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Poverty Alleviation in Nigeria Through Investments in the Manufacturing Sector

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Abstract

This paper discusses investments in the manufacturing sector with the intent to reduce poverty situation in Nigeria which has reached a monumental crisis and has become a great concern to Government at all levels. In spite of the documentation and implementation of government programmes and projects, the poverty level has remained, and is accentuating yearly. The high poverty level has been partly attributed principally, to the loss of jobs in the manufacturing sector, especially wage employment, arising from the shutdown of many enterprises because of the unfavourable economic conditions in Nigeria. The objective of this study is to proffer solution to some of the problems leading to shut down of manufacturing enterprises, with a view to alleviate the poverty that would otherwise have arisen there from. Secondary data were used with econometric analysis. The theoretical framework in this study hinges on the neoclassical growth theory based on the work of Solow (1956), which rests on three central assumptions: constant returns to scale, perfect competition and exogenous technological change, complemented with the new growth theory. Time series data of a period from 1977 to 2008 was used to estimate the effects of increased investments in the manufacturing sector of the Nigerian economy using E-view. From the findings, increased investment is likely to increase manufacturing gross domestic output, and provide better machinery that can reduce costs and production time, better methods and process control and upgrade the quality of the labour force.

Key words: Poverty alleviation; Investment; Manufacturing sector; Enterprises

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INTRODUCTION

The United Nations Human Poverty Index (HPI) from the year 2006 till today has consistently classified Nigeria among the 25 poorest nations of the world where a great majority of the populace remain poverty ridden. The same organization in its Human Development Index (HDI) (2011) ranked Nigeria as the 156th with HDI of 0.40 among the poorest countries of the world. The current ranking of Nigeria as one of the poorest countries is unfortunate because in the 1970s, and early 1980s Nigeria was classified among the middle income nations with a relatively moderate standard of living. The situation of poverty appears to be a paradox because the country is endowed with a lot of natural, materials, and human resources which can be harnessed to generate employment and reduce poverty in the land. Perhaps, the principal cause of poverty in Nigeria is the dwindling performance of the manufacturing sector which has resulted in job losses especially wage employment occasioned by the unprecedented fall in capacity utilization rate of the manufacturing firms in the country.

This paper discusses the way forward for poverty alleviation through investments in the manufacturing sector. It is submitted that investments in the manufacturing firms which can generate wage employment could be one of the several path ways to achieve the national objective of employment generation which will reduce poverty in the land. This is why massive investments are being proposed into the sector so that it will perform the anticipated roles in the economy.

1. THEORETICAL FRAMEWORK AND REVIEW OF RELEVANT LITERATURE

1.1 Theoretical Framework

The theoretical framework in this study hinges on the neoclassical growth theory complemented with the new growth theory. The standard neoclassical growth model is based on the work of Solow (1956), which rests on three central assumptions: constant returns to scale, perfect competition and exogenous technological change. In the context of a two-factor Cobb-Douglas production function, these assumptions imply that the sources of growth in output can be decomposed into conventional inputs of labour, physical capital and exogenously determined total factor productivity, which is usually assumed to be related to technological change. In this study we assume that output depends on three inputs – machine and equipment (M&E) capital, non-M&E capital and labour. The new growth theory points to three potential influences on output and productivity growth i.e. investment in human capital, research and development (R&D) and investment in machinery and equipment (M&E). However, much of the literature focuses on human capital and R&D as sources of growth. Few efforts have been made to estimate the impact of M&E investment. This paper presents empirical models that try to fill this gap. Using time series data of a period from 1977 to 2008 the effects of increased investments in the manufacturing sector of the Nigerian economy in reducing poverty level in the country was estimated. From the literature, it has been found that the elasticity of output with respect to M&E capital stock and M&E investment are well above capital's share of national income suggested by a constant-returns-to-scale Cobb-Douglas production function. All firms have identical and constant-returns-to-scale technologies. Markets are perfectly competitive and factors of production are perfectly mobile between sectors. At the firm level, the production function can be written as:

$Y = A\,F\,KaKbLc$ (1),

Where Y is the real output, Ka and Kb are respectively M&E and non-M&E capital inputs, L is the labour input and A, a scaling variable. Coefficients a, b, and c represent, respectively, the share of M&E capital, non-M&E capital and labour inputs in total output.

Assume that the M&E capital stock used by the firm embodies productivity-enhancing knowledge. As well, it is possible that the gains from investment cannot be fully captured by the firm that makes the investment. In this case, all firms benefit from a single firm's investment and the social return to investment exceeds the private return. Consequently, at the aggregate level, the term A becomes a function of M&E capital.

1.2 Review of Relevant Literature

1.2.1 A Concept of Poverty

There seems to be no single universally acceptable definition of poverty, because scholars have ascribed various meanings to the term. As pointed out by Aboyade (1975), poverty is like an elephant, it is more easily recognized than defined. Generally, poverty is the lack of basic human needs such as clean water, nutrition, health care, education, clothing, shelter and other basic needs because of the inability to afford them. Specifically, poverty is a situation where the income of families is insufficient to obtain the minimum necessities of life for the maintenance of physical efficiency (Ravallion, 1994).

The World Summit on Social Development in Copenhagen (1995) define poverty as a condition characterized by severe deprivation of basic human needs including food, sanitation facilities, education and information. It includes a lack of income and productive resources to ensure sustainable livelihood.

Some writers have a deep broader definition of it such as being unable to meet basic material needs, encompassing food, water, clothing, shelter, education, health as well as basic non-material needs including participation, identity and dignity among others (Ali & Thorbecke, 1998).

Accordingly, people are counted poor when their measured standard of living in terms of income or consumption is below the poverty line. Thus the poverty line is a measure that separates the poor from the non-poor. Poverty has been classified into two distinct levels – absolute and relative poverty. The World Bank (2009) refers to extreme or absolute poverty as a condition whereby a person is living on less than USD 1.25 per day. For Beck (1994) relative poverty is a situation where individuals or families are in command of resources which over time fall seriously short of the resources commanded by the average persons or families in the community in which they live.

1.2.2 A Profile of Nigeria

Nigeria is a federation made up of 36 states and Abuja the Federal Capital, with an estimated 150 million people (NPC, 2006). The country is the largest in Africa in terms of population and contains one sixth of the world's black people.

- The country is the 8th largest petroleum producer, and the 6th world exported of crude oil. She has the 6th largest deposit of natural gas, and perhaps the 2nd largest deposit of bitumen.
- Nigeria has 79 million hectares of fertile land but currently only 32 million hectares (46%) are being cultivated (FMARD, 2009).
- The country has varied ecology ranging from mangrove swamps and rainforest in the south, and derived guinea savannah in the North.
- The agro-ecological zones provide suitable climate and edaphic conditions for the production of various tree crops both local and exotic. These include oil palm, cocoa,

coffee, cashew, coconut, mango, citrus, gum Arabic, date palm, sheanuts, apple, tropical wood, neem etc.. The land is also fertile for the cultivation and production of arable crops such as grains, cassava, tubers and plantain.

● Abundant solid mineral deposit is available throughout the length and breadth of the country.

● Nigeria has over 100 universities producing more than 200,000 graduates per annum.

● The basic human capital for progress is available. It is estimated that over 5 million Nigerians live outside the country and some of them are highly qualified professionals.

● Unfortunately, in the midst of such abundance of resources, the country is classified among the 25 poorest nations of the world.

1.2.3 Poverty in Nigeria

The National Bureau of Statistic (NBS) (various editions) reports that in 1960, 15% of the Nigerian population was poor, but by 1965, this moved to 28%. However, by 1985, the poverty index in the country was 46%, while in 1996, poverty incidence in the country was 66% or 76.6 million people out of 110 million. In 2006, poverty incidence in the country was estimated to have increased to 70% or 98 million people out of a population of 140 million and at the end of 2011, the NBS categorized 72% of Nigeria's population as relatively being poor. It was on the basis of the foregoing analysis that the United Nations (UN) Human Poverty Index (HPI) in 2006 placed and classified Nigeria among the 25 poorest nations of the world.

Table 1
Some Economic Development Indicators of Nigeria and Some Selected Developed Countries 2009

Countries	Per capital in GNP U$	Adult literacy ratio as % of population	Commercial energy use per capital (klg) of oil equivalent	Ratio of physician per population
Nigeria	280	49	165	9,591
U.S.A	29,080	99.5	7,905	420
France	36,300	96.4	4,150	350
Germany	28,280	98	4,156	380
U.K	20,870	97	3,057	450
Switzerland	43,060	97.2	3,057	630
Japan	40,940	97.2	3,964	610

Source: The World Bank (2009). World Development Indicators Development Data Group Washington DC USA.

Table 1 shows some economic development indicators of Nigeria and some selected developed countries. While per capital in gross national product was $280 in Nigeria in 2009, it was $29,080 in USA, $20,870 in U.K and $40,940 in Japan. Also adult literacy in Nigeria was 49 percent of the population in 2009 whereas it was 98 percent in Germany. Commercial energy per capital in Nigeria was 165 of oil equivalent but 3,057 in Switzerland in 2009. All these indicators tend to suggest the low level of development and poverty in Nigeria.

1.2.4 Causes of Poverty in Nigeria

Poverty in Nigeria has been attributed to many factors. Maduagwu (2000), Ogwumike (2001), Ogundele (2000), and others attributed poverty in Nigeria to the under listed factors among others:

i. Structural crisis arising from exogenous factors such as lack of skill, location disadvantage, changes in economic policies which lead to unemployment.

ii. National calamities such as flooding, environmental degration and drought especially in some parts of Northern Nigeria.

iii. Negative rapid changes in macro economic and monetary policies resulting in low economic growth rate, inflation and the continuous slide in the value of the naira – the nation's currency.

iv. Lack of cognate investments in key industries.

v. Unsatisfactory and poor performance of some national Economic Programmes which are meant to generate employment but are unable to do so.

vi. Lack of proper co-ordination and continuity of government programmes and projects, this also include inappropriate sequency of implementation of key aspects of such programmes and projects.

vii. Growth in the GDP without commensurate creation of employment leading to unemployment crisis which Umo (2006) observed that it has led to four elements in human resource wastage – unemployment, underemployment, low wage employment and outright social exclusion.

viii. Corruption at all levels and poor governance.

ix. The dwindling performance of the manufacturing sector of the Nigerian economy resulting in loss of wage employment.

x. Political turbulence and social unrest resulting in stoppage of work and imposition of curfew.

1.2.5 Poverty Alleviation Programmes in Nigeria 1990-2011

Poverty alleviation is any process which seeks to reduce the level of poverty in a community or amongst a group of people or countries. Poverty alleviation is characterized with longer development terms which will improve the living standard of people. A brief reference of such programmes initiated or developed in Nigeria are listed as follows: Establishment of Directorate for Food, Roads and Rural Infrastructure – DFRI

● Establishment of Agricultural Development Programme – ADP

● Establishment of Multicommodity Companies

- Primary Health Care Programme – PHCP
- Normadic Education Programme – NEP
- Federal Urban Mass Transit Programme
- National Directorate of Employment – NDE
- Universal Basic Education – UBE
- National Poverty Eradication Programme – NAPEP
- National Economic and Development Strategy – NEEDS
- Small and Medium Enterprise Development Agency of Nigeria – SMEDAN
- National Economic Reconstruction Funds – NERFUND
- National Agricultural Land Development Agency – NALDA
- Better Life Programme
- Family Economic Advancement Programme – FEAP
- Rural Infrastructure Development Scheme – RIDS
- Social Welfare Services Scheme – SOWESS; and
- National Resource Development and Conservation Scheme – NRDCS

It is against the backdrop of the ineffectiveness of the various government poverty alleviation programme that a proposal to improve the manufacturing firms for accelerated employment creation as a way of poverty alleviation is being initiated in this paper. This is because the manufacturing sector is the threshold for sustainable development being the largest single sector of wage employment in Nigeria. It should therefore be given a pride of place in national economic planning.

1.2.6 Status of Manufacturing Sector in Nigeria

The Central Bank of Nigeria (CBN) in its annual reports (various editions) highlighted that during the 1960s and early 1970s, manufacturing activities were positively accelerated and value added per worker was at par with, if not higher than that in other African countries such as Botswana, Ghana and Kenya. During this period the share of manufacturing in GDP nearly doubled from less than 5 percent to 8 percent and on that trend many people believed that the country was on a path to industrialization. It was observed however that as from the 1980s manufacturing firms in Nigeria experienced relative stagnation as the sectors value added per capital lagged behind that of many comparator countries.

- Presently, the manufacturing sector is experiencing collapse with an average capacity utilization hovering around 40 percent.
- The Manufacturers Association of Nigeria (MAN) in a survey carried out as part of its membership operational audit in January 2010, recorded that of the 2780 registered members, a total of 839 manufacturing firms closed their factories in 2009. This is due to their inability to cope with the challenges posted by the harsh operating environment in Nigeria. The table below shows the number of manufacturing firms that shut down their operations across the country.

Table 2
Manufacturing Companies in Nigeria That Shut down in 2009

Manufacturing enclaves	States involved	Number of firms that shut down
Northern Area	Kaduna, Kano	176
South-East Area	Anambra, Enugu, Imo, Abia	178
South-South	Rivers, Cross River, Akwa Ibom	46
South-West	Oyo, Ogun, Osun, Ekiti, Kogi, Kwara	225
Lagos Area	Ikeja, Apapa, Ikorodu	219

Source: The Manufacturing Association of Nigeria Membership Operational Audit Survey 2009.

As shown in Table 2 the implication of the large number of closed manufacturing firms is that it has worsened the country's growing unemployment rate which leads to poverty as a result of loss of wage employment. From Table 2, the South-West geo-political region was the most affected of the shut-down of operations with 225 firms unable to operate since 2009. However, the data that show which sectoral group was most affected was not available.

In the annual report of MAN for 2006, it was also claimed that the job loss in the sector between 1983 and January 2006 was estimated at 4.2 million. In addition, in the Newsletter edition of the Association for March, 2010, it was reported that one million jobs have been lost in the sector between 2006 and 2010.

Various factors have been advanced for the collapsing situation of the manufacturing sector. Jamodu (2010) President of the association identified the problems confronting the sector among others to include:

- Poor power (Electricity) supply
- Dilapidated infrastructure
- Lack of access to corporate finance
- Policy inconsistency
- Multiple taxation
- Corruption
- Lack of adequate take off incentives for new business and
- General poverty in the land which places serious strain on the manufacturing firms.

Ogundele (2000), Malik, Ted and Baptist (2006) in their survey of Nigerian manufacturing firms found that the sector is having problems due to the factors listed below:

- Power shortage 70%
- Lack of demand for the products 60%
- Lacks of finance/capital 20%
- Lack of imported raw materials 20%
- Lack of domestic raw materials 20%

- Problems of information technology 10%
- Foreign competitors 5%
- The World Bank (2006) in the report of survey of investment climate in Nigeria, ranked constraints in the manufacturing sector as follows:

● Electricity 80%
● Access to finance 41%
● Transportation 38%
● Multiple taxes 25%
● Crime 24%
● Corruption 22%
● Others 22%

Anyanwu (2006) also identified the lingering problems of the manufacturing sector to include:

(a) Low investment which has made it difficult for manufacturing enterprises to acquire modern facilities, information technology and human resources development which are critical in reducing production costs, raise productivity and improve competitiveness. Low investments have been traced largely to banks unwillingness to make credit available to the manufacturers as a result of their perception that manufacturing in the Nigerian environment is a risky venture.

(b) Low level of capacity utilization. Generally capacity utilization rate in the manufacturing sector is between 30 and 40 percent indicating gross underutilization of resources due to a number of factors which have been identified and discussed in this paper.

(c) High cost of production traced largely to poor performing infrastructural facilities; and

(d) Inflation.

1.2.7 The Nigerian Investment Profile and Incentives to the Manufacturing Sector

The Federal Government of Nigeria has taken various measures and initiatives to assist manufacturing firms so that they can operate at maximum efficiency level. Through these measures, it is envisaged that there would be improvement in the operations and performance of the firms, wage employment would increase, and poverty would reduce in the land. The government measure is first of all to encourage capital investments in the manufacturing firms.

Capital investment involves the commitment of funds now with the expectation of acceptable earnings in the future. Horne (1990) describes capital investment as a situation when firms or individuals make a current cash outlay for the benefit to be realized in the future. In other words, it involves decision to spend money now on a project at some future date with the expectation of reaping or recovering such money back from the project. Pandey (1989), defines capital investment as a decision to invest a firm current fund in the most efficient way in long term activities in anticipation of an expected flow of future benefits over series of years. Major (1983) points out that the distinctive features of capital investment which makes it worthwhile developing and applying a special set of techniques for appraising is that the whole nature of a business and its directions and the rate of progress is ultimately governed by its overall investment programme and that the investment will earn streams of profit or returns over the period of anticipated years. It is on these bases that investments in the manufacturing sector are being proposed because it can generate wage employment in the long run. The multiplier effects of improved and increased wage employment will reduce poverty in the land. Adeleke (2002) highlights the various techniques which can be used to measure and appraise capital investment. These include Return on Investment (ROI) Discounted Cash Flow, Internal Rate of Return (IRR), Profitability Index, and Pay Back Period. There seems to be no technique of Investment appraisal that is held to be universally the best. The best technique is one that will enable an investor make the right decision on capital project investment.

One of the principal measures taken by the Federal Government to encourage investments in the country in all sectors of the economy was the establishment of the Nigerian Investment Promotion Commission (NIPC) decree no 75 of 1992. The commission was established to develop strategies which will attract foreign investments into Nigeria. The decree (now Act) which established the commission has opened virtually all aspects of Nigerian economic sector to an unrestricted foreign ownership and management.

The act provides that enterprises established in Nigeria shall not be nationalized or expropriated by any government of the federation, nor any person who owns whether wholly or in part of the capital of any enterprise be compelled by law to surrender his interest to any other person. Section 24 of the Act also assure foreign investors of an unrestricted transferability of their funds invested in Nigeria be it in the form of equity or loan capital or dividends and interest. This thereby guarantees free movement of capital. Through the NIPC Act, foreign manufacturing firms are being encouraged to establish in Nigeria and operate effectively. Fortunately, the listing of the Nigerian Stock Exchange (NSE) e-business portal in the internet makes it possible for foreigners to participate in the capital market both as operators and investors in the market. The Federal Government of Nigeria has also taken various measures and initiatives to assist manufacturing firms so as to operate at maximum efficiency level. Through these measures, it is envisaged that there would be improvement in the operations and performance of the firms, wage employment would increase, and poverty would reduce in the land. The government measures and initiatives include the establishment of the following organizations and institutions.

(a) Standard Organization of Nigeria (SON). The main responsibilities of SON is to advice and ensure standards of specifications and control. Establishing and

approving standards in respect of meteorology, materials, commodities processed and procedures.

(b) National Agency for Food and Drugs Administration and Control (NAFDAC). This Agency is established so that food and drugs are manufactured under good handling and hygiene. A manufacturer is expected to ensure that products are produced under good sanitary conditions. The Agency is required to examine products and ensure that they contain the ingredients stated in the application forms.

(c) The Independent Corrupt Practices and other Related Offences Commission (ICPC) and Economic and Financial Crime Commission (EFCC). The two organizations are to investigate and report any act of corruption, and fraud on economic and financial crime and prosecute such offenders.

(d) The establishment of financial Institutions: NERFUND, BOI and NEXIM, NEPC. The National Economic Reconstruction FUND-NERFUND was established to give loans to small and medium scale enterprises including manufacturing firms that fulfilled certain conditions through the participating commercial banks. NERFUND, by all intents and purposes is to plug the finance gap in small and medium scale manufacturing enterprises development in Nigeria.

The Bank of Industry (BOI) was established with the sole aim of assisting manufacturing and other enterprises not only in granting them loan facilities but also in Entrepreneurship Development Programme (EDP). The EDP was founded on the recognition that mere fiscal policies and financial incentives alone are not enough to accelerate smooth manufacturing operations. The operators of the firms should be exposed to EDP skills.

The Nigerian Export-Import Bank (NEXIM) is to assist manufacturing firms with loan facilities to export their products to overseas market; while the Nigerian Export Promotion Council provides logistics and information support for exporters.

(e) Role of Education and Training Institutions. In order to enhance entrepreneurial education and training for operators of manufacturing firms in Nigeria, the Federal Government has established some institutions towards this end. Such institutions include the Centre for Management Development (CMD) the Industrial Training Fund (ITF) and a host of tertiary institutions which are located across the country. CMD is designed to provide training for high level manpower, while ITF is to concentrate on middle level and technical skill manpower needs.

(f) The Raw Materials Research and Development Council (RMRDC) and the Federal Institute of Industrial Research (FIIRO). The two organizations are to research on the local natural endowment which can be converted and used as raw materials by the manufacturing firms in Nigeria.

(g) CBN (2010) also mentioned the provision of ₦200 Billion Intervention Fund for re-financing and restructuring of banks loan to the manufacturing sector. The programme was initiated in 2010 to assist SME/ manufacturing sector. The objectives of the fund are to:

* Fast-track the development of the manufacturing sector of the Nigerian economy by improving access to credit to manufacturers.

* Increase output, generate employment, diversity the revenue base, increase foreign exchange earnings and provide inputs to the industrial sector on a sustainable basis.

* The Bank of Industry shall be the Managing Agent and be responsible for the day to day administration of the fund.

The activities to be covered include any entity that is adjusted to be a manufacturer if it is involved in the production and processing of tangible goods, and belong to any of the organized private sector: MAN, NASME, NACCIMA, NASSI, fabricates, deploys plants, machinery or equipment to deliver goods or provide infrastructure to facilitate economic development in the real sector. It includes small and medium scale enterprise (SMEs) defined as an entity with an asset base (excluding land) of between five million and five hundred million naira with a labour force of between eleven and three hundred people. The facilities to be covered include:

* Long term loan for acquisition of plant and machinery
* Refinancing of existing loans
* Resuscitation of ailing industries
* Re-financing of existing lease; and
* Provision of working capital.

2. MODEL SPECIFICATION, EMPIRICAL ANALYSIS AND RESULTS

This section provides an insight into the nature and sources of data used in the study; the model specification as well as the method of analysis in achieving the specific objective and the results.

2.1 Hypothesis

Ho: There is no positive relationship between poverty level (PCI used in this study as proxy) and investments in the manufacturing sector in Nigeria.

Hi: There is positive relationship between poverty level (PCI used in this study as proxy) and investments in the manufacturing sector in Nigeria.

2.2 Model Specification

Given the above theoretical formulation, the following model is developed to address the issue of the relevance of massive investments in the manufacturing sector to reducing poverty level in the Nigerian economy.

GDP = f (IME, PCI, EDU, ELE, RMP, MFDI, DUM) (1)

Where GDP = manufacturing gross domestic product,

PCI = per capita income,
IME = investment in machines and equipment,
EDU = investment in education,
ELE = electricity (hydro-power),
RMP = rate of manufacturing productivity,
MFDI = manufacturing foreign direct investment,
DUM = dummy variable (which captures the seasonal component – seasonalization or policy regime changes),
U_{ti} = stochastic error trem,
b_i = constants.

Based on the hypothesis that poverty (either absolute or relative) is a function of permanent income or wealth, the growth rate of real GDP is used as proxy for wealth; and used to enable us know the effect of increased investments in the manufacturing sector in creating wealth for the nation as well as the individuals through employment generation. Annual GDP figures were obtained from the CBN statistical Bulletin and Consumer Price Index was used for deflating the variables to get the real gross domestic product. The estimate was run in first difference form.

The final model used in the study is specified as follows:

$$GDP_{ti} = b_o + b_1IME_{t1} + b_2 PCI_{t2} + b_3EDU_{t3} + b_4ELE_{t4} + b_5RMP_{t5} + b_6MFDI_{t6} + b_7DUM_{t7} + U_{ti} \quad (2)$$

2.3 Empirical Analysis and Results

The first step of the empirical analysis was to estimate equation (2) using time-series data. To test if the data series were stationary or integrated, we use Augmented Dickey – Fuller (ADF) unit root test for the null hypothesis of non-stationarity in level and first difference form before going ahead to check for the long run relationships between the variables. The results of the unit root test are given in the table below:

Table 3
Unit Root Test Results

Variance	Intercept	T
EDU	1ST Difference	-
ELE	1ST Difference	-
MGDP	1ST Difference	-
RMP	1ST Difference	-

As shown in the table above, at their 1st difference forms, the ADF test suggests that the manufacturing gross domestic product, investment in education, investment in electricity, and the rate of manufacturing production variables are stationary at 5%.

Sensitivity Test

Before arriving at the final conclusion of the analysis, three tests were carried out with different variables in attempt to test how closely related each variable is to manufacturing gross domestic output.

First and Second Tests

The first test was carried out with the variables: investment in education, investment in electricity, manufacturing gross domestic product, and rate of manufacturing production. The results derived from the analysis were relatively the same in terms of the R^2 and R^{-2} but much lower in terms of the coefficients of the parameters and the D.W. statistics when compared with the second test. In this second test the variable investment in machines and equipments was added to the variables above used in the 1st test.

Third Test

The third test had a dummy variable added to it but the investment in machines and equipments was removed. When this third test was run, using E-views as was done in the first two tests, the R^2 and R^{-2} were much higher than that of the 1st and 2nd tests but the coefficients of the parameters and the D.W. statistic were lower compared with that obtained in the 1st and 2nd tests.

Table 4
OLS Estmation Result

Variable	Coefficient	Standard error	T-statistic	Probability
C	-80.71259	6.825160	-11.82574	0.0000
EDU	0.775456	0.177454	4.369902	0.0002
ELE	4.483029	0.424395	10.56334	0.0000
RMP	1.191012	0.280154	4.241277	0.0002

$R^2 = 0.898957$
Adjusted $R^2 = 0.888131$
Durbin Watson Statistic = 1.410053
Probability (F-statistic) = 0.000000

The Durbin Watson shows there is positive auto correlation.

The result shows that investment in the manufacturing sector has a high positive impact on the gross domestic product. The R^2 was 0.898957 i.e. about 89.89% variation in MGDP is explained by all the variables (EDU, ELE, and RMP), while the remaining variation is captured by the error term; therefore, we conclude that our estimated model is of good fit and reliable for policy making. The P-value for the F-statistic is 0.0000 which is less than 0.05. At 5% significance level, we reject the null hypothesis and conclude that our estimated model is statistically significant.

Heteroskedasticity WHITE test was done to test for multicollinearity. The observation from the result of the multicollinearity test is that the cantered VIF have values lower than 5, meaning that there is no severe multicollinearity.

As shown in Table 3 above, we find that all the series are stationary at first difference but not level stationary, and the variables are integrated of order 1. Since the variables were not stationary at level we tested for co-integrating relationships among the variables. The results are supportive of the hypothesis of at most one co-integrating equation in every case, implying that the regression can be estimated in level form using a Vector-Error-Correction (VEC) methodology.

Using the Joansen Cointegration Test, we first estimated equation (2) using investments in education and electricity, manufacturing gross domestic product, and rate of manufacturing production. The Trace test indicated 2 cointegrating eqn(s) at the 0.05 level (5%); denotes rejection of the null hypothesis at the 0.05 level. MacKinno-Haug-Michelis (1999) P-Values. (unrestricted Cointegration Rank Test – Maximum Eigenvalue).

Table 5
Vector-Error-Correction Methodology (VECM)

Variable	Coefficient	Std. error	T-statistic	Prob.
GDP(-1)	0.934599	0.182853	5.111194	0.0003
GDP(-2)	0.275394	0.226458	1.216094	0.2473
EDU	-569.5995	2327.837	-0.244690	0.8108
EDU(-1)	-1311.854	1483.393	-0.884360	0.3939
EDU(-2)	3179.049	1732.122	1.835350	0.0913
ELE	0.017218	0.021003	0.819787	0.4283
ELE(-1)	0.070549	0.019801	3.562823	0.0039
ELE(-2)	-0.042977	0.022341	-1.923671	0.0784
IME	-128.8809	58.86205	-2.189541	0.0490
IME(-1)	68.36072	56.15134	1.217437	0.2468
IME(-2)	24.21167	57.97501	0.417622	0.6836
RMP	73.92331	94.87331	0.779179	0.4510
RMP(-1)	-17.15894	90.68758	-0.189209	0.8531
RMP(-2)	-99.30140	129.8899	-0.764505	0.4593
(VECM)SER01(-1)	-1960824.	1549875.	-1.265149	0.2298
C	-1540460.	1906942.	-0.807817	0.4349
R-squared	0.998320	Mean dependent var		4759048.
Adjusted R-squared	0.996221	S.D. dependent var		6979522.
S.E. of regression	429060.4	Akaike info criterion		29.07214
Sum squared resid	2.21E+12	Schwarz criterion		29.83340
Log likelihood	-391.0100	Hannan-Quinn criter.		29.30487
F-statistic	475.5070	Durbin-Watson stat		2.137694
Prob(F-statistic)	0.000000			

Table 5 shows that about 19.6% of the annual deviation is corrected in the long run.

3. SUMMARY AND CONCLUSION

3.1 Summary

The basic tenet of this paper is that poverty alleviation in Nigeria could be effected by increased investments in the manufacturing sector. This will result in increased jobs and income for both the individual and the nation. This is because the sector is capable of creating wage employment for the citizenry. The path to poverty alleviation and economic development require huge capital investments in the various sectors of the economy. The choice of investment in the manufacturing sector appears to be more attractive because of its multiplier effects on development in other sectors such as the development, production and utilization of local raw materials. The result of this study has been found to be consistent with the experience of other countries that have found themselves in the same predicaments of increasing poverty level in the land and have resolved it through massive investments in the manufacturing sector. For example, Japan and Germany from the end of the second world war and the United States of America after the great depression of the 1930s as well as the newly industrialized countries of South-East Asia such as Hongkong. South Korea, Singapore, Taiwan, Indonesia and Malaysia which embarked on massive investments in the manufacturing sector, especially in the small and medium scale enterprises to provoke economic growth and development.

However, given the limited investible funds, priority should be given to the high performing sectoral group of the manufacturing sector in the investments decisions. Following from the above, it could be emphasized that improved and increased investments in the Nigerian manufacturing sector is a necessary condition for the sector's recovery, achieving competiveness, boosting GDP, creating more jobs for poverty alleviation and uplifting the standard of living of the people. Increased investment is likely to provide better machinery that can reduce costs and production time, better methods and process control and upgrade the quality of the labour force. To complement the above the following activities should also be embarked upon:

- The development of effective financial markets;
- Accessibility to investible funds; and
- Good co-operate governance;
- Improvement in power generation, transmission

and distribution;

- Diversify access to financial requirements through the Bank of Industry;
- Check smuggling and unrestricted importation of goods that can be produced in Nigeria;
- Check corruption;
- Eliminate multiple taxation;
- Ensure effective performance of regulatory bodies;
- Stimulate demand for locally manufactured goods;
- Reduce dependency on imported goods;
- Rehabilitate federal roads, provide pipe borne water to the populace; and
- Improve the health care delivery system.

3.2 Conclusion

The collapsing manufacturing firms in Nigeria calls for urgent attention in order to salvage the economy and put a stop to job loses which are contributing to poverty in the land. It has been estimated that from 2006, majority of the Nigerian population between the ages of 15 and 40 years are either jobless or under employed. This is a challenge to the government. Perhaps the most effective starting point to reduce poverty is to assist the manufacturing firms to operate at maximum efficiency level through massive investment. Through massive investment in the afore-listed, and especially in reliable power grid (electricity generation, transmission and distribution), infrastructure in general as well as in the small and medium scale enterprises to provoke economic growth, development, and alleviate poverty in the country.

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APPENDIX

1.0 Data

This study uses time-series data sets over the 1977 and 2008 period to estimate the effect of different types of capital investment in the manufacturing sector on the changes in the poverty level of the Nigerian economy using the new growth theoretical framework. The data used included: per capita income, investment in machines and equipment, investment in education (proxy for human development capital), electricity, rate of manufacturing production, and manufacturing's foreign direct investment.

DATA

Obs	IME	PCI	EDU	ELE	RMP	MFDI
1977	14533.33	0.000301	757.5758	28890000	1,695.58	703.8
1978	14294.29	0.000303	430.5714	23240000	2,168.99	1263.4
1979	12714.67	0.000303	710.9333	33050000	2,599.15	1402.5
1980	12238.64	0.000313	1082.500	27830000	3,485.86	1503.9
1981	12045.63	0.003276	428.0583	23900000	13,837.92	1705.7
1982	10432.73	0.003134	443.6364	24730000	15,633.54	1922.5
1983	5932.680	0.002851	226.5359	19890000	10,797.42	2128.1
1984	3856.684	0.002740	77.48663	26680000	9,532.75	2109.3
1985	3669.312	0.029713	95.60847	30910000	12,032.40	2278.1
1986	4916.744	0.002947	205.5814	36300000	11,582.62	2810.2
1987	7820.763	0.002849	58.94068	32840000	12,041.61	3122.3
1988	7383.421	0.002983	74.15789	40080000	13,713.89	3637.0
1989	7243.091	0.003112	40.34545	41400000	14,011.49	5406.4
1990	6649.825	0.004856	58.19298	43870000	14,702.40	6339.0
1991	10952.14	0.003290	41.30000	59310000	16,078.45	8692.4
1992	12946.07	0.003292	36.86180	60590000	15,357.18	9746.3
1993	13380.95	0.003260	93.03571	55720000	14,788.13	12885.1
1994	8168.788	0.003204	81.00000	55620000	14591.36	14059.9
1995	7168.243	0.003193	73.44881	55000000	13,836.14	27668.8
1996	7769.264	0.003244	62.47911	55000000	13,953.42	29814.3
1997	9032.188	0.003256	67.12498	55930000	14,009.95	31297.2
1998	10742.67	0.003267	201.4963	57750000	13,046.30	34503.9
1999	11800.16	0.003227	133.8457	61480000	13,494.64	36282.1
2000	13003.36	0.003303	320.3321	56280000	13,958.82	37333.6
2001	15149.55	0.003375	233.9223	59090000	14,935.10	37779.6
2002	15517.71	0.003447	96.79622	82340000	16439.36	39953.6
2003	15246.14	0.003687	124.5140	74480000	17,369.63	45719.4
2004	16509.40	0.003836	166.1527	81080000	19,436.78	102995.8
2005	18726.53	0.003989	189.6393	77680000	21,305.05	133894.5
2006	8937.619	0.004130	227.8281	62630000	23,305.87	212729.4
2007	10501.19	0.003803	288.4917	62270000	25,535.50	219512.0
2008	15468.33	0.003803	253.4974	57210000	27,806.76	155938.3

1.01 SUB-DATA 1

Obs	EDU	ELE	GDP	RMP
1977	757.5758	28890000	31520.3	1695.58
1978	430.5714	23240000	34540.1	2168.99
1979	710.9333	33050000	41974.7	2599.15
1980	1082.500	27830000	49632.3	3485.86
1981	428.0583	23900000	47619.7	13837.92
1982	443.6364	24730000	49069.3	15633.54
1983	226.5359	19890000	53107.4	10797.42
1984	77.48663	26680000	59622.5	9532.75
1985	95.60847	30910000	67908.6	12032.40
1986	205.5814	36300000	69147.0	11582.62
1987	58.94068	32840000	105222.8	12041.61
1988	74.15789	40080000	139085.3	13713.89
1989	40.34545	41400000	216797.5	14011.49
1990	58.19298	43870000	267550.0	14702.40
1991	41.30000	59310000	312139.7	16078.45
1992	36.86180	60590000	532613.8	15357.18
1993	93.03571	55720000	683869.8	14788.13
1994	81.00000	55620000	899863.2	14591.36
1995	73.44881	55000000	1933211.6	13836.14
1996	62.47911	55000000	2702717.1	13953.42
1997	67.12498	55930000	2801972.6	14009.95
1998	201.4963	57750000	2708430.9	13046.30
1999	133.8457	61480000	3194015.0	13494.64
2000	320.3321	56280000	4582127.3	13958.82
2001	233.9223	59090000	4725086.0	14935.10
2002	96.79622	82340000	6912381.3	16439.36
2003	124.5140	74480000	10169130.0	17369.63
2004	166.1527	81080000	11673600.0	19436.78
2005	189.6393	77680000	14735320.0	21305.05
2006	227.8281	62630000	18709580.0	23305.87
2007	288.4917	62270000	20853580.0	25535.50
2008	253.4974	57210000	24048580.0	27806.76

1.02 DESCRIPTIVE

	EDU	ELE	GDP	RMP
Mean	230.6841	48845938	4169094.	13971.38
Median	149.9992	55310000	608241.8	13984.39
Maximum	1082.500	82340000	24048580	27806.76
Minimum	36.86180	19890000	31520.30	1695.580
Std. Dev.	239.0973	18073529	6703955.	5953.121
Skewness	2.005585	0.056663	1.768518	-0.097432
Kurtosis	6.854981	1.978660	4.944758	3.647610
Jarque-Bera	41.26714	1.407972	21.72362	0.609828
Probability	0.000000	0.494610	0.000019	0.737187
Sum	7381.891	1.56E+09	1.33E+08	447084.1
Sum Sq. Dev.	1772193.	1.01E+16	1.39E+15	1.10E+09
Observations	32	32	32	32

1.03 OLS

Variable	Coefficient	Std. error	T-statistic	Prob.
C	-80.71259	6.825160	-11.82574	0.0000
LOG (EDU)	0.775456	0.177454	4.369902	0.0002
LOG (ELE)	4.483029	0.424395	10.56334	0.0000
LOG (RMP)	1.191012	0.280154	4.251277	0.0002
R-squared	0.898957	Mean dependent var		13.40739
Adjusted R-squared	0.888131	S.D. dependent var		2.279835
S.E. of regression	0.762533	Akaike info criterion		2.412126
Sum squared resid	16.28077	Schwarz criterion		2.595343
Log likelihood	-34.59401	Hannan-Quinn criter.		2.472857
F-statistic	83.03657	Durbin-Watson stat		1.410053
Prob (F-statistic)	0.000000			

1.04 SUB-DATA 2

Obs	EDU	ELE	GDP	IME	RMP
1977	757.5758	28890000	31520.3	14533.330	1695.58
1978	430.5714	23240000	34540.1	14294.290	2168.99
1979	710.9333	33050000	41974.7	12714.670	2599.15
1980	1082.500	27830000	49632.3	12238.640	3485.86
1981	428.0583	23900000	47619.7	12045.630	13837.92
1982	443.6364	24730000	49069.3	10432.730	15633.54
1983	226.5359	19890000	53107.4	5932.680	10797.42
1984	77.48663	26680000	59622.5	3856.684	9532.75
1985	95.60847	30910000	67908.6	3669.312	12032.40
1986	205.5814	36300000	69147.0	4916.744	11582.62
1987	58.94068	32840000	105222.8	7820.763	12041.61
1988	74.15789	40080000	139085.3	7383.421	13713.89
1989	40.34545	41400000	216797.5	7243.091	14011.49
1990	58.19298	43870000	267550.0	6649.825	14702.40
1991	41.30000	59310000	312139.7	10952.140	16078.45
1992	36.86180	60590000	532613.8	12946.070	15357.18
1993	93.03571	55720000	683869.8	13380.950	14788.13
1994	81.00000	55620000	899863.2	8168.788	14591.36
1995	73.44881	55000000	1933211.6	7168.243	13836.14
1996	62.47911	55000000	2702717.1	7769.264	13953.42
1997	67.12498	55930000	2801972.6	9032.188	14009.95
1998	201.4963	57750000	2708430.9	10742.670	13046.30
1999	133.8457	61480000	3194015.0	11800.160	13494.64
2000	320.3321	56280000	4582127.3	13003.360	13958.82
2001	233.9223	59090000	4725086.0	15149.550	14935.10
2002	96.79622	82340000	6912381.3	15517.710	16439.36
2003	124.5140	74480000	10169130.0	15246.140	17369.63
2004	166.1527	81080000	11673600.0	16509.400	19436.78
2005	189.6393	77680000	14735320.0	18726.530	21305.05
2006	227.8281	62630000	18709580.0	8937.619	23305.87
2007	288.4917	62270000	20853580.0	10501.190	25535.50
2008	253.4974	57210000	24048580.0	15468.330	27806.76

1.05 OLS

Variable	Coefficient	Std. error	T-statistic	Prob.
C	-82.01048	7.397030	-11.08695	0.0000
LOG (EDU)	0.841437	0.223718	3.761148	0.0008
LOG (ELE)	4.691057	0.600773	7.808370	0.0000
LOG (IME)	-0.253923	0.511835	-0.496103	0.6238
LOG (RMP)	1.152393	0.294478	3.913338	0.0006
R-squared	0.899870	Mean dependent var		13.40739
Adjusted R-squared	0.885036	S.D. dependent var		2.279835
S.E. of regression	0.773010	Akaike info criterion		2.465552
Sum squared resid	16.13371	Schwarz criterion		2.694573
Log likelihood	-34.44883	Hannan-Quinn criter.		2.541466
F-statistic	60.66218	Durbin-Watson stat		1.513975
Prob (F-statistic)	0.000000			

1.06 DR CHRIS – SUB-DATA 3

Obs	DUM	EDU	ELE	GDP
1977	0	757.5758	28890000	31520.3
1978	0	430.5714	23240000	34540.1
1979	0	710.9333	33050000	41974.7
1980	0	1082.500	27830000	49632.3
1981	0	428.0583	23900000	47619.7
1982	0	443.6364	24730000	49069.3
1983	0	226.5359	19890000	53107.4
1984	0	77.48663	26680000	59622.5
1985	0	95.60847	30910000	67908.6
1986	0	205.5814	36300000	69147.0
1987	0	58.94068	32840000	105222.8
1988	0	74.15789	40080000	139085.3
1989	0	40.34545	41400000	216797.5
1990	0	58.19298	43870000	267550.0
1991	0	41.30000	59310000	312139.7
1992	0	36.86180	60590000	532613.8
1993	1	93.03571	55720000	683869.8
1994	1	81.00000	55620000	899863.2
1995	1	73.44881	55000000	1933211.6
1996	1	62.47911	55000000	2702717.1
1997	1	67.12498	55930000	2801972.6
1998	1	201.4963	57750000	2708430.9
1999	1	133.8457	61480000	3194015.0
2000	1	320.3321	56280000	4582127.3
2001	1	233.9223	59090000	4725086.0
2002	1	96.79622	82340000	6912381.3
2003	1	124.5140	74480000	10169130.0
2004	1	166.1527	81080000	11673600.0
2005	1	189.6393	77680000	14735320.0
2006	1	227.8281	62630000	18709580.0
2007	1	288.4917	62270000	20853580.0
2008	1	253.4974	57210000	24048580.0

1.07 OLS

Variable	Coefficient	Std. error	T-statistic	Prob.
C	-46.37685	9.355738	-4.957049	0.0000
LOG (EDU)	0.444429	0.156194	2.845367	0.0084
LOG (ELE)	2.720639	0.514744	5.285423	0.0000
LOG (RMP)	0.927154	0.224749	4.125288	0.0003
DUM	1.753828	0.394467	4.446068	0.0001
R-squared	0.941665	Mean dependent var		13.40739
Adjusted R-squared	0.933023	S.D. dependent var		2.279835
S.E. of regression	0.590018	Akaike info criterion		1.925274
Sum squared resid	9.399276	Schwarz criterion		2.154295
Log likelihood	-25.80438	Hannan-Quinn criter.		2.001188
F-statistic	108.9619	Durbin-Watson stat		1.348140
Prob (F-statistic)	0.000000			

