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2012

Online at <https://mpra.ub.uni-muenchen.de/88189/>
MPRA Paper No. 88189, posted 08 Aug 2018 15:42 UTC

Economic Development in Nigeria: the Basic Needs Approach

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Abstract

This paper investigates the efficacy of Nigeria's development policies in improving the standard of living of the people by adopting the Basic Needs Approach (BNA) to development. Relying on post-independence data, the paper placed special emphasis on the integration and cointegration properties of the variables which are prerequisite conditions for technical efficiency in measuring the parameter estimates and establishes the notion of long-run equilibrium relationship between the basic needs variable (nutrition, health, education) and the major macroeconomic policy variable employed in the study. Qualified evidence from the study indicates that government development policies as measured by its spending on health, education, agriculture and water resources have been partly effective and sub-optimal. The paper points to misapplication of funds, abandonment of projects and embezzlement of public funds as major hitches to the efficacy of development policies in entrenching improved living standard in Nigeria. We conclude that the Basic Needs Approach represents a better methodology for examining the development process and its impact on people's welfare and recommends a more conscientious and objective implementation of Nigeria's development policies in addition to improved funding.

Keywords: Economic Development, Nigeria, Basic Needs Approach

1. Introduction

The center piece of contemporary economic policies is predicated on growth and development. In Sub-Saharan Africa (SSA), the various economic adjustment programs were aimed at enhancing growth and development. Although there have been attempts by some studies to equate growth to development, some distinguishing features between the two are discernable (Obadan, 1997). While economic growth is defined as an increase in per capita real income sustained over time, economic development, on the other hand, is the process whereby the real per capita income not only increase over time but includes qualitative and quantitative improvement in political, social and economic institutions as well as the distribution of income. This implies that if the traditional production function expands due to the growth of the variable inputs, then development could be attained. In particular, therefore, development implies not only growth of per capita income but also its distribution, the sources of growth, the development of infrastructure and administrative institutions. Hence, development is a much broader concept than economic growth (Essang, 1981:299).

Early economic development policies in Nigeria had focused on growth. Since the international yardstick for measuring the well-being of nations then was the growth of per capita income, it was necessary to concentrate on a measure that would increase the GDP. It was the general thinking and belief that if growth were stimulated, even in a sector, it would spread to the other sectors, thus resulting in development. Hence, the discovery and subsequent exploitation of petroleum oil in the early 1970s in Nigeria saw government's complete intensification of efforts in the growth process. The oil sector employed substantial capital; government attempted to stimulate growth and development through the oil sector. By middle of the 1970s, about 90% of the country's earnings were from the oil sector. Investment in the sector was capital intensive. The technology and most inputs used in the sector were imported. The expectation was that the oil sector would stimulate growth with a resultant spill over on other sectors of the economy. Although the oil sector currently contributes about 25% to the country's GDP, and remains the major foreign exchange earner for the country, the economy is still very dependent on the oil sector. All policies to diversify the economy have not yield positive results. Notwithstanding the shortcomings of the growth-inducing policies adopted in Nigeria, data indicates average cumulative positive growth over the period, 1980 – 2010 (Table 1.2). It was therefore expected that within this period such positive growth should have entrenched development in the economy. On the contrary, a perceptive review of Nigeria's development profile points to rising unemployment of production factors (capacity underutilization) and increase in poverty level. From Table 1.1, the incidence of poverty (measured by poverty gap and headcount) increased sharply between 1985 and 1992 and between 1992 and 1996. There was however a slight decrease in poverty level in 2003. The poverty headcount ratio at \$2.00 a day (2005 international prices) which stood at 86.07% by March 1996 declined to 82.63% by July 2003. This slight decline in poverty headcount ratio was not sustained as the ratio again increased to 84.12% by 2009 with the poverty gap also rising from 45.39% in 2003 to 49.70% in 2009.

Table 1.1: Profile of Poverty in Nigeria (1985-2009)

<u>Country</u>	<u>Year</u>	<u>Data type</u>	<u>Poverty line (PPPS/mo)</u>	<u>Mean (\$)</u>	<u>Headcount (%)</u>	<u>Poverty gap (%)</u>	<u>Squared pov. gap</u>	<u>Watts index</u>	<u>Gini index</u>	<u>MLD index</u>	<u>Popu. (mil.)</u>	<u>Survey year</u>
Nigeria	2009.8	C	60.00	39.90	84.12	49.70	33.97	0.92	48.83	0.42	154.49	2009.8
Nigeria	2003.7	C	60.00	40.52	82.63	45.39	29.50	0.80	42.93	0.32	133.07	2003.7
Nigeria	1996.3	C	60.00	39.35	86.07	49.22	32.58	0.88	46.50	0.38	112.62	1996.3
Nigeria	1992.3	C	60.00	40.15	79.95	46.12	31.62	0.88	44.95	0.37	102.44	1992.3
Nigeria	1985.5	C	60.00	45.74	76.39	38.24	23.19	0.63	38.68	0.25	85.83	1985.5

Source: PovcalNet - Development Research Group, World Bank.

Note : A Poverty line of \$60 per month implies a poverty line of \$2 per day.

Poverty gap is defined as the mean shortfall from the poverty line (counting the nonpoor as having zero shortfall), expressed as a percentage of the poverty line. This measure reflects the depth of poverty as well as its incidence. Poverty headcount ratio at \$2 a day (PPP) (% of population) is the percentage of the population living on less than \$2.00 a day at 2005 international prices. As a result of revisions in Purchasing Power Parity (PPP) exchange rates, poverty rates for individual countries cannot be compared with poverty rates reported in earlier editions.

Overall, Table 1.1 indicates that poverty ate deep into the growth roots of the country and totally drenched the progress made from the impressive growth performance in the oil sector. The unemployment data as recorded by the Central Bank of Nigeria (CBN) and the Nigerian Bureau of Statistics (Table 1.2) might not have depicted the actual or time picture due to the large and accommodating informal sector in Nigeria. Capacity utilization decreased from 70.1% in 1980 to 38.3% in 1985. Slight reprieve came in 1990 when it rose to 40.3%, but the rise could not be sustained as the rate plunged to 29.29% in 1995. By the year 2000, the manufacturing capacity utilization rate in Nigeria had plummeted to 36.1% against its value of 70.1% in 1980. Infrastructural provisions, in term of public utilities (roads, power, railways etc.) are still very inadequate. Yet the economy is said to be growing. If growth, translates to into development then one would have concluded that the country is developing, given its growth indications of rising GDP and per Capita Output (table 1.2).

Table 1.2: Profile of Economic Development in Nigeria (1980-2010)

YEAR	MANU. CAPACITY UTILIZATION RATE (%)	UNEMPLOYMENT RATE (%)	GDP. GROWTH RATE (%)	GDP.PER CAPITA GROWTH RATE (ANNUAL %)
1980	70.1	6.4	4	1
1981	73.3	7.2	-13	-15
1982	63.6	8.7	0	-3
1983	49.7	10.2	-5	-8
1984	43	7.9	-5	-7
1985	38.3	6.1	10	7
1986	38.8	5.3	3	0
1987	40.4	7.0	-1	-3
1988	42.4	5.1	10	7
1989	43.8	4.5	7	4
1990	40.3	3.5	8	6
1991	42	3.1	5	2
1992	38.1	3.5	3	0
1993	37.2	3.4	2	0
1994	30.4	3.2	0	-2
1995	29.29	1.9	3	0
1996	32.46	2.8	4	2
1997	30.4	3.4	3	0
1998	32.4	3.5	2	0
1999	34.6	17.5	1	-1
2000	36.1	13.1	5	3
2001	42.7	13.7	3	1
2002	54.9	12.2	2	-1
2003	56.5	14.8	10	8
2004	55.7	13.4	11	8
2005	54.8	11.9	5	3
2006	53.3	12.3	6	4
2007	53.38	12.7	6	4
2008	53.84	14.9	6	3
2009	58.92	19.7	7	4
2010	na	21.1	8	5

Source: World Development Indicators (WDI), World Bank. Data on manufacturing capacity utilization and unemployment rate were sourced from the Nigeria Bureau of Statistics (NBS) and Central Bank of Nigeria (CBN) Statistical Bulletin (various issues).

The basic needs of life (health, education, food, housing, etc) are reported to be very far from the average Nigerian who constitute over 80% of the country's population. However, it has been argued in some quarters that development in the form of basic needs had permeated from growth experienced in some sectors to the generality of Nigerians. This brings to the fore the quest for an empirical examination of this contentious issue. This is important to ensure that macroeconomic policies are properly focused.

The broad objective of this paper is to examine the economic development process in Nigeria by adopting the Basic Needs Approach (BNA). The paper seeks to ascertain whether or not economic growth have induced development in Nigeria over the period under study (1970 – 2010). To achieve this, the study took an eclectic review of the basic development models and an appraisal of various development strategies and programmes launched by different administrations in Nigeria with a view to ascertaining the extent to which they have entrenched the desired improvement in living standard in the country. In addition, the study seeks to determine whether government expenditure on health, education, agriculture and water have impacted on the basic need of life, namely, food production, access to portable water, health and education. The novelty introduced into the Basic Need Approach (BNA) and adopted for this study is the endogenization of real per capita gross domestic product. This is a departure from the prevailing orthodoxy that characterizes the old (traditional) models of growth and development whereby measures of aggregate economic activities are often introduced as response variables rather than arguments in the model. The rationale for the endogenization is the realization that the emphasis on growth have hitherto almost always failed to entrench improvement in living standard in less

developed countries (LDCs), hence the need to model growth as an argument in the Basic Need functions. This innovation is necessary to track the responses of the basic needs variables (access to good health as measured by life expectancy, access to basic education as measured by per capita enrolment, access to food as measured by the index of food production and access to portable water) to changes in macroeconomic policy variables which include government spending on health, education, agriculture and water resources. The balance of the paper is structured as follows. Section 2 provides an eclectic review of the basic development models and Nigeria's development strategies and programmes in history. Section 3 describes the methodology, the type and sources of the data set used in the empirical analysis and the diagnostic tests on the data and model. The result of the analysis is presented in section 4. Section 5 presents the policy implications of our findings, while the paper is concluded in section 6.

2. Eclectic Review of Basic Development Models and Nigeria's Development Strategies in History

2.1 The Basic Development Models

Early studies on theories of economic development have tended to focus on either the economics of under-development or economies of developing countries. Starting from the early 1950s, a counter revolution came to set aside these earlier thoughts on development (Krugman, 1993:16). Regrettably, the new approach that was launched by the counter revolution was not very convincing in addressing the core issues of development in the underdeveloped economies, as they stressed more growth rather than development. In recent times, pockets of argument are now emerging on the efficacy of this new approach in solving the economic problems of developing countries. Some scholars have argued that the new approach failed to improve on early development theories, thus allowing the early theories to remain valid. It, therefore, becomes imperative to revisit the old theories in order to provide a background for understanding the essential ingredients of economic development.

2.1.1. The Dual Economy Model: Basu (1998) submits that much of the present day literature on the dual economy model derives its starting point for Arthur Lewis (1955), but that the origin of the idea can be traced to earlier writings of Boeke (1953) and Furnivall (1939). In his work on India, Furnivall (1939) defines a plural economy as a society consisting of two or more elements or social orders which live side by side, yet without mingling in one political unit. Economic dualism was assigned a much more central role by Boeke who emphasizes that a village should not be interpreted literally but in the context of a "pre-capitalistic" community.

2.1.2 Arthur Lewis Model: Lewis model is a long run analysis of the development of a dual economy; it traces the time-path of a poor economy getting gradually industrialized. Lewis describe the model as a "classical" one, meaning that in the rural sector there is, for all the practical purposes, an unlimited labour supply at the subsistence wage. More precisely, at the subsistence wage, there is an excess supply of labour and the excess supply is sufficiently large so that no employer - incumbent or prospective - has to worry when considering expansion, about having to bid up wages or about getting rationed in the labour market. If the capitalist sector wishes to draw on this unlimited supply of labour, it cannot, however do so at the subsistence wage. It typically has to pay a higher wage, which is a mark-up on the rural subsistence wage. The Lewis model generated much interest among development economists, and in the 1960s there were many attempts to restate it formally. The main concern of these efforts was to examine the turning points in the long-run process described by Lewis. One of the most prominent attempts to restate Lewis model was due to John Fei and Gustav Ranis (1968).

2.1.3 The Fei-Ranis Model: Fei and Ranis (1968) presented a theory of development relevant to the labour surplus type of underdeveloped economy like Nigeria. These models present a typical LDC by the existence of two distinct sectors, the modern sector and the rural sector. While the modern sector is market oriented using considerable capital and technology, the rural sector produces for subsistence and depends on land for production (Essang 1981). According to Higgins (1968) the proponents of this model (Ranis and Fei, 1968) pulled together in their fundamental equation, the various factors influencing the rate of labour absorption into the industrial sector as follows:

$$AL = \frac{AK + BL + J}{ELL} \quad \text{----- (2.1)}$$

Where AL = rate of labour absorption (% rate of growth of industrial employment through time, AK = rate of capital accumulation, BL = degree of labour using bias or derivation from neutrality of Innovations, J = the "intensity of innovation or fractional increase in output due entirely to the passage of one unit of time, holding both capital and labour constant" or rate of which productivity is raised through time of technological progress, ELL = rate of which the marginal productivity of labour falls as the ratio of labour to capital is raised.

Equation 2.1 above states that the rate of growth of industrial employment depends on the rate at which marginal productivity of labour falls with increases in employment (other things being equal), the rate of capital accumulation in the industrial sector, the extent to which innovations release or absorb labour and the rate at which productivity is raised by technological progress. From their characterization of the two sectors, the

proponents of the dual economy models (Ranis and Fei, 1968; Lewis 1955) advocated the concentration of resources on the dynamic, commercial modern sector and the withdrawing resources from the subsistence sector. It was believed that this strategy would ensure cumulative growth of incomes, employment and rapid structural transformation of the under- developed economies. As we see in Essang (1981), the dual economy model assigns a very restrictive role to agriculture and thus misled policy maker in underdeveloped countries by emphasizing and even exaggerating the capacity of urban industries for cumulative growth.

2.1.4 The Harris–Todaro Model: A major weakness of the early development theories is the neglect of urban unemployment. Yet the problem demand serious theoretical attention because conventional remedies have often surprised governments by accentuating rather than curing the problem. Todaro (1981) reports that the Kenyan government in an effort to reduce urban unemployment particularly in Nairobi and its outskirts entered into a pact with capitalists and trade unions which among other things, called on both the private and public sectors to increase their employment by 15%. However, when this pact was implemented, the effect turned out to be quite reverse of what was expected. The possibility of new jobs in the urban centres caused migration from the rural regions to Nairobi in such numbers that the end result was higher than urban unemployment before the program was launched. This experience has been observed in many other developing countries, including Nigeria. For these reasons it becomes important to construct a realistic theory of rural- urban labour distribution that can be used for policy purposes. The Harris – Todaro model best analyses the scenario (See Todaro, 1969 and Harris and Todaro, 1970 for an exposition on their model).

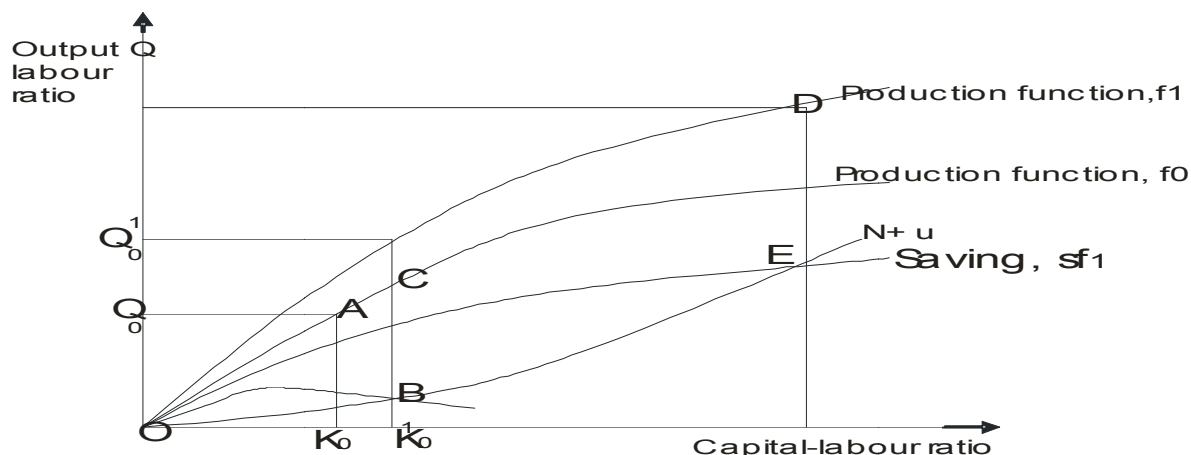
Harris and Todaro's work has given rise to substantial literature, criticizing and modifying their basis model (see Corden and Findlay, 1975; Fields, 1975; Todaro, 1976; Mazumdar, 1976; Weary, 1981; Beladi and Marjit, 1996 cited in Basu, 1998). Mazumdar (1976) cited in Basu (1998) was noted to have made an interesting observation that the use of the urban employment rate as the probability of finding an urban job amount to an over estimation of the likelihood of a migrant finding a job. In reality, however, a person presently employed would have a greater probability of finding a job in the next period because employers do not typically sack all their employees at the beginning of each period and choose new workers by a random process. This means that a new arrival in the urban sector has a smaller probability of finding a job. Also the Harris and Todaro (HT) model supposes that in the urban sector people find jobs either in the formal sector at a wage (W) or they remain unemployed. But empirical studies in Latin America and Asia have revealed that many job seekers who do not find employment in the urban formal sector end up working (often on poorly paid odd jobs) in the urban informal sector. Indeed informal sector can be quite large, as is the case in Nigeria (Essang, 1981).

2.1.5 The Classical and Neo-Classical Model

The classical and neo-classical economists see the growth of an economy, whether rural or non-rural, as resulting from the intensification of capital investment and employment of labour. These models suit the aspirations of the developed economies and are derived from the basic framework of the developed economies. It is not surprising therefore, that most of these theories are anchored on capital intensification as a necessary tool for growth and development. They see capital as that factor which could create output and growth (Higgins 1968:95).

The convergence argument which is presented in the work of Pack (1993) corroborates the work of early classical thinkers that growth result from the intensification of capital investment and employment of labour. The view of the convergent argument as presented in the neo-classical growth model (figure 2.1) is that nations start initially at point A in the growth model, with capital-labour ratio (K_0) and output-labour ratio (Q_0), and move along the production function f_0 as they increase their capital-labour ratios. They take advantage of the readily available new techniques to the right of k_0 . An interpretation of this convergence argument is that if investment rates are equal across countries as a result of domestic saving or international capital movements, all countries will move towards C. Equilibrium is determined at B where savings S_f equals the requirements for new investment ($N + u$).

Figure 2.1: The Neo-classical Growth Model



Source: Adapted Pack (1993)

Notes: N is the rate of labour force growth; u is the rate of labour – augmenting technical change and $(N+u)$ is the investment required to maintain a constant capital-labour ratio.

Countries starting to the left of point B should grow more rapidly than those already at it. This is because they do not have to incur expenses for research or the commercialization of the techniques to the right of K_0 . These more advanced techniques are available to economies which were initially poor at no cost. The assumption is that there exists an international best practice production function along which nations (and the industries and firms within them) can move. Output per effective worker will increase as a result of capital accumulation and will converge towards f_0 . As long as labour augmenting technical change is taking place at the rate of u per year, income per unit of labour increase at this rate.

The Gerschenkron's (1962) view, interpreted in the convergence theory, is that industrial countries operate along the production function f_1 and that the developing countries operate initially on f_0 but have the opportunity to move toward f_1 and to shift from technologies that have lower total factor productivity (TFP) at any given capital-labour ratio to ones that have greater TFP (Gerschenkron, 1962). As a result of such a shift, the intermediate term growth in per capita income would include the impact of capital deepening technical change. Technical change would now include the effect of introducing the more productive technology, f_1 , as well as the existing rate of labour–augmenting technical change. Convergence is the move from A to D . The model depicts clearly the position that returns paid to factor encourage their productivity.

However, this model is limited because, like the dual economy models of Fei & Ranis (1968) and Lewis (1954), it ignores technology which is an integral embodiment of labour resource. The model also considers labour as a fixed input with only capital variation. But technical labour force is known to be positively related to agricultural and economic development. In Nigeria, for instance, where the economy is largely agrarian in nature, and considering the fact that over 75% of the country is rural (CBN, 2000), the quality of labour is a key determinant of the growth rate of the economy with its unlimited labour supply (Lewis 1954).

2.1.6 The Endogenous Growth Model (AK Model):

Barro and Sala-i-Martin (1990) demonstrate the endogenous growth using the AK model. The model implies that returns to capital are always constant. In their demonstration, the model is derived from the behavior of households and firms (for an exposition on the mathematical underpinnings, see Barro and Sala-i-Martin, 1990: 141). Basically, in the AK model of the firm with its linear production function $y (=AK)$, anything that changes the level of the baseline technology, A , affects the long run per capita growth rate. The various activities of government such as the provision of infrastructure, protection of property rights and the taxation of economic activities can be viewed as effects on the coefficient A and hence, on the growth rate.

2.2 Overview of Nigeria's Development Programmes in History:

Conscious of the fact that its industrialization policies and focus on the oil sector to engender growth did not translate to improvement in the living standard of the generality of the people, the government of Nigeria adopted several measures to address this anomaly. Since studies had identified that over 80% of poor Nigerians live in the rural areas, the development policies were targeted at the rural sector, although with great spillover expectation to the urban sector. This section of the paper presents an overview of some of the country's development strategies with a view to determining the extent to which they have helped in entrenching the much needed development in the country.

2.2.1 Agricultural Credit Guarantee Scheme Fund (ACGSF): This scheme which was established in 1977 sought to provide guarantee of up to 75% of total loans by commercial banks to farmers for agricultural purposes. An account by Ekong (1991) shows that as at 1998, a total of 14637 loans (valued at ₦216 million) were

guaranteed. As we see in Ekong, C. N. (2001), the fall in the nominal amount of loans guaranteed and the number of loan account was very pronounced in the peak period of the Structural Adjustment Programme (1986-1993) during which interest rate took a bullish trend following its deregulation. This discouraged borrowing and investment, especially in the 'uncertain' agricultural sector. The scheme did not create the desired impact due to, among other things, the deflating values of loans resulting from inflation.

2.2.2 River Basin Development Authority: Historical facts about civilization show that civilization existed and flourished around river valleys. Examples include The Nile Valley in Egypt, The Tigris-Euphrate Valley in Mesopotamia, The Indus Valley in India and The Yangtze and Hwang-Ho Valley in China (Batten, 1939; Van Loon, 1950; Olayide, et al., 1984). Towns such as Oxford, Cambridge and Bedford exemplify this striking feature (Mitchell, 1954). As we see in Ekong (2001), water resources development in Nigeria received the first noticeable mention in the International Bank for Reconstruction and Development (IBRD) 1955 report. The report advocated the establishment of a laboratory for salt and silt analysis of water as well as the study of simple models of water control projects. The importance of collecting data on River Niger and Benue was stressed in view of the agricultural and navigational benefits that could be derived from using such data as a basis for planning. In August 1976, another Authority, the Niger Delta Basin Development Authority was established with the aim of the comprehensive and integrated physical development of the Delta area. Today, the remnants of these River Basin Development Authorities can still be seen in many states in Nigeria.

2.2.3 The Rural Banking Scheme: This scheme was launched in 1976 following the recommendations of the Okigbo Financial Review Committee which found that over 50.4% of Nigeria's money stocks were in the rural sector. It was drawn up in 3-stages with a total of 766 banks branches to be established in Nigeria between 1976 and 1989. The scheme was to, among other things, cultivate the banking habit among rural dwellers and mobilize savings from rural areas for profitable investment. Although it recorded 100% compliance rate at the end of the third phase, the objectives of the scheme were never realized. The scheme died a natural death in 1992.

2.2.4 The Directorate of Food, Roads and Rural Infrastructure (DFRRI): Following the inability of the various rural development strategies to yield anticipated results, government in 1986 established the DFRRI through the promulgation of Decree No.4 of 1987. Under the scheme, the directorate was to construct and maintain rural roads to provide the link between the farm produce and the market, promote agricultural production through the provision of inputs (seedling, fertilizers and equipment) and the provision of rural housing. The scheme was unable to meet the set target due to high level of corruption and duplication of functions and was scrapped in 1993.

2.2.5 Better Life for Rural Women (BLRW): To raise the consciousness of women about their rights, social, political and economic responsibilities, the BLRW was established by Mrs. Mariam Babangida in 1987. The programme focused on four basic areas of women problems, namely, health, education, farming, social and political affairs. While a lot was achieved in the areas of promotion of rural health, reduction in infant mortality and adult literacy programmes, the scheme was said to have been hijacked by urban 'better-to-do' women at the detriment of the precarious rural women. This condition manifested in 1993 when the government of Sanni Abacha decided to proscribe this programme, restructure its organ and rename it the Family Economic Advancement Programme (FEAP).

2.2.6 The Family Economic Advancement Programme (FEAP): FEAP was directed at encouraging rural development through the formation of cooperative groups. Cottage industries were to be set up at the ward level under government sponsorship using cooperative groups as the spring board. The projects were to be financed through loans guaranteed up to a maximum of ₦500,000. The activities of FEAP were abandoned with the ouster of the Sanni Abacha Administration.

2.3 The Foundation of Economic Development

The earlier theories reviewed in this paper outlined the nature and causes of poverty in developing countries and the transformation of societies from rural to industrial which were hinged on agriculture (Thirwall, 1983; Meier, 1984, Ekong, 1991, Todaro, 1981; Galbraith, 1980; Kehoane, 1989). But the realization that the various industrialization policies and other development programmes launched in underdeveloped countries have failed to improve the living standard made the World Bank to introduce the Basic Need Approach (BNA) to measuring development and welfare in 1970. Thus, it is the reality of income distribution rigidities, where only few people in most countries receive all the wealth while the rest live in squalor that informed the Basic Needs Approach to development (George and Sabelli, 1994). In his contribution, Goulet (1971) view development as an embodiment of three components: life sustenance, self-esteem and freedom. He stressed that development can only be said to have taken place when and where there is improvement in the basic needs.

Since the Basic Needs Approach (BNA) constitutes an attempt to come to grips directly with poverty in the areas of food, nutrition, health, education and housing, and because it is predicated on a policy consisting of relatively high growth rates, redistribution of income, reorientation of investment and a review and modification of consumption and production pattern, it can be said to provide the foundation for rapid economic development

(Wadlow, 2012). The absence of these basic ingredients leads to a self-perpetuating chain of poverty by producing a sense of fatalism and acceptance of the established order, which Galbraith (1980) refers to as the 'accommodation to poverty'.

3. Methodology

3.1 Method of Analysis

The methodology adopted in this study is anchored on the Basic Needs Approach (BNA) to the measurement of development and welfare which was introduced by the World Bank in 1970. For the purpose of this study, an adjusted basic need is employed. That is, this study regards the basic needs to include food, health and education. As earlier noted, the novelty introduced into the Basic Need Approach (BNA) and employed in this study is the endogenization of real per capital gross domestic product. This is a departure from the prevailing orthodoxy that characterizes the old (traditional) models of growth/development whereby measures of aggregate economic activities, say GDP, are introduced as response variables rather than arguments in the model. The rationale for the endogenization is the realization that the emphasis on growth have hitherto almost always failed to entrench improved living standard in less developed countries (LDCs), hence the need to model growth as an argument in the basic needs functions. This innovation is necessary to track the responses of the basic need variables to changes in macroeconomic policy variables.

Given its wide range of application with satisfactory results, we employ the ordinary least square (OLS) technique of regression analysis to estimate the model (section 3.2) using the quantitative econometrics software, eviews 5.0. In fact, with the exception of the full information likelihood method, all other techniques of regression analysis involve the application of the OLS, modified in some respects (Koutsoyiannis, 1977). Since standard inference procedures do not apply to regression models which contain an integrated regressand or regressor, it is imperative to check whether the series is stationary before using it for the estimation. As Gujarati (2004:798) notes, "if a time series is not stationary, its behaviour can only be studied for the time period under consideration. Thus, an integrated process may be of little practical value for the purpose of statistical inferences such as forecasting or hypotheses tests". We conduct a battery of unit root tests in order to arrive at firm conclusions concerning the integration properties of the macroeconomic time series used in the model.

3.2 Model Specification

The model for the study is anchored on the following questions.

- i. How has government expenditure on health impacted on life expectancy at birth in Nigeria?
- ii. How has government expenditure on education influenced primary school enrolment in Nigeria?
- iii. How has government expenditure on agriculture resulted in increased food products?
- iv. How has government expenditure on water increased access to good drinking water?

On the basis of the above questions-which the study seeks to address-the econometric specification of the model is as follows:

$$\ln LE = \ln A + \alpha_1 \ln GSH + \alpha_2 \ln YP + \alpha_3 \ln FP + e \quad \text{-----} (3.1)$$

$$\ln PEP = \ln A + \beta_1 \ln YP + \beta_2 \ln GEE + e \quad \text{-----} (3.2)$$

$$\ln FP = \ln A + \Omega_1 \ln GACF + \Omega_2 \ln GSA + e \quad \text{-----} (3.3)$$

$$\ln GDW = \ln A + \epsilon_1 \ln GSW + e \quad \text{-----} (3.4)$$

Where LE = life expectancy, A = intercept, GSH = Government Spending on Health, YP = real Per Capita Output, FP = Index of Food Production, GEE = Government Expenses on Education, GACF = Government Agriculture Credit Facility, GSA = Government spending on Agriculture, GDW = Access to Good drinking Water, GSW = Government Spending on Water Provision, e= Error Terms, ln = Log, PEP = Primary School Enrolment Per Capita which is defined as the ratio of primary school enrolment to the total population.

The *a priori* expectation about the signs of the variables is as follows: $\alpha_1, \alpha_2, \alpha_3 > 0$; $\beta_1, \beta_2 > 0$; $\Omega_1, \Omega_2 > 0$ and $\epsilon_1 > 0$.

3.3 The Data

This study makes use of secondary data sourced from the World Bank (World Bank Development Indicators), Central Bank of Nigeria's (CBN) Statistical Bulletin and Financial Reviews. In addition, data obtained from the Nigerian Bureau of statistics (NBS) is employed.

4. The Results

For the purpose of clarity, the results from the data/model diagnostic tests and the estimation regression results are distinctly presented and interpreted.

4.1 Preliminary Diagnostic Results

The results from the test of the time series properties of the data (integration tests) and the test of cointegration properties of the model (equations 3.1, 3.2, 3.3 and 3.4) are presented in sections 4.1.1 and 4.1.2 respectively.

4.1.1 Integration Result

As is clear from the previous section, standard inference procedure does not apply to regression that contains non stationary time series. Therefore, it is crucial to get the prerequisite stage of unit-root testing right. Hence, we carried out a battery of unit root tests in order to arrive at firm conclusions concerning the integration properties of the macroeconomic time series used in the model. Table 4.1 presents the unit-root or stationarity test results performed using the Augmented Dickey-Fuller, Philips-Perron (PP) and Ng-Peron (NP) techniques. The test result help us to determine the order of integration in the times series. At the levels, the three techniques return results that lead to the rejection of the unit-root hypothesis at the 5% level of significance except for government spending on health (GSH) and output per capita (YP). When the series were differenced, the ADF, PP and NP tests were unable to reject the unit root null for nine out of the eleven variables, implying that these variables (except PE) became stationary after first differencing. The NP test returned results that led to similar conclusions, but, with an exception in that of index of food production (FP) which was stationary at levels but not at first difference. Primary Enrolment (PE) became stationary after second differencing.

Table 4.1: Unit Root Test Results (Lag Length=2)

Levels	First differences						conclusions
	ADF	PP	NP	ADF	PP	NP	
Variables							
GEE	3.82	2.29	4.84	-8.76	-8.41	-17.19	I(1)
GSH	-3.73	4.77	5.33	-0.46	-6.46	-0.03	I(0)
GSA	-3.83	-3.92	-16.4	-7.17	-21.01	-39.68	I(1)
FP	-1.73	-0.08	-18.71	-1.71	-6.47	-4.17	I(1) / I(2)
PE	-2.47	-2.67	-3.15	-2.18	-2.18	-6.92	I(2)
PEP	-1.44	-1.26	-4.66	-2.36	-2.2	-6.15	I(1)
YP	-0.5	-0.23	1.16	-6.42	-6.73	-19.9	I(0)
LE	-0.09	-0.33	2.75	-6.91	-6.89	-3.6	I(1)
GDW	-0.32	-0.08	-0.23	-4.03	-7.63	-6.59	I(1)
GSW	0.56	0.322	4.6	-4.11	-3.62	-920.1	I(1)
GACF	0.68	-1.42	-4.96	-0.65	-8.69	-30.39	I(1)
Critical Values	-2.94	-2.93	-8.1	-2.93	-2.94	-8.1	

Note: The acronyms for the variables are as earlier defined in section 3.2.

The test results offer reliable information concerning the integration properties of the series which is a prerequisite condition for technical efficiency in measuring the parameter estimates (Mbutur, 2009: 56). However, differencing comes with loss of economic relevance in terms of economic interpretation of the data and the estimates derived thereof. Interestingly, if a time series contains a unit root, as it where, a linear combination of two or more of such non-stationary series may be stationary (Engle and Granger 1987). The stationary linear combination is called the cointegrating equation and may be interpreted as a long-run equilibrium relationship among the variables. Thus, we employ Johanson's (1991) Maximum Likelihood cointegration test to ascertain if the linear combination of the non-stationary time series in the equations (3.1, 3.2, 3.3 and 3.4) of the model are stationary. A given equation is said to be cointegrated if the linear combination of its non-stationary (or mixture of stationary and non-stationary) series is stationary.

4.1.2 Co-integration Results

Table 4.2 presents the results of the cointegration test using the Johansen Maximum Likelihood Trace criterion. We followed the procedure recommended by Johansen (1991) by starting from the most restrictive model in terms of deterministic components and then, iterating until the first time the null hypothesis could not be rejected at the 5% level of significance.

Table 4.2: Cointegration Test Result

Johannsen Maximum Likelihood Trace Test										
Eq.	Co. Variable				Eigenvalue	Trace	5% Crt.Val.	conclusion	Co. Eqs.	
3.1	LE	GSH	YP	FP	0.56	58.57	55.25	Ho: r=0, Rejected	One	
3.2	PEP	YP	GEE	-	0.42	25.27	35.01	Ho: r=0, Not rejected	Nil	
3.3	FP	GACF	GSA	-	0.511	37.16	35.01	Ho: r=0, Rejected	One	
3.4	GDW	GSW	-	-	0.72	20.84	18.38	Ho: r=0, Rejected	Two	

For equation 3.1, we are able to reject the null of no cointegration ($r=0$) at the 5% level of significance. We interpret the evidence as consistent with the notion of the existence of a long-run relationship between Life expectancy (LE) on the one hand and government spending on health (GSH), real per capita output (YP) and food production (FP) on the other hand. Conversely, equation 3.2 returned a trace statistic of 25.27, thereby leading to the inability to reject the null hypothesis of no cointegration. In other words, we accepted that

equation 3.2 is not a cointegrating relation. The trace statistic of both equation 3.3 and 3.4 are greater than the corresponding critical values which means that both equations are cointegrating, although equation 3.4 has higher number of cointegrating relations (two) than equation 3.3. Based on the findings from the cointegration tests, we estimate the model in their logged form as specified in section 3.2 and interpret equations 3.1, 3.3 and 3.4 as cointegrating functions. Per capita enrolment (PEP) and government expenditure on education (GEE) which are stationary at first difference were employed in log-differenced form in the non-cointegrating equation 3.2.

4.2 Estimation Regression Results

The multiple regression result for the model (equations 3.1, 3.2, 3.3 and 3.4) are distinctly presented (in Table 4.3) and interpreted to allow a flow of argument on the individual questions.

Table 4.3: Regression Results of the Model

Endogenous Variable	Constant	Exogenous Variable									
		GSH	YP	FP	GEE	GACF	GSA	GSW	R ²	DW	F
LE	0.61 (2.16)**	0.01 (2.8)**	0.004 (0.84)	-0.054 (-1.94)	na	na	na	na	0.96	2.51	127
PEP	-0.75 (-4)**	na	0.19 (5.28)**	na	-0.10 (-7.4)**	na	na	na	0.62	1.58	28
FP	3.09 (72.34)***	na	na	na	na	-0.007 (-0.22)	0.15 (25.8)***	na	0.95	1.56	333
GDW	3.67 (102.2)***	na	na	na	na	na	na	0.032 (7.96)**	0.81	1.79	63

Notes : t-values are in parentheses, * significant at 10%, ** significant at 5% and *** significant at 1%. na = not applicable. All the variables are estimated in their logged form to correct form possible non-linearity.

From equation 3.1, government spending on health (GSH) and real per capita output (YP), except food production index (FP), met the theoretical a priori expectation for the evaluation of least square estimate in that they have the expected positive signs. The coefficients of GSH and YP have elastic impact of 0.01 and 0.004 respectively. This means that a 100-unit increase in GSH will lead to about 1 unit rise in life expectancy. Similarly a 100-unit rise in per capita output will improve life expectancy by about 0.4 units. Statistically, only GSH is statistically significant at 5% level of significance (LOS). This is evident from the t-statistic, the probability values and the standard error test. Our table value ($t_{0.025, 40}$) is 2.042 while the computed t-statistic (tc) for GSH, for instance, is 2.8. The t-value of per capita output, though positive, was weak in explaining changes in life expectancy. A possible explanation for this is that the high growth in population in Nigeria overwhelmed growth in real output. The R² of 0.96 indicates that about 96% of variations in life expectancy can be explained by variations in government spending on health (GSH), per capita output (YP) and food production (FP). Based on the econometric criterion, the Durbin Watson (D.W) statistic of 2.51 indicates absence of serial correlation; hence there is no reason to suspect that the result is spurious. Overall, equation 3.1 is robust as shown by the F-statistic of 127 which indicates that the entire parameter estimates in equation 3.1 are statistically significant. The cointegration results in table 4.2 provide evidence for the existence of a long-run equilibrium relationship among the variables in equation 3.1. This suggests the existence of a long-run relationship between Life expectancy (LE) on the one hand and government spending on health (GSH), real per capita output (YP) and food production (FP) on the other hand.

The regression results of equation 3.2 show that real per capita output (YP) is positively related to per capita primary enrolment (PEP) as expected while government expenditure on education (GEE) failed to meet the a priori expected sign since it turned out to be negative. However, the coefficients of both variables are statistically significant at 5% LOS. The elastic impact of 0.19 for YP points to the fact that a 100% rise in YP will result in about 19% increase in per capita primary enrolment (PEP). The negative sign of government expenditure on education (GEE) may have resulted from misappropriation of fund meant for the educational sector as well as poor funding of the education sector in Nigeria. The R² of 62% and F-statistic of 28 indicates that equation 3.2 is robust although there is no evidence of a long-run equilibrium relation among the variables judging from the cointegration result. The D.W statistic of 1.58 shows the absence of serial correlation in the residual. Evidence from equation 3.3 indicates that the coefficient of government spending on agriculture (GSA) is positively related to food production (FP) as expected and statistically significant at 5% LOS as shown by the t-value of 25.8. This means that increase in government spending on agriculture will lead to increase in food production, ceteris paribus. This result is not surprising because as shown in section 2, the rural and agricultural sector have been the priority sectors in the implementation of the various development programmes adopted by different administrations to entrench development in Nigeria.

Government agriculture credit guarantee facility (GACF) is, however, insignificant and negatively related to food production. A possible reason is that guaranteeing of the loan by the government does not necessarily imply actual disbursement of the loan. Even after government has guaranteed commercial banks' loans to the agricultural sector, the banks may still be unwilling to lend to the 'uncertain' agricultural sector in Nigeria especially where profit motive is their primary consideration. High default rate may constitute yet another hitch. This is buttressed by the fall in the nominal amount of loans guaranteed and the number of loan account (section 2.2.1), especially during the pick period of deregulation in Nigeria as reported in Ekong (2001). Based on econometric criterion, equation 3.3 is robust given the F-statistic of 333 and R^2 of 0.95. The D.W statistic of 1.56 is a pointer to the absence of serial correlation in the error term. Evidence from the cointegration test supports the notion of long-run equilibrium relation between food production, agricultural credit guarantee facility and government spending on agriculture. The estimate from equation 4.4 indicates that the long-run elastic impact of government spending on water (GSW) is 0.032 with a highly significant t-value of 7.96. The elastic impact of 0.032 indicates that a thousand unit increases in government spending on water resources will result in about 32-units rise in access to good drinking water (GDW). Again equation 4.4 is robust and fit the data very well as indicated by the F-statistic of 63 and R^2 of 81%. The D.W statistic of 1.79 points to the absence of serial correlation in the equation, so that there is no reason to suspect that the values of the parameters are spurious.

5. Implications For Policy

The results from this study have interesting implications for the policy debate in developing countries and Nigeria in particular. The major finding from the result is that government development policies as measured by its spending on health, education, agriculture and water have been partly effective and sub-optimal in Nigeria. For development policy to be effective, it must be targeted at meeting the basic needs of the people which include nutrition, education, health and access to safe and portable water, among others. It does not suffice for government to increase the funding of the education and health sector or other basic infrastructures. The implementation must be objective and conscientious. The leaders and people must be committed. Aside from increasing spending on education, health, agriculture and water resources, the government must ensure that the funds are judiciously applied. One of the key issues that must be addressed here is the high level of fiscal irresponsibility in the country. Corruption and the attitude of embezzling public fund must also be tackled objectively if the 'basic needs' are to be addressed. The negative but significant relation between government spending on education and per capital enrolment points to the misapplication of funds and poor funding of projects in the educational sector in Nigeria. Therefore, the implementation of projects in the sector should be re-appraised to address the issues that threatened its effectiveness. The significant impact of government's spending on health on life expectancy points to the great potential of spending on health in addressing the ravaging prevalence of HIV and AIDS pandemic in Nigeria in particular, and poverty stricken African countries in general.

6. Conclusions

Focusing on the Basic Needs Approach (BNA) to economic development, this paper took an eclectic review of the basic development models (the dual economy models of Fei and Ranis (1968) and Lewis (1954), the Harris-Todaro model, the classical and neo-classical model, the endogenous growth models) and Nigeria's development programmes in history. Relying on post-independence data, the paper placed special emphasis on the cointegration and integration properties of the model and variables which are prerequisite conditions for technical efficiency in measuring the parameter estimates and establishes the notion of long-run equilibrium relationship between the variables. Overall, we find qualified evidence that suggest the existence of long-run relationship between the basic need variables (nutrition, health, education) and most macroeconomic policy variables (government spending on the basic needs) employed in the study. The finding from the study is that Nigeria's development policies have been partly effective and sub-optimal. As a final point, this study points to misapplication of funds, abandonment of projects and embezzlement of public funds as major hitches to the efficacy of development policies in entrenching development and recommends a more conscientious and objective implementation of Nigeria's development policies.

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