

## **GOVERNMENT EXPENDITURE, OIL REVENUE AND ECONOMIC GROWTH IN NIGERIA**

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### **Abstract**

*The Nigerian economy is very vulnerable to oil price dynamics. The monetization of crude oil proceeds affect money supply and consequently, degenerate price level the objective of this study is to empirically investigate the dynamic relationship between crude oil price and inflation in Nigeria, in order to suggest appropriate domestic policies necessary to control inflation for the policy makers. The study also attempts to answer questions like: what is the causal links between oil price and headline inflation in Nigeria? Is oil price highly correlated with core and food inflation? The methodology adopted by the paper is a simple regressions models and statistical package for social sciences and annual series from 1982-2011 were used for the estimation. The estimation results that changes in crude oil price have had significant effects on inflation other findings are that inflation has been influenced by exchange rate changes and changes in broad money supply and maximum lending rate.*

*Keywords: Government expenditure, oil revenue, economic growth, inflation, Nigeria*

## INTRODUCTION

Oil revenue refers to the income earned from the sale of crude oil. And it is the dominant source of government revenue, accounting for about 90 percent of total exports, and this approximates to 80% of total government revenues. Since the oil discoveries in the late 1950s, oil has become the dominant factor in Nigeria economy.

Oil is a major source of revenue in Nigeria. Oil being the mainstay of the Nigerian economy plays a vital role in shaping the economic and political destiny of the country. Although Nigeria's oil industry was founded at the beginning of the century, it was not until the end of the Nigeria civil war (1967 - 1970) that the oil industry began to play a prominent role in the economic life of the country.

Nigeria can be categorized as a country that is primarily rural, which depends on primary product exports (especially oil products). Since the attainment of independence in 1960 it has experienced ethnic, regional and religious tensions, magnified by the significant disparities in economic, educational and environmental development in the south and the north. These could be partly attributed to the major discovery of oil in the country which affects and is affected by economic and social components.

Crude oil discovery and its revenue have had certain impacts on the Nigeria economy both positively and adversely. On the negative side, this can be considered with respect to the surrounding communities within which the oil wells are exploited. Some of these communities still suffer environmental degradation, which leads to deprivation of means of livelihood and other economic and social factors. Although large proceeds are obtained from the domestic sales and export of petroleum products, its on the growth of the Nigerian economy as regards returns and productivity is still questionable hence, the need to evaluate the relative impacts of crude oil revenue on the economy.

In Nigeria, though crude oil has contributed largely to the economy, the revenue has not been properly used. Considering the fact that there are other sectors in the economy, the excess revenue made from the oil sector can be invested in them to diversify and also increase the total GDP of the economy. The oil industry has remained the leading sector of the Nigerian economy for many decades. Oil revenue has continued to account for over ninety percent of the nation's gross revenue. By 1997, production target had reached 2.5 million barrels per day (Intl. Energy Authority). The proven reserve is about 25 billion barrels.

Providing adequate education and health services to people using crude oil revenue is one of the major ways of improving the quality of human resources. Apart from being issues of social concern, both provide an economy with healthy trained human resources required for economic growth and development. Similarly, health is fundamental to economic growth and

development and is one of the key determinants of economic performance both at the micro and macro levels. This derives from the fact that health is both a direct component of human well-being and a form of human capital that, increases an individuals' capabilities (Bloom and Canning, 2003). Grossman (1972) has equally demonstrated that health is a form of human capital. Schultz (1992) argued that population quality is the decisive factor of production and emphasised the merits of investing in education and health (see also Bloom and Canning, 2000 and 2003). Meeting the commendable United Nation health Millennium Development Goals (MDGs) of reduction by two-thirds in the under-5 mortality ratio and a reduction by three-quarters in maternal mortality, and halting and beginning to reverse the spread of HIV/AIDS, malaria and other major diseases by 2015 will be completely elusive for Sub-Sahara African countries like Nigeria if sufficient attention is not paid to health expenditures. Similarly, eradicating illiteracy as one of the objectives of the (MDGs) will be a mirage if adequate attention is not given to educational expenditure from crude oil revenue by the federal government; it is against this backdrop that this paper examines the correlation between Expenditures on Education and Health Services, using crude oil revenue and Economic Growth in Nigeria. Among other objectives, the paper focuses on public expenditures on the education and health sectors during the period under review with 'a view to ascertaining the relative commitments of the governments to these sectors. In addition, the study empirically identified the various outcomes from expenditures on education and health services and their correlation with economic growth.

The rest of this paper is structured as follows: Section 2 is on the review of some extant literature. The focus of section 3 is on the commitment of government towards education and health in Nigeria during the last few decades. Section 4 is the empirical analysis where time series data are employed to estimate the impact of education and health indicators on economic growth in Nigeria. Section 5 concludes the paper.

An economy's growth is measured by the change in the volume of its output or in the real incomes of its residents (World Bank, 2006). Therefore, oil exporting countries are said to experience growth due to large influx of income or revenue derived from exports and an opportunity to increase public spending, but most oil exporting countries have poor public sector management, that is, they have had difficulty managing funds with rigid operational rules, as tensions have often surfaced in situations of significant exogenous changes or with shifting policy priorities. Earmarking the resources of oil funds for specific uses, and allowing extra budgetary spending by the funds can complicate fiscal and asset management and reduce efficiency in the allocation of resources. Transparency and accountability practices for funds differ across Organisation of Petroleum Exporting Countries (OPEC) (International Monetary Fund, 2007). In Nigeria, the rate of illiteracy is very high. Most of the workers are unskilled and

they make use of outmoded capital, equipment and methods of production. By implication, their marginal productivity is extremely low and this leads to low real income, low savings, low investment and consequently low rate of capital formation. It was indicated on the document that adult literacy rate of at least 65% would be attained by 2008. Therefore the strategy is aimed at empowering the citizenry to acquire the skills and knowledge that would prepare them for the vast challenges. Overtime, the following issues relating to the concept have remained unresolved: Uneven distribution of skilled manpower, Misemployment of human capital in Nigeria, Poor reward system retarding the acquisition and development of human capital.

This leads to fall backs in the real gross domestic income. This research hopes to show the relationship between revenue from oil exports, overall expenditure and changes in output levels in Nigeria.

### **SCOPE OF THE STUDY**

The scope of the study is on the economic performance of Nigeria. The data used will be obtained from the publication of statistical bulletin of Central Bank of Nigeria (CBN), International Monetary Fund (IMF), and Organisation of Petroleum Exporting Countries (OPEC). It covers the GDP relative to oil export, its revenue, public expenditure rates on health and education services.

The study of this nature is prompted by the slow rate of Nigeria's economic growth despite the huge contribution of the government through the use of crude oil revenue. Researches on this topic being carried out over the ears have not really achieved its prior objective. The effect of health and education as part of social infrastructures for human capital development on economic growth holds a lot of benefits to our overall economic progress. The government and its agencies will find this work resourceful in formatting policy, directives and regulations for human capital development to aid economic growth.

### **RESEARCH OBJECTIVES**

The main objective of the study is to show interrelationship between public expenditure, oil revenue and economic performance in Nigeria. The specific objectives are to:

1. Investigate the impacts of oil revenue to the performance of an economy;
2. Highlight the relationship' between oil revenue and public expenditures on health and education; and
3. Show the significance of increasing crude oil revenue expenditures to growth of an economy.

## LITERATURE REVIEW

### Theoretical Review

In the earlier neo— classical model, human capital (social infrastructure) was not considered a major input for production and hence was not included in growth models. Perhaps, Solow's (1956) model could be seen the pioneer in this direction. Solow incorporated human capital as one of the independent variables in his model. The model attributed growth in national income to three sources namely: increase in the stock of physical capital, increases in the size of labour force, and a residual representing other factors. Solow uses the aggregate production function which is continuous and homogenous of degree one.

$$Y = F(L, K, T) \dots \dots \dots (1)$$

Where:

Y = aggregate real output,

K = stock of capital,

L = labour

T = Technical change.

Taking technical change as constant, equation 1 can be re-written as:

$$Y = A f(K, L) \dots \dots \dots (2)$$

Equation (2) can be expressed in growth term to obtain:

$$\frac{dY}{Y} = (A \cdot \frac{dY}{dK}) \frac{dK}{Y} + (A \cdot \frac{dY}{dN} \cdot \frac{N}{Y}) \frac{dN}{Y} + \frac{dA}{A} \dots \dots \dots (3)$$

Which can be written for estimation purposes as:

$$\frac{Y}{Y} = a_0 + a_1 \frac{I}{Y} + a_2 \frac{N}{Y} \dots \dots \dots (4)$$

where:

$a_0 = \frac{dA}{A}$ ,

$a_1 = A \cdot \frac{dY}{dK}$

$a_2 = A \cdot \frac{dY}{dN} \cdot \frac{N}{Y}$

I dK = change in capital (investment)

I/Y = ratio of investment to income,

The constant term:

( $a_0$ ) is assumed to capture the growth in productivity,

$a_1$  is the marginal productivity of capital, and

$a_2$  is the elasticity of output with respect to population.

Therefore, with this background, the model can be formed as:

$$= G_y + a_0 + a_1 G_k + a_2 G_L + U \dots (5)$$

Where:

$G_y$  = Growth rate of real GDP

$G_k$  = Growth rate of capital,

$G_L$  = Growth rate of labour

$U$  = disturbance term

There are coefficients to be estimated and their signs are expected to be positive. In order to examine the impact of government expenditure using crude oil revenue on education and health for sustained economic growth, variables as life expectancy and adult literacy rate were introduced as independent variables. Also a dummy variable is introduced to capture the effect of economic reform. Given this adjustment, equation (5) can be modified as:

$$GRY = a_0 + a_1 LR + a_2 LE + a_3 GRL + a_4 GRC + U_t$$

Where:

$GRY$  = Growth rate of GDP,

$LR$  = Adult literacy rate,

$LE$  = Life Expectancy,

$GRL$  = Growth rate of labour,

$GRC$  = Growth rate of capital

The study will employ ordinary least square method to estimate the impact of adult literacy rate, life expectancy, growth rate of labour, growth rate of capital and a dummy variable on the growth rate of GDP.

Level of stationarity of the variables will also be examined through Augmented Dickey Fuller Test to investigate if the variables had a unit root not. The data set for the study consisted of annual time series data for 1980 to 2010. The data were to be obtained from the Central Bank of Nigeria statistical bulletin, Annual Reports and Statement of Accounts (various issues) and World Bank Development indicators, IMF, OPEC, etc

Arising from this study, the following lessons are drawn; First, government expenditure on capital will have differential impact on economic growth when the funds are properly managed, invested in more productive sectors rather than non — productive so as to reduce corruption and mismanagement of the Nation's resources and foster economic growth. Second, the government should intensify effort to ensure that the country is export - focused, with, attention given to Agriculture, manufacturing and other export driven

sectors to improve balance of trade. Third; government should explore more avenue of generating revenue rather than procure huge debt either internally or externally. Finally, with proper handling of the above, it will be easier for the government to manipulate Macroeconomic variables such as exchange rate, inflation and so on, to ensure steady and accelerate growth.

### **Empirical Review**

According to Adedipe (2004), by the time Nigeria became politically independent in October 1960, agriculture was the dominant sector of the economy, contributing about 70% of the Gross Domestic Product (GDP), employing about the same percentage of the working population, and accounting for about 90% of foreign earnings and Federal Government revenue. The early period of post-independence up until mid-1970s saw a rapid growth of industrial capacity and output, as the contribution of the manufacturing sector to GDP rose from 4.8% to 8.2%. This pattern changed when oil suddenly became of strategic importance to the world economy through its supply-price nexus, Crude oil was first discovered in commercial quantities in Nigeria in 1956, while actual production started in 1958. It became the dominant resource in the mid-1970s. On-shore oil exploration accounts for about 65% of total production and it is found mainly in the swampy areas of the Niger Delta, while the remaining 35% represents offshore production and involves drilling for oil in the deep waters of the continental shelf. Nigeria has proven reserves of about 32 billion barrels of predominantly low sulphur light crude, which at current rate of exploitation could last another 38 years. The intention is to expand the reserves to 40 billion barrels and production capacity to 4 million barrels per day (mbd). The massive increase in oil revenue as an aftermath of the Middle-East war of 1973 created unprecedented, unexpected and unplanned wealth for Nigeria. Then began the dramatic shift of policies from a holistic approach to benchmarking them against the state of the oil sector. Now, in order to make the business environment conducive for new investments, the government began investing the newfound wealth in socio-economic infrastructure across the country, especially in the urban areas. As well, the services sector grew. This shows that as government increased as a result of increases from oil, government expenditure also increased.

According to Elhiraika and Hamed (2001), economic growth and development in the United Arab Emirate is as a result of government investment in physical and social infrastructure which helped to boost economic activity in general and private investment in specific, a stable macroeconomic environment, which is characterized by low inflation rates and semi-fixed exchange rate, and government policies, availability of capital and absence of restrictions on

capital movement together with a high degree of openness opened the door for remarkable growth in foreign trade.

According to Hamed and Elhiraika (2001), The UAE government does not rely on fiscal policy tools in achieving macroeconomic stability. Rather it relies mainly on monetary policy tools, particularly the link between the Dirham and the U.S. dollar, to maintain macroeconomic stability, and that the governments of the dominant emirates finance their budget deficits by drawing down their own abundant overseas assets, thereby eliminating inflationary pressures, and avoiding crowding out of private sector activities. This suggests the absence of any important link between macroeconomic performance and the budget deficits, but government spending undoubtedly stimulates private economic activity.

According to Siddiqi (1999), in Saudi Arabia, the hydrocarbon sector contributes over 40 percent of the Saudi GDP, and generates 80 percent of government revenues and total export earnings respectively. The slump in oil revenues - by over a third in 1998 - has led to ballooning twin deficits on the balance of payments and budget, amid a general slowdown in government and consumer spending, as well as falls in fixed investment in the non-oil private sector. The economy, after expanding in 1996-97, may experience a negative growth in nominal GDP for the first time in five years. However, the IMF projects a real GDP growth of 0.4 percent, compared with 2.7 percent in 1997. Total earnings of Saudi banks in the year to September rose 11 percent. This indicates that the business sector after two years of higher liquidity remains in a relatively sound position.

Bourguignon and Gelb (1988) suggest that the stagnation of the Venezuelan economy started after 1978, coinciding with the second oil shock in 1979. According to their calculations, the non-oil sector did not seem to gain from the 1970s windfall. They further argue that inappropriate economic policies resulted in steep declines in private investment and massive capital flight. Combined with a large upsurge in consumption during the decade of revenue windfall, these effects meant that Venezuela was subject to severe internal and external imbalances that ultimately lead to its decline in economic performance. Schumpeter (1954) has similarly stressed the role of innovation (which is a by-product of education) in the process of economic growth. This, he asserted, can be achieved by assigning key role to entrepreneurs particularly because of their ability to innovate which could be seen in different ways: creation of new products, and new markets; designing of more cost effective method of production; and organizational restructuring.

The World Development Report (1997) examines how knowledge influences development. The report reinforces some well – known lessons, such as the value of knowledge gained through trade and foreign investment. It also highlights others that have sometimes been



overlooked, such as how imperfect information leads to failure in all markets and the importance of institution to facilitate the flow of information. Moreover, the report looks at the role of knowledge in development, examining difference in knowledge across and within the countries, the impact of knowledge gaps and information failures on development, and the way in which governments in developing countries and international institutions can foster development by addressing these issues.

The World Health Organisation (1999) vividly captured the link between health and income. There is proven evidence that adult health depends on child health and itself directly influences labour productivity. In other words, improvements in child health, for instance, which implies reduction in child mortality rates, translate into improvements in adult health in subsequent years.

According to Jafaroy and Gunnarsson (2008) quoting Verhoeven et al. (2007), performance indicators are divided into desired outcome and intermediate output indicators. Desired outcomes correspond to the underlying objectives sought by policy makers. Intermediate outputs are thought to be related to desired outcomes but can be more closely associated with current spending. According to Budina and van Wijnbergen (2008) oil is the dominant source of government revenue, accounting for about 90 percent of total exports, and this approximates to 80% of total government revenues. Since the oil discoveries in the early 1970s, oil has become the dominant factor in Nigeria's economy. Nafziger (2006) and Ibaba, (2005) state that Nigerian economy has the potentialities of becoming one of the twenty leading economies of the world before the year 2020 if their abundant crude oil wealth, human and natural resources are properly managed and corruption mitigated.

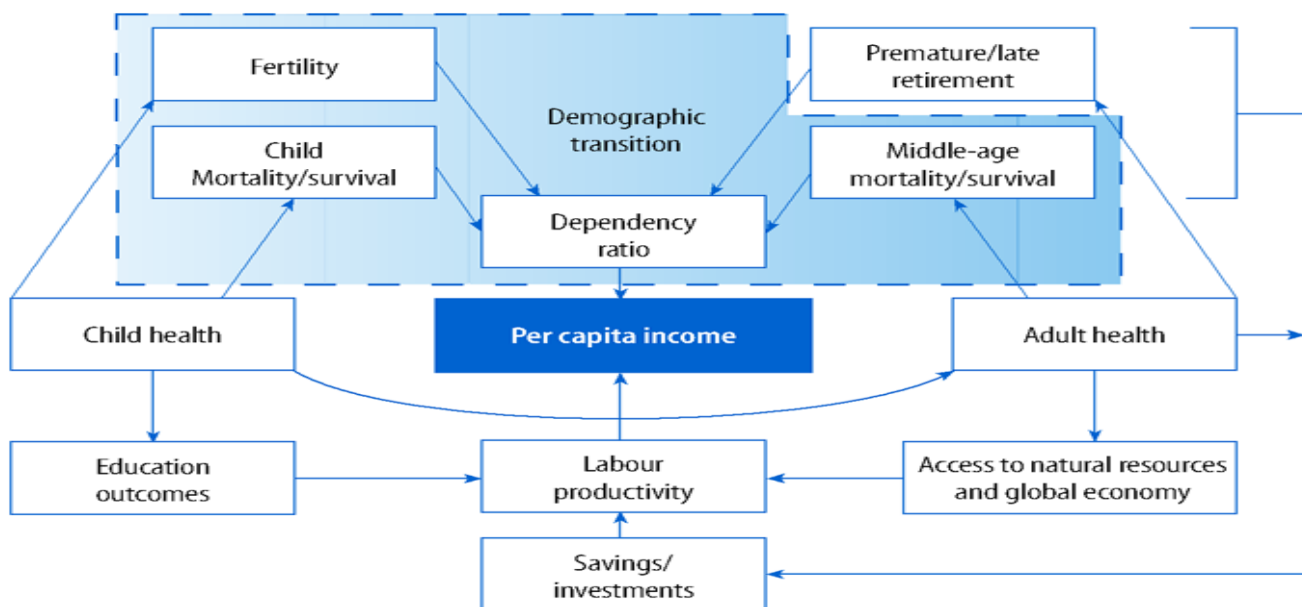
The tax laws according to Adekanola (2007) have vested the authority to assess, administer and collect all taxes from corporate entities on the Federal Inland Revenue Services. Taxes administered at the Federal level include the Petroleum Profits Tax, Companies Income Tax, and the Value Added Tax as well as the Capital Gain Tax, when such capital gains are generated by corporate entities. Azubuike (2009) however posits that tax payers or revenue public payers are well disposed to perform their civic duties willingly when they see evidence of public expenditure which they can identify with or benefit directly from. Unfortunately, this has not been the case in Nigeria. Macdonald (1980) opines the fact that the retention of a corporation tax under an expenditure tax regime is justified in the Meade Report of 1978 on Tax Reform on the ground that it can raise revenue while not distorting the rate of return to saving. Ogbonna (2009) expressed the view that the administration of Petroleum Profits Tax in Nigeria has mainly been focused on revenue generation to the detriment of stimulating economic growth and development

## METHODOLOGY

This research is designed specifically to measure the relative effect of oil industry on economic growth in Nigeria. It focuses on the model adopted in the estimation and description of the instrument used for the presentation and analysis of the data. Consequently, the study depended on secondary data for in-depth study and analysis of the data collected; the common structural patterns have firmly been established on the basis of analytical, statistical and econometric techniques, and testing of the relationship on aggregate oil output revenue and its selected indicator, GDP.

The general ordinary least squares approach (OLS) will be used in the estimation of the parameters. The choice of OLS techniques of regression is not only as a result of its simplicity, but as a result of its optimal properties of linearity, unblusedness, minimum variance, zero mean (Kontsoyians 1997 p.26). From the economic theory and perhaps, empirical result, it is expected that a positive relationship between oil revenue and economic growth exist.

Figure-1: The Relationship between Health Outcomes and Economic Growth



Source: WHO: The World Health Report, 1999, p 11

### Child Mortality

In terms of social achievements, data below reveals that the recent economic growth has been less impactful on wellbeing of the people. The number of infant deaths per 1,000 live births soared by 40% to 105 deaths in 2010 from 75 deaths in 1990 and 100 deaths in 1980.

Table 1: Selected indicators

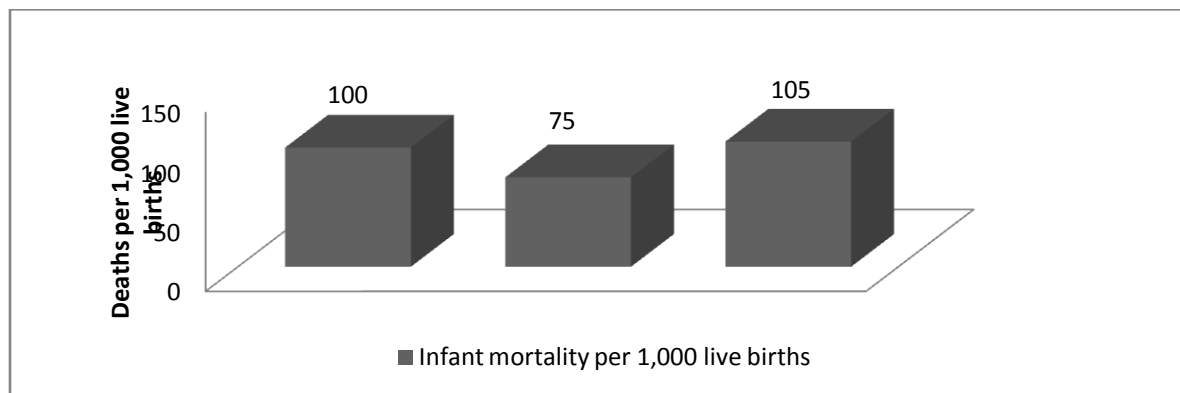
Indicators	1980	1990	2010
Under-five mortality rate per 1,000 live births	201	157	172
Infant mortality rate per 1,000 live births, %	100	75	105
Children under age 5 sleeping under insecticide-treated nets (ITNs), %	2.2	5.5	17.3
Population using improved water source, %	66.25 <sup>1</sup>	55.8 <sup>1</sup>	55.2
Use of improved sanitation facilities, %	49.8	53.8	29.6

Note:

1. DPT = Diphtheria, Pertussis (whooping cough) and Tetanus
2. BCG = Bacillus Calmette-Guérin (i.e, a vaccine against tuberculosis)
3. <sup>P</sup> Proportion of 12-23 months-old children fully immunize

Source: NBS, <sup>1</sup>Nigeria Demographic and Health Survey

Figure 2: Trends in the Number of Infant Deaths per 1,000 Live Births (1980-2010)



Source: NBS

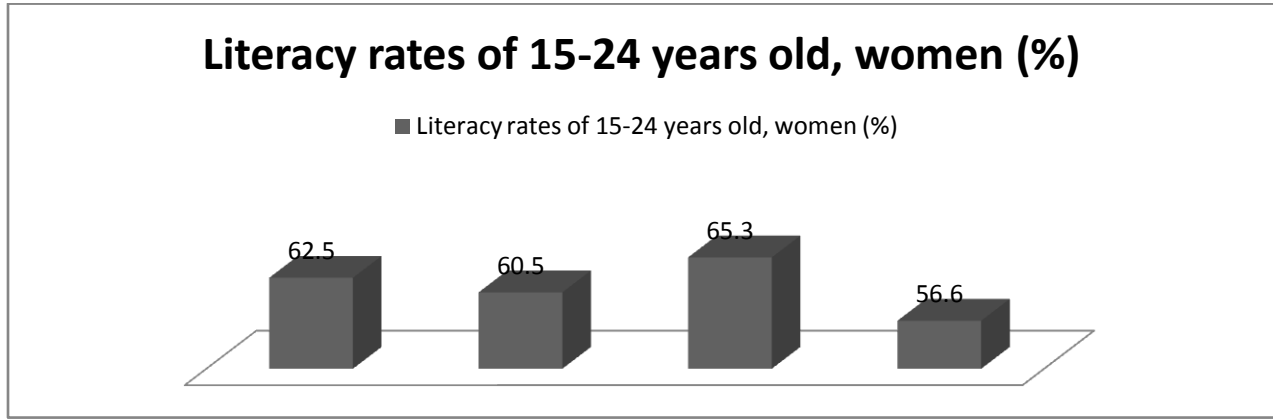
### Life Expectancy at Birth

Life Expectancy at Birth measures the desired age span and quality of health of a population. Nigeria's Life Expectancy at Birth was 51.9 years in 1990 and dropped to 48.4 years reported for 2010. This shows a decline of 3.5 years in the average length of life of Nigerians. It also suggests a decline in the quality of life of Nigerians. Although there was a decrease of 7.23% in Life Expectancy at Birth of Nigerians, more need to be done to improve the quality of life of Nigerians.

### Literacy and Education

Literacy rate among young women of 15-24 years of age was down to 56.6 % in 2010 from 65.3 % in 2009 and 60.5 in 2003

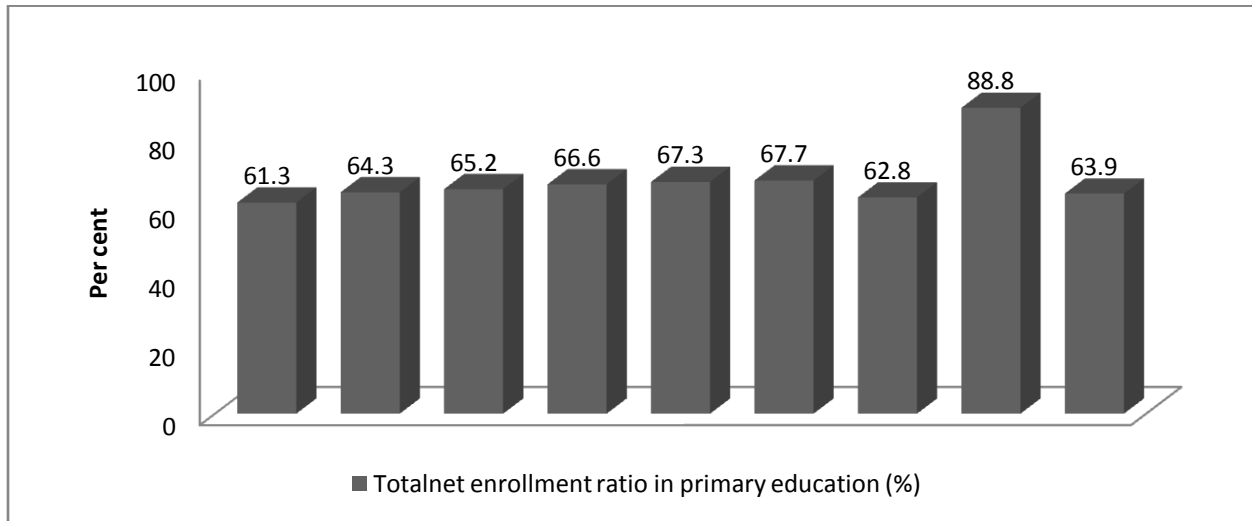
Figure 3: Literacy and Education



Source: NBS

Total net enrolment ratio in primary education for both sexes stood at 63.9% in 2010. In 2008 it was 88.8% and in 2007 it stood at 62.8%.

Figure 4: Trend in Total net Enrolment Ratios in Primary Education

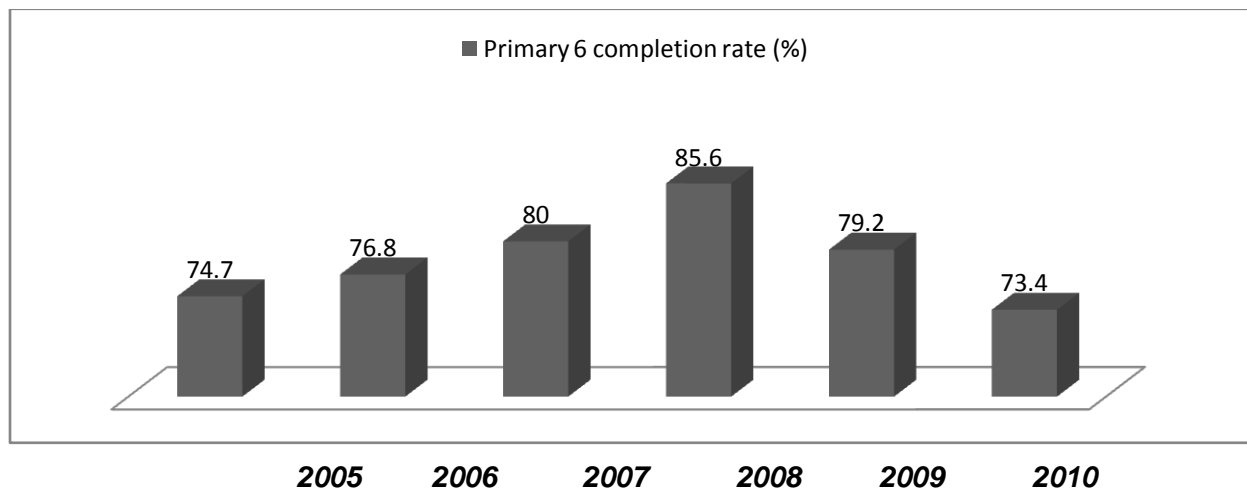


Source: NBS

Primary six completion rate was 73.4% in 2010 compared with 85.6% and 79.7% in 2008 and 2006 respectively. Indeed, primary six completion rate had been falling since 2006, indicating weakening ability of the education system to prevent drop-out in primary school.

## Primary Six Completion Rate

Figure 5: Primary Six Completion Rate



Source: NBS

A review of the standard and quality assurance of the education sector indicate that there is the need to urgently reverse the sharp decline in the quality of input and provision of infrastructure at all levels of education in Nigeria. Poor standard of education has resulted in poor performance of Nigerian students in examinations, even as the performance of the Senior Secondary candidates was a little over average in the WAEC examinations of May/June and November/December 2010 as at year ending 2010.

Table 2: Performance of Candidates in Secondary School Certificate Examinations (2010)

Year	WAEC (May/June)		WAEC (Nov/Dec)	
	No. of Candidates	% with $\geq 5$ Credits	No. of Candidates	% with $\geq 5$ Credits
2010	1,540,250	51.71	404,863	45.6

Source: WAEC

In order to correct this ugly trend, the Federal Ministry of Education adopted a number of turn-around strategies, which included the development of an effective mechanism for quality assurance in basic education, such as the Basic Education Certificate Examination (BECE) to qualified candidates to gain admission to any senior secondary school nationwide. In addition to other general examinations, Teacher needs assessment were conducted, school infrastructure were rehabilitated, capacity development were intensified and web-presence were provided to

enhance international ranking of tertiary institutions, among others. To achieve macroeconomic stability, Government is determined to pursue policies that will ensure a stable macroeconomic environment through a strong and prudent fiscal policy, management of deficit, sustainable debt-GDP ratio of no more than 30%, and single digit inflation thereby promoting real growth. Steps to improve government revenue will help address some macroeconomic challenges. Government therefore intends to block leakages from various sources, improve corporate tax collection, and boost internally generated revenue. The focus on cutting recurrent expenditure to sustainable level is therefore in the right direction towards boosting growth by redirecting expenditure to infrastructure, as well as reducing deficit level and debt services. It is therefore hopeful that the overall domestic economic growth will accelerate during 2010. The prospects for economic growth in Nigeria in 2010 are hinged largely on the rebound of crude oil and gas production following the completion of some maintenance works on oil production facilities in the country. The price of crude oil in the international market is expected to remain above budget benchmark of US\$72 per barrel and that foreign demand for Nigerian products will continue to grow.

As global recovery gathers pace, the positive growth prospects are also hinged on developments in the global economy particularly continuous growth in US, China, India and other emerging and advanced economies. Similarly, the growth of non-oil sector is estimated to benefit from the partial withdrawal of fuel price subsidy and subsequent reinvestments in productive activities of the real sector under the Subsidy Re-investment and Empowerment (SURE) programme. The down-side risks to growth include security challenges in some parts of the country, high youth unemployment, rising inflation pressure, delay in the passage of PIB Bill, increasing spending on personnel costs at state level, sluggish growth in private sector credit and rising public sector debt profile. An assessment of Government policy direction for 2012 and beyond shows that attempts to address the down-side risks to growth in the economy are steps in the right direction

## **Model Specification**

### ***Model Specification: 1***

This study employs ordinary least square (OLS) method of analysis to examine the relationship between GDP and other variables in our study.  $Gy = \alpha_0 + \alpha_1 Gk + \alpha_2 GL + U$  Where:  $Gy$  = Growth rate of real GDP  $Gk$  = Growth rate of capital  $GL$  = Growth rate of labour  $U$  = disturbance term. The  $\alpha$ 's are coefficients to be estimated and their signs are expected to be positive. In order to examine the impact of education and health on economic growth, variables such as life expectancy and adult literacy rate were introduced as independent variables. The researcher

introduced a dummy variable to capture the effect of economic reform. Given this adjustment, equation (5) can be modified as:  $GRY = \alpha_0 + \alpha_1 LR + \alpha_2 LE + \alpha_3 GRL + \alpha_4 GRC + \alpha_5 SAP + U_t$   
 Where: GRY = Growth rate of GDP LR = Adult literacy rate LE = Life Expectancy GRL = Growth rate of labour GRC = Growth rate of capital SAP = Structural Adjustment Programme  
 The study employed ordinary least square method to estimate the impact of adult literacy rate, life expectancy, growth rate of labour, growth rate of capital and a dummy variable on the growth rate of GDP. Level of stationarity of the variables was also examined through Augmented Dickey Fuller Test. The data set for the study consisted of annual time series data for 1980 to 2010. The data were obtained from the Central Bank of Nigeria statistical bulletin, Annual Reports and Statement of Accounts (various issues) and World Bank Development indicators.

### **Model Specification: 2**

In order to empirically determine the impact of crude oil revenue and social infrastructure on Economic growth, the multiple regression equation is implicitly expressed as:

$$RGDP = F(\text{THE}, \text{OREV}, \text{PS}, \text{PP}, \text{TS}) \quad (1)$$

Where

RGDP = Real GDP is Dependent Variable

THE = Total Health Expenditure

OREV = Oil Revenue

PS = Primary School Enrolment

PP = Post Primary School Enrolment

TS = Tertiary School Enrolment

The equation can be explicitly expressed as:

$$RGDP = \alpha_1 + \alpha_2 \text{THE} + \alpha_3 \text{OREV} + \alpha_4 \text{PS} + \alpha_5 \text{PP} + \alpha_6 \text{TP} + U_t \quad (2)$$

Where  $\alpha_1 - \alpha_6$  are coefficient of associated variables.

$\alpha_1$  = constant intercepts

### **ANALYSIS**

The table 3 shows the analysis of the result of the data used in the study. The method of analysis employed is the ordinary least square (OLS).

Table 3: Health and Education Expenditures in Nigeria 1980-2010 (N" million)

Years	Recurrent Exp. on Health	Capital Exp. on Health	Total Health Expenditure	Recurrent Exp. on Education	Capital Exp. on Education	Total Education Expenditure
1980-1989	191.4	110.9	302.3	748.4	363.89	112.3
1990-1999	2,961.69	2,241.7	5,203.3	8,988.7	3,661.44	12,650.1
2000	11,612.6	6,569.2	18,181.8	44,225.5	23,342.6	67,568.1
2001	24,523.5	20,128.0	44,651.5	39,884.6	19,860.0	59,744.6
2002	50,563.2	12,608.0	63,171.2	100,240.0	9,215.0	109,455.0
2003	33,254.5	6,431.0	39,685.5	64,755.9	14,680.0	79,435.9
2004	33,377.4	26,410.0	59,787.4	72,217.9	21,550.0	93,767.9
2005	50,032.8	21,652.6	71,685.4	92,594.7	27,440.8	120,036.0
2006	67,550.2	38,039.8	105,590.0	129,422.0	35,791.8	165,214.0
2007	81,900.0	34,728.8	116,628.8	150,800.0	30,960.6	181,760.6
2008	98,200.0	38,702.5	136,902.5	164,000.0	33,276.5	197,276.5
2009	90,200.0	42,676.2	132,876.2	137,116.0	35,592.4	172,708.4
2010	102,620.0	46,649.8	149,269.8	158,640.0	37,908.2	196,548.2

Source: Central Bank of Nigeria's Statistical Bulletin, 2010, p 91

In order to test for the stationarity of the variables, Augmented Dickey-Fuller (ADF) tests was used to investigate if the variables had a unit root or not.

Unit Root Test: The Augmented Dickey-Fuller (ADF) test for unit roots was conducted for all the time series employed for the study. The ADF results in Table 4 show that all the variables are non-stationary in their levels. However, with their first differences, growth rate of real GDP, growth rate of capital, life expectancy, and growth rate of labour become stationary, that is, they are I(1) since the ADF value of each of these variables are greater than the 5% critical value. Also, time series data on adult literacy rate become stationary only after second differences, thus, it was integrated series of order I (2). With these results, all variables are regressed at their stationary level

Table 4: Unit Root Test Result

Variable	1 <sup>st</sup> Difference	Critical Value	2 <sup>nd</sup> Difference	Critical Value	Order of Intergration
GRGDP	-5.713	-3.749	-6.744	-4.4415	I(1)
LR	-4.3248	-4.4167	-5.9894	-4.4415	I(2)
GRCAP	-6.1690	-3.6496	-6.8020	-3.6576	I(1)
LIFEEXP	-4.752	-3.749	-9.271	-3.766	I(1)
GRLAB	-6.3933	-3.6496	-8.5535	-3.6576	I(1)



**PRESENTATION OF RESULTS**

$$D(\text{GRY}) = 0.09 + 2.46 D(\text{LR},2) + 2.73 D(\text{LE}) - 0.012 D(\text{GRL}) + 0.051 D(\text{GRC}) + 9.0 \text{SAP}$$

(0.89)      (2.57)                      (1.96)                      (0.89)                      (2.04)                      (0.807)

$$R^2 = 0.46$$

$$F(5, 21) = 3.04$$

$$P\text{-value} = 0.036$$

$$\text{DW statistic} = 2.36$$

The t-values are reported in parentheses below the coefficients. An examination of the result above shows that t-values of literacy rate, life expectancy and growth rate of capital are significantly different from zero at the 4% level, 9% level and at the 6% level respectively. With an  $R^2$  of 0.46, it is clear that the five independent variables explained 46% of the systematic variations in Nigeria's growth rate of gross domestic product during the period under study. The Durbin Watson test of serial correlation indicates absence of serial correlation as indicated by a D-W statistic of 2.36. All the variables, except growth rate of labour, have the correct signs but only three are significantly different from zero, using 10% level of significance. The F-statistic of 3.04 is significant at the 4% level. Thus, the hypothesis of a significant linear relationship between economic growth, measured by the growth rate of GDP, and the five independent variables is validated.

Table 5: Regression Results Dependent Variable: D (GRGRP)

Method: Least Squares				
Sample(adjusted): 1980 2010				
Included observations: 24 after adjusting endpoints				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.090200	0.891564	0.101170	0.9205
D(LR,2)	2.465256	1.091293	2.259023	0.0365
D(LIFEEEXP)	2.733646	1.480777	1.846089	0.0814
D(GRLAB)	-0.011830	0.109583	-0.107953	0.9152
D(GRCAP)	0.051569	0.025245	2.042720	0.0560
D(SAP)	9.004114	5.929249	1.518593	0.1462
R-squared	0.457967	Mean dependent var	0.152086	
Adjusted R-squared	0.307403	S.D. dependent var	5.122953	
S.E. of regression	4.263446	Akaike info criterion	5.950350	
Sum squared resid	327.1855	Schwarz criterion	6.244864	
Log likelihood	-65.40420	F-statistic	3.041667	
Durbin-Watson stat	2.366006	Prob(F-statistic)	0.036638	

In examining the relationship between each of the independent variables and economic growth, it could be observed that education, measured by literacy rate, had a positive relationship with economic growth. The coefficient of literacy rate was 2.465. Thus, a 1% increase in literacy rate resulted in a 2.465% increase in the growth rate of GDP. Thus, investment in education was a worthwhile venture during the period under study. The result shows the significance of education to growth in Nigeria. Despite low budgetary allocation to education, its impact on economic growth was still felt during this period of study. The result also showed the importance of health in the process of economic growth. The coefficient of life expectancy was 2.73. This indicated a positive relationship between health, proxied by life expectancy, and economic growth. An increase of 1% in life expectancy, other things being constant, raised growth rate by about 2.73%. This equally showed that public investment in the health sector was worthwhile. Table 5 presents details about the results. Growth of capital (investment) had a positive impact on economic growth. The coefficient of growth of capital indicated that a 1% increase in investment led to about 0.051% in growth rate of the economy. Also, economic reform had a positive effect on economic growth during the period of this study. However, growth of labour force had a negative sign. One of the major reasons for this was the downsizing of industries which occurred immediately after the structural adjustment programme. This led to retrenchment of many workers. In addition, the poor labour-growth relationship was also exacerbated by political crises that characterized these periods.

Table 6: Regression Results

YEARS	GDP	THE	OREV	PS	PP	TP
1980	49632.3	302.3	12353.3	35875	3218	13
1981	47619.66	470.4	8564.4	36683	4969	16
1982	49069.28	534.39	7814.9	37611	5603	19
1983	53107.38	461.09	7253	37888	5894	24
1984	59622.53	565.59	8269.2	38211	6190	27
1985	67908.55	735.33	10923.7	35281	5876	24
1986	69146.99	747.03	8107.3	35433	5730	24
1987	105222.84	992.19	19207	34266	6092	28
1988	139085.3	3,335.40	19831.7	33796	6044	104
1989	216797.54	5,649.10	39130.5	34904	5868	118
1990	267549.99	5,009.70	71881.1	35433	6001	122
1991	312139.74	3,980.30	82666.4	35446	5860	124
1992	532613.83	4,416.26	1640748.1	36610	6009	130
1993	638869.79	22,409.68	162102.4	37812	6162	133
1994	899863.22	13,995.29	160192.4	38000	6300	133
1995	1933211.55	19,738.70	324547.6	39677	6452	138
1996	2702719.13	20,742.14	408783	41660	6646	138
1997	2801972.58	28,260.53	416811.1	43951	7311	138

1998	2708430.86	33,016.15	324311.2	45621	7801	138
1999	3194014.97	158,447.92	724422.5	47902	8113	144
2000	4582127.29	113,376.98	1591675.8	48860	8275	144
2001	4725086	132,638.86	1707562.8	49306	6319	173
2002	6912381.25	205,136.82	1230851.2	51870	6305	177
2003	8487031.57	198,678.31	2074280.6	995.1	6034.6	7029.7
2004	11411066.9	193,164.59	3354800	2051.9	3602.4	5654.3
2005	14572239.1	215,949.89	4762400	2426.4	9746.4	12172.8
2006	18564594.7	227,685.67	5287566.9	3215.7	11667	14882.7
2007	20657317.7	280,463.08	4462910	3808.2	12983.1	16791.3
2008	2429632.29	646,700	6530630.1	10579.3	14034.8	24614.1
2009	24794238.7	671,386	3191937.98	8516.6	23047.2	31563.8
2010	29205783	1,131,600	5396091.05	10529.2	39034	49563.2

The result of estimation of the model summarized in the table above shows that there is a positive relationship between Real GDP and Total Health Expenditure, Oil Revenue, Post Primary School enrolment. However, Primary school enrolment and Tertiary school enrolment are negatively related to real gross domestic product.

Table 7: Unit Root Test Summary statistics (AOF & PP Unit Root Test Results)

Dependent Variable: GDP				
Method: Least Squares				
Sample: 1980 2010				
Included observations: 31				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
THE	6.711434	13.94133	0.481405	0.6344
OREV	1.402728	0.764333	1.835233	0.0784
PS	-344.7781	122.3215	-2.818623	0.0093
PP	1876.186	591.3681	3.172620	0.0040
TS	-1119.674	615.2562	-1.819851	0.0808
C	2956857.	3230775.	0.915216	0.3688
R-squared	0.834224	Mean dependent var		5264197.
Adjusted R-squared	0.801069	S.D. dependent var		8020466.
S.E. of regression	3577264.	Akaike info criterion		33.19008
Sum squared resid	3.20E+14	Schwarz criterion		33.46763
Log likelihood	-508.4462	Hannan-Quinn criter.		33.28055
F-statistic	25.16119	Durbin-Watson stat		2.477777
Prob(F-statistic)	0.000000			

$$\text{LRDGP} = 2956857 + 6.711434\text{THE} + 1.402778 \text{ OREV} - 344.7781 \text{ PS} + 1876.186\text{PP} - 1119.6\text{TS}$$

A close inspection of the table above indicates that the specified model has high coefficient of determination. This can be seen from R – Squared of 83.4 percent. The R-squared reports that

the variable can explain about 83.4 percent of total variation in real gross domestic product while the remaining 16.6 percent variation in real gross domestic product in the model or rather accounted for by other variables outside the model. The fitness of every regression result is based on its R squared. The adjusted R-squared shows that asymptotically, the variables can explain approximately 92 percent of total variation. The implication of this is that the model has goodness of fit. The F statistics test the overall significance of the model under study. When F-calculated is greater than F-tabulated we reject the null hypothesis ( $H_0$ ) and conclude that the variable is statistically significant in explaining the dependent variable. From the table it shows that F-statistics is 25.16119 and Pros (F-statistics is 0.00000. we therefore reject the null hypothesis and accept the alternative hypothesis. This is because it is greater than the critical values of 2.57 and 3.79 at 1% and 5% respectively. This implies that the model under this study is statistically significantly difference from zero. In other words, the explanatory variables jointly considered are significantly important in explaining variation in the dependent variable real gross domestic product. But Durbin Watson statistic value of 2.47 revealed that there is no autocorrelation. When considered the statistical significant of each variable from the table above we can see that primary school enrolment and post primary school enrolment are individually statistically significant at 5% while oil revenue and tertiary school enrolment are individually statistically significant at 10%. A unit increase in total health expenditure will increase real gross domestic product by six percent .While a unit increase in oil revenue will increase Real GDP by 1.4 percent. As soon as the oil Revenue increases by a unit, primary school enrolment and Tertiary School enrolment will reduced by 344% and 119% respectively and by implication the oil revenue surplus has induced people to engage in social vices such as bunkering, kidnapping there by making them to be unproductive.

### Unit Root Test Result

Literature has established that most time series variables are not stationary. Therefore, using non stationary variables in the model might lead to spurious regression which cannot be used for precise prediction (Gujarti, 2003). Hence, our first step is to examine the characteristics of the time series data used for estimation of the model to determine whether the variables have unit root i.e whether it is stationary and the order of integration. The Augmented Dickey Filler and Phillip-Peron tests are used for this purpose. A variable is stationary if the absolute ADF/PP value is higher than any of the absolute Mackinnon values. The probabilities to Fisher test are computed using asymptotic chi square distribution. All other tests assume asymptotic normality. The table suggest that one variable RGDP in each of the test is stationary at level, while OREV, PP, TP indicate non-stationary at levels. However, were stationary after first difference, which

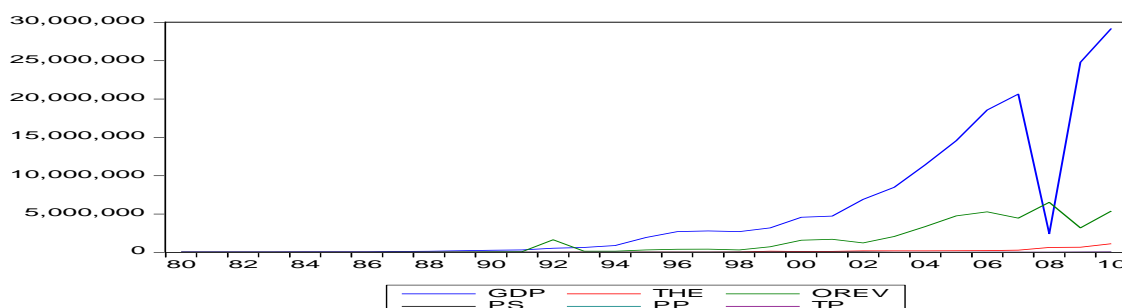
implies that they (1) series. Given the Unit root properties of the variables, therefore, were proceed to test for actual number of co integrating equations that exist among the variables by using Johnsen co integration test .Longrun Analysis - Co integration Test Co integration analysis is carried by Watson to determine the existence of long run relationship that exist between the dependent variable and its regressor. When one or all the variables is/are non stationary at level which means they have stochastic trend. Essentially, it is used to check if the independent variable can predict the dependent variable now (short run) or in the future (long run).The long run relationships among the variables were examined using Johnsen co integration framework. The results obtained above allow the possibility of long run relationship among the variables. We are to determine how real gross domestic product reacts in the long run to other variable.

Table 8: Group unit root test results

Group unit root test: Summary				
Series: GDP, THE, OREV, PS, PP, TP				
Sample: 1980 2010				
Exogenous variables: Individual effects				
Automatic selection of maximum lags				
Automatic lag length selection based on SIC: 0 to 6				
Newey-West automatic bandwidth selection and Bartlett kernel				
Method	Statistic	Prob.**	Cross-sections	Obs
Null: Unit root (assumes common unit root process)				
Levin, Lin & Chu t*	10.1507	1.0000	5	136
Null: Unit root (assumes individual unit root process)				
Im, Pesaran and Shin W-stat			4	106
ADF - Fisher Chi-square	0.09667	1.0000	4	106
PP - Fisher Chi-square	0.57409	0.9998	4	120

\*\* Probabilities for Fisher tests are computed using an asymptotic Chi-square distribution.

All other tests assume asymptotic normality.



Notes:

ADF 1 and PP1 = Unit root tests with constant,

ADF 2 and PP2 = Unit root tests with constant and trend \*and\*\* indicate statistical significance at 1% and 5% level, respectively 0.09667 as the ADF-Fisher-Chi square value and 0.57 409 as the Philip Peron – Fisher Chi-square value.

From the table above,  $b_0$  the trace and Eigen value tests suggest that there are four co integration equations at the 5 percent significance level after normalization among the variables. In essence, the variables will converge to equilibrium point in the long run.

The study examined the commitment of the federal government of Nigeria to education and health through her budgetary allocations within the last few decades. It was found that little attention was paid the health sector as the percentage of budgetary allocation to the sector ranged from less than 2.7% in the 1980s to 5.6% in 2006 compared with education. However, government's commitment to education fluctuated within the period. It reached the peak in 2000, after which it decreased to about 8.7% in 2006. However, when the budgetary allocations to education were compared with the 26% of the total budget recommended by UNESCO for developing countries like Nigeria, it is clear that government has to devote more resources to the sector. In spite of the meagre resources allocated to both sectors, the result of the empirical analysis showed that education, measured by adult literacy rate, and health, measured by life expectancy, had positive relationship with economic growth. Thus, investment in education and health was a worthwhile venture during the period under study.

## CONCLUSION

To make Nigeria one of the twenty developed countries in 2020, the importance of government spending on human capital and investment goods cannot be overemphasized and the low rate of government spending on health and education as well as capital projects has led to the low rate of growth in the Nigerian economy. Therefore, more attention has to be directed towards increasing the spending on education and health. Also, there must be accountability by the government so that on-going projects are carried out effectively and reduce corruption in the public sector.

The oil industry is a vital industry in Nigeria. Its output via oil revenue is generally agreed to be a catalyst to economic growth. This study explored the working of this industry on the shores of Nigeria. It equally discussed the consequence of oil revenue on the Gross domestic product (GDP) of Nigeria from 1980-2010. The study proved that there has been environment

degradation, neglect of the people, abandonment of the agricultural and manufacturing sectors and a reasonable contribution to GDP, though with variation in the trend.

It is the opinion of the researcher that corruption in the Nigerian nation may have contributed immensely to the poor contribution of the oil sector to the economic growth of Nigeria. For example, all allegations abound where retired military officers and some influential politicians are offered oil licenses to the proceeds are reflected in the private pockets of such people only.

## REFERENCES

- Adedipe. B. (2007). The Impact of Oil on Nigeria's Economic Policy Formulation.
- Ajakaiye, M.B (1990). Impact of Oil Boom on Nigerian Agriculture. Paper presented at the first International Conference on Free Crops. Organized by the Imo State Government. April 1990.
- Anyanwu, J.C, Oyefusi A., Oaikhenan H. & Dimowo F.A. The Structure of the Nigerian Economy (1960-1997). Joanee Educational Publishers Ltd. Onitisha, Nigeria.
- Bloom, D. E., and Canning, D. (2003). The health and poverty of nations: from them-v to Practice. *Journal of Human Development*, 4(1): 47-71.
- Central Bank of Nigeria (2010). Statistical Bulletin Central Bank of Nigeria (various issues): Annual Report and Statement of Account.
- Ely,Richard and Wicker, George (2002). Elementary Principles of Economics. International Monetary Fund.
- The Fiscal Affairs Department (2007). The Role of Fiscal Institutions in Managing the Oil Revenue Boom.
- Grossman, M. (1972). On the Concept of Health Capital and the Demand of Health, *Journal of Political Economy*, 80(2): 223-255.
- Kubeyinje & Nezainya (1999). Oil a mixed blessing for Nigerian Economy in Africa Recovery. UN Department for Public Information, 13(1).
- Nwankwo, G.O. (1983). Nigeria and OPEC; Africa Universities Press. Ibadan.
- Odularu, .G.O (2008). Crude oil and Nigerian Economic Performance.
- Obadan, M.I (1987). Impact of Petroleum on the Nigerian Economy. *ECONEWS* 2 (2).
- Onyenekwe, C.N. (1998). Multinational Company Financing of Socio-Economic Development in Oil Producing Communities of Nigeria.
- Pinan, Valentino (2001). Public Expenditure: A key Concept in Economic. Retrieved from <http://www.economics\webinstitute.org>.
- Solow, R (1956). A Contribution to the Theory of Economic Growth. *Quarterly Journal of Economics*, 70: 65-94.
- Schultz, T.P. (1992). The Role of Education and Human Capital in Economic Development: An Empirical Assessment. Yale Economic Growth Center Discussion Papers Series.670.
- World Bank (2006). World Development Indicators. Development Data Group, Washington. Retrieved from <http://www.\worldbank.org>.
- Koutsoyannis A. (1979). Theory of Econometric. Hongkong Macmillan Education Books Limited.