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Economic Planning and Human Capital Development in Nigeria

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ABSTRACT: *This study provides econometrics evidence linking economic planning process to human capital development in Nigeria. The specific objectives focused on the effects of planned investments on education, healthcare delivery and community and social services on human capital development in Nigeria over the period 1990-2016. Data collected from Central Bank of Nigeria Statistical Bulletin were analyzed using Fully Modified Least Squares and Granger Causality test in addition to augmented Dickey Fuller unit root and Johansen-Juselius test. The results of the unit root tests show that only life expectancy is stationary at levels while the other variables in the model become stationary at first difference. The cointegration tests results revealed that the variables in each of the models have long run relationship. The regression result in shows that planned expenditure on education has weak significant positive impact on life expectancy. This finding aligns with the theoretical expectation as economic planning that increases budgetary allocation to the education sector is expected to increase the level human capital of the population and in turn increase their opportunities of living a long and healthy life. The results further show that public investment in the education sector generates positive outcomes on gender parity index for gross enrollment ratio in primary and secondary education in Nigeria. The Granger causality test shows that unidirectional causality runs from public expenditure on social and community services to life expectancy and from public expenditure on education to gender parity index for gross enrollment ratio in primary and secondary education. Therefore, it is recommended that policy makers should ensure that economic planning in Nigeria continues to prioritize medium and long term investments on education in addition to community and social services in order to enhance pace of human development.*

Keywords: *Economic planning, Human capital, Education, Healthcare and social services.*

1. Introduction

Economic planning has been identified as a roadmap for achieving development objectives in many developing economies. This is because it involves effective coordination of macroeconomic policies, especially fiscal and monetary policies by relevant government agencies. 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, planning is considered as a panacea for the actualization of myriad of development goals such as human capital development. Again, in view of the uncertainties surrounding market economy, developing countries are increasingly adopting measures to address core developmental changes facing them by designing and implementing various economic plans.

Todaro and Smith (2011) argued that economic planning assumed a prominent position in development narratives as an essential and pivotal means of shaping and accelerating economic growth in almost all developing countries 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. In most cases, the economic planning strategies tend to prioritize human

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capital development through investment in education, training, medical treatment, and the marginal productivity of labour depends partly on the rate of return on human capital one owns. Therefore, human capital is a means of production into which additional investment yields additional output.

The level investment in human capital is often predicted by the provisions of the economic plan and this to large extent determines the overall economic outcomes. Most often an economic plan is regarded as a programme of action employed by the central government to improve general welfare and advance the developmental process. It may also be taken as an instrument for regulating a free private enterprise economy which seems to vary from country to country. 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 rely on economic planning to (i) improve on the standard of living of the people through a sizable increase in national income within a specific period of time; (ii) expand employment opportunities to reduce the level of unemployment; (iii) engender efficient utilization of the country's scarce resources for rapid and sustained growth; (iv) reduce economic and social inequalities among the population and (v.) alleviate poverty within a specified period of time. However, despite good development objectives associated with economic planning, many developing economies either fail outright or achieve sub-optimal results in terms of their pace socio-economic advancement (Gumede, 2008).

In Nigeria, economic planning has been a consistent phenomenon in the political and economic landscape as many governments – both military and civilian have often relied on it in advancing the process of national development. The economic development plans in Nigeria ranged from short, medium, and long-term plan which are technically referred to as perspective, fixed and budgetary plans. For instance, the post-independence era in Nigeria with the National Development Plans ranging from the first development plan (1962-1968) to the fifth development plan (1988-1992). Nigeria further adopted the rolling plans with the objective to afford the country the opportunity to effectively address the increasing socio-political and economic uncertainties. With the return to democratic governance in 1999, several economic plans were initiated. These include 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 spite of the numerous economic plans initiated in Nigeria since her political independence in 1960, the pace of human capital development still remains a source of concern to policy makers and other stakeholders in the economy. Thus, this paper is designed to evaluate the impact of economic planning on human capital development.

1.1. Statement of the Problem

The economic planning process in Nigeria has evolved overtime as governments strive to put the economy on track in order to improve opportunities for welfare maximization. The plans have seem to prioritize investments in key sectors of the economy considered as having high sectoral linkage or large positive spillover effect on the overall economy. The tenure of the plans often range from short term to long term with sustained growth and development objectives in-view. It is expected that for economic planning to effective, it has to be consistent and time-bound. Nigeria's experience in the planning process over the past two decades has been characterized by gross inconsistency as successive governments are found making a 'U-turn' from the development plans of their predecessors. This has continued to threaten the sustainability of the plan objectives. In most cases, political undertone and party politics often drive the neglect of sound policy initiatives of past government by any succeeding government and by so doing trading public interest for partisan politics.

In addition to policy inconsistency, economic planning process in Nigeria has threatened by poor quality or non-availability of required data. This is often linked to the poor data generation process prevalent in the Nigeria economy which seems to undermine the accuracy and effectiveness of the planning process. Since the actualization of political independence in 1960, governments in the first two decades of the post-independence era and afterwards have be confronted by the problem of poor data which has been described in development economics literature as a bane to effective development given that provisions for public goods tend to fall short of the need of the population. More so, the incidence of systemic corruption in the Nigerian public sector has continued to pose a problem to the actualization of plan objectives. This is because individual gains are

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optimized at the expense of public welfare. Although various economic plans have prioritized investments in health and education with a view to improving the quality of human capital, the level of educational attainment and health status have remained a source of worry to policy makers and other stakeholders including development in the nigrian economy.

The United Nations Development Programme human development report (HDR) shows that Expected years of schooling (years) of Nigeria grew marginally at annual rate of 1.69 percent from 7.3 years in 1996 to 10 years in 2015. The report further revealed that average life expectancy increases slowly, but remains lower than that many of poorer African countries. The World Health Organization (WHO) report indicates that life expectancy in Nigeria is 54.7 for male and 55.7 for female while average life expectancy is 55.2, thus giving Nigeria a World Life Expectancy ranking of 178. These poor outlooks of Nigeria in terms of human capital development despite various economic plans that have prioritized investments in education and healthcare have remained a source of worry in the socio-economic landscape. It is against this background that this paper explored how economic planning that prioritized investments in education and healthcare delivery affect the level of human capital development in Nigeria.

1.2. Objectives of the Study

This paper broadly seeks to examine the impact of economic planning on human capital development in Nigeria. Following the overall objective of this paper, specific efforts were made in this paper to: analyze the trends and dimensions of economic planning and human capital development in Nigeria, determine the impact of panned investment on education on educational and health sectors outcomes in Nigeria, examine how planned investment on healthcare delivery affect educational and health sectors outcomes in Nigeria, assess the impact of planned investments on social and community services on educational and health sectors outcomes in Nigeria and determine the direction of causality between measures economic planning and human capital development.

2. Review of Related Literature

2.1. Theoretical Literature

2.1.1. Theory of Human Capital Development

The theory of human capital is rooted on the macroeconomic development theory which underscores the role of skilled manpower in the development process. Prior to 1960s, it is believed that the main factors of production include land, labour, capital and management (Mincer 1962b, Becker 1993). However, starting from 1960s, economists become confronted with the difficulty of explaining the determinants of growth in most economies, especially in the United States of America using the traditional production factors. Becker (1964), Schultz (1961) and Mincer (1974) in their respective studies focused on the human capital as driver of production which opposed the prevailing assumption that physical capital main source of economic progress. Lucas (1990) argued that premise underlying the human capital theory is that people's skills, experiences and learning capacities can adequately match with other productive resources in the economy. Notably, the empirical work of Becker (1964) is outstanding the development of human capital theory as it emphasized on the trainings and skills of the population that are important in improving their productivity and welfare.

Hatch and Dyer (2004) opined that Becker's work is of great importance in the contemporary employee development and learning literature based on the assumption that human capital theory provides for the development of employees' knowledge and skills through investment in education or training. It therefore believed that the level of human capital acquired by an individual is direct function of educational attainment. On the contrary, it is argued that those that seem not to invest in education end up in earning low income and in turn remain relatively poor.

In addition to improving the quality of healthcare delivery, quality healthcare has been identified as an integral part of individuals' stock of human capital and as such influences the marginal productivity of labour. The health status of people often acts similar to their trainings and knowledge in influencing the extent and depth of productivity across different groups and economic regions. Poor health status lowers the likelihood of finding work or being able to work at all and hence a higher probability of ending up poor (Reinstadler and Ray, 2010). Hence, planned investment in healthcare delivery is considered as a sure to boosting human capital to increase opportunities for better earnings and rapid growth of the overall economy.

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2.1.2. Wagner's Theory of Increasing State Activity

This theory often referred to as Wagner's law of increasing state activities is emerged from the empirical work of Wagner (1890). In support of government intervention in the economy, Wagner (1890) laid-out three reasons that drive state activities to include growing demand for health and education services by the citizens, provision of enabling environment for business to thrive and the incidences of market failure. This provides basis for planned public investments in these critical aspects of the economy. Additionally, the realities of market failure prompted the intervention of government to engage in capital investment with a view to providing public goods which are prerequisites for effective and efficient functioning of the private sector.

The key assumption of Wagner Law is that increase in real income provides the long-run tendency for public spending to increase relative to national income. Magazzino, Giolli and Mele (2015) are of the opinion that Wagner's Law reveals that the share of government spending to the gross domestic product tends to increase in the process of economic development. This underscores the role of the state in improving human capital and providing socio-economic infrastructure. Wagner observed that economic development in economies passing through the process of industrialization is associated with increasing state activity relative to the economy. As a long-run phenomenon, the effectiveness of Wagner's law in terms of providing required explanations for economic outcomes tends to provide a significant result in the long-run.

Overall, this paper is built on human capital theory. The rationale for anchoring this paper on this theory was driven by its root on the macroeconomic development as it identifies investments in human capital as an integral part of the development process.

2.2. Empirical Literature

Numerous research efforts have been devoted to the effects of economic planning process on human capital development. The outcomes of these studies are mixed and as such have increased the controversies in macroeconomic research.

Chukwunonso (2014) examined the impact of social spending on human development in sub-Saharan Africa. The study employed fixed effect panel data model and regresses the human development index on health and education spending across the countries sampled. It was discovered from the results that only public health and tertiary education spending are significant in explaining human development in the countries covered. Private health spending as well as primary and secondary education expenditures was not significant in influencing human capital. The however, recommended that in order to ensure the continued development of the human capital in the countries sampled, increased public funding of the health sector is necessary. It also recommended that budgetary allocations to the education sector, particularly primary and secondary education sub-sectors should be promoted to facilitate the availability and accessibility of education services.

Sawada and Burki (1997) analyzed the implications of micro evidence of social spending on schooling from rural Pakistan. The study was designed to offer better understanding of the causes of low human capital development in the study area. From the panel data regression result, it was obvious that that the permanent and transitory income fluctuations affect children's schooling decision. This is indication of imperfect credit situation, thus, human capital investment in rural Pakistan tend to be impaired by incidences of poverty and the incompletely insured income volatility.

Anyanwu and Erhijakpor (2007) utilized data for 47 African countries in analyzing the impacts of per capita total as well as government health expenditures and per capita income on infant mortality and under-five mortality between 1999 and 2004. It was found that health expenditures exert significant effect on infant mortality and under-five mortality. This result is an indication that total health expenditures play a key role in the health status of the sampled African countries. The result further revealed that both infant and under-five mortality are positively related to healthcare expenditures in Sub-Saharan Africa.

Bein, Unlucan, Olowu and Kalifa (2017) provided econometrics evidence that links healthcare expenditures to health outcomes for eight East African countries comprising Burundi, Eritrea, Ethiopia, Kenya, Rwanda, Sudan, Tanzania, and Uganda. Outcomes in the healthcare was mainly measured by improvements in adult life expectancy and a reduction in the number of neonatal, infant, and under-five deaths. The study employed panel data regression technique using data obtained from world development indicators for the period 2000–2014. It was found that strong positive relationship exists between total healthcare expenditures and total life expectancy. Although the results shows evidence of positive relationship between healthcare expenditures and female and male life expectancy, healthcare was found to have stronger

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positive effect on females' life expectancy than in males. However, the results revealed that healthcare expenditures negatively influence the number of neonatal, infant, and under-five deaths. From the results, the study recommended for more private participation in the healthcare sector in order to substantially improve the overall health outcomes.

Castro-Leal, et al. (2000) relied on benefit incidence method in investigating the link between public spending and curative healthcare on the vulnerable in several African countries amongst them include Guinea, Ghana, Madagascar, Tanzania, Cote d' ivorie, South Africa. Contrary the expectations, the results indicate that public spending is mainly beneficial to the rich than the targeted poor. The study therefore advocated that public policy actions must be targeted at mitigating the counties bottlenecks that limit the access of the poor to healthcare services with a view to optimizing the effectiveness of public healthcare in promoting human development.

Granado et al. (2010) empirically explored the behavior of public spending on health and education in a sample of 150 countries between 1987 and 2007. The countries studied were segmented into developed and developing economies. The analytical tool relied on regression model and the results showed that spending on education and health is pro-cyclical in developing countries and acyclical in developed countries. Specifically, periods of positive growth are associated with pro-cyclical outcomes in public expenditures whereas periods of output gap and show evidence of acyclical effects of public spending. The study concludes that rising incidences of cyclicality are detrimental to the pace of human development.

Innocent (2017) empirically analyzed the nexus between human capital development and government expenditure during 1990-2014. The method for data analysis is Autoregressive Distributed Lag (ARDL) model and impulse response functions. The bounds test result show that government expenditure and human development index have long run relationship. The ADRL results showed that both in the long and short run, government spending has remained positive but to a very large extent insignificant to human capital development in Nigeria. Owing to the findings, the study recommended for government spending to be adequately channeled to human development through the establishment of specialized high technology-driven schools and procurement of quality health facilities.

Nwokoye (2017) analyzed the long-run and short-run impact of federal government human capital spending on human capital development in Nigeria. Time series data from 1990-2015 was collected and analyzed using autoregressive distributed lag (ARDL) model. The Bounds test result showed that long-run relationship exists between Human Development Index (HDI) and government human capital spending. The study finds that 1-year and 2-year lags of government recurrent education expenditure has weak significant negative impact on HDI rather than the expected positive impact. Only government recurrent health spending has positive impact on human capital development up to the 2-year lag. The speed of adjustment of the short-run relations is 41 percent significant at 5 percent level of significance. The results demonstrated that both in the long and short run, government health spending has remained positive but to a very large extent insignificant to human capital development in Nigeria. The study therefore concludes that human capital development could be achieved through more efficient health spending in Nigeria.

2.4. Literature Gap Analysis

This paper improved upon earlier studies as it broadly captured human capital development from the perspectives of health status and educational attainments. Additionally, the introduction of planned investments on social and community services as part of the explanatory variables offered more insights into the specialized fiscal planning process which were overlooked by previous studies reviewed.

3. Methodology

3.1. Research Design

Research design mainly describes procedure for carrying-out an empirical investigation with a view the achieving the specific objectives. Van-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 as such cannot be manipulated. The data required for this study are time series data. Specifically, the data on planned investment in education expenditure, planned healthcare investment, planned investments on social and community services, life expectancy at

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birth gender parity index for gross enrollment ratio in primary and secondary education were used for estimating the models. The sources of the data include Central Bank of Nigeria Statistical Bulletin (2017) and World Bank World Development Indicators (2017).

3.2. Method of Data Analysis

The Fully Modified Ordinary Least Squares (FM-OLS) developed by Phillips and Hansen (1990) was applied in estimating the long run relationship between planned public investments and the underlying indicators of human capital development. This estimation method was adopted because it is adjudged as having the capacity of overcoming simultaneity problem that are associated with regressors. The advantage of the FMOLS over the Ordinary Least Squares is that the FM-OLS as asymptotically equivalent to maximum likelihood and produces median-unbiased and asymptotically normal estimates. Furthermore, Granger causality test was employed in estimating the direction causality between the explanatory variables and each of the dependent variables. Therefore, 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. Additionally, some pre and post estimation tests conducted in this paper are explained as follows:

3.2.1. Unit Root Test

The Augmented Dickey-Fuller unit root method developed by Dickey and Fuller (1981) was adopted to determine if the variables 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 rationale for this test follows Granger and Newbold (1974) postulation that non-stationary time series tend to produce spurious regression result, hence unit root test is considered as an inevitable practice in macroeconomic time series analysis. The general specification of the unit root model with intercept and trend is of the form:

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

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).

3.2.2. 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:

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

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

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.

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3.2.3. 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.

3.3 Model Specification

This paper employed cointegrating regression anchored on the human capital theory which assumes that improved education and healthcare delivery are important for developing the pace of human capital. In the model, on planned investment in education expenditure (PIE), planned healthcare investment (PHI), planned investments on social and community services (PSC) were introduced as the explanatory variables whilst life expectancy at birth (LIF) gender parity index for gross enrollment ratio in primary and secondary education (GSR) served as the dependent variables. The econometric specification of the model is provided as:

$$LIF_t = M_1 + Z_1PIE_t + Z_2PHI_t + Z_3PSC_t + U_{1t} \quad (4)$$

$$GSR_t = M_2 + W_1PIE_t + W_2PHI_t + W_3PSC_t + U_{2t} \quad (5)$$

Where: LIF, GSR, PIE, PHI and PSC are previously defined, $M_1 - M_2$ = constant terms, Z_1- Z_3 and Z_1- Z_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. Summary of descriptive statistics

	LIF	GSR	PIE	PHE	PSC
Mean	49.51386	0.892278	53005.32	1.071667	13.03056
Median	49.61195	0.890500	55385.08	1.000000	12.55500
Maximum	52.97790	0.966000	97465.21	1.470000	23.06000
Minimum	46.10000	0.819000	8516.600	0.620000	3.460000
Std. Dev.	2.384169	0.054718	33310.90	0.232588	4.340508
Jarque-Bera	1.534608	1.872655	1.745294	0.538247	0.719792
Probability	0.464263	0.392065	0.417844	0.764049	0.697749
Observations	18	18	18	18	18

Source: Author's computation using E-views 9

The descriptive statistics reported in Table 1 shows that the average life expectancy in Nigeria between 1990 and 2016 is 49.51 years while the gross primary and secondary school enrolments measured by gender parity index averaged 0.892. The result also show that planned investment in education and health sectors averaged 53005.32 and 1.072 percent respectively. Again, it was found that planned investment in social and community services averaged 13.031 percent. Furthermore, it was found from the standard deviation that the observations for each of the series clustered around their respective mean values. Additionally, the probability values of the Jarque-Bera statistics for the each of the series indicate that they are normally distributed over the sampled period. This necessitated the upholding of the null hypothesis of normal distribution in the series.

4.2. Unit root Test

The unit root test was performed using ADF method and the results for each of the series are reported in Table 2.

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Table-2. Unit Root Test Results

Series in the model	Levels test results	First difference test results	Order of integration
	t-statistic	t-statistic	
LIF	-4.764 (0.001)	NC	**I(0)**
GSR	-0.536 (0.861)	-4.280 (0.005)	**I(1)**
PIE	-1.2353 (0.643)	-5.053 (0.000)	**I(1)**
PHE	-2.327 (0.173)	-4.669 (0.002)	**I(1)**
PSC	**-1.720 (0.409)**	**-9.452 (0.000)**	**I(1)**

NB: Figures in parenthesis are the probability values while NC denotes not computed

The results of the unit root tests in Table 2 show that only life expectancy is stationary at levels given that the corresponding probability value (0.001) of its t-statistic (-4.764) is less than 0.05. In this case, the null hypothesis of unit root is rejected at 5 percent level of significance. On the contrary, the other variables in the model were not stationary at levels and as such the null hypothesis of unit root is maintained for each of them at levels at 5 percent level. However, the first difference test results revealed that the series become stationary upon first difference. Therefore, they are integrated of order on [I(1)].

4.3. Cointegration Test

The cointegration test for evidence of long run relationship among the series was performed at 5 percent level using Johansen-Juselius method. The results are showed in Tables 3 and 4.

Table-3. Cointegration test result for model 1

Series: LIF PIE PHE PSC				
Lags interval (in first differences): 1 to 2				
Hypothesized	**Eigenvalue**	**Trace**	**0.05**	**Prob.****
No. of CE(s)		**Statistic**	**Critical Value**	
None *	0.958985	120.2272	63.87610	0.0000
At most 1 *	0.864555	59.54466	42.91525	0.0005
At most 2	0.568296	21.56000	25.87211	0.1569
At most 3	0.255261	5.599703	12.51798	0.5127
Hypothesized	Eigenvalue	Max-Eigen	0.05	Prob.**
No. of CE(s)		Statistic	Critical Value	
None *	0.958985	60.68257	32.11832	0.0000
At most 1 *	0.864555	37.98465	25.82321	0.0008
At most 2	0.568296	15.96030	19.38704	0.1469
At most 3	0.255261	5.599703	12.51798	0.5127

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

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Table-4. Cointegration test result for model 2

Series: GSR PIE PHE PSC Lags interval (in first differences): 1 to 1				
Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.800791	58.13492	47.85613	0.0041
At most 1 *	0.694598	32.32055	29.79707	0.0251
At most 2	0.432953	13.34251	15.49471	0.1028
At most 3	0.234016	4.265496	3.841466	0.0389
Hypothesized	Eigenvalue	Max-Eigen	0.05	Prob.**
No. of CE(s)		Statistic	Critical Value	
None	0.800791	25.81437	27.58434	0.0828
At most 1	0.694598	18.97804	21.13162	0.0975
At most 2	0.432953	9.077010	14.26460	0.2798
At most 3	0.234016	4.265496	3.841466	0.0389

Note: * and ** indicate rejection of the hypothesis at the 0.05 level and **MacKinnon-Haug-Michelis (1999) p-values respectively

The cointegration test result reported in Table 3 showed that the variables in the life expectancy model are cointegrated. Specifically, two cointegrating vectors each are found from the trace and maximum eigenvalue tests results as reported in the upper and lower panels of Table 3. These findings provide enough evidence of rejecting the null hypothesis of no cointrgration at 5 percent of significance. Similarly, the cointegtation test results for the second model reported in Table 4 show that the variables long run relationship. It was observed from the trace test result that two cointegrating vectors exist in the model. This forms basis for the rejection of the null hypothesis of no cointegration at 5 percent level.

4.4. Model Estimation

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

The regression result in the left-most part of Table 5 shows that planned expenditure on education has weak significant positive impact on life expectancy. This finding aligns with the theoretical expectation as economic planning that increases budgetary allocation to the education sector is expected to increase the level human capital of the population and in turn increase their opportunities of living a long and healthy life. The result further resaved that planned expenditures on healthcare as well as social and community services do not significantly impact on life expectancy. However, taken together, investment in education, healthcare delivery and social and community services significantly influence changes in life expectancy at 5 percent level. This is because probability value (0.0002) of the F-statistic is less than 0.05. The coefficient of determination (0.635) shows that the explanatory variables account for 63.5 percent of the systematic variations in life expectancy over the period studied. the result further showed that the residuals are normally distributed at 5 percent level given that associated probability value of Jarque-Bera statistics is greater than 0.05.

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Table-5. Cointegtrating regression results

Model 1		**Model 2**	
Dependent variable: LIF		**Dependent variable: GSR**	
Regressor	Coefficient	Regressor	Coefficient
PIE	0.0000815 (0.000)	PIE	0.00000184 (0.000)
PHE	-2.66022 (0.2038)	PHE	-0.081164 (0.087)
PSC	0.004959 (0.9629)	PSC	-0.003281 (0.196)
Const.	48.00259 (0.000)	Const.	0.92728 (0.000)
R-squared	0.635	R-squared	0.582
Prob(F-stat.)	0.0002	Prob(F-stat.)	0.000
Prob(Jarque-Bera stat.)	0.842	Prob(Jarque-Bera stat.)	0.463

Source: Author's computation using E-views 9
Note: Figures in bracket are the corresponding probability values of the t-statistics

As reported in the right-most part of Table 5, planned investment in education has a weak significant positive impact on gender parity index for gross enrollment ratio in primary and secondary education between 1990 and 2016. This implies that the ratio of girls to boys enrolled at primary and secondary levels increases with an increase in public investment in the education sector. On the other hand, investments in healthcare and social and communities are insignificant linked to gender parity index for gross enrollment ratio in primary and secondary education in Nigeria. However, it evidence from the probability value (0.000) of the F-ratio that the explanatory variables are jointly significantly in explaining changes in the ratio of girls to boys enrolled at primary and secondary schools in Nigeria. This is indicative that they have high forecasting ability for the gender parity index in school enrolments at primary and secondary levels. In addition to the outcome of the F-test, the R-squared (0.582) indicate that 58.2 percent of the total variations in gross school enrolment ratio are attributed to changes in the underlying explanatory variables. It therefore, follows that on balance, economic planning is helpful in the development of human capital overtime.

4.5. Granger Causality Test

The interactions among the variables in each of the models were captured with the application of Granger causality test performed at 5 percent level of significance. The results 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**
PIE→LIF	0.359	0.549	Accept H_0
LIF→PIE	4.288	0.038	Reject H_0
PHE→LIF	2.332	0.127	Accept H_0
LIF→PHE	0.023	0.879	Accept H_0
PSC→LIF	3.731	0.053	Reject H_0
LIF→PSC	0.547	0.459	Accept H_0
PIE,PHE,PSC→LIF	13.913	0.000	Reject H_0

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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**
PIE→GSR	5.011	0.025	Reject H_0
GSR→PIE	2.095	0.148	Accept H_0
PHE→GSR	1.696	0.193	Accept H_0
GSR→PHE	0.040	0.841	Accept H_0
PSC→GSR	0.819	0.365	Accept H_0
GSR→PSC	1.503	0.220	Accept H_0
PIE,PHE,PSC→GSR	10.379	0.016	Reject H_0

The results in Table 6 show that unidirectional causality runs from public expenditure on social and community services to life expectancy. Similarly, unidirectional causality is found to flow from life expectancy to planned expenditure on education. The results further showed that joint causality runs from the explanatory variables to life expectancy. This implies that the regressors have predicting power on life expectancy. The second result in Table 7 shows that bidirectional causality flows from planned investment in education to ender parity index for gross enrollment ratio in primary and secondary education. This finding agrees with the outcome of the cointegrating regression for model 2 and further authenticates the important role played by planned education investment in stimulating the pace of human capital in Nigeria. More importantly, the result shows that joint causality runs from the underlying indicators of public investments to gross primary and secondary school enrolments. This finding agrees with the theoretical a priori expectation which assumes planned public investment is an important source of human capital development.

5. Conclusion and Recommendations

On the basis of the findings, the study concludes that the economic planning process that allows for increasing allocation on education and social and community services is pro-cyclical with regarding to stimulating the process of human capital development. Accordingly, the following recommendations are proffered:

i. Policy makers should ensure that economic planning in Nigeria continues to prioritize medium and long term investments on education in addition to community and social services in order to enhance pace of human development.
ii. Planned investments in the healthcare should be closely monitored by the relevant stakeholders in order to mitigate its ineffectiveness in terms improving healthy and long living amongst the Nigerian population.
iii. The economic planning process should provide for fiscal sustainability plan in order to investments in sectors that fosters human capital development are sustained overtime.

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