saharan African region. Contrarily, it was found from the result that significant positive effects exist between additional water and electricity investments and regional education level. Although the result found evidence of a correlation between public services, education and poverty, no evidence of causality was established among these variables.

Makgatho (2016) employed panel data for nine South African provinces from 1995-2013 to empirical disaggregate the impact of public investment on provincial inequality. The study adapted to the model developed by Zhang and Fan (2004) to determine the extent public investment impact on provincial inequality during the period covered with a focus on public investments in education, health, water, sanitation, agriculture and electricity. The outcome of the regression analysis from the Fields and Shorrocks method were found to differ when it comes to Eskoms electricity infrastructure roll out and education. The Shorrocks results suggests a neutral to slightly positive contribution to inequality, whereas the Fields method suggest that Eskoms electricity roll out and

education are equalizing factors as they contribute negatively to inequality. The study therefore, recommended that measures must be put in place to optimize the net effects of public investment through reduced incidence of income inequality.

Acharya and Nuriev (2016) explored the interactions among public investment, growth and poverty incidence in 30 transition economies by applying panel data over the period 1995-2010. The Least Square Dummy Variable technique was used for conducting the analysis and the result showed that public investment impact positively on growth, but does not robustly reduce poverty, poverty gap and inequality in income distribution in the study area. The growth impact of public expenditure is found to be more robust when combined with foreign direct investment. The study recommended for the spending of public current expenditure on educational subsidies so as to engender pro-poor growth.

Hooper *et al.* (2017) used United States state-level panel data to examine the link between infrastructure spending and per capita income inequality from 1950 to 2010. The techniques for data analysis are the panel regression with both state and time fixed effects. The result showed that highways and higher education spending growth in a given decade have a negative correlation with Gini indices at the end of the decade. This finding is an indication that growth in infrastructure spending help in reducing income inequality. The relationship was found to be more robust with the level of inequality at the bottom 40 per cent of the income distribution. The result further revealed that expenditure on infrastructure on is more effective in reducing inequality. The study therefore, recommended for innovations in finance for infrastructure investments in the United States with a view to making more resources available and effective in reducing the incidence of inequality.

2.3. Literature Gap Analysis

This paper filled the gap in earlier studies by exploring both aggregate and distributional impacts of planned investments on sustainable development indicators, especially reduction in poverty headcount and inequality. This offered a broader and more encompassing approach to socio-economic measure of sustainable development unlike the approach followed by previous studies.

3. METHODOLOGY

3.1. Research Design

Research design mainly describes procedure for carrying-out an empirical investigation with a view to achieving the specific objectives. Wyk (2010) argued that research design provides in-depth information on the nature of data required, method of obtaining the required data and techniques to be adopted in analyzing them. In view of the nature of this study, ex-post facto research design was adopted. This is because the data for the empirical analysis are already in existence and as such cannot be manipulated.

3.2. Data Required and Sources

The data required for this study are time series data. Specifically, the data on planned public investment in economic services, social and community services and aggregate investments as a ratio of GDP were used for estimating the models. The sources of the data include CBN (2017) and World Bank (2017).

3.3. Method of Data Analysis

In estimating the long run relationship between planned public investments and the underlying indicators of human capital development, this paper adopted the Fully Modified Ordinary Least Squares (FM-OLS) developed by Phillips and Hansen (1990). This estimation method was adopted because it is adjudged as having the capacity of overcoming the simultaneity problem that are associated with explanatory variables. The merit of the FMOLS over the Ordinary Least Squares is that the FM-OLS is asymptotically equivalent to the maximum likelihood and

produces median-unbiased and asymptotically normal estimates. Also this paper applied the Granger causality test in estimating the direction of causality between the regressors and each of the dependent variables. To this extent, the null hypothesis of no causality was tested with the application of chi-square (x^2) asymptotically distributed statistics at 5 percent level of significance. In additionally, the study conducted some pre and post estimation tests explained as follows:

3.3.1. Unit Root Test

This paper adopted the Augmented Dickey-Fuller unit root method developed by Dickey and Fuller (1981) to determine if the variables used are stationary or not. In this case the null hypothesis of unit root was tested against the alternative hypothesis of no unit root at conventional 5 percent level of significance. The basis for this test follows Granger and Newbold (1974) understanding that non-stationary time series tend to produce spurious regression result, hence unit root test is considered as a panacea for applying macroeconomic time series analysis. The general specification of the unit root model with intercept and trend is of the form:

$$\Delta Y_t = b_0 + b_1 Y_{t-1} + \sum_{i=1}^{n} c_i \Delta Y_{t-i} + u_t \quad (1)$$

Where: Y_t = variable under investigation, b_1 and c_i = parameter estimate of the variables, n = optimal lag length, Δ= First difference operator and u_t = Stochastic term. The lag order for each of the variables was automatically selected using Schwarz Information Criterion (SIC).

3.3.2. Cointegration Test

The cointegration test formed basis for determining the evidence of long run relationship among the variables. Following its robustness in testing for cointegration in a multivariate model, the Johansen and Juselius (1990) co-integration method was applied in this paper to check if the variables have long run relationship. Thus, the null hypothesis of no cointegration was tested at 5 percent level. The general form of the model based on trace and maximum eigenvalue statistics is as follows:

$$\lambda_{trace}(r) = -T \sum_{i=r+1}^{n} In\left(1-\hat{\lambda}_i\right) \quad (2)$$

$$\lambda_{\max}(r, r+1) = -T\, In\left(1-\hat{\lambda} r+1\right) \quad (3)$$

Where $\hat{\lambda}$ implies the estimated values of the characteristic roots and T denotes the number of observations. Basically, the trace statistic tests the null that the number of distinct cointegrating vectors is equal to or less than r. On the other hand, the Max-Eigen statistic tests the null hypothesis that the number of cointegrating vectors is r, against the alternative of r +1. In each of the two instances, evidence of at least one cointegrating vector at 5 percent implies that the variables are cointegrated.

3.3.3. Wald Test for Coefficient Restriction

The Wald test was applied in this study to determine whether the coefficients of the explanatory variables are jointly significant. The test statistics employed in this case is the F-statistic. The null hypothesis that the parameters of the regressors are equal to zero was tested at 5 percent level of significance.

3.3.4. Serial Correlation Test

The test for serial correlation was applied to examine whether or not the error term is serially independent. Specifically, the correlogram test for serial correlation was adopted in this paper. The null hypothesis of no serial correlation of order up to p was tested at 5 percent level of significance using Q-statistics.

3.5. Model Specification

This paper employed cointegrating regression built on the sustainable development theory which assumes that development and environment are closely linked and as such public investment is considered as central in achieving sustainable development. In each of the models, planned investment in economic services (PES), community and social services (PIC) and gross public investment as a ratio of GDP (GPI) were introduced as the explanatory variables whilst poverty rate (POT) and Gini index (GIX), proxy for income inequality served as the dependent variables. The econometric specification of the model is provided as:

$$POT_t = D_1 + Z_1PES_t + Z_2PIC_t + Z_3GPI_t + U_{1t} \quad (4)$$

$$GIX_t = D_2 + W_1PES_t + W_2PIC_t + W_3GPI_t + U_{2t} \quad (5)$$

Where: POT, GPI, PES, PIC and GPI are as defined earlier in sub-section 3.5, $D_1 - D_2$ = constant terms, Z_1- Z_3 and W_1- W_3 = coefficients of the explanatory variables and $U_{1t} - U_{2t}$ = stochastic parameters.

4. RESULTS AND DISCUSSION

4.1. Descriptive Statistics

The descriptive statistics for each of the series are summarized in Table 1.

Table-1. Descriptive statistics for the underlying series

	POT	GIX	PES	PIC	GPI
Mean	52.46108	44.37405	40.88730	11.76135	3.263784
Median	51.50000	43.90000	43.89000	11.68000	2.840000
Maximum	72.00000	56.00000	67.00000	23.06000	9.380000
Minimum	30.00000	36.70000	5.880000	2.560000	0.620000
Std. Dev.	11.47686	5.188835	15.90918	5.415465	1.901005
Jarque-Bera	1.571646	2.659460	1.881029	1.505841	8.734142
Probability	0.455744	0.264549	0.390427	0.470989	0.012688
Observations	37	37	37	37	37

Source: Computed by the Author from E-views 9

It was observed from the result in Table 1 that the average poverty rate is 52.46 percent. This shows that large population of Nigeria is living before US$ 1.9 per day. In addition, the average value of Gini index of 44.374 percent shows that inequality is problem to worry in Nigeria. The result further shows that public investments in economic services averaged 40.887 percent which that of community and social services has a mean value of 11.76 percent. It was also found that total government expenditure accounted for 3.26 percent of GDP. The standard deviation for each of the series is less than the corresponding mean values. This indicates that the observations for each of the series clustered around their mean values. The probability values of the respective Jarque-Berra statistics show that all the variables except ratio of the total investment to GDP are normally distributed at 5 percent level of significance.

4.2. Unit Root Test

The unit root test was carried out with the application of ADF procedure. The results for each of the series are reported in Table 2.

Table-2. ADF unit root test results for the series in the model

Series in the model	Levels test results	First difference test results	Order of integration
	t-statistic	t-statistic	
POT	-2.972 (0.154)	-6.783 (0.000)	I(1)
GIX	-2.534 (0.310)	-3.605 (0.044)	I(1)
PES	-2.969 (0.154)	-4.524 (0.005)	I(1)
PIC	-4.899 (0.002)	NC	I(0)
GPI	-2.633 (0.269)	-8.805 (0.000)	I(1)

Source: Author's computation using E-views 9
NB: Figures in parenthesis are the probability values while NC denotes not computed

The results in Table 2 show the unit root test for the series at levels and first difference. The levels results show that only planned investments in community and social services are stationary and as such it is integrated of order zero. This implies that the null hypothesis of unit root is rejected for this variable is rejected at 5 percent level. The first difference test result shows that the other variables in the model become stationary at being differenced one. Thus, they are all I(1). Overall, the results show that the variables are mixed integrated.

4.3. Cointegration Test

The cointegration test was necessitated in order to determine if long run relationship exist among the variables in each of the models. The test was carried out at 5 percent level using and the results are showed in Tables 3 and 4

Table-3. Cointegration test result for model 1

Series: POT PES PIC GPI				
Lags interval (in first differences): 1 to 2				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.547817	60.21984	47.85613	0.0023
At most 1 *	0.500018	33.23514	29.79707	0.0193
At most 2	0.177804	9.666889	15.49471	0.3072
At most 3	0.084737	3.010488	3.841466	0.0827
Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.547817	26.98470	27.58434	0.0595
At most 1	0.500018	23.56825	21.13162	0.0222
At most 2	0.177804	6.656401	14.26460	0.5305
At most 3	0.084737	3.010488	3.841466	0.0827

Source: Author's computation using E-views 9
Note: * and ** indicate rejection of the hypothesis at the 0.05 level and **MacKinnon *et al.* (1999) p-values respectively

Table-4. Cointegration test result for model 2

Series: GIX PES PIC GPI				
Lags interval (in first differences): 1 to 3				
Hypothesized		**Trace**	**0.05**	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.781826	81.21262	47.85613	0.0000
At most 1 *	0.381411	30.97138	29.79707	0.0365
At most 2	0.364498	15.12103	15.49471	0.0569
At most 3	0.004860	0.160785	3.841466	0.6884
Hypothesized		Max-Eigen	0.05	
No. of CE(s)	**Eigenvalue**	**Statistic**	**Critical Value**	**Prob.****
None *	0.781826	50.24124	27.58434	0.0000
At most 1	0.381411	15.85035	21.13162	0.2337
At most 2	0.364498	14.96025	14.26460	0.0388
At most 3	0.004860	0.160785	3.841466	0.6884

Source: Author's computation using E-views 9
Note: * and ** indicate rejection of the hypothesis at the 0.05 level and **MacKinnon *et al.* (1999) p-values respectively

The cointegration test result for model 1 reported in Table 3 shows that two cointegrating vectors exist in the model up to order two. This indicates that the variables can move together in the long run. Similarly, the result for

model 2 showed in Table 4 revealed that the trace test shows evidence of two cointegrating vectors whereas the maximum eigenvalue test revealed that one cointegrating equation exist in the model. Hence, the variables have long run relationship. It therefore follows from the results that variables in each of the models can move together in the long run.

4.4. Estimation of Cointegrating Regression Model

The FMOLS formed based for the estimation of the cointegrating regression models and the results are reported in Table 5.

Table-5. Cointegtrating regression results

Model 1 **Dependent variable: POT**		**Model 2** **Dependent variable: GIX**	
Explanatory variable	**Coefficient**	**Explanatory variable**	**Coefficient**
PES	0.452 (0.000)	PES	0.168 (0.000)
PIC	-0.815 (0.028)	PIC	-0.429 (0.000)
GPI	-1.314 (0.194)	GPI	0.042 (0.196)
Const.	48.003 (0.000)	Const.	42.581 (0.000)
R-squared	0.286	R-squared	0.542
(F-stat.)	8.143	(F-stat.)	56.78
Prob(F-stat.)	0.000	Prob(F-stat.)	0.000

Source: Author's computation using E-views 9

The results in Table 5 show that planned investments on economic services exert significant positive impact on poverty rate and Gini index. This finding indicates that contrary to theoretical expectation, public investments on economic services exacerbate the incidences of poverty and inequality. On the contrary, planned investment on community and social services has significantly negative impact on poverty rate and Gini index. 1 percent increase in investments on community and social services reduces poverty rate by 0.815 percent and 0.429 percent in income inequality. It therefore follows, from the result that investments in community and social services play key role achieving sustainable development goals by mitigating the incidences of poverty and inequality. The gross investment as a ratio of GDP has insignificant negative impact on poverty rate and positive impact on income inequality. The coefficient of determination reveals that the explanatory variables account for 28.6 percent of the overall variations in poverty and 54.2 percent of the total variations in income inequality. This suggests that the regressors have stronger explanatory power for income inequality. The Wald test for joint significance of the explanatory variables indicates that they are collectively significant in explaining changes in both poverty rate and income inequality. This finding suggests that the underlying measures of planned investments in Nigeria are important in predicting changes in sustainable development in Nigeria during the period studied.

4.5. Granger Causality Test

The direction of causality between the explanatory variables and each of the forecast variables was determined using Granger causality test. The results are presented in are reported in Table 6 and 7.

Table-6. VAR Granger causality/block exogeneity wald tests results for model 1

Null Hypothesis (H_0): No causality			
Direction of causality	**Chi-square (X^2) calculated**	**P-value**	**Decision**
PES→POT	10.201	0.001	Reject H_0
POT→PES	2.424	0.119	Accept H_0
PIC→POT	3.081	0.079	Accept H_0
POT→PIC	1.127	0.288	Accept H_0
GPI→POT	0.1023	0.749	Accept H_0
POT→GPI	0.0008	0.977	Accept H_0
PES,PIC,GPI→POT	12.649	0.006	Reject H_0

Source: Author's calculations from E-views Software

Table-7. VAR Granger causality/block exogeneity wald tests results for model 2

Null Hypothesis (H_0): No causality			
Direction of causality	**Chi-square (X^2) calculated**	**P-value**	**Decision**
PES→GIX	7.553	0.023	Reject H_0
GIX→PES	4.582	0.101	Accept H_0
PIC→GIX	11.829	0.003	Reject H_0
GIX→PIC	5.579	0.061	Accept H_0
GPI→GIX	2.081	0.353	Accept H_0
GIX→GPI	2.041	0.360	Accept H_0
PES,PIC,GPI→GIX	14.197	0.028	Reject H_0

Source: Author's calculations from E-views Software

The Granger causality test results show that unidirectional causality runs from planned investment on economic services to both poverty rate and income inequality. Similarly, unidirectional causality flows from planned investment on community and social services to income inequality. In each of the instances, investments in economic services and community and social services have predictive power on both poverty incidence and income inequality. More importantly, the results equally show that the explanatory variables collectively have predictive power on both poverty rate and inequality. This finding indicates that the underlying measures of economic planning are jointly important in predicting changes in sustainable development in Nigeria.

5. CONCLUSION

While this result deviated from the work of Odubunmi and Omobitan (2014) it authenticated the finding of Laabas and Limam (2004). The implication of this finding is that investment in agriculture, construction; transport and communication seem not foster reduction in the population of the poor in Nigeria. On the contrary, planned investment on community and social services has significantly negative impact on poverty rate and Gini index. This finding aligns with the result of Hooper *et al.* (2017) that investment in education is negatively associated with income inequality. The Granger causality test shows evidence of joint causality flowing from the measures of planned investment to sustainable development. The conclusion drawn from this study is that on balance, prioritizing public investments on economic, community and social services fosters sustainable development. Thus, on the basis of the findings, it is recommended as follows:

1. Policy makers should prioritize investment in education, health and other aspects of community and social services in to engender sustainable development.
2. Adequate provisions should also be made investments on key economic services such as agriculture, transportation and communication in order to foster sustainable development.

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