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STATE SPACE MODELLING AND KALMAN FILTERRING OF INTEREST RATE IN NIGERIA: IMPLICATIONS FOR INVESTMENT

AKIGHIR, DAVID TERFA[1]

IOREMBER, PAUL TERHEMBA[2]

[1,2] Department of Economics,

Benue State University, Makurdi

Abstract

The volatile nature of interest rate in the Nigerian economy has informed various interest rate policies and regimes to ensure its stability with a view to enhancing investment in the country. Yet, it is not certain whether interest rate would be investment friendly to galvanize investment in the nearest future. This study has employed the state space modeling and the kalman filtering approaches to ascertain the likely behavior of interest rate in Nigeria up to 2020. Quarterly data on interest rate spanning from 1999Q1 to 2013Q4. The out-of-sample forecast of interest rate showed that from 2014Q1 to 2020Q4 interest rate in Nigeria will hover around an average of 18%. It was concluded that this level of interest rate is not investment friendly, and if efficient interest rate policies are not put in place, investment would be adversely affected especially that of small and medium scale enterprises. The paper recommended that the Central Bank should reduce lending rate to commercial banks and the government should provide infrastructure such as stable electricity supply so as to reduce the cost of doing business of commercial banks in the country.

KEYWORDS: State Space, Kalman Filter, Monetary Policy Rate, Interest, Forecast

Introduction

The veracity of the relationship between interest rates and investment in an economy is indisputable. Interest rates have a substantial influence on the rate and pattern of economic growth by influencing the volume and disposition of savings, as well as the volume and productivity of investment (Leahy, 1993). Changes in interest rates can significantly affect

different types of investments. Changes in interest rates also influence the level of household consumption in a country. Consumption of durable goods is interest rate sensitive, since households will sometimes finance the purchase of "big ticket items" such as automobiles, household appliances, computers, televisions, and other goods through borrowing. Households will respond to higher interest rates by decreasing their consumption of these non-essential items since it becomes more costly to borrow when interest rates rise and consequently decreasing both the demand for the products and the incentive to produce. This is the indirect effect of interest rate on investment. Directly, high interest rate increases the cost of production and adversely affects profitability of investors.

In Nigeria, various interest rates regimes and policies have evolved with a view to making interest rates stable for enhanced investment. From 1987, direct controls on interest rate were relaxed, and this caused interest rate to increase till 1989. In 1992, there was partial deregulation of interest rate; however, this failed to achieve investment friendly objective. Thus, total deregulation of interest rates was adopted in 1996. Between 1999 and 2005 the Monetary Policy Committee (MPC) adjusted the Monetary Rediscount Rate (MRR) in line with the monetary conditions. The failure of the MRR to adequately signal the direction of monetary policy; then, the Monetary Policy Rate (MPR) was introduced in December, 2006. In line with market expectations, the CBN maintained its accommodative stance and kept its benchmark rate unchanged and the MPR was kept at 12 percent. In order to have investment friendly interest rates for the economy; especially for the small and medium enterprises, upon the assumption of office in June, 2014, the new CBN governor re-iterated the commitment of effective management of interest rates in Nigeria for enhanced investment. Thus, it becomes pertinent to

model interest rate in Nigeria so as to make forecast ahead, and ascertain the possibility of the Nigerian economy achieving investment friendly interest rate.

Towards this end, this paper has employed the State Space modeling and the Kalman filtering approach to model and filter interest rate in Nigeria using the quarterly interest rate data from 1999 to 2013; and further forecast the likely behavior of interest rates in Nigeria up to 2020 and the implications for investment. The significance of this study is based on the current CBN policy of boosting investment using the instrument of interest rate adjustment. A forecast of the possible level of the interest rate up to year 2020 will significantly influence investment driving policies of the government.

The Interest Rate Transmission Mechanism

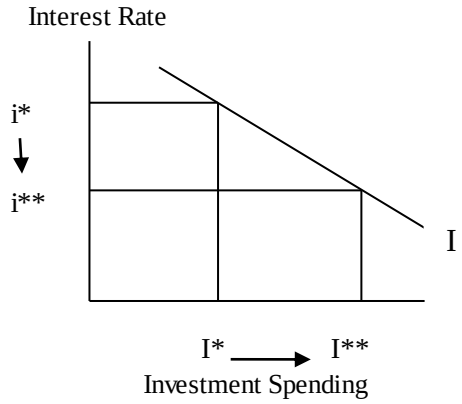
If interest rate is the cost of borrowing money, an increase in the interest rate reduces the overall investment because most of the businesses are partly or wholly financed with borrowed funds. An increase in the interest rate compels companies to put more resources to payoff this investment cost which obviously lowers investment stock. It therefore follows that, investment is a negative function of interest rate as expressed below;

$$I = f(\underline{R}) \quad \text{---------- (1)}$$

where I = investment and R = interest rate.

Thus, for investors, interest rate has an inverse relationship with their investment decisions, since it influences the cost of capital for investment. Figures 2a and 2b depict degrees of responsiveness of investment to interest rate variability in an economy.

Business Investment



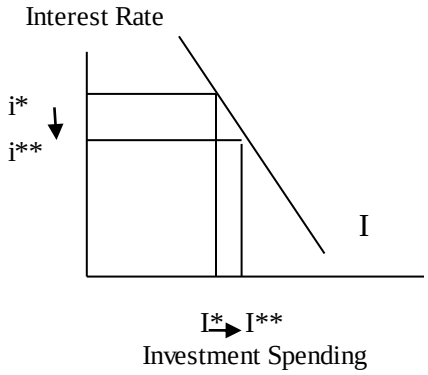
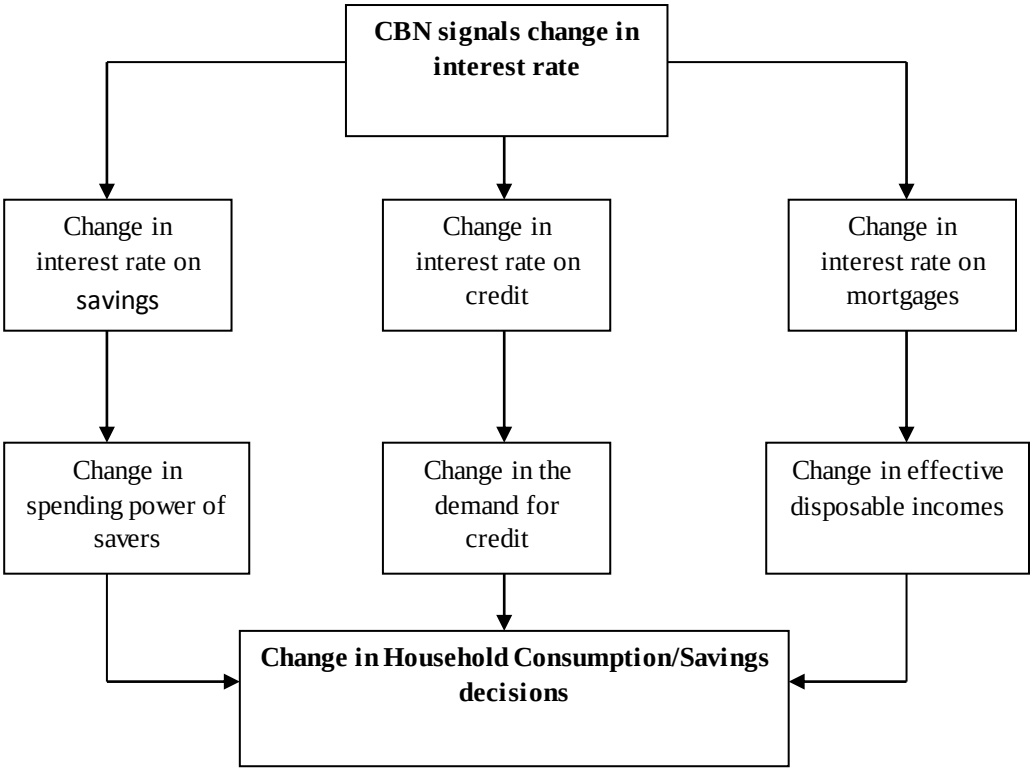


Figure 2a **Figure 2b**

Source: Authors' Construction

Firms take interest rates into account when deciding whether or not they go ahead with new or existing capital investment spending. A fall in interest rates (from i* to i**) will proportionately increase business confidence and raise the level of investment spending (from I* to I**) as shown in figure 2a. The same is for Figure 2b except that, a fall in interest rate (from i* to i**) will lead to a negligible rise in the level of investment spending (from I* to I**). The figure 2b scenario is more likely to occur according to the Keynes absolute income hypothesis. Also, Keynes is of the view that interest rate changes is not the only factor influencing investment, factors such as returns on investment, government policies will also affect investment.

Household Consumption/Savings



Source: Authors' Construction

A change in interest rate on savings, credit and mortgages occasioned by change in the interest rate by the Central Bank of Nigeria (CBN) is capable of transmitting a unique change in the spending power of savers, demand for credit and effective disposable incomes respectively. High interest rate on savings induces savings and lowers the spending power of savers while high interest rate on credit discourages borrowing and lowers the demand for credit. Similarly, high interest rates on mortgages increase the cost of mortgages and reduce the demand for most types of housing and vice versa. Conversely, when interest rates on savings fall, there is a re-distribution of income away from lenders (who receive less) towards those with variable rate loans. People with positive net savings also stand to lose out from big cuts in interest rates. Also,

lower interest rate on credit encourages people to spend using various forms of credit and boosts demand for "big ticket" consumer durables and high street spending generally. Similarly, if interest rates on mortgages fall, the effective disposable income of home-owners who have variable-rate mortgages with their building society or bank will increase- leading to a rise in their purchasing power. Lower mortgage rate stimulates an increase in new mortgages approvals and generally cause an expansion in housing market activity.

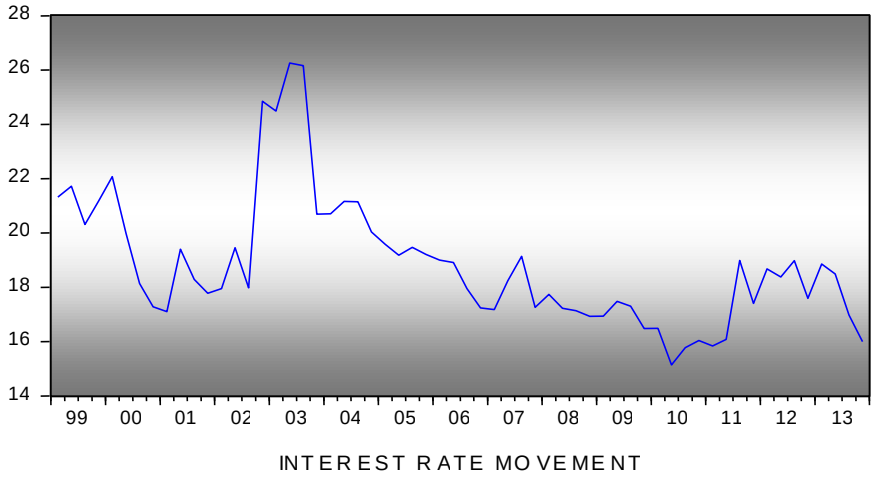
Interest Rate Policies in Nigeria

Interest rate policies in Nigeria have undergone series of reforms to enhance interest rate management in order to encourage investment. In August 1987, all controls on interest rates were removed, while the CBN adopted the policy of fixing only its minimum rediscount rate to indicate the desired direction of interest rates changes. Throughout this period interest rate rose up to 1989. This was modified in 1989, when CBN issued further directive on the required spreads between deposit and lending rates. Subsequent to the deregulation of interest rate in the post-SAP era, the spread between deposit and lending rates begin to widen and thus, interest rates increased remarkably. The high interest rate implies that cost of borrowing have gone up in the organized financial market, thereby increasing the cost of operations. The spread rose from -0.25 percent in 1985 to 13.7 in 1992 and a height of 20.7 percent in 2002 (Olawale and Adegoke, 2010).

In 1991, the government prescribed a maximum margin between each bank's average cost of funds and its maximum lending rates. Later, the CBN prescribed savings-deposit rate and a maximum lending rate. Partial deregulation was however restored in 1992 when financial

institutions were only required to maintain a specific spread between their average cost of funds and their maximum lending rates. The removal of maximum lending rate ceiling in 1993 saw interest rates rising to unprecedented levels with its attendant negative impact on the real sector investment in 1994, direct interest rate controls were restored. As these and other controls introduced in 1994 and 1995 had negative economic effects, total deregulation of interest rates was adopted in October, 1996. Between 1999 and 2005 the bank through its Monetary Policy Committee (MPC) adjusted the Monetary Rediscount Rate (MRR) in line with monetary conditions. However, due to its inefficiency to effectively signal the direction of monetary policy; a new framework for implementing monetary policy was introduced in December 2006; that is the Monetary Policy Rate (MPR) (CBN, 2010).

In 2011, the MPR was raised by 275 basis points from 9.25 percent to 12.0 percent in order to curb inflationary pressures and encourage borrowing for enhanced investment. The average interbank rate witnessed some volatility in the second quarter of 2012. Volatility was higher on shorter term tenors due to aggressive mop up activities by the CBN. For instance, rates on the call and 7 Days tenors hit as high as 15.46 percent, and 15.79 percent, respectively. In 2013, the monetary policy committee (MPC) refused to raise further the MPR and maintained it at 12.0 percent (Abubakar, 2013). The volatile movement of interest rates in Nigeria is given in Figure 3



Source: CBN Bulletin, 2013

Figure 3 : Trend Analysis of quarterly interest rate in Nigeria (1999Q1-2013Q4)

The figure shows an erratic movement of interest rates over time in Nigeria. Between 2002 and 2004, interest rate rose and hovered around 27 percent; this was due to the inefficiency of the MRR to effectively signal the direction of monetary policy in Nigeria that necessitated its replacement with the MPR by the MPC. MPR as a monetary instrument depended on adaptive expectation model where monetary authorities used paste information to make future forecast. Thus the inability of adaptive model informed the choice of MPR which uses rational expectations assumptions where both the past and present information are used in making forecast. With the implementation of the MPR, interest rate declined and hovered around 15 percent in 2010; but rose again averaging 17 percent between 2011 and 2013.

Empirical Literature

Lot of researches on the relationship between interest rate and investment have concluded that, increase in real interest rate tend to raise the real cost of borrowing and consequently, decrease in the level of investment. For instance, Udonsah (2012) investigated the impact of interest rate on investment decision in Nigeria between 1981 and 2010. Using the technique of Ordinary Least Squares, found that interest rate has negative impact on investment decision in Nigeria.

Joshua and Delano (1990) in a study on "determinants of private investment in Less Developing Countries (LDCs)" on 23 less developing countries for the period of 1975 to 1985 using multiple regression analysis found that, interest rate is inversely related to investment in the countries investigated.

Obamuyi (2009) Studied the relationship between interest rate and economic growth in Nigeria. The study employed cointegration and error correction modeling techniques and revealed that lending rate has significant effect on economic growth. The study then postulated that investment friendly interest rate policies necessary for promoting economic growth needs to be formulated and properly implemented.

Sulaiman et al (2013) examined the rate of interest and its impact on investment to the extent of Pakistan from 1964 to 2014 using Vector Error Correction Model. Their findings conformed to the economic theory and a number of other studies that investment has significant inverse association with real interest rate in Pakistan. Similarly, Larsen (2004) in a study on "the impact of loan rates on direct real estate investment holding period return" in the United State found that

real estate investment is inversely related to interest rate. This means that changes in interest rates tend to affect investment decisions of investors.

Theoretical Framework and Models

This section explains the modeling procedures involved in the State Space and Kalman Filtering approaches.

State Space Modelling of Interest Rate

State state models are models that use state variables to describe a system by a set of first–order difference and differential equations. It is a class of probabilistic graphical model (Koller and Friedman, 2009) that describes the probabilistic dependence between the latent or unobserved variable and the observed measurement. Fitting a model into state space framework produces powerful statistical properties for optimal forecast usually through the process of Kalman Filtering. The state space model structure is a good choice for this study because it requires specifying only one input (interest rate) for quick estimation

Many time-series models used in economics and econometrics are special cases of the class of linear state space models developed by engineers to describe physical systems. The linear state-space model postulates that an observed time series is a linear function of a (generally unobserved) state vector and the law of motion for the state vector is first-order vector autoregression (Rothenberg and Elliot, 1996). A state space approach also called dynamic linear modeling approach applied to univariate models makes it possible to use mathematical framework in the model development.

A state space model consists of a signal (measurement) and a state (transition) equation. The signal equation is responsible for relating the observable data and the unobservable state variables and it can be represented by the following system:

$$y_t = Z_t\alpha_t + C_t x_t + u_t \text{ ----------2}$$
$$\alpha_t = T_t\alpha_{t-1} + D_t x_t + R_t\eta_t \text{ ----------3}$$

where equations 2 and 3 are the signal and state equations respectively. The vector y_t represent the signal and x_t is the vector of the exogenous observed variable. α_t is a vector of the unobserved state variable, so that y_t and x_t are used to make inferences about α_t. Collectively, (*C,D,T,Z*) are referred to as the system matrices. In particular, *T* is a matrix that describes the transition between the states (state transition matrix), *D* and *C* are the input matrices, *Z* is the output matrix and R_t is the system noise matrix.

By assuming that the state space model above is time invariant, the general Autoregressive Moving Average of oder *p* and *q* (*ARMA (p,q))* model is specified as

$$y_t = \phi y_{t-1} + ... + \phi_p y_{t-p} + \eta_t + \theta_1\eta_{t-1} ... + \theta_q\eta_{t-q} \text{ ---------- 4}$$

Where *p* is the order term of the Autoregressive (*AR*) and *q* is the order term of the moving average *(MA)*. According to Mehmet (2007), by letting $m = \max(p, q+1)$, then $p = m$ *and* $q = m-1$. Hence the state form of the *ARMA (p,q)* is specified as

$$y_t = \phi y_{t-1} + ... + \phi_p y_{t-m} + \eta_t + \theta_1\eta_{t-1} ... + \theta_{m-1}\eta_{t-m+1} \text{ ----------5}$$

When $y_t = (1\ 0'_{m-1})\alpha_t$ then, the state equation

$$\alpha_t = \begin{pmatrix} \phi_1 & \phi_2 & \cdots & \phi_{m-1} & \phi_m \\ 1 & 0 & \cdots & 0 & 0 \\ 0 & 1 & \cdots & 0 & 0 \\ \vdots & \vdots & \ddots & & \vdots \\ 0 & 0 & \cdots & 1 & 0 \end{pmatrix} \alpha_{t-1} + \begin{pmatrix} 1 \\ \theta_1 \\ \vdots \\ \theta_{m-2} \\ \theta_{m-1} \end{pmatrix} \eta_t$$

Kalman Filter

The kalman filter is a recursive algorithm for producing optimal linear forecasts of α_{t+1} and y_{t+1} from the past history of y_t. Assuming that Z and T in equation 2 and 3 are known,

$$\alpha_t = \mathrm{E}(\alpha_t | y_{t-1}) \text{ and } \eta_t = \mathrm{var}(\alpha_t | y_{t-1}).$$

It is a recursive procedure for computing the conditional mean $x_{t|t-1}$ and covariance matrix (P_t) of the state vector x_t given Y_{t-1}. It is used to estimate the likelihood function of a state space system (Kalman, 1960). After selecting the initial state $x_{1|0}$ and P_1, the Kalman filter is often considered to iterate between two steps: time update or prediction and measurement update. The prediction step uses the current state estimate at time t, i.e $x_{t|t}$, to produce an estimate of the state at $t+1$ using the state equation:

$$\alpha_{t+1|t} = \mathrm{T}\alpha_{t|t} \text{ ---------- 6}$$

Similarly, if μ_t and η_t in equation 2and 3 are normally distributed, the minimum MSE forecast of y_{t+1} at time t is $Z\alpha_{t+1}$. (Rothenberg and Elliot, 1996). Apart from operating recursively, the Kalman Filter has the advantage of keeping track of the estimated state of the system and the variance or uncertainty of the estimate (Kalman, 1960).

Preliminary Analysis

When modeling with ARMA, the time series need to be stationary which means, it should exhibit similar behavior over time inform of constant expected value of autocovariance and to avoid spurious estimates. (Montgomery, Jenkings and Kulahci, 2008). This study therefore identified the stationary properties of the time series (interest rate) and estimated an ARMA model for the quarterly interest rate in Nigeria from 1999Q1 to 2013Q4 which makes up to 60 observations. The choice of the sample size is based on the assumption that, periods of uninterrupted democratic regimes are more favourable to driving private sector investment.

A cursory examination of Figure 3 suggests that the series is non stationary (apparent trend, and moving averages). The observations seem to wander away from a fixed mean, and the variance seems to be non constant over time. This necessitated the application of the Augmented Dickey Fuller (ADF) test of unit root Dickey and Fuller (1979). The result of the ADF test is presented in table 1

Table 1: Unit Root Test

Variable	ADF t-statistics @ Level	ADF t-statistics @ 1st Diff	Mackinno critical value @ 5%	Order of integration
Interest Rate	-2.5039	-8.9289	-2.9115	I(1)

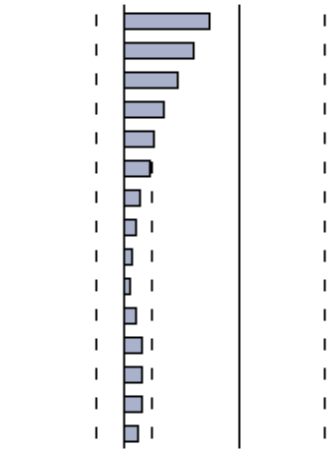
Source: Authors compilation using Eviews

Table 1 has confirmed the non stationarity of the interest rate variable in level. However, the variable became stationary after first differencing; hence, the estimation process is based on the differenced data.

After the time series (interest rate) has been stationarized by differencing, we fit an ARMA model to find the value of the parameter that minimizes the error term mostly and as well to determine whether autoregressive (AR) or moving average (MA) terms are needed to correct any autocorrelation that remains in the differenced series. Using the Box and Jenkings (1976) suggestion of one – fourth of the number of observations in the examination of autocorrelation, the autocorrelation function (ACF) and the partial autocorrelation function (PACF) are determined using 15 lags (60/4). The result is presented in table 2

Table 2: ACF and PACF Spikes and Values

Date: 09/21/14 Time: 16:20
Sample: 1999Q1 2013Q4
Included observations: 60



Autocorrelation	Partial Correlation		AC	PAC	Q-Stat	Prob
		1	0.779	0.779	38.284	0.000
		2	0.633	0.065	63.945	0.000
		3	0.486	-0.064	79.373	0.000
		4	0.355	-0.056	87.747	0.000
		5	0.271	0.033	92.703	0.000
		6	0.223	0.055	96.139	0.000
		7	0.138	-0.117	97.477	0.000
		8	0.106	0.045	98.276	0.000
		9	0.068	-0.011	98.610	0.000
		10	0.052	0.029	98.810	0.000
		11	0.107	0.169	99.680	0.000
		12	0.158	0.068	101.62	0.000
		13	0.168	-0.045	103.86	0.000
		14	0.159	-0.060	105.90	0.000
		15	0.126	-0.023	107.22	0.000

From the table, only the first five autocorrelations are significantly different from zero at 5% level. That is, only the first five autocorrelations extend beyond the 95% confidence intervals

indicated by dashed lines. The autocorrelations decay to statistical insignificance rather quickly. We conclude that the mean of the series is probably stationary. An AR model seems appropriate because the ACF decays toward zero rather than cutting off sharply to zero. If the ACF cuts off to zero, it suggests a moving-average model (Mehmet, 2007). The PACF plot on the other hand has a significant spike only at lag 1, meaning that all the higher order autocorrelations are effectively explained by the lag 1 autocorrelation. Alternatively, we can obtain the ideal candidate of AR, MA or ARMA by estimating up to the 2nd lag and selecting the one with the lowest Schwarz information criteria (SC) as shown below upon estimation;

Table 3: AR and ARMA values

Table 3: Autoregressive Moving Average (ARMA) test of Candidate Model

ARMA(p,q)	AR(1)	AR(2)	MA(1)	MA(2)	ARMA(1,1)	ARMA(1,2)	ARMA(2,1)	ARMA(2,2)
SC	3.71	4.14	4.16	4.22	3.77	3.75	3.78	4.19

The minimum SC (3.71) value is obtained for the AR(1) model (Schwarz, 1978). Thus we consider this model as the ideal candidate.

Furthermore, the appropriateness of the AR(1) model is determined by matching the actual values of both ACF and PACF with their theoretical values as shown the figure below;

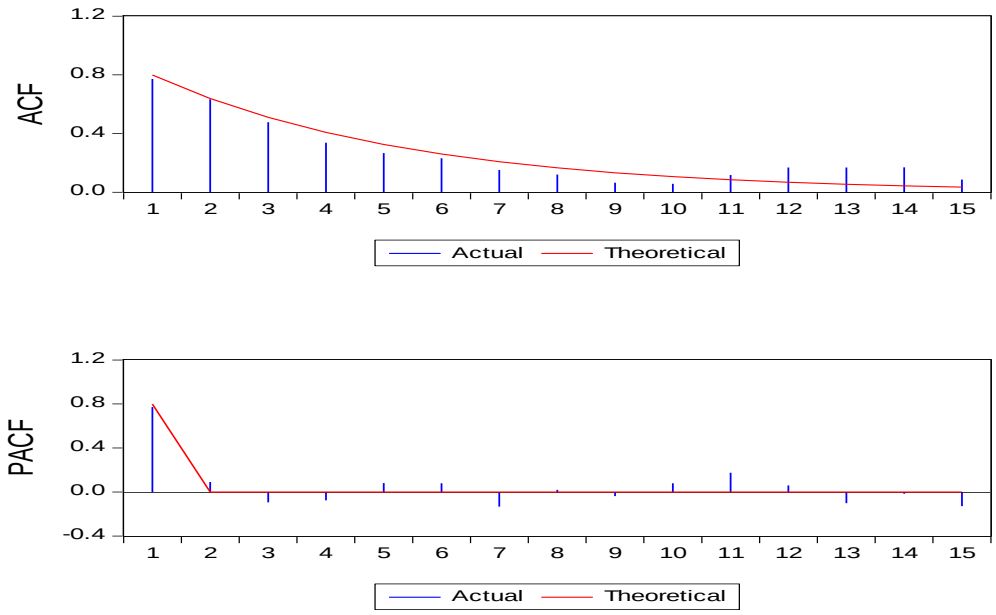


Figure 4: ACF and PACF Test of Autocorrelation

Clearly, the theoretical ACF and PACF match all the significant sample ACF and PACF estimates (actual). The AR(1) model produced quite similar autocorrelation function with a merging of sampling error (Mehmet, 2007). Therefore, AR(1) model is appropriate for the quarterly movement in interest rate.

Data Analysis

Having identified and specified the appropriateness of the ARMA model, the unknown parameters for the variances and the unobserved component can be estimated using the maximum likelihood (Marquardt) method of estimation. The log likelihood function (a modification of the Gauss–Newton algorithm) used in this paper corresponds to the one given by Durbin and Koopman (2001) and is referred to by Harvey as the prediction error decomposition (Harvey1989). The table below showed the state space estimation of the AR(1).

State Space Estimation and the Kalman Filtering of AR(1)

Table 4: Result of the State Space Estimation of AR(1) Model

Sspace: AR(1)
Method: Maximum likelihood (Marquardt)
Date: 09/21/14 Time: 22:54
Sample: 1999Q1 2013Q4
Included observations: 60
Convergence achieved after 15 iteration

	Coefficient	Std. Error	z-Statistic	Prob.
C(1)	0.719380	0.103528	6.948644	0.0000
C(2)	0.836467	0.070178	11.91916	0.0000
	Final State	**Root MSE**	**z-Statistic**	**Prob.**
SV1	18.34352	1.140723	16.08061	0.0000
SV2	-1.960278	1.721515	-1.138694	0.2548
Log likelihood	-120.7601	Akaike info criterion		4.092003
Parameters	2	Schwarz criterion		4.161814
Diffuse priors	2	Hannan-Quinn criter.		4.119310

Source: Eviews7 Output

Table 4 showed that the model has been fitted on 60 observations using the Marquardt optimization algorithm taking 15 iterations to achieve convergence solution. At convergence, the maximum of the log likelihood is found to be -120.7601. The coefficients C(1) = 0.719380 and (C2) = 0.836467 are the logs of the variances of the error terms for the measurement and state equations respectively. (i.e $\sigma^2{}_\mu = 2.0532$ and $\sigma^2{}_\eta = 2.3082$). The final state of the unobserved component for one-step and 2-step ahead predicted values are 18.34352 and -1.960278 respectively.

Table 5: Result of the Kalman Filtering of AR(1)

Sspace: AR(1)
Method: Kalman filter
Date: 09/21/14 Time: 22:35
Sample: 1999Q1 2013Q4
Included observations: 60

	Final State	Root MSE	z-Statistic	Prob.
SV1	18.34357	1.140629	16.08197	0.0000
SV2	-1.960285	1.721468	-1.138728	0.2548

Log likelihood	-120.7601	Akaike info criterion	4.025336
Parameters	0	Schwarz criterion	4.025336
Diffuse priors	2	Hannan-Quinn criter.	4.025336

Source: Eviews Output

The Root Mean Square Error (RMSE) which is the metric of comparison for the forecasting ability of the model is smaller in the Kalman Filter for the SV1 (1.140723) indicating robustness in the one-step ahead forecast than two-steps ahead (SV2). Hence, our forecasts are based on one-step ahead method.

Interest Rate Forecasts

In order to forecast the behavior of interest rate, two sets of forecasts were used, namely, the with-in-sample forecast and the out- of-sample forecast. The with-in-sample forecast covers the period of 1999Q1 to 2013Q4. The forecast result is shown in Figure 5.

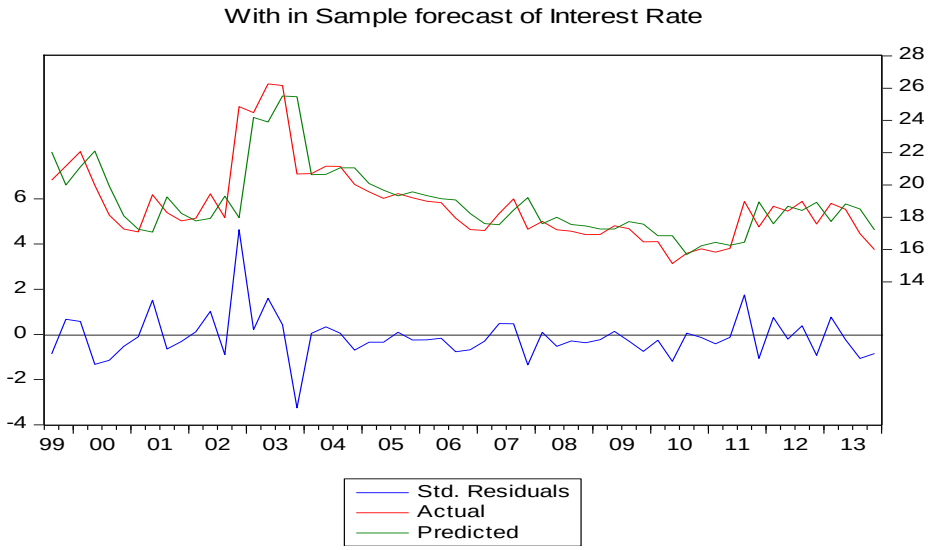


Figure 5: Actual and Predicted Interest Rate from 1999Q1 to 2013Q4 Forecast

The figure shows the actual and predicted interest rates forecast in Nigeria from 1999Q1 to 2013Q4. A close examination reveals that the predicted interest rates mimic the actual interest rate movement in the forecasted period. This shows that both the state space and the Kalman Filter models are adequate and suitable for forecasting interest rate behavior in Nigeria. Based on the suitability of the models, it is assumed that, the out-of-sample forecast is likely to yield optimal results. Thus, we proceeded to forecast ahead using a sample range of 2014Q1 to 2020Q4 in order to ascertain the likely behavior of the interest rate in Nigeria and the implications it holds for investment. The out-of-sample forecast on the other hand covers the period from 2014Q1 to 2020Q4 as shown in Figure 6.

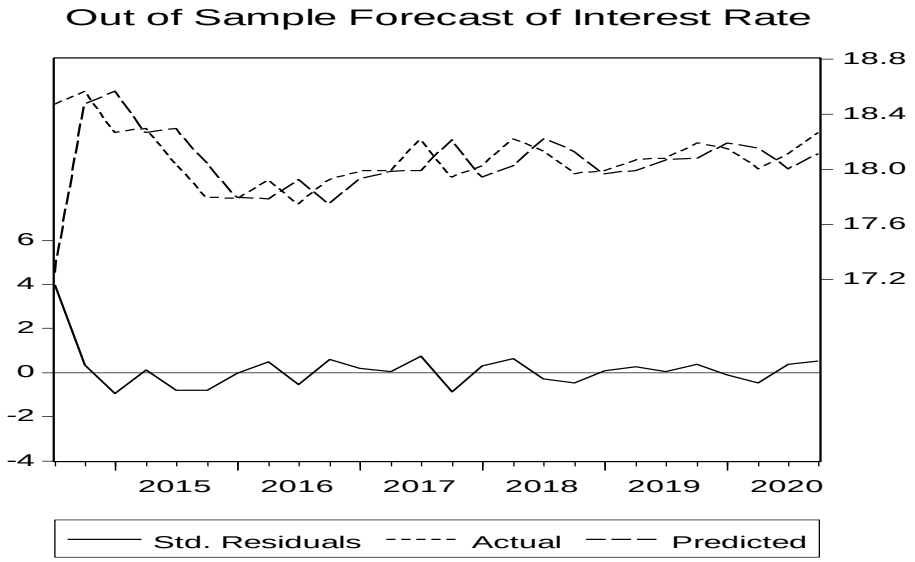


Figure 6: Actual and Predicted Interest Rate from 2014Q1 to 202Q4 Forecast

The figure shows that the predicted out-of-sample interest rate in 2014 was approximately 17.2 percent; while the actual interest in the same period was above 18 percent. Furthermore, both the predicted and the actual interest rates averaged 18 percent throughout the out-of-sample period. This suggest that, interest rate would hover around 18 percent from 2015 to 2020; which is slightly above the with-in-sample period prediction (i.e below 18%) in Figure 5.

The implication for investment is that, if the evolving interest rate policies are not efficient to effectively lower interest rate in the country, there would be a likelihood of decline in investment especially that of the small and medium scale enterprises; since the cost of capital would be higher relative to the current cost of borrowing. This is because, high cost of credit does not only affect private sector investment through increased cost of operation but also affects production performance and this has negative effect on liquidity and profitability of the enterprises (Sender, 2000). Similarly, if the forecasted interest rate is allowed to hold, borrowing will be discouraged and investors (small and medium scale enterprises) in Nigeria will suffer from capital constraints

which will lower their resilience to risk and prevent them from attaining economies of scale or even folding up in the shortest possible time.

High interest rate charges is a major factor that limits SMEs access to finance, and the limited access to finance is a key obstacle to enterprise growth and entrepreneurship, particularly for young people in Nigeria. According to the World Bank, it is only 6.7 percent of Nigerian firms reported having a loan or active line credit in 2014, and that SMEs' lending is made up only 5 percent of the total commercial bank lending in Nigeria. This basically is because of high interest rate charged by commercial banks that grossly affects the profitability of investors in Nigeria. A situation that has seriously encouraged patronage of informal financial institutions for investment funds which is not healthy for the regulation of the economy.

In order to validate our forecasted results, evaluation statistics were used for both with-in-sample and out-of-sample forecasts; the results are shown in Table 6.

Table 6: Evaluation of the Forecasts

Statistic	With-in-Sample Forecast	Out-of-Sample Forecast
Root Mean Squared Error	0.747981	0.659584
Theil's Inequality Coeff.	0.035183	0.041885
Bias Proportion	0.567771	0.000000
Variance Proportion	0.152212	0.128692
Covariance Proportion	0.984124	0.761308

Source: Computed from Model Forecasting

The validatory statistics in Table 6 are the Root Mean Squared Error, the Theil's ineqality coefficient, decomposed into Bias proportion, Variance proportion and the Covariance proportion. The RMSE for both the with-in-sample and out-of- sample periods are low as expected. The Theil's ineqality coefficients for both the with-in-sample and out-of- sample forecasts are also low as expected. The results show that the causes of discrepancies between the

actual and the predicted innterest rate is not caused by mean of interest rate. The variance proportions are low as expected, implying that the discrepancies between the actual and the predicted is not caused by the variance of interest rate. The covariances are generally high indicating that the actual and the predicted values are correlated with each other. The synergy of these statistics shows the high predictory power of the model; implying that our findings are valid and suitable for interest rate policies in the Nigerian economy.

Conclusion, Recommendations and Policy Implications

It is concluded in this paper that if effective interest rate policies are not formulated and implemented in the country, it will be difficult for the Central Bank of Nigeria (CBN) to achieve its accommodative interest rate target in country which is aimed at financial inclusion. This is because, if apropriate measures are not taken from now till 2020, interest rate can not be below 18 percent. The implication is that, the SMEs which are expected to benefit from investment friendly interest rate regime will be deterred by the 18 percent interest rate, since their profitability will be adversely affected. This high interest rate will affect employment, income, and economic growth of real sector of the economy.

For the economy to achieve an accommodative interest rate regime, the paper makes the following recommendations;

i. The CBN as the lender of last resort to commercial banks must reduce the cost of funds to commercial banks. Since commercial banks charge interest rates based on the cost they obtain funds from the apex bank. This means 12 percent of the MPR plus other cash

handling charges of the commercial banks. Thus, to reduce interest rate, the MPR which is the major signal of the direction of monetary policies should be reduced.

ii. The CBN should evolve policies to reduce the cost of doing business of the commercial banks in the country. This is because, commercial banks charge higher interest rates to enable them cover their operating costs such as electricity bills, and other charges. Towards this end, government should ensure stable and uniterrupted power supply in the country. Also, the cash handling charges can be reduced through the cashless policy of the CBN.

iii. The CBN should enforce the N65 Automated Teller Machine (ATM) charges to cushion the maintance cost of managing ATMs in the country, as this would immensely help banks adequately maintain the manegement of the ATM.

REFERENCES

ABubakar I. (2013); Macroeconomic Environment. *Zenith Economic Quarterly Vol.6 (2)*

Box G.E. and Jenkings G.M. (1976); "Time series Analysis: Forecasting and Control". Revised Edition, Holden-Day Inc. Oakland.

Central Bank of Nigeria (2010), *The Changing Structure of the Nigerian Economy*, Lagos, Atisele Vanessa Cards Co.

Central Bank of Nigeria Statistical Bulletin (CBN) (2013). www.cenbank.org. Retrieved on 15/9/2014.

Dickey, D. and Fuller, W. A. (1979). Distribution of the estimates for autoregressive time series with unit root. *Journal of the American Statistical Association*, 74, 427-431.

Durbin J. and Koopman S.J (2001); "Time Series Analysis by State Space Methods". Oxford University Press, Oxford.

Harvey A.C (1989); "Forcasting Structural Time Series Models and Kalman Filter". Cambridge University Press, Cambridge.

Joshua G. and Delano V. (1990); Private Investment in Developing Countries: An Empirical Analysis. IMF Research Department, Washington D.C.

Kalman R.E. (1960); A new Approach to Linear Filtering and Prediction Problems. *Journal of Basic Engineering 82(1): 35-45*

Koller D. and Friedman N. (2009): Probabilistic Graphical Models. Cambridge, M.A: MIT Press

Larsen, E. J. (2004). The Impact of Loan Rates on Direct Real Estate Investment Holding Period Return. *Financial Services Review, 13, 111-121.*

Leahy J.C. (1993); Investment in Competitive Equilibrium: The optimality of Myopic Behaviour. *Quarterly Journal of Economics 108: 1105-1133*

Mehmet B. (2007); "Identifying and Estimating ARMA models"; Econ 604 Eviews Tutorial. No.2, Eastern Mediterranean University.

Montgomery D.C., Jennings C.L. and Kulahci (2008): "Introduction to Time Series Analysis". Fourth Edition, New York, Wiley.

Obamuyi C. (2009); An investigation of the relationship between interest rate and economic growth in Nigeria from 1970 – 2006. *Journal of Economics and International Finance, 1(4): 093-098*

Olawale, O. and Adegoke, I. A. (2010), Economic Distortions and Stock Market Performance in Nigeria. *Selected Papers of the 51st Annual Conference of the NES.*

Rothenberg T.Y., Elliot G. and Stock J.H. (1996) "Efficient Tests for an Auto regressive Unit Root" *Econometrica Vol 64 No.4, 813 – 836.*

Sander C. (2000); Bridging the gap of Market Failures and Asymmetric Micro Finance and Enterprise Financing: *International Discussion on Challenges of SMEs financing, Vienna.*

Schwarz, G. (1978): Estimating the dimension of a model: *The Annals of statistics 6(2): 461-464*

Sulaiman D.M., Ghulam R.L., Saba J. and Muhammad N. (2013); Rate of Interest and its Impact on Investment to the extent of Pakistan. *Pakistan Journal of Commerce and Social Sciences Vol.7(1), 91-99*

Udonsah R. (2012); The Impact of Interest Rate on Investment in Nigeria. *Journal of Economics and International Finance, 1(4): 093-098*

FOREIGN DIRECT INVESTMENT AND THE MANFUCATURING SECTOR OUTPUT IN NIGERIA: A PRE AND POST SAP ANALYSIS

Andohol Jerome Ph.D
Department of Economics
Benue State University, Makurdi
Email: torsaa2002@yahoo.com

Usar Terzungwe
Department of Economics
Benue State university, Makurdi
Email: thomasusar8@gmail.com

ABSTRACT

The study investigated the relationship between Foreign Direct Investment and Manufacturing industries within the pre and post-SAP framework. The Chow test provided justification for splitting the data into the pre and post-SAP framework. Ordinary least squares (OLS) and the Cochrane-Orccut transformation was used to estimate the model in the pre-SAP era, while the Granger Representation Theorem and VECM were used for the post-SAP era. The Cochrane-Orcutt results show that FDI has a positive and significant impact on Manufacturing Sector Output in the pre-SAP era, and the Engle-Granger cointegration ascertained the existence of a long run relationship among the variables. The vector error correction model estimated the long run relationship between FDI and the manufacturing industries performance and also reported a positive relationship between Foreign Direct Investment and Manufacturing Sector Output. The causality test of the variables for the two periods shows no causality between FDI and the Manufacturing Sector Output in the pre-SAP era and bidirectional causation in the post-SAP era. The study therefore, recommends that the government of Nigeria should as a matter of priority contain insurgency in the country so as to attract foreign direct investment into Nigeria. The study also recommends expedient action from the government to encourage the manufacturing sector through incentives such as favorable policies, tax holidays and adequate policing of the nation's borders to prevent dumping in the economy.

Keywords: FDI, manufacturing sector, SAP, multinationals, Chow Test Cochrane-Orcutt, Granger Representation Theorem

1. INTRODUCTION

The world economy has opened up and borders have become less of a barrier to trade (Biller, 2004). There has been a growing trend of spreading investments into different nations around the globe. This diffusion of investment is often directed towards developing countries where inputs such as labor and raw materials are cheap compared to the developed countries of

the world. This international flow of capital has led to debates on the impact it has on the growth of the economies of the receiving nation and other areas and these views are provided later on in the work.

Global annual Foreign Direct Investment inflows tend to fluctuate with U.S. and global business cycles. This is substantiated by the fact that $230 billion in 2011, of Foreign Direct Investment in the United States, dropped by 28 percent in 2012 and was also below the amount invested in 2010. The worldwide investment flows followed a similar pattern. Globally, annual FDI totaled $1.35 trillion in 2012, saw a contraction of 18 percent from the previous year, according to the United Nations Conference on Trade and Development (UNCTAD) in its World Investment Report (WIR) 2013, as cited by (Organization for International Investment, 2013).

Insah, (2013) observed that at the continental level, FDI flow into Africa is attracted largely by natural resource endowment. Almost 40% of FDI has been in the primary sector, particularly oil and mineral extraction business. Other countries such as Mauritius and Seychelles have managed to attract FDI through liberalization, export orientation, tax and other incentives, while some African countries have attracted FDI due to their proximity with South Africa (Haile, and Asseta, 2006).

In Nigeria, a national quest for scientific and technological know-how through FDI which is required for achieving sustainable development has gathered momentum in recent years. According to Dutse, Okwoli and Kurfi, (2011) Nigeria after decades of restricting FDI like other developing nations is now making frantic efforts to attract external investors, and spending large sums of money to attract foreign companies. Explanations for the justification of these efforts have been proffered by authors such as Oman, (2000) who explained that multinational companies MNCs are thought to bring not just employment and capital, but also new skills and technological knowledge for domestic firms.

The Nigerian government laid much emphasis on the manufacturing sector because it envisage that the modernization of the sector requires a deliberate and sustained application and combination of suitable technology, management techniques and other resources to move the economy from the traditional low level of productivity to a more automated and efficient system

of mass production of goods and services (Malik, Teal and Baptist, 2006). Despite these attributes, the controversy on whether or not Foreign Direct Investments constitutes ladder to development rages on (Adejumo, 2013). In the midst of this controversy arises the need for country- specific assessments of the role of Foreign Direct Investment in national industrialization efforts, with particular emphasis on the manufacturing sub-sector. The choice of the manufacturing sector is hinged on the importance of the sector in resource utilization and its role in achieving the vision 20:2020.

Literature on the impact of FDI on economic growth in Nigeria is vast and there seems to be a consensus that FDI has a positive impact on economic growth in Nigeria. For instance Olayiwola and Okodua, (2012) employed cointegration and vector error correction using data from 1980-2007. Their findings reveal that FDI affects economic growth positively in the longrun. Other studies such as Shiro, (2007), Ekperiware (2011) are also in agreement with the above exposition. On sectoral basis, there is also a consensus that FDI negatively impacts the manufacturing sector in Nigeria and has been confirmed by Adeolu, (2007), Imuodu, (2012), Opaluwa, Ameh, Alabi and Abdul (2012) and Adejumo, (2013). However these studies have failed to take note of the existence of the structural break in 1986 in the form of the Structural Adjustment Programme (SAP). It is in this light that this study intends to complement the ongoing debate in establishing the effects that exist between Foreign Direct Investment and the manufacturing industry subsector within a pre and post Structural Adjustment Programme framework.

The paper is divided into five sections; the first section is the introduction, followed by the review of literature, methodology, presentation and interpretation of results and the conclusion.

2. LITERATURE REVIEW

2.1 Conceptual clarification

The Organization for Economic Cooperation and Development, (2008) defines Foreign Direct Investment as reflecting the objectives of establishing a lasting interest by a resident enterprise in one economy (direct investor) in an enterprise (direct investment enterprise) that is

resident in an economy other than that of the direct investor. This implies the interest of the long term relationship between the direct investment enterprise and a significant degree of influence on the management of the enterprise. The direct or indirect ownership of 10 percent or more of the voting power of an enterprise resident in one economy by an investor resident in another economy is evidence of such a relationship. Disagreements exists, that in some cases an ownership of as little as 10 percent of the voting power may not lead to the exercise of any significant influence, while on the other hand, an investor may own less than 10 percent but have an effective voice in the management.

Multinational Corporations (MNC) are also referred to in literature as Transnational Corporations (TNC) or Multinational Enterprises (MNE). Detomasi, (2007) defines a Multinational Corporation as an enterprise that engages in Foreign Direct Investment and that owns or control value added activities in more than one country. A firm is not really a multinational if it just engages in overseas trade or serves as a contractor to foreign firms. There are a number of ways of assessing the degree of multi-nationality of a specific firm. Firms are considered to be multinationals if they have many foreign affiliates or subsidiaries in foreign countries; they operate in a wide variety of countries around the globe, the proportion of assets, revenue or profits is high; their employees, stockholders, owners and managers are from different countries; their overseas operations are much more ambitious than just sales offices, including a full range of manufacturing and research and development activities.

Anyanwu, Oyefusi, Oaikenan and Dimowo, (1997), aver that the manufacturing industry is a subset of the industrial sector (others being processing, craft and mining subsectors). Manufacturing thus involves the conversion of raw materials into finished consumer goods or intermediate or producer goods. Manufacturing like other industrial activities, creates avenues for employment, helps boost agriculture, helps to diversify the economy, while helping the nation to increase its foreign exchange earnings, enabling local labor to acquire skills. In addition, it minimizes the risk of overdependence on foreign trade and leads to the fullest utilization of available resources.

Adejumo, (2013) posits that the manufacturing sector is particularly important in the process of industrialization because of its multidimensional benefit to the development process.

Other authors like Rajnesh, (1992) defined industrialization in terms of an increase in the share of the gross domestic product contributed by the manufacturing sector. Anyanwu, (2000) identified the problems the manufacturing sector in Nigeria prior to SAP include a low level technology, low level capacity building, low investment, poor infrastructure and high cost of production. Ku, Mustapha and Goh, (2010) also availed that the problems faced by the manufacturing sector in Nigeria in the 1960s and 70s were dependency on oil income, weak infrastructure, lack of proper management and planning and lack of skilled labor. These problems necessitated the introduction of SAP.

Anyanwu, Oyefusi, Oaikenan and Dimowo, (1997) further posits that the first response of Nigeria's government to the deteriorating economic conditions in the country was to introduce some stabilization, austerity and counter-trade measures between 1982 and 1984. In order to secure foreign assistance to solve its balance of payment problems, the government approached the International Monetary Fund for a three year extended facility loan in 1983. The International Monetary Fund on its own part introduced conditionalities These were 60 percent devaluation in the national currency, rationalization in the size of the public service, trade liberalization and removal of petroleum subsidy. The government in a bid to secure legitimacy threw the matter to the general public. The Nigerian public rejected the loan proposal however; the Babangida's government in July 1986 adopted an externally packaged Structural Adjustment Programme (SAP).

Obadan and Ekuehare, (1989) noted that the Nigeria's Structural Adjustment Programme is intended to discourage primitive accumulators and to encourage capitalist accumulators in the economy. The emerging structure of dependent capitalism envisages only a supportive role for the government in a refurbished economic environment of highly reduced government ownership and control of agricultural and industrial enterprises. Philips, (1987) outlined in specific terms the objectives of the Structural Adjustment Programmes to include, first to restructure and diversify the productive base of the economy in order to reduce dependency on the oil sector and on imports, secondly to achieve fiscal and balance of payment viability over the period, in the third place to lay the basis for a sustainable non-inflationary growth and lastly to reduce the

dominance of unproductive investment in the public sector, improve the sectors efficiency and enhance the growth potentials of the private sector.

The inflow of FDI into the Nigerian economy is broken down into seven sectors. These include mining and quarrying, manufacturing and processing, agriculture; forestry and fisheries transport and communication, building and construction, trading and business services and lastly miscellaneous services. FDI in Nigeria has traditionally been concentrated in the extractive industries. The mining and quarrying sector seems to have been next to the extractive sector in receiving FDI attention. According to Imuodu (2012) the average share of this sector in total FDI between the periods 1980-2009 was about 26 percent. The manufacturing and processing sector received enormous attention in 1980-84, its share of total FDI stood at 38.3 percent; it reached the peak of 43.7 percent between the periods 1990-94, fell to 23.6 percent in 1995-99 and rose to 40.7 percent in 2005-09. Its average total all through the period was, however, 34.8 percent in 1980-2009. FDI in trading and business and other miscellaneous services also received some boost but not as much as the two sectors already mentioned. FDI on building and construction was not encouraging as it averaged 4.2 percent in the entire period under consideration. The worst hard-hit was the agriculture, forestry and the fisheries sector. From 1.4 percent in 1980-84, it rose marginally to 1.7 percent in 1990-94, fell to the trough of 0.4 percent in 1995-99 and rose to all record high of 2.1 percent in 2005-09.

Dutse, Okwoli and Kurfi (2011) pointed out that the developments in the manufacturing sector have been attributed to some policy initiatives aimed at promoting the performance of some firms within the manufacturing subsector. The policy initiatives includes granting of licenses for importation of quality raw materials for industrial use, provision of capital allowance incentives for incurring excessive capital expenditure, granting of input loan by ministry of commerce and industries in collaboration with the Central Bank of Nigeria and commercial banks, provision of 2-3 years duty free period of importation of machinery, equipments and spare parts during the phase of plant building and commencement of production.

2.2 Theoretical framework

Different theoretical explanations that developed over time have been integrated by Dunning (1981), in his **OLI-paradigm,** which has become the standard theoretical framework for studies on Foreign Subsidiaries of Multinational Corporations.

This work is anchored on the OLI-paradigm. The O-L-I Paradigm explains Foreign Direct Invsestment (FDI) by merging three isolated theories of international production, the monopolistic advantage (ownership advantage), the location advantage and internalization theories, in a single approach; hence it is often called an **eclectic theory**. The idea of the eclectic theory of Dunning is a simple, yet profound construct, which rests on a tripod set of conditions for Foreign Direct Investment (FDI) to take place. It avers that the extent, geography and industrial composition of foreign production embarked on by Multinational Corporations (MNCs) is determined by the collaboration among a set of three sub-paradigms. Each of these sub paradigms has implicit implication for spillovers in the host economy.

2.3 Empirical Review

Many scholarly literatures exist on the role of Foreign Direct Investment in the economy. Adejumo, (2013) studied the relationship between Foreign Direct Investment and the manufacturing sector performance in Nigeria (1970-2009) using autoregressive distributed lags (ARDL) and cointegration. He found that Foreign Direct Investment impact negatively on manufacturing value added, the proxy used in measuring manufacturing industries performance. The effect of Foreign Direct Investment on manufacturing value added was significant at 10 percent. The results imply that a 1 percent increase in Foreign Direct Investment leads to a 0.47 percent decrease in manufacturing value added in the long run.

In a similar research, Chandran and Krishnan, (2008) researching on Foreign Direct Investment and manufacturing growth in Malaysia from 1970-2003 using cointegration and autoregressive distributed lag. The study found that Foreign Direct Investment had a positive and significant contribution to manufacturing value added and significant at 1 percent. The result meant that an increase in Foreign Direct Investment by 1 percent contributed to a 0.084 unit increase in manufacturing value added.

Opaluwa, Ameh, Alabi and Abdul, (2012) conducted research on the effect of Foreign Direct Investment on the Nigerian manufacturing sector employing from 1970-2010 employed Vector Autoregression (VAR), cointegration and error correction techniques to establish the relationship between Foreign Direct Investment and the growth of the manufacturing sector.

Their findings show that Foreign Direct Investment has a negative effect on the manufacturing productivity and it is statistically significant.

Imoudu, (2012) studied the impact of Foreign Direct Investment on Nigeria's economic growth 1980-2009: evidence from the Johansen cointegration approach, using vector error correction model (VECM) and Johansen cointegration test. The findings show that the impact of Foreign Direct Investment on manufacturing, agriculture, mining and petroleum were minimal, except for the telecommunication sector which had a good and promising future in the long run.

Insah, (2013) wrote on Foreign Direct Investment inflows and economic growth in Ghana from 1980-2010 using dynamic ordinary least squares and Vector Error Correction Models (VECM) found a positive relationship between economic growth and Foreign Direct Investment. He also found that lagged values of Foreign Direct Investment have inverse relationship with economic growth in Ghana.

Onyeagu, (2013) in a similar research on an econometric analysis of the impact of Foreign Direct Investment on economic growth in Ghana: the role of human capital development from 1975-2008, using Johansen and Juselius cointegration and Error Correction Model (ECM) also found that Foreign Direct Investment has a positive and significant effect on economic growth in Ghana in the long run, which implies that Foreign Direct Investment potential in Ghana has positive relationship with the growth of Ghanaian industries.

Olayiwola and Okodua, (2012) researched on Foreign Direct Investment nonoil exports and economic growth in Nigeria; a causality analysis from 1980-2007, using Vector Error Correction (VEC), cointegration and granger causality test found a unidirectional causation flowing from Foreign Direct Investment to nonoil exports. The study also found that Foreign Direct Investment affects economic growth positively in the long run, though at an unimpressively low rate.

Ogbanje, Okwu and Saror, (2012) in an analysis of Foreign Direct Investment in Nigeria: the fate of Nigerias' agricultural sectors from 1970-2010, used Duncan multiple range tests, correlation analysis and least squares. The findings showed a positive and strong relationship

exist between Foreign Direct Investment and Agricultural Gross Domestic Product (AGDP). Specifically, Agricultural Gross Domestic Product increased by 87.9 percent with a 1 unit increase in Foreign Direct Investment and significant at 0.01 level of probability. The study also found that the agricultural sector gets the least average Foreign Direct Investment in Nigeria.

Castejon and Woerz, (2005) carried out a cross country analysis on the influence of Foreign Direct Investment on output growth from 1987-2002, using panel estimation and generalized least squares methods. They found that Foreign Direct Investment had a significant effect on the food, petroleum, chemicals, plastic and rubber industries. The most significant effect was however observed in the transport sector. They concluded that the impact of Foreign Direct Investment is often weak, but Foreign Direct Investment is an important contributor to growth in combination with investment or exports.

Nwanko, (2013) studied the impact of Foreign Direct Investment on the power sector of Nigeria: 2000-2001, using Johansen cointegration and error correction mechanism established a positive and statistically significant effect between inward Foreign Direct Investment and the power sector in Nigeria. The findings imply that an increase in Foreign Direct Investment inflow will bring about a rise in power sector output in Nigeria. The researcher recommended that Foreign Direct Investment should focus more on Nigeria's power sector because of the strategic relevance of the sector to the nation's economy. This will mitigate capital constraint faced by the key actors in the power sector of the Nigerian economy.

Biller, (2004) in his thesis on the impact of Foreign Direct Investment on Mexico's agricultural sector and forests, from 1970-2002 using Ordinary Least Squares (OLS) in Mexico found that Foreign Direct Investment affects labor markets in Mexico in such a way that it causes preferences to forms of employment in other sectors of the economy rather than agriculture leading to labor mobility away from the sector.

Majekwu and Samson, (2012), used cointegration and error correction model to examine the relationship between Foreign Direct Investment and challenges of sustainable development in Nigeria: 1970-2010. The study revealed that there exist a long-run relationship between the

dependent variable and explanatory variables, and that gross capital formation has a positive and significant relationship with economic growth in Nigeria.

Ekperiware, (2011) in his research on oil and nonoil Foreign Direct Investment and economic growth in Nigeria from 1970-2008 using Ordinary Least Squares (OLS) found that nonoil Foreign Direct Investment is more statistically significant and has more positive effect on the Nigerian economy on the average compared to oil Foreign Direct Investment. The extractive sector that attracts higher Foreign Direct Investment in the Nigerian economy has less impact to economic growth.

From the review of the empirical works above, it is obvious that a gap exist in literature which is the absence of a study that takes account of the structural break and incorporates it in the analysis of the effects of FDI on MSO. This research thus fills this void in literature.

3. METHODOLOGY

3.1 Types and Sources of Data

Secondary data was used for the study. The variables required were Manufacturing Sector Output (MSO), Foreign Direct Investment (FDI), Domestic Savings (DS) Trade Openness (TO), Exchange Rate (EXR) and Interest Rate (INTR). Data for the variables were sourced from the Central Bank of Nigeria statistical bulletin various issues.

3.2 Model Specification

To test the impact of Foreign Direct Investment on the manufacturing subsectors performance, a single equation model influenced by the OLI-Paradigm theory of (Dunning, 1981) was postulated to ascertain the impact of the explanatory variables on the dependent variable in the Pre Structural Adjustment Programme and the post Structural Adjustment Programme era.

The model is specified in line with that used by Adejumo, (2013) with slight modifications which are the introduction of Domestic Savings and Exchange Rate and exclusion of Total Factor Productivity. The implicit model to account for the effect of Foreign Direct Investment in the Pre and post Structural Adjustment programme era is expressed below.

MSO =*f* (FDI, DS, TO, INTR, EXR)……..(3.1)

The model in its explicit form is expressed in its natural logarithm form in order to denominate all variables in a common unit.

$LnMSO = \alpha_0 + \beta_1 LnFDI + \beta_2 LnDS + \beta_3 LnTO + \beta_4 LnINTR + \beta_5 LnEXR + u_t$…….. (3.2)

Where

α_0 is the intercept

β_1- β_5 is the coefficient of the variables

U_t is the stochastic error term

MSO is the Manufacturing Sector Output.

FDI is Foreign Direct Investment. Data on Foreign Private Investment will be obtained for FDI

DS is domestic savings in the economy

TO is trade openness defined as the level of a country's' integration to the world's economy and will be measured by Nigeria's ratio of trade to Gross Domestic Product (Adejumo, 2013).

INT is Interest Rates defined as the price of investment.

EXR is the rate of interest, the rate at which the naira exchanges with the US dollar.

3.3 Method of Data Analysis

3.3.1Chow Test of structural break

When we use a regression model involving time series, it may happen that there is a structural change in the relationship between the regressand Y and the regressors. By structural change it is meant the values of the parameters of the model do not remain the same through the entire time period (Gujarati and Porter, 2009). To overcome errors in estimation, we use the chow test which is carried out using the following formula

$$F = \frac{(RSS_R - RSS_{UR})/k}{(RSS_{UR})/(n_1 + n_1 - 2k)}$$

3.2.2 Augmented Dickey-Fuller Test (ADF)

This study employed Augmented Dickey-Fuller test to test the individual stationary properties of the series. The standard Augmented Dickey-Fuller test is stated below:

$$\Delta P_{it} = \beta_1 + \beta_{2t} + \sigma P_{it-1} + \alpha \sum_{t-1}^{m} \Delta P_{it-1} + \varepsilon_{it} \text{----------(3.5)}$$

The null hypothesis is that, there is no stationarity in the series.

3.2.3 Regression Analysis

The Cochrane-Orcutt Method of OLS estimation was adopted in this work. This procedure in econometrics, adjusts a linear model for serial correlation in the error term. If it is found via the Durbin–Watson statistic that the error term of the classical least squares specified above is serially correlated over time, then standard statistical inference as normally applied to regressions is invalid because standard errors are estimated with bias. To avoid this problem, the residuals must be modeled. If the process generating the residuals is found to be a stationary first-order autoregressive structure, $\varepsilon_t = \rho\varepsilon_{t-1} + e_t,\ |\rho| < 1$, with the errors $\{e_t\}$ being white noise, then the Cochrane–Orcutt procedure can be used to transform the model by taking a quasi-difference:

$$y_t - \rho y_{t-1} = \alpha(1-\rho) + \beta(X_t - \rho X_{t-1}) + e_t \text{.----------(3.7)}$$

In this specification the error terms are white noise, thus statistical inference is valid. Then the sum of squared residuals (e_t^2) is minimized with respect to (α, β), conditional on ρ. (Wikipedia, 2014)

3.4.4 Cointegration Analysis: This study adopted the Engel Granger Representation Theorem. According to this theorem, if two or more variables *y* and *x* are cointegrated, then the relationship between them can be expressed as an error correction model (ECM), in which the error term from the OLS regression, lagged once, acts as the error correction term. In this case the cointegration provides evidence of a long-run relationship between the variables, while the

ECM provides evidence of the short-run relationship. A basic error correction model would appear as follows:

$$\Delta y_t = \chi_0 + \chi_1 \Delta x_t - ECM\,(u_{t-1}) + \varepsilon_t \text{ ----------(3.8)}$$

Where ECM is the error correction term coefficient, which theory suggests should be negative and whose value measures the speed of adjustment back to equilibrium following an exogenous shock. The error correction term u_{t-1}, which can be written as: $(y_{t-1} - x_{t-1})$,is the residual from the cointegrating relationship in the model. This is done in order to evaluate if there exists some linear combination of these variables that converge to a long-run relationship over time, the usage of any particular method depends largely on the order of integration reported by the ADF result. If the order of integration is uniform, the application of Johansen Cointegration is considered most appropriate and if otherwise, the Engle-Granger approach is applied (Gujarati and Porter, 2009).

3.2.5 Vector Error Correction Model

Cointegration series have an error correction representation. Engle and Granger (Engle and Granger, 1987) reveal that, if the series are cointegrated, then the probability of the omitted variable bias, autocorrelation and endogeneity is ruled out. The specification of the vector error correction is for the observation of the short run properties of the series (Short run dynamics).

Relying on the Presence of a cointegration vector, the subsequent can be written as follows:

$$\Delta Y_{1t} = \phi_1 + \sum_{k=1}^{p-1} \alpha_{11,k} \Delta Y_{1,t-k} + \sum_{k=1}^{p-1} \alpha_{12,kj} \Delta Y_{2,t-k} + \sum_{k=1}^{p-1} \alpha_{13,k} \Delta Y_{3,t-k} + \sum_{k=1}^{p-1} \alpha_{14,k} \Delta Y_{4,t-1}$$
$$+ \sum_{k=1}^{p-1} \alpha_{15,k} \Delta Y_{5,t-1} + \sum_{h=1}^{r} \alpha_{1,h} ECM_{h,t-1} + \varepsilon_t \text{ ----------3.9}$$

3.2.6 a priori expectations

On a priori expectation, β_1, β_2 and $\beta_3 > 0$, while β_4 and $\beta_5 < 0$

4. DATA PRESENTATION AND ANALYSIS

Table 4.1 below gives the descriptive statistics of the variables used in the work. The descriptive statistics of data series gives information about simple statistics such as mean, median, minimum value, maximum value and the distribution of the sample measured by skewness, kurtosis and the Jaque-Bera statistic.

Table 4.1 Descriptive statistics

	MSO(₦m)	FDI(₦m)	DS(₦m)	TO	EXR (₦)	INTR (%)
Mean	255010.5	146447.1	877130.8	0.804843	49.19857	16.54318
Median	134007.4	16378.10	46427.50	0.721468	13.60395	17.62500
Maximum	823860.0	951534.5	5030144.	2.494319	159.7000	36.09000
Minimum	3784.000	0.500000	411.8000	0.061603	0.500000	6.000000
Std. Dev.	247715.1	219041.7	1594507.	0.438338	61.26687	7.938656
Skewness	0.653453	1.948629	1.664424	1.690654	0.741755	0.298640
Kurtosis	2.094043	6.506752	4.031303	7.487684	1.741675	2.279082
Jarque-Bera	4.636066	50.39088	22.26550	57.88301	6.937671	1.606854
Probability	0.098467	0.000000	0.000015	0.000000	0.031153	0.447792
Sum	11220463	6443673.	38593754	35.41309	2164.737	727.9000
Sum Sq. Dev.	2.64E+12	2.06E+12	1.09E+14	8.262037	161406.1	2709.957
Observations	44	44	44	44	44	44

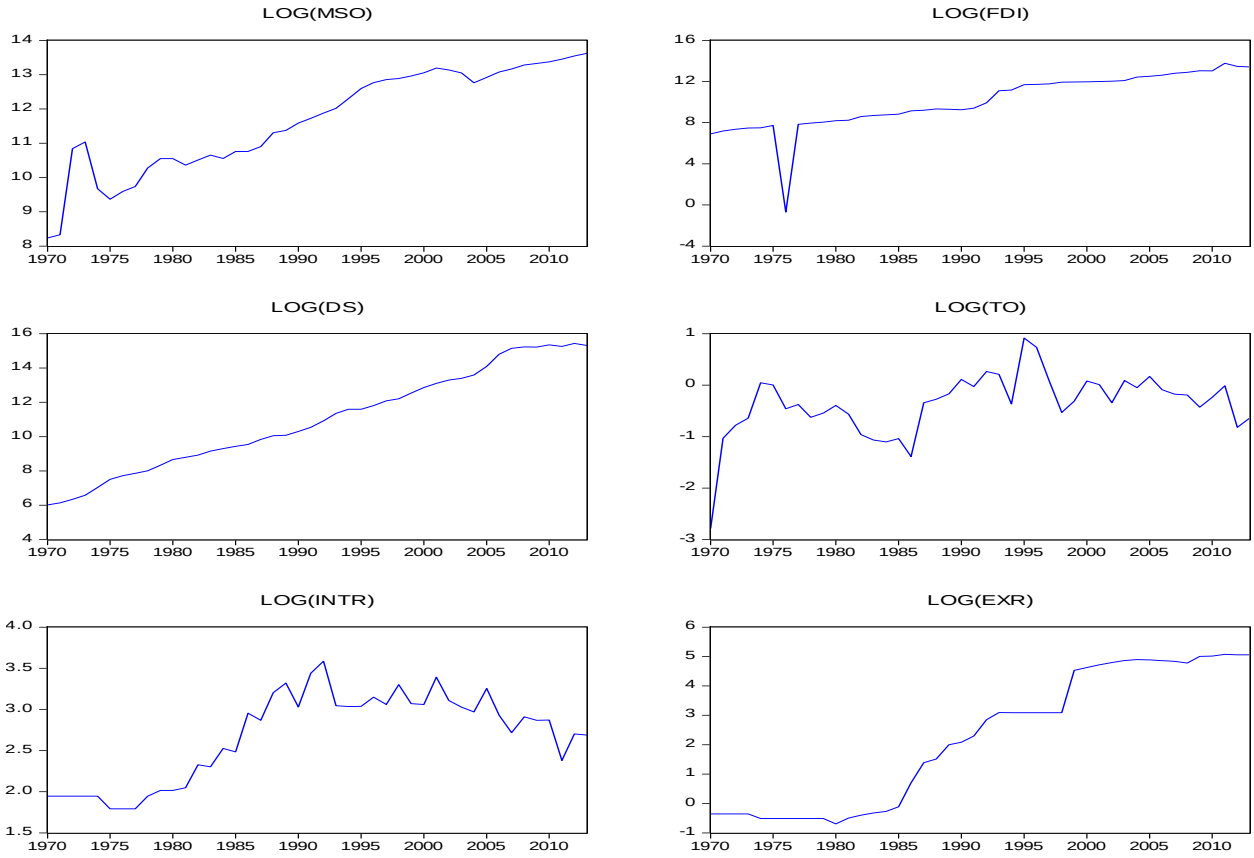
Source: Authors Computation using eviews 7.1

A look at the observation shows that MSO, FDI, DS, TO, EXR and INTR had mean values of ₦255010.5, ₦146447.1, ₦877130.8, 0.804, N49.199 and 16.45%, with minimum values of ₦3784, ₦0.5, ₦411.8, 0.062, ₦0.5 and 6% and maximum values of ₦823860, ₦951534.5, ₦5030144, 2.49, ₦159.7, 36% respectively and a standard deviation of ₦247715.1 ₦219041.7 ₦1594507 0.44 units ₦61.27 and 7.97% respectively.

The Jacque-Bera test of normality for the variables shows bias for MSO, FDI, DS, TO EXR and no bias for INTR as revealed by the probability values, as well as low and high skewness and kurtosis values.

4.2 Trend Analysis

The figures below shows the trend of the variables used in the study all variables are in logs.



Source: author's construction using eviews7

The figures above reveal the trends for MSO, FDI, DS, TO, EXR and INTR in Nigeria from 1970-2013. Manufacturing sector output has grown steadily, as well as Foreign Direct Investment and Domestic Savings. The index of trade openness and interest rates showed a fluctuating trend, though the rate of interest was relatively stable between 1970-1980, while the exchange rate rose sharply and has been on a steady rise. As at 2010, the growth rate of MSO, FDI, DS, TO EXR and INTR were 5.02%, -1.89%, 13.77%, 20.95%, 0.94% and 0.34% respectively.

4.3 Chow test

The Chow test reported a calculated F-statistic value of 11.07 and a critical F-statistic value of 2.42 providing sufficient evidence to reject the null hypothesis of the existence of

parameter stability in favor of the alternative hypothesis of a structural change and conclude that the regressions are different.

4.4 Unit Root Test (Augmented Dickey Fuller Test ADF)

Following the result of the ADF test, all variables MSO, FDI, DS, TO, EXR and INTR were of the order I(0) in the pre-SAP era. The study adopts the technique of ordinary least squares for the regression analysis. This is based on the premise that, all the variables in the data set are stationary and can yield best linear unbiased estimates (BLUE). However for the post-SAP era the variables were found to have a mixed of order I(1) and I(2) which led to the adoption of the Engle-Granger Representation Theorem for the post-SAP analysis.

4.5 Result of OLS Regression Analysis

Following the Chow Test and result of the Augmented Dickey Fuller (ADF) unit root test, OLS was applied on the first model and the result is presented in table 4.2.

Table 4.2: Impact of Foreign Direct Investment on manufacturing industries in Nigeria 1970-1985 (Ordinary Least Squares Technique)

Dependent Variable	Explanatory Variable	Coefficient	Std. Error	t-Statistic	Prob.
MSO	FDI	1.0357	0.2021	5.1254	0.0140
	DS	0.8166	0.3444	2.3710	0.0390
	TO	0.6090	0.1879	3.2415	0.0215
	INTR	1.4999	2.3416	0.6405	0.5362
	EXR	-0.8820	0.2906	-3.0349	0.0254
	C	6.2406	0.4330	1.8179	0.0991

$\bar{R}^2$ = 0.21 D.W = 1.25 F –Statistic = 1.786 Prob(F-Stats) = 0.203

Source: Authors computation using eviews 7.1

The results in Table 4.2 shows that with an adjusted R^2 of 0.21, only 21 percent of the systematic variations in Manufacturing Sector Output, (proxy for manufacturing industries) were explained by the explanatory variables. This is a poor fit further buttressed by an F – Statistic of 1.786 and the overall insignificant probability of the F-statistics (0.203) and a Durbin Watson (DW) statistic of 1.25 shows the presence of serial correlation.

4.6 Cochrane-Orcutt transformation Technique

The poor results from the OLS regression necessitated the use of the Cochrane–Orcutt method. The Cochrane–Orcutt AR(1) which converged after 11 iterations produced better results as reflected in table 4.3 below.

Table 4.3: Impact of Foreign Direct Investment on Manufacturing industries in Nigeria 1970-1985 (Cochrane – Orcutt Method AR 1)

Dependent Variable	Explanatory Variable	Coefficient	Std. Error	t-Statistic	Prob.
MSO	FDI	1.0788	0.2579	3.5667	0.0086
	DS	-0.7067	0.3025	-2.3365	0.0272
	TO	-2.3478	0.7582	-3.0965	0.0147
	EXR	-1.4069	1.7735	-0.7933	0.4505
	C	13.6743	3.6899	3.7059	0.0060
	AR(1)	0.4645	0.1017	4.5695	0.0018

$\bar{R}^2$ = **0.72** **D.W = 1.856** **F-Statistic = 7.458** **Prob(F-Stats) = 0.044560**

Source: Authors computation using Eviews 7

Here, one of the variables INTR (Interest rate) was dropped as it consistently performed poorly in terms of individual test of significance. This is not surprising because most financial institutions at the time in question were not under any strict regulation from the apex bank [Central Bank of Nigeria (CBN)].

An adjusted R^2 of 0.72 shows that 72 percent of the systematic variations in economic growth was accounted for by all the explanatory variables put together. The robustness of this result is further buttressed by an F-statistic of 7.4576 and a Durbin-Watson Statistic of 1.86 which clearly indicates the near absence of autocorrelation.

On the performance of the individual variables FDI, DS and TO passed the t–test at the 5 percent level of significance. The result shows that two variables FDI and EXR correctly meet expectation in terms of their signs, while DS and TO did not meet expectation with respect to their signs. The justification for the behavior of these variables can be explained thus, first low education and underdeveloped financial institutions accompanied with a weak apex bank are responsible for the poor savings attitude of Nigerians during this period. With respect to TO corruption, profit repatriation and porous borders which encouraged smuggling are responsible for the behavior of this variable. The positive impact of FDI shows the importance of the international flow of capital in form of direct investment in the Pre-SAP era.

The results further show that a unit increases in FDI and DS variables will result in 1.08 and -0.71 unit increases in MSO growth rate in Nigeria respectively. A unit rise in TO and EXR variables brings about -2.35 and -1.41 units decrease in MSO respectively.

4.7 Tests for Cointegration (Engle-Granger Representation Approach)

Applying the Engle-Granger representation theorem because of the mixed order of integration, the results revealed are documented below.

Table 4.4: Cointegration Test (1986-2013)

Variable	ADF t-statistics @ Level	Critical value			Order of integration	Prob.
		1%	5%	10%		
Residual	-4.7247	-3.6999	-2.9763	-2.6272	I(0)	0.0081

Source: Authors computation using Eviews 7

The process above produced an ADF t-statistic of -4.7247 at levels for the Residual which is less than the 5% critical value of -2.9763 thereby leading to the rejection of the null hypothesis of non-stationarity in favor of stationary time series with the conclusion that, the error term is stationary and the

variables under study are cointegrated.

4.8 Vector Error Correction

In this case of the post-SAP era (1986-2013) the cointegration provides evidence of a long-run relationship between the variables, while the ECM provides evidence of the short-run relationship. Below is the result of the vector error correction within the framework of Engel-Granger Representation theorem.

Table 4.4 Vector Error Correction

Dependent Variable: MSO (1986-2013)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
FDI	2.4782	0.5541	4.4724	0.0093
DS	1.2741	0.4157	3.0649	0.0317
TO	0.8746	0.3271	2.6737	0.0475
EXR	-0.7489	0.2471	-3.0306	0.0350
INTR	0.5772	0.1470	3.9264	0.0241
ECM(-1)	-0.2141	0.0470	-4.5544	0.0084
C	3.8339	1.2081	3.1735	0.0275
R-squared	0.745	F-Statistic		11.250
Adjusted R-squared	0.661	Durbin-Watson stat		1.954
Prob(F-statistic)	0.000120			

Source: Authors computation using Eviews 7

The cointegrating relationship in table 4.6 above provides information for the long run relationship.

From the model, the intercept is 3.83 units implying that, the growth of the manufacturing sector is independent of the model variables by 3.83 units, meaning that, if all the variables are held constant, MSO will grow by 3.83 irrespective of exogenous influences in the short run. Foreign Direct Investment (FDI) is positively related to MSO in the long run and is statistically significant at the 10% level of significance as shown by the low probability value of 0.0093 this is consistent with the results Ebong,

Udoh and Obafemi, (2013). A unit change in FDI affects MSO positively by 2.49 units. Domestic Savings (DS) also affects MSO positively in the long run. A unit change in DS increases MSO by 1.27 units and is significant at 10% as shown by its probability value 0.0317 and is consistent with the findings of Imuodu, (2012). The index of trade openness TO also exerts a positive influence on MSO this is in agreement with (Ebong, Udoh and Obafemi, 2013). A unit change in TO increases MSO by 0.87 units in the long run and is statistically significant at 10% given the probability value of 0.0475. The rate of interest (INTR) negates a priori expectation affecting the economy positively and is statistically significant at 10% given the low probability value of 0.0241. A unit change in INTR affects the economy positively by 0.58 units. One justification for this behavior could be the activities of the Monetary Policy Committee (MPC) which pegs the lending rate called the Monetary Policy Rate, (MPR) thus distorting the free working of the market with regards to the lending rate. Finally, exchange rate (EXR) is negatively related to MSO and is also statistically significant at 10%. A unit change in EXR reduces MSO by 0.75 units meaning that, if the rate of exchange increases, more local currency is required for foreign transaction which adversely affects the growth of the economy.

For the short run analysis, the ECM provides evidence of the short-run relationship with the coefficient of -0.21 implying that, it will take roughly a period of 6 years for the variables to re-align to equilibrium in the event of an exogenous shock. The ECM is also known as the speed of adjustment.

The coefficient of determinations (R^2) is 0.75 and the adjusted value is 0.66 which indicates that about 66% of total variation or a change in the present value of MSO is explained by changes in the explanatory variables while the remaining 34% is explained by other variation outside the model that is the error term. The Durbin Watson statistic of 1.95 is indicative of the near absence of autocorrelation in the model. The robustness of the model is further buttressed by the high value of the F-Statistic (11.25) which explained the overall significance of the model.

On individual grounds, all the variables passed the t-test of significance at 5% level of significance evidenced by small standard errors, high t-statistics and minimal probability values.

4.9 Granger Causality Test

In order to ascertain the direction of causality between MSO and FDI, the study employed Pair wise Granger causality. The results of the test are presented in the table 4.4:

Table 4.4 causality test of variables in the pre-SAP era

Pairwise Granger Causality Tests
Date: 09/13/14 Time: 07:50
Sample: 1970 1985
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause MSO	14	2.52679	0.1346
MSO does not Granger Cause FDI		0.92242	0.4321

Source: Authors computation using Eviews 7

The pairwise granger causality test shows the causal relationships that exist among the dependable variable and the exogenous variables. The result as shown by the table above reveals that FDI does not granger cause MSO and MSO does not granger cause FDI at the 10% which shows that in the pre-SAP era, FDI and MSO were not sensitive to each other's movement.

Table 4.5 Granger causality test of variables in the post-SAP era

Pairwise Granger Causality Tests
Date: 09/09/14 Time: 20:53
Sample: 1986 2013
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Prob.
FDI does not Granger Cause MSO	26	56.4476	4.E-09
MSO does not Granger Cause FDI		8.57445	0.0019

Source: authors computation with e-views 7

The pair wise granger causality test revealed the following results. A bidirectional causal relationship was found to exist between MSO and FDI within the period of 1986 to 2013.this implies that FDI granger causes MSO and MSO granger causes FDI at 10% significance level. In this period as captured by (Adejumo, 2013) both variables became sensitive to each other's movement in the early 1990s onward.

5. Conclusions and policy recommendations

This research examined the relationship between Foreign Direct Investment and manufacturing

industries performance within a pre and post SAP framework. The causality test showed zero causality between FDI and MSO in the pre-SAP era while bidirectional causation existed between the two variables in the post-SAP era. The justification for the latter case can be explained by the introduction of the indigenization policy of the government at that time, which discouraged foreign ownership of some particular industrial ventures. The Cochrane-Orcutt and granger representation theorem results highlight the fact that given the existence of a structural break 1970-1985 and 1986-2013 which is the Structural Adjustment Programme, Foreign Direct Investment had a positive and significant effect on the Manufacturing Sector Output in both periods. Comparatively, FDI had a higher impact on MSO in the post-SAP era leading the study to draw the conclusion that FDI fared better after the introduction of the Structural Adjustment Programme in Nigeria. The finding of this research is inconsistent with the findings of other researchers like (Ebong, Udoh and Obafemi, 2013); due to the fact that these researchers did not recognize the existence of a structural break in the form of the Structural Adjustment Programme. Thus the observed difference can be accounted for by the methodology adopted for this research which differs from the methodology used by the above mentioned researchers.

In the light of the foregoing, the study recommends the following.

Firstly, the federal government of Nigeria should as a matter of priority contain insurgency in the country to create a safe haven for foreign investors. This is necessary to continue to reap the positive spillover effects of Foreign Direct Investment in Nigeria as seen in the pre and post-SAP era.

Secondly, the government should sustain the liberal foreign trade policy in place so as to reap the gains of international trade as seen in the post-SAP era.

In addition, efforts should be geared towards sustaining the value of the naira, because a high exchange of the naira to other foreign countries currencies places the economy at a poor bargaining power position in international trade as evidenced during seen pre= SAP era.

Further, there should be clear guidelines in government policy regarding priority sectors that require foreign investment in Nigeria amongst which should include like agriculture, mining and manufacturing.

The policy of interest rate regulation by the CBN should be encouraged to reap the benefits as seen

in its positive impact on the manufacturing sector output in the pre-SAP era

Finally, the study recommends expedient action on the part of the government to encourage the manufacturing sector through favorable policies, tax holidays and adequate policing of the nation's borders to avoid smuggling and stem corruption by border officials.

References

Adejumo, A. V. (2013). "Foreign Direct Investment and the manufacturing sector performance in Nigeria". *Australian Journal of Business and management Research,* Vol.3 No4.

Adeolu, B. A. (2007). "Foreign Direct Investment and economic growth: evidence from Nigeria". *African economic research consortium*, papers No. 165 Nairobi, Kenya.

Anyanwu, C. M. (2000) productivity in the Nigerian manufacturing industry

Anyanwu, J. C, Oyefusi, A. Oaikenan, H. and Dimowo, F. A. (1997). The structure of the Nigerian economy (1960-1997),[1st] Onitsha: Joanee Educational Publishers, pp.454.

Ayodele A. S. and FalokunG.O (2003) The Nigerian Economy and Pattern of Development. Printoteque, 32, Shipeolu Street, Palmgroove, Lagos.

Biller, T. (2004). "The impact of foreign direct investment on Mexico's agricultural sectors and forests" *An honors thesis for the department Economics,* Tufts University, 2004.

Castejon, C. F. and Woerz, J. (2005). "Good or bad? The influence of Foreign Direct Investment on output growth. An industry level analysis". Tinbergen institute, Erasmus University, Rotterdam.

Chandran, V. G. R. and Krishnan, G. (2008) "Foreign Direct Investment and manufacturing growth: the Malaysian experience". *International Business Research* vol.1, No.3

Detomasi, D. A. (2007) "the multinational corporation and global governance: modeling global public policy network" *Journal of Business ethics*, Vol.71.issue3, pp321-334

Dunning, J. H. (1981) "Explaining the international direct investment position of countries: Towards a dynamic or developmental approach",*Weltwirtschaftliches Archiv*, vol. 122, pp. 667-677.

Dutse, A.Y. Okwoli, A.A. and Kurfi, A.K. (2011). "promoting FDI-related technology spillovers in Nigeria's manufacturing sector: Active firms targeted policy approach". Conference paper presented at the international conference on sociality and Economics development. Singapore (2011).

Ebong, F. Udoh, E. and Obafemi, F. (2013) "Globalization and the industrial development of nigeria: evidence from time series analysis" *international review of social science and humanities* vol. 6, 2(2014), pp 12-24

Ekperiware, C. M. (2011). "oil and nonoil Foreign Direct Investment and economic growth in Nigeria" *Journal of emerging trends in economics and management sciences*. 2(4):333-343

Granger, C.W. (1987) "Co-integration and error correction: Representation, estimation and testing" *Econometrica*, 55(2) (1987), 251-276.

Gujarati, D. N. and Porter, D, C (2009) Basic Econometrics McGraw-Hill international edition. Fifth edition.

Haile, G. and Asseta, H. (2006). "Determinants of foreign direct investment in Ethiopia: a time-series analysis" Conference paper presented at the *4th international conference on the Ethiopian economy,* 10-12 Jun.2006.

Imoudu, E. C. (2012). "The impact of Foreign Direct Investment on Nigeria's economic growth 1980-2009: evidence form Johansen cointegration approach". *International journal of business and social science,* vol. 3 No 6 (special issue – March 2012).

Insah, B. (2013). "Foreign Direct Investment inflows and economic Growth in Ghana". *International journal of economic practices and theories,* Vol.3, No.2, 2013.

Ku, H. Mustapha, U. M. and Goh, S (2010) "a literature review of past and present performance of Nigerian manufacturing sector" proceedings of IMechE, part B:*Journal of Engineering Manufacture,* 2010 vol 224, no. 12 pp.1894-1904

Majekwu, J. N. and Samson, O. (2012). "Foreign Direct Investment and the challenges of sustainable development in Nigeria". *Journal of research in international business and management*, 2(7), 190-198.

Malik, A. Teal, F. and Baptist, S. (2006). "The performance of Nigerian manufacturing firms: report on the Nigerian Manufacturing Enterprise Survey". Center for the study of African economies University of Oxford; http://www.gprg.org/pubs/reports/pdfs/2006-04-malik-teal-baptist.pdf

Nwankwo, O. (2013). "The impact of Foreign Direct Investment on Power sector in Nigeria: 2000-2011". *Journal of management research* ISSN 1941-899X, Vol.5, N0.3

Obadan, M. I. and Ekuehare, B. U. (1989) "the theoretical basis of SAP in Nigeria: An appraisal". *International Social Science Journal*, Vol. XII, No 2.

Ogbanje, E. C. Okwu, O. J. and Saror, S. F. (2010) "an analysis of Foreign Direct Investment in Nigeria, the fate of Nigeria's agricultural sector". A publication of Nassarawa State University Keffi, 6(2), 15-25

Olayiwola, K. and Okodua, H. (2012). "Foreign Direct Investment, non oil exports and economic growth in Nigeria: a causality analysis". *The African Finance Journal*, vol. 11, part 1.

Oman, C. (2000). "Policy competition for FDI: a case study of competition to attract FDI". Organization for economic cooperation and Development Paris. http://wwwoecd.org/dataoecd/9/27/2089936.pdf

Onyeagu,A. N. (2013). "An econometric analysis of the impact of Foreign Direct Investment on economic growth in Ghana: the role of human capital development" international journal of Humanities and social science invention ISSN 2319-7722 Http://www.ijhss.org vol.2 issue 8.

Opaluwa, D. Ameh, A. A. Alabi, J. O and Abdul, M. (2012) "the effect of Foreign Direct Investment on Nigeria's manufacturing sector". *International journal of business and management*, 4(2), 140-148

Organization for Economic Cooperation and Development, (2008). "Benchmark Definition of Foreign Direct Investment" fourth edition.

Organization for International Investment (2013). "Foreign Direct Investment in the United States. 1225 Nineteenth Street, NW, suite 501, Washington DC 20036

Philips, A. O (1987). "a general overview of the Structural Adjustment Programme" *NISER*, Ibadan, 1-12.

Rajnesh, C. (1992). "Industrialization and Development in the third world". Rutledge, London.

Shiro, A. A. (2007). "the impact of Foreign Direct Investment on the Nigerian economy". Department of Finance, University of Lagos Nigeria.

Wikipedia, (2014) "Cochrane-Orccut estimation" Wikipedia the free encyclopedia

Rethinking Nigeria's International Trade in the Post Economic Crisis Period: Application of the Gravity Model

Terungwa Paul Joseph Jato

Department of Economics, Veritas University, Abuja, Nigeria.
E-mail: jatopj@gmail.com, jatopj@yahoo.com
+234 8066051622, +234 8026606069]

Abstract: *Given the volatile and unpredictable nature of global economic interactions as exemplify by the recent global economic crisis and the fact that no one nation is an island of its own, most economies are therefore at risk to global economic movements. There is, therefore, always the need for individual economies, especially those of the developing nations, to continually evaluate and reposition their global interactions, interrelations and interdependence. Applying Ordinary Least Squares (OLS) technique to the gravity model of trade, the work investigated the relationship between Nigeria's international trade and trade determinants to analyse trade flows between Nigeria and her trading partners (OECD Countries and SSA Countries) with the view to see whether Nigeria should operate a free trade with the advanced economies or with the developing ones. The results of the work conformed to the expected sign of GDP variable of the trade partners in the gravity equation; however, the sign of the own GDP and distance variables did not conform. Also, trade flows between Nigeria and trade partners responds more to the GDP of the OECD countries than it responds to the GDP of the SSA countries. The conclusion thus is that, Nigeria can benefit from free trade with the advanced economies as much as free trade with the developing economies. However, it is recommendations, among others, that Nigeria should seek for more trade with the developing economies to which she has more comparative advantage over.*

Keywords: distance, GDP, gravity model, international trade, Nigerian economy, OECD countries, SSA countries, trade flows

I. Introduction

The need for and understanding of the interdependence and interactions of the world economies have reached their peak with the emergence of globalization. Though, many theorists have in time past seen exchanges between countries as one of the means by which a country could

develop, the impact made by globalization of the world has more reaching effects. No one country has been spared from participating in this increasing globalizing exercise – be it socially, economically, politically, technologically, environmentally, etc.

International trade is one of the cardinal means of this globalization; where "free trade" is encouraged and emphasized between countries. The promoters of this, with the backing of theory and practical examples, assert that no economy can be or is in *autarky* but rather a component of the global or international economy; and that, there are growth and development prospects and potentials for all economies for participating in international trade. In the forefront of these promoters are the advanced economies, with well established market-driven institutions. No wonder, opinions of many third world scholars and analysts tend to suggest that the emphasized reasons advanced in favor of international trade are all but a mere strategy of the developed economies to hoodwink the developing economies into an arena of exploitation.

Whatever views expressed, it is pertinent that trade between national economies has long become an integral component of all economies, and vital for comparative analysis between economies and from which states can acquire the resources they lack for their growth and development, if they have the wherewithal. It is by these that the Nigerian economy, like others, engages in exchanges of good/services between other countries. As to whether the country has benefited from international trade has been subjected to debate of its own with different perspectives held by analysts and commentators. However, more arguments seemed to be tilting toward the pessimist view that, given the state of the Nigerian economy, its institutions and that of the adjoining social-political institutions, the country stands in a disadvantage position of drawing from whatever benefits international trade (and free trade for that matter) promises. The global crisis seemed to heighten this perspective, where the price and demand of Nigeria's major

trading commodity – crude oil – were said to be hit by the crisis, thereby adversely affecting the economy.

It is to this, so to say, disadvantaged position of the country that a two-stage trade has been recommended for the country – a "guided-free-trade" for trade with advanced economies and a "free trade" with its "equals". To what extents this can help improve foreign trade of the country is what this paper sought to provide an answer to. The study thus examined the prospects of trade between Nigeria and two groups of countries (Sub-Saharan Africa (SSA) countries and Organization of Economic Co-operation and Development (OECD) countries) with different levels of development. An evaluation was, therefore, done using the gravity model of international trade, to determine which of the groups Nigeria stands to benefit more from in free trade. The aim was to determine the rate response of Nigeria's foreign trade flows to the attributes of a trading group, such as economic growth and distance between the trading partners.

This analysis became necessary due to the volatile and unpredictable nature of global economic interactions, as have been witnessed by the recent global economic crisis, which have rocked the world economies hitting both the strong and the weak and in which the Nigerian economy equally suffered setback. And not only is the international arena full of uncertainty causing various economic mishaps, but Nigeria appears to be deficient in possessing those institutions that makes for full and effective participation in the international trade so as to derive optimal benefits. To these, works like this become relevant as policy guides.

II. Literature Review

II.I Nigeria's International Trade: An Overview

Nigeria's policy towards foreign trade has varied over time from restrictive to liberal. With the breeze of globalization, blown into Nigeria through the Structural Adjustment Programme (SAP) policy and its sub-policies of trade liberalization, privatization, and deregulation, government policies toward foreign trade have been liberal; emphasizing free trade with other economies. Efforts have shifted from trade restriction by import substitution to free trade and export promotion and attraction of foreign capital. By this, Nigerian government has administered various export incentive programmes such as tax concessions, export development funds, capital asset depreciation allowances, and foreign currency retention programs in addition to operating Free Trade Zones and Export Processing Zones (Ariyo, 1997). Though most concessions, waivers or exemptions have been stopped, the Nigerian Export Promotion Council has continued to implement the Export Expansion Grant scheme to improve non-oil export performance.

However, much cannot be said to have been achieved from the external sector in terms of trade. There is negative net-export in the face of weak exchange rate. Oil and other minerals still accounts for a grater percent of the country's export. This is evident in Table 1. The values in the table 1 show that, while oil exports increased steadily over the period of 1970 to 2010, non-oil exports did not rise at the same rate. However, the opposite is the when considering imports. Non-oil imports rose faster than oil imports. More daunting is the net non-oil exports. They have remained negative throughout the period. This shows that the non-oil sector or the economy is a vent for leakages than injections. This has given rise to the over-reliance on the oil sector for its exports. According to The Library of Congress Country Studies (1991), oil has accounted for a greater proportion of the increases in exports even before the 1970s; increasing from 13 percent

in 1955 to 35 percent in 1965, to 93% in 1975, and then to 96 percent in 1985 and stood at 95% by 2011. The dependence on oil and a few other export commodities has made Nigeria particularly vulnerable to world price fluctuations as such being at risk of any external disturbance.

Table 1: Nigeria's Export and Imports (₦ million) 1970-2010

	Exports			Imports (₦ million)				
Year	**Oil**	**Non-Oil**	**Total**	**Oil**	**Non-Oil**	**Total**	**Differences in Totals**	**Differences in Non-Oil**
1970	510	375.4	885.4	52.2	704.2	756.4	129	-328.80
1975	4,563.1	362.4	4,925.5	118	3,603.5	3,721.5	1,204	-3,241.10
1980	13,632.3	554.4	14,186.7	227.4	8,868.2	9,095.6	5,091.1	-8,313.80
1985	11,223.7	497.1	11,720.8	51.8	7,010.8	7,062.6	4,658.2	-6,513.70
1990	106,626.5	3,259.6	109,886.1	6,073.1	39,644.8	45,717.9	64,168.2	-36,385.20
1995	927,565.3	23,076.1	950,641.4	155,825.9	599,301.8	755,127.7	195,513.7	-576,225.70
2000	1,920,900	24,822.9	1,945,723	220,817.7	764,204.7	985,022.4	960,700.9	-739,381.80
2005	6,266,097	105,955.8	6,372,052	182,754.8	2,296,567.7	2,479,322.5	3,892,730	-2,190,611.90
2010	10,639,417.4	396,377.2	11,035,794.5	2,073,579.0	5,931,795.2	8,005,374.2	3,030,420	-5,535,418.03

Source: Compiled from Central Bank Statistical Bulletin, various issues.

Figure 1 presents a graphical view of the behaviour of the variables in Table 1 for a more descriptive emphasis. This too depicts a clear picture of oil export (OILEX) rising faster and higher above non-oil exports (NOILEX). On the contrary, non-oil imports have a higher trend than oil imports. This still highlights the non-oil sector as vent for outflow of money.

On the other hand, there is heavy importation of non-oil goods/services. This has grown steadily exceeding oil imports over the years. This shows how highly dependent the Nigerian economy is on foreign good/services; and this has its negative consequences on the country in terms of foreign trade. It means then that the country is not competing effectively in the global market and cannot do so if this trend is maintained.

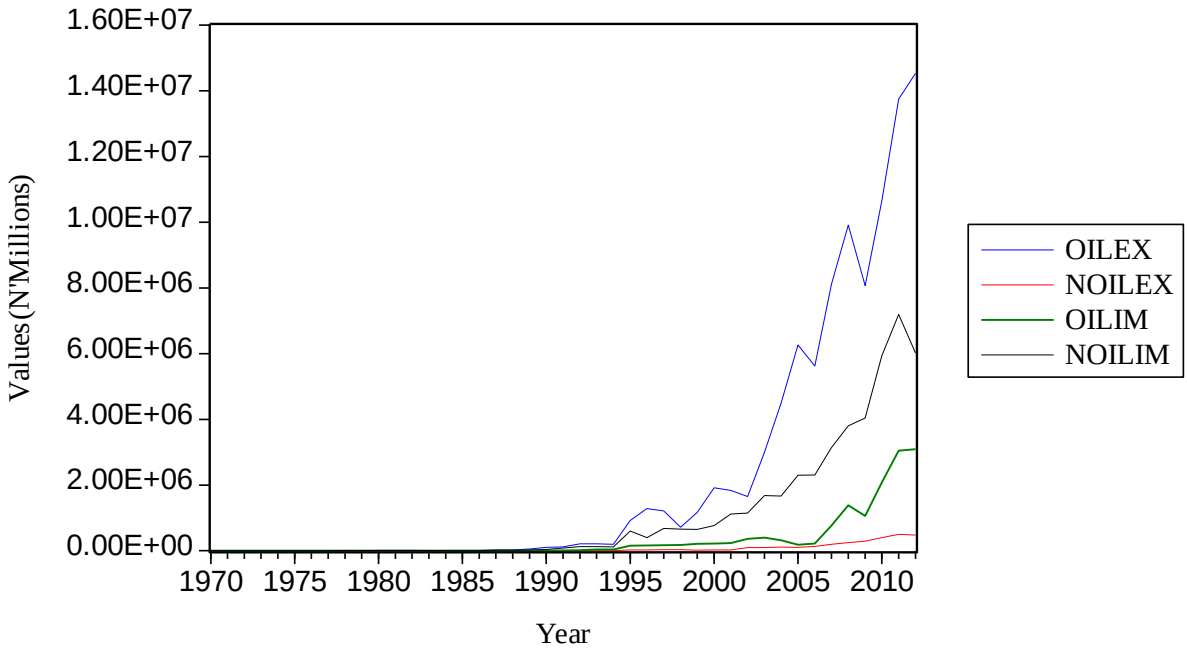


Fig. 1: Oil vs Non-Oil Exports and Imports (1970-2012)

According to The Library of Congress Country Studies (1991), this has reflected in the fact that, Nigeria's overall commodity terms of trade (price of exports divided by price of imports) fell substantially, from a base of 100 (1980) to 83.8 (1984) and 35.5 (1986), before rising to 42.6 (1987) and then falling to 34.6 (1988). Meanwhile, export purchasing power (quantity of exports multiplied by the commodity terms of trade) declined from 100 (1980) to 48.3 (1984), 23.0 (1986), 23.1 (1987), and 20.4 (1988), a 79.6 percent reduction in the purchasing power of exports in eight years.

According to Central Intelligence Agency (CIA) (2014) estimates, Nigeria's exports fell from $96.37 billion in 2011 to $95.68 billion 2012, which placed the country on the 40th position in comparison to the world exports. The chief exports commodities being petroleum and petroleum products (95%), cocoa and rubber. Nigeria's Imports, according to this source, equally fell from $61.65 billion in 2011 to $53.36 billion in 2012 and took the country to the 53rd

position in comparison to the world imports. Imports commodities by the country include machinery, chemicals, transport equipment, manufactured goods, food and live animals

Akeem (2011), confirmed the weak performance of the external sector from his study that export, import, and exchanged rate are all negatively related to real output, thus showing the less or no impact of foreign trade on economic growth.

The Balance of Payments (BOP) has equally not been favourable. Over the years this statement of account has been negative, portraying the excess of imports over exports and the poor terms of trade. This goes thus to further depict the ineffectiveness of fiscal policy to achieve the macroeconomic objective of favourable balance of payments by influencing foreign trade through exports and imports.

Another feature of Nigeria's international trade is that it has been dominated by trading with the advanced nations than the developing nations. A clear picture is that depicted by Tables 2 and 3. In 2006, 2007, and 2008 this dominance clearly showed with USA, France, Belgium, Spain, UK, Netherlands, and Germany from the advanced economies with Brazil, China, and India from the developing economies.

Table 2: Top 5 Countries Importing from Nigeria

All values in US$ Billion						
Rank	Importers	Exported value in 2006	Importers	Exported value in 2007	Importers	Exported value in 2008
-	World	59.22	World	53.96	World	81.82
1	USA	26.66	USA	25.16	USA	34.76
2	India	5.51	Belgium	4.51	India	7.87
3	Spain	4.73	India	4.40	Brazil	5.31
4	France	3.35	Brazil	3.46	France	3.37
5	Brazil	2.50	France	1.97	Netherlands	3.30

Source: *UN database in Focus Africa [Online].Available at:* http://focusafrica.gov.in/Nigeria_international_trade.html (2011).

Out of the total value of Nigeria's imports were US$59.22b, US$53.96b, US$81.82b in 2006, 2007, and 2008 respectively, USA alone accounted for US$26.66b, US$25.16b and US$34.76b in the respective periods. On the other hand, a developing country like India could only import to Nigeria US$5.51b, US$4.40b and US$7.87b of goods/services in the respective years (see Table 2). However, in terms of importation, Nigeria imported more from China to a volume of US$3.16b in 2006, US$4.89, and US$4.29b. Imports from USA amounted to US$3.59b, US$4.89b and US$2.31b in the respective periods (see Table 2).

Table 3: Top 5 Countries Exporting to Nigeria

All values in US$ Billion						
	Year 2006		Year 2007		Year 2008	
Rank	Exporters	Imported value in 2006	Exporters	Imported value in 2007	Exporters	Imported value in 2008
-	World	22.9	World	32.36	World	28.19
1	USA	3.59	China	4.91	China	4.29
2	China	3.16	USA	4.89	USA	2.31
3	UK	2.70	Belgium	3.96	Belize	2.00
4	Germany	1.28	UK	1.72	Germany	1.91
5	Belgium	1.17	Germany	1.58	Belgium	1.59

Source: *UN database in Focus Africa [Online].Available at:* http://focusafrica.gov.in/Nigeria_international_trade.html (2011).

It is glaring from the above that no developing countries of the Sub-Saharan Africa (SSA) made to the 5 top countries in trade with Nigeria. And this has been so. For instance, according to CIA (2014) in 2012, the major importers from Nigeria, were US with 16.8% of total value of exports, India with 11.5% of the value, Netherlands had 8.6% of export value, Spain 7.8%, Brazil 7.6%, UK 5.1%, Germany 4.9%, Japan 4.1%, and France 4.1% of the value of export. However, the country, in the same year, (according to CIA, 2014) imported majorly from China 18.3%, US 10.1%, India 5.5%. This constitution of trade partners highlights the disadvantaged position of Nigeria in foreign trade since she cannot have maximum control of the market like the advanced nations.

II.II Why should Nigeria bother about Trading Partners?

The form of international trade endorsed by the promoters of globalization is a *free trade* – simply referred to as trade between nations without any form of artificial restrictions. This is as opposed to restricted (or a regulated or guided) trade. This, as globalization wants it, should be practiced by all economies, their state of development notwithstanding. With this then emerged the theory and policy of *Trade Liberalization* which was, and still is, promulgated to lure and persuade countries hitherto practicing restricted or guided trade to embrace free trade and open up their borders to trade in all goods/services and with all economies not minding their levels of development.

The risen dust of globalization had not settled when global village was engulfed in a financial turmoil that ended up as another global economic crisis. This, being a global crisis and coming at a time when countries had not long embraced globalization with all its policies, affected almost all economies though with different magnitude. The developed economies of United States of America and Britain are numbered top on the worst-hit list. Sheinis (2010) also identified Russia as one of the economies on top of this list. The effects of this crisis, which most economies are still battling with, have brought renewed thinking. By this, those economies that had close trade ties to these advanced economies contacted this tsunami more than those with less ties to the advanced economies. With this experience, a cautious selection of trading partners becomes necessary.

That decline in demand and supply caused by the global economic crisis, according to Baldwin and Taglioni (2009), has rapidly improved global imbalances, since the gap between exports and imports ineluctably falls at the same pace as the underlying export and import flows.

As import and export growth resume, large global imbalances will return unless both surplus and deficit economies undergo structural changes, they had warned.

The very over dominance of Nigeria's foreign trade by the developed nations (as exemplified above) with more advanced market institutions which puts Nigeria at the receiving end of any trade policy, trading act, etc., equally requires that the country should rethink who she should trade with.

Also, as noted by the World Trade Organization – WTO (1998) steps towards macroeconomic stabilization and trade and investment liberalization must be supported by credible structural reforms if Nigeria is to regain international confidence and improve the standards of living of the population. According to WTO (1998) report on Nigeria's trade policies and practices states that political and institutional uncertainty persist in Nigeria and that the weakening of the rule of law has discouraged foreign direct investment and trade flows outside the oil export sector. In terms of trade policies and trade partners, the report concludes that Nigeria is currently at a crossroads in its economic and trade policies. While steps have been taken toward trade and investment liberalization and macroeconomic stabilization, policy priorities remain divided between dependence on the public sector and import substitution strategies on the one hand, and greater reliance on the private sector and market-based reform on the other.

Also, given the saturated nature of the advanced markets, which has necessitated in the first their outward looking approach that brings about international trade, it becomes wise for Nigeria to watch carefully who she trade with, if the aim of the trade is to bring benefit to the country.

It thus become imperative for Nigeria rethinking her foreign trade in terms of who she should trade with, and also the extent and nature to which to do this.

II.III Theoretical Framework – The Gravity Model of International Trade

The gravity model is a widely used model. For over decades the gravity model has been successfully applied to flows of the most widely varying types, such as migration, buyers distributed across shopping centers, recreational traffic, commuting, patient flows to hospitals and interregional as well as international trade (Ferwerda, Kattenberg, Chang, Unger, Groot and Bikker, 2011). Bikker (2009), had also affirmed that the traditional gravity model has been applied many times to international trade flows, especially in order to analyze trade creation and trade diversion. The name of the model is analogous to that Newton's law of gravity. According to Krugman, Obstfeld and Melitz (2012) "just as the gravitational attraction between any two objects is proportional to the product of their masses and diminishes with distance, the trade between any two countries is, other things equal, proportional to the product of their GDPs and diminishes with distance." This is expressed algebraically as:

$$T_{ij} = (A \cdot Y_i \cdot Y_j)/D_{ij} \quad (1)$$

where A is a constant term, T_{ij} is the value of trade between country i and country j (otherwise known as trade flows), Y_i is country i's *GDP*, Y_j is country j's GDP, and D_{ij} is the distance between the two countries. That is, the value of trade between any two countries is proportional, other things equal, to the product of the two countries' GDPs, and diminishes with the distance between the two countries (Krugman *et al*, 2012).

In its more general form, the gravity model can be stated as follow:

$$T_{ij} = (A \cdot Y_i^a \cdot Y_j^b)/D^c{}_{ij} \quad (2)$$

By this (Krugman *et al*, 2012), there are three variables that determine the volume of trade between two countries – the size of the two countries' GDPs and the distance between the countries, without specifically assuming that trade is proportional to the product of the two GDPs and inversely proportional to distance. Instead, *a*, *b* and *c* are chosen to fit the actual data as closely as possible. If *a*, *b* and *c* were all equal to 1, (2) would be the same as (1).

Ignoring the level of proportionality between bilateral trade flow and its determining variable, Josic (2008) specifies the gravity model in the following functional relationship:

$$E_{ij} = A \cdot GDP_i^{\beta 1} \cdot GDP_j^{\beta 2} \cdot D_{ij}^{\beta 3} \quad (3)$$

where *A* is a constant term, *E* is exports from country *i* to country *j* (as the trade flows), GDP is gross domestic product (the economic strength of a country), *D* is the distance between the countries (i.e. geographical proximity) and the β_s are the elasticities.

However, (Josic, 2008) a better understanding of the gravity equation in terms of elasticity is achieved using log-linear structure (logarithmic values of all variables) in Equation 4:

$$logE_{ij} = \alpha_{ij} + \beta_1 logGDP_i + \beta_2 logGDP_j + \beta_3 logD_{ij} \quad (4)$$

where β_1, β_2 and β_3 parameters are interpreted as coefficients of elasticity of exports in respect to changes in independent variables (GDP and distance). This change of dependent variable is not in absolute terms, it is rather relative change due to interpretation of log structure and percentage changes that persist in β_i coefficients.

It is possible to extend (4) using other variables that could possibly measure economic strength of a country better, such as Population (POP), *GDP per capita* (GDP/POP) or

combination of all mentioned. Furthermore, the extended gravity equation can also be written in the following form:

$$logE_{ij} = \alpha_{ij} + \beta_1 logGDP_i + \beta_2 logGDP_j + \beta_3 logPOP_i + \beta_4 logPOP_j + \beta_5 log\left(\frac{GDP_i}{POP_i}\right) + \beta_6 log\left(\frac{GDP_j}{POP_j}\right) + \beta_7 logD_{ij} \quad (5)$$

Theoretically, it is expected that the signs of β_1, β_2 and β_6 coefficients of GDP variables, using regression analysis, should comply with the signs in Table 4 below:

Table 4. Expected Signs of β_i Coefficients

β_i	Expected sign of β_i
β_1	+
β_2	+
B_6	-

Positive signs in Table 4 arise from the positive impact of higher income on imports of country's trade partner under constant marginal propensity to import. As Krugman *et al* (2012) rightly pointed out; large economies tend to spend large amounts on imports because they have large incomes. They also tend to attract large shares of other countries' spending because they produce a wide range of products. So, other things equal, the trade between any two economies is larger, the larger is either economy.

An impact of geographical proximity on trade is negative, and suggests that distance affects trade in the opposite way ($\frac{\partial E_{ij}}{\partial D_{ij}} < 0$) due to transport costs. Hence, the expected sign of parameter β_3 for variable Distance is negative (β_3<0).

How to measure distance has been a key question in setting gravity model properly. According to Josic (2008) one way is to use great circle distance between capital cities of trade

partners (country *i* and country *j*). The other way is to use auxiliary variables that represent changes in prices that occur in process of trade between countries *i* and *j*. These can be measured either using real exchange rate or the price of oil. Due to the inclusion of transport costs, it is impossible to hold Heckscher-Ohlin's assumption that international trade will equalize prices of all tradeable goods in countries that participate in trade. Transport costs inhibit trade and discriminate prices in both trade partners as well.

Parameter α_{ij} is taken to account for all other unobservable variables that are not explained directly through gravity equation and includes cultural, historical, political and language differences among countries.

According to Ferwerda, *et al* (2011), the empirical results obtained with the model have always been judged as very good. The model is sensible, intuitive and hard to avoid as a reduced theoretical model to explain bilateral trade. However, the gravity model equally has some imperfections. These include the absence of a cogent derivation of the model, based on economic theory and it cannot describe substitutions between flows and (Bikker, 2009; Ferwerda, *et al*, 2011).

III. Methodology

Adopting a simple gravity model of Josic (2008) type, longitudinal data about the variables were obtained from the World Bank (2011) and time-series data from the CBN (2011). The longitudinal data were for the gross domestic product (GDP) of the Organization for Economic Co-operation and Development (OECD) countries and Sub-Saharan African (SSA) countries. The time series is on the exchange rate which was used as a proxy for distance between Nigeria and her trading partners. Both kinds of data were drawn for a period of 26 years (i.e., 1986-

2011). The ordinary least squares (OLS) estimation technique of regression analysis was used to perform the test on the following models.

$$logTFNIG = \alpha_{NIG,OECD} + \beta_1 logGDP_{NIG} + \beta_2 logGDP_{OECD} + \beta_3 logD_{NIG,OECD} \quad (6)$$

$$logTFNIG = \theta_{NIG,SSA} + \gamma_1 logGDP_{NIG} + \gamma_2 logGDP_{SSA} + \gamma_3 logD_{NIG,SSA} \quad (7)$$

where;

TF_{NIG} = trade flows to Nigeria for the trading zones (Organization for Economic Co-operation and Development OECD countries and Sub-Saharan African SSA countries),[1]

GDP_{NIG} = GDP of Nigeria,

GDP_{OECD} = GDP of the OECD countries,

GDP_{SSA} = GDP of Sub-Saharan African countries,

$D_{NIG,OECD}$ = Distance between Nigeria and OECD countries proxied by exchange rate,

$D_{NIG,SSA}$ = Distance between Nigeria and SSA countries proxied by exchange rate, and

α, θ, β_i and γ_i = the parameters.

The parameters β_1, β_2, γ_1, and γ_2 are expected to be positive (i.e. $\beta_1 > 0$, $\beta_2 > 0$, $\gamma_1 > 0$, and $\gamma_2 > 0$), while β_3, and γ_3 should be negative (i.e. $\beta_3 < 0$, and $\gamma_3 < 0$). This is as explained above.

[1] Computed as the arithmetic mean of exports (E_t) from and imports (M_t) to Nigeria. That is, $TF = \frac{(Et+Mt)}{2}$.

IV. Result

Table 5: ADF Unit Root Test

Variables	ADF statistic	Test Critical Values 5%	Order of integration
TF	-3.625682	-3.248592	1(0)
GDP_{NIG}	-3.515296	-1.955681	1(0)
GDP_{OECD}	-4.116235	-2.998064	1(0)
GDP_{SSA}	-4.296810	-3.612199	1(0)
D	-4.743836	-2.991878	1(0)

Source: Author's Computed, 2014 (Eviews 6.0)

The result of Table 5 above shows that all the variables were stationary at level. Though GDP_{NIG}, GDP_{OECD}, and D were stationary with a trend and intercept while the other were stationary with only a trend. The attainment of stationarity is, however, consistent with the fundamental assumptions of the OLS; as such formed the basis for use of OLS to test the model.

The empirical results based on the gravity model and variables used are as presented below.

Table 6: Correlation Matrix (With LOGGDPOECD Variable)

	LOGTF	$LOGGDP_{NIG}$	$LOGGDP_{OECD}$	LOGD
LOGTF	1.000000	0.872937	0.980029	0.952556
$LOGGDP_{NIG}$	0.872937	1.000000	0.926976	0.818691
$LOGGDP_{OECD}$	0.980029	0.926976	1.000000	0.927925
LOGD	0.952556	0.818691	0.927925	1.000000

Source: Author's Computation, 2014 (Eviews 6.0)

Table 7: Correlation Matrix (With LOGGDPSSA Variable)

	LOGTF	$LOGGDP_{NIG}$	$LOGGDP_{SSA}$	LOGD
LOGTF	1.000000	0.872937	0.825896	0.952556
$LOGGDP_{NIG}$	0.872937	1.000000	0.976486	0.818691
$LOGGDP_{SSA}$	0.825896	0.976486	1.000000	0.739002
LOGD	0.952556	0.818691	0.739002	1.000000

Source: Author's Computation, 2014 (Eviews 6.0)

From Tables 6 and 7 it is clear that there is a strong positive linear correlation between OECD's GDP and trade flows (TF) to Nigeria ($\rho_{LOGTF,LOGGDPOECD} = 0.980029$) and between

SSA's GDP and TF ($\rho_{LOGTF,LOGGDPSSA} = 0.825896$). Trade flows to Nigeria are almost perfectly correlated with the changes in OECD's GDP and ASS's GDP.

Results of regression analysis based on Equations 6 and 7 are presented in Table 8:

Table 8: Regression Analysis on LOGTF Variable with OECD

Dependent Variable: LOGTF
Method: Least Squares
Date: 05/05/13 Time: 17:53
Sample: 1986 2011
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-57.59254	8.272372	-6.962034	0.0000
$LOGGDP_{NIG}$	-0.446747	0.224221	-1.992441	0.0589
$LOGGDP_{OECD}$	5.042350	0.760720	6.628390	0.0000
LOGD	0.395793	0.136730	2.894711	0.0084

R-squared	0.977859	Mean dependent var	5.860055
Adjusted R-squared	0.974840	S.D. dependent var	0.907285
S.E. of regression	0.143914	Akaike info criterion	-0.898570
Sum squared resid	0.455645	Schwarz criterion	-0.705016
Log likelihood	15.68140	F-statistic	323.8760
Durbin-Watson stat	1.128605	Prob(F-statistic)	0.000000

Source: Author's Computation, 2014 (Eviews 6.0)

Table 9: Regression Analysis on $LOGTF_{NIG}$ Variable with SSA

Dependent Variable: $LOGTF_{NIG}$
Method: Least Squares
Date: 05/05/13 Time: 17:56
Sample: 1986 2011
Included observations: 26

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-12.05130	5.317173	-2.266487	0.0336
$LOGGDP_{NIG}$	-0.662177	0.811472	-0.816019	0.4232
$LOGGDP_{SSA}$	1.981067	1.121028	1.767188	0.0911
LOGD	1.242674	0.157350	7.897528	0.0000
R-squared	0.941890	Mean dependent var		5.860055
Adjusted R-squared	0.933966	S.D. dependent var		0.907285
S.E. of regression	0.233145	Akaike info criterion		0.066326
Sum squared resid	1.195846	Schwarz criterion		0.259880
Log likelihood	3.137756	F-statistic		118.8650
Durbin-Watson stat	0.833217	Prob(F-statistic)		0.000000

Source: Author's Computation, 2014 (Eviews 6.0)

With the results, (6) and (7) becomes:

$$logTF_{NIG} = -57.59254 - 0.446747logGDP_{NIG} + 5.042350logGDP_{OECD} + 0.395793logD_{NIG,OECD} \quad (6')$$

$$logTF_{NIG} = -12.05130 - 0.662177logGDP_{NIG} + 1.981067logGDP_{SSA} + 1.242674logD_{NIG,SSA} \quad (7')$$

V. Discussion of Results

The results in Tables 8 and 9, and as expressed in (6′) and (7′), show a positive relationship between the TF_{NIG} and the GDP of and distance between trading countries; while a negative relationship exists between TF_{NIG} and own GDP. This implies that, a $1 rise in GDP (i.e., economic strength) of OECD and SSA countries will lead to a corresponding $5.04 and $1.98 increase in TF_{NIG} respectively. The negative intercepts indicates that, without the impact of the explanatory, TF_{NIG} will decline. By these only one of the expected signs from for the two equations (β_2 and γ_2, respectively) conform to the *a priori* expectation, as was suggested in Table

4. It should be noted, however, that, the interpretation of the coefficients (β_i and γ_i) in log-linear form is in terms of elasticity due to log values used.

The t-test was conducted with it results in Tables 8 and 9. From the results of this statistic, based on the (6), all the other explanatory variables, except $LOGGDP_{NIG}$ (i.e. the country's own GDP), were significant in explaining variations in TF under 5% significance level. This is consistent with the fact that OECD's demand (measured by GDP) for Nigeria's goods is positively correlated, i.e. $(\frac{\partial TFNIG}{\partial GDP_{OECD}} > 0)$. However, with reference to (7), the t-tests show that only variable LOGD is significant in explaining variable TF under 5% significance level. This is, however, not consistent with the expectation that trade with SSA countries should have significant impact on the trade flows to Nigeria. The ρ-values equally support the t statistics for all equations.

The distance (D), as a variable, does not conform to the gravity model expectations and parameter's negative sign. This, as in the case of Josic (2008), can be explained by the usage of a proxy variable (exchange rate) instead of physical distance between Nigeria and her trading partners. This gave the respective estimates of the parameters β_3 and γ_3 (i.e. 0.395793 and 1.242674) to be greater than zero. These can be interpreted as percentage change of Nigeria's trade flows due to changes in distance between Nigeria and her trading partners. Due to the low values of these estimates, it could be that distance does not impact significantly on trade flows to Nigeria. The value for SSA is a higher and can be taken to mean the lack of a common regional currency which causes exchange rate problems between Nigeria and other SSA countries.

The intercepts, α and θ, are negative to prove that without the mentioned variable, trade flows to Nigeria will decline. It can be generalised from here that, international trade has the potentials of adding to a country's growth.

Considering the R-squared values, As Josic (2008) had noted, the fitness or suitability of gravity model in explaining trade pattern is justified due to high R-squared values, which express goodness of fit between observed and predicted values. The R-squared values of 0.977859 and 0.941890 suggest that, about 98% and 94% of the TF to Nigeria are explained by GDP of the trading partners, GDP of the country, and distance – in terms of exchange rate – between Nigeria and her trading partners; while the remaining percentages are accounted for by variables not considered by the gravity model. These show that the gravity equations posses the explanatory power to explain changes in trade flows to Nigeria.

The F-test for the two equations shows that, with the degree of freedom V_1=3 and V_2=26, equals $F_{0.05}$= 2.98. Empirical values from Tables 8 and 9 (F-statistics = 323.8760 and F-statistics = 118.8650) are higher than critical value. This further supports the strength of the model that the R-square is significant at α = .05. That is to say, at least one variable is significant in explaining the behaviour of the dependent variable, $TF_{NIG,}$ in the model, under 5% significance level.

From the results, it is clear that Nigeria's trade flows depend on depends on the economic strength of her trading partners. Changes in the purchasing power of the partners, especially the advanced partners, accounts for the flow of trade benefits to Nigeria. This is seen where, a $1 rise in GDP of OECD countries leads to $5.04 increase in trade flows as against $1.98 rise for a $1 rise in purchasing power (GDP) of SSA countries. This means that, as the country stands to benefit more from trade with the advanced economies with high GDP growth rate than the economies of the developing nations, ceteris paribus. However, this positive relationship could

be disastrous if there is fall in the purchasing power of these advanced economies. It means that, under situations of economic crisis, Nigeria will lose more in trade with the advanced economies than developing economies. This implies further that, a conscious effort of balancing of the flow of trade benefits from the two group of trading partners will be more beneficial.

The same scenario occurs with regards to distance. Though the signs of the estimates (i.e. 0.395793 and 1.242674) do not come out as expected, it can be seen that the impact of distance (proxy exchange rate instead of physical distance between Nigeria and her trading partners) between Nigeria and the advanced partners yield negligible impacts. This can be taken to mean that distance does not affect trade between Nigeria and the advanced economies. This can be as a result ease of trade due to an easily exchange medium – the Dollar. As such, distance between Nigeria and the advances economies does not impact significantly on trade flows to Nigeria. This, however, still differ with respect to the developing countries with a positive coefficient of 1.242674, making trade with the advanced nations more beneficial. As explained earlier, this relatively higher value can be taken to mean the lack of a common regional currency which causes exchange rate problems between Nigeria and other SSA countries.

VI. Conclusion and Recommendation

The need for the work, as has stated above, was born out of the desire to assess the effect of economic strength and distance on trade flows to Nigeria necessary for trade policy reform in Nigeria. The gravity model was then adopted due to its strength in assessing the flow of trade benefits between countries. This has been proven by the fitness of the estimated models. The results show positive impacts of trading partners' GDP on trade flows to Nigeria. That is, Nigeria's exports grow as the economies of her trading partners grow. The growth in exports is,

however, higher with growth in the economies of OECD than the SSA. This means that, the trade flows to Nigeria are more influenced by the economic performance of the OECD countries than that of the SSA countries. Led by the results, it is convincing to conclude that changes in purchasing power of the advanced countries (as exemplified by the OECD countries) account for the flow of trade benefits to Nigeria more that of 'equal economies' – the SSA countries.

This suffices then to say that, the freely opening of the Nigerian economy to foreign trade has benefit to the country. But with the significant impact of the advanced economies on Nigeria's external trade, the negative down turns in these economies can be equally transmitted to Nigeria via changes in trade flow. This will not be same with the SSA developing economies. This then explains the rate of transmission and the quantum of the impact of the last global economic crisis – which had its origin in the advanced economies – on Nigerian trade benefits and the entire economy.

Given the above, as it may be, it will be wise for Nigeria foreign trade policies should be reformed to seek more open trade with the developing economies to which she has more comparative advantage over. On the other hand, a more guided trade policy should be instituted for trade between Nigeria and the advanced economies. This kind of policy design will increase Nigeria's trade gains and at the same time save the country in time of any global turmoil that result from the advanced economies with better structures and institutions that make readjustment possible and easy.

African regional organisations (like ECOWAS, AU, etc) should intensify efforts at encouraging regional trade. This can be done through instituting a common currency that will enhance transactions and exchange rate between African states, the removal of trade barriers between member states, among others.

Reference

Akeem, U. O. (2011). "Performance evaluation of foreign trade and economic growth in Nigeria." *Research Journal of Finance and Accounting*. [Online]. Vol 2, No 2. Retrieved on 1/10/2011 from: http://www.iiste.org/Journals/index.php/RJFA/article/view/181

Ariyo, A. (1997). "Productivity of the Nigerian tax system: 1970–1990." AERC Research Paper 67, Nairobi: African Economic Research Consortium.

Bikker, J. (2009). An Extended Gravity Model with Substitution applied to International Trade. De Nederlandsche Bank (DNB) Working Paper No. 215. Amsterdam, The Netherlands.

Baldwin, R. Taglioni, D. (2009). "The Great Trade Collapse and Trade Imbalances." *VOX* http://www.voxeu.org/article/great-trade-collapse-and-trade-imbalances

Central Bank of Nigeria (2011). *Statistical Bulletin*. Abuja: Publication of CBN.

Central Intelligence Agency (2014). The World Factbook. Retrieved on 19/02/2014 from https://www.cia.gov/library/publications/the-world-factbook/geos/ni.html

Ferwerda, J. *et al*. (2011). Gravity Models of Trade-based Money Laundering. De Nederlandsche Bank (DNB) Working Paper No. 318. Amsterdam, The Netherlands.

Josic, M. (2008). "Gravity Model and International Trade: The Case of OECD Countries." Retrieved on 8/4/2013 from: http://www.ien.bg.ac.rs/IEN1/images/stories/conferences/01/Josic%20Mislav%20-%2016M.htm

Krugman, P. R., *et al* (2012). *International Economics: Theory & Policy*. Boston: Addison-Wesley Publishers. 9th edt.

McConnel, C.R. (1963). *Economic: Principles, Problems and Policies*. Toronto: McGraw Hill Book Company. 6th Edition

Sheinis, V. (2010). "The Economic Crisis and the Challenges of Modernization." *Problems of Economic Transition*. Vol. 53, No. 4

The Library of Congress Country Studies. (1991). CIA world factbook. Retrieved on 1/10/2013 from: http://www.photius.com/countries/nigeria/economy/nigeria_economy_foreign_trade.html

Todaro, M.P. (1977). Economics for a developing world. London: Longman Group Ltd.

United Nations (2011). UN Database in Focus Africa. Retrieved on 19/02/2014 from http://focusafrica.gov.in/Nigeria_international_trade.html.

World Bank. (2011). Development Indicators. Washington DC. Retrieved on 5/05/2013 from http://data.worldbank.org/indicator/NY.GDP.MKTP.CD/countries/1W?display=graph

World Trade Organization (1998). Structural Reforms and Increased Transparency needed to generate Trade and Growth in Nigeria. Trade Policy Reviews: First Press Release, Secretariat and Government Summaries. Retrieved on 19/02/2014 from http://www.wto.org/english/tratop_e/tpr_e/tp75_e.htm#Top.

EFFECTIVENESS OF MONETARY POLICY ON LIQUIDITY MANAGEMENT IN NIGERIA

OKWORI, JOSEPH
Department of Economics,
Benue State University, Makurdi.
0806072553
(okworij@yahoo.com)

ABU, JOHN
Department of Economics,
Benue State University, Makurdi.
08160691106
(johnantenyi@gmail.com)

ABSTRACT

The paper analyzed monetary policy investigating its potency in management of liquidity in Nigeria covering a twenty eight year period of 1986 to 2013, which coincide with the emergence of SAP in the country. Hinging the background of analysis on the Keynesian Liquidity Preference Theory, the study adopted the Ordinary Least Square (OLS) using multiple regression analysis. The study found that monetary policy has not significantly influenced liquidity management in Nigeria during the study period. To this effect, the study recommended among others that the Central Bank should maintain a flexible Monetary Policy Rate so as to prevent commercial banks from liquidity surfeit. Also, the government should complement the monetary authority by providing a good regulatory environment rather than being a liability to the CBN.

Keywords: Liquidity management, monetary policy, financial ratios

1.0 Introduction

Since its establishment in 1959, the Central Bank of Nigeria (CBN) has continued to play the traditional role of regulating the stock of money in such a way as to promote social welfare (Ajayi, 1999). This role is anchored on the use of monetary policy which is usually targeted at achieving full employment equilibrium, rapid economic growth, price stability, and external balance (Adesoye, Maku and Atanda, 2012). Inflation targeting and exchange rate policy have dominated CBN's monetary policy focus in recent times based on assumption that these are essential tools of achieving macroeconomics stability (Aliyu and Englama, 2009). This according to Ezema (2009) is due to the backdrop that price stability, low unemployment and high and stable economic growth have over the years constituted internal balance measures.

While balance of payments equilibrium and exchange rate stability make up the external balance. The CBN over the years has instituted various monetary policies to regulate and develop the financial system in order to achieve major macroeconomic objectives which often conflict and result to distortion in the economy. This role of the CBN has facilitated the emergence of a more active money market where treasury bills have grown in volume and value, becoming a prominent earning asset for investors and source of balancing liquidity in the market as against the hitherto more operational informal system. However, some monetary policy tools like cash reserve and capital requirements, have been used to buffer the liquidity creation process of commercial banks through deposit base and credit facilities to the public (Ajayi and Atanda, 2012).

Monetary policy can either be expansionary or contractionary depending on the overall policy thrust of the monetary authority. By manipulating Open Market Operations (OMO), discount ratio and reserve requirements, the Central Bank controls the rate of growth of money supply, the level of interest rate, security prices, credit availability and liquidity creation through its influence on commercial bank operations. These variables in turn can exert monetary imbalances or shocks on the economy by influencing the level of investment, consumption, imports, exports, government spending, total output, income, and price level in the economy (Mishran and Pradhan, 2008). In general terms, monetary policy refers to a combination of measures designed to regulate the value, supply, and cost of money in an economy, in consonance with the expected level of economic activity (Okwu, Obiakor, Falaiye and Owolabi, 2011; Adesoye, Maku and Atanda, 2012). For most economies, the objectives of monetary policy include price stability, maintenance of balance of payment equilibrium, promotion of employment and output growth, and sustainable development (Folawewo and Osinubi, 2006).

In a bid to achieve macroeconomic goals, liquidity management is critical for the conduct of monetary policy, financial sector soundness, and economic growth. Consequently, efficient and effective management of liquidity is at the heart of the conduct of monetary policy. From the Central Bank's point of view, liquidity management is critical in delivering the mandate of monetary and price stability. Adequate liquidity promotes a sound banking and financial system which provides a virile platform for sustainable economic growth and development (CBN, 2011). Inadequate liquidity could render banks incapable of performing their traditional

functions and send wrong signals to economic agents and thereby compromise the attainments of monetary policy objectives. It could also precipitate a run in the banking system which might exacerbate structural distortions in the economy and impede the attainment of set macroeconomic goals. Excess liquidity will, however, result in inflation thus rendering the country's currency valueless. It is on this background that this paper investigated the effectiveness of the monetary policy in managing the liquidity flow and holding for speedy growth in the Nigerian economy.

The paper, therefore, assess the impact of monetary policy on liquidity management in Nigeria from 1986 to 2013 – a period which coincides with the current democratic dispensation. Specifically: the paper evaluates the effect of monetary policy on liquidity management in Nigeria and ascertained the challenges of monetary policy and liquidity management in the country. The paper is structured in five sections; Section one is the introduction which dealt with the background of the study. Section two covers the review of literature while sections three and four deals with methodology and discussion of results respectively. Finally, section five presents the conclusion and recommendations.

2.0 Literature Review

2.1 Theoretical Framework

Monetary policy got its root from the works of Irving Fisher (Diamond, 2003) who laid the foundation of the quantity theory of money through his equation of exchange. In his proposition, money has no effect on economic aggregates but price. However, the role of money in an economy got further elucidation from Keynes (1936) and other Cambridge economists who proposed that money has indirect effect on other economic variables by influencing the interest rate which affects investment and cash holding of economic agents.

However, Keynes recommends a proper blend of monetary and fiscal policies, as at some occasions, monetary policy could fail to achieve its objective. The role of monetary policy which is, of course, to influence the volume, cost and direction of money supply was effectively conversed by Friedman (1968), whose position is that inflation, is always and everywhere a monetary phenomenon; while recognizing in the short run that increase in money supply can

reduce unemployment but can also create inflation and so monetary authorities should increase money supply with caution.

Keynes' Liquidity Preference Theory, however, presents a better understanding of the role of monetary policy in an economy. He explains his liquidity preference theory in terms of interest rates. Keynes defines the rate of interest as the reward of not hoarding but parting with liquidity for a specified period. It "is not the 'price' which brings into equilibrium the demand for resources to invest with the readiness to abstain from consumption. It is the 'price' which equilibrates the desire to hold wealth in the form of cash with the available quantity of cash" (Keynes, 1936). In other words, the rate of interest, in the Keynesian sense, is determined by the demand for and the supply of money. This theory is, therefore, characterized as the monetary theory of interest as distinct from the quantity theory of the money.

In order to perceive the main theoretical innovation which Keynes introduced to the money economy, it is necessary to consider the component of demand for money itself. Considering the demand for money as a means of exchange; there are two motives behind the desire of the people to hold liquid cash: the transactions motive, and the precautionary motive (Binks and Jennings, 1986).

The extent to which money is demanded for this purpose is primarily determined by two influences: the level of real income and the rate of interest. In its simplest form, the Classical interpretation of the demand for money finishes here. Money is only held to enable the purchase of goods and services. Keynes introduced an additional motive for holding money balances. He based it upon the idea that money itself yields utility over and above that which it represented in terms of the value of the goods and services which it could be used to purchase. He believed that money is also demanded because of its perfect liquidity: it provides the holder with the ability to enter into any market transaction immediately. There is, according to this view, a demand or preference for money simply because it is the most versatile means of exchange. The concept of *liquidity preference* provides the third motive for holding money and is popularly referred to as the speculative motive.

Keynes holds that the transaction and precautionary motives are relatively interest inelastic, but are highly income elastic. The amount of money (M_1) held under these two motives is a function of (L_1) the level of income (Y) and is expressed as:

$$M_1 = L_1 (Y) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . (1)$$

However, money held for speculative purpose is interest elastic and Keynes expressed it algebraically as

$$M_2 = L_2 (r) \quad . \quad . \quad . \quad . \quad . \quad . \quad . \quad . (2)$$

where L_2 is the speculative demand for money and r is the interest rate.

When a bank operates, it acquires and disposes of income earning assets. These income earning assets constitute between one-fourth and one-third of a commercial bank's total assets. Thus, a bank's earning assets are an important source of its income. The manner in which banks manage their portfolios, that is acquiring and disposing of their income earning assets, can have important effects on the financial markets, on the borrowing, and spending practices of households and businesses and on the economy as a whole. This is determined by interest rates, which are charged by Central Banks when providing loans of a short-term nature (overnight) to banks in need of liquidity. This is intended to control money supply either on a contractionary or expansionary stance. This affects the level of bank reserves and the desire of the people to hold currency relative to deposits, which constitutes high-powered money and is a determinant of liquidity in the Nigerian economy.

2.2 Monetary Policy Appraisal in Nigeria

The responsibility for monetary policy formulation rests with the Central Bank of Nigeria (CBN). Monetary policy objective is couched in terms of maintaining price stability and promoting non-inflationary growth. The primary means adopted to achieve this objective is to set aggregate money supply targets and to rely on the open market operations (OMO) and other policy instruments to achieve the target (Ajayi and Atanda, 2012). Monetary policy in Nigeria has relied more on indirect transmission mechanisms.

Prior to the adoption of Structural Adjustment Programme (SAP), there was limit to the capital base required of commercial banks in Nigeria. Following the adoption of SAP the minimum capital base benchmark was increased. During this era, a minimum of ₦1 billion was prescribed for commercial banks and about ₦500 million for merchant bank as a result of the obstinate problem of illiquidity and poor deposit management. The limit for commercial banks was, however, increased subsequently to ₦25billion by July 2004. Similarly, in the early 1980s, banks operated under highly regulated environment through tight monetary policy characterized

by fixed exchange rate. Every signs of institutional weakness were apparent through the pre-SAP and SAP periods. A number of the banks were adversely affected in performing their primary functions in promoting the growth of the economy.

Monetary management was challenging in 2008 as a result of the liquidity surfeit experienced in the second quarter and the tight liquidity condition occasioned by the impact of the global financial crisis on the domestic economy in the third and fourth quarters of the year. The major sources of the excess liquidity in the second quarter included the disbursement of part of the excess crude oil receipts and the enhanced statutory allocations to the three-tiers of government, arising from the favourable crude oil price in the international market, as well as the payment of matured treasury bills. The financial markets, particularly the inter-bank segment, experienced relatively tight liquidity from end-August 2008, owing to the outflow of portfolio investment, occasioned by the global credit crunch. In order to ensure the stability of the financial system, the Central Bank of Nigeria undertook a number of monetary policy measures in mid-September 2008 to ensure adequate liquidity in the banking system.

Also, during the global financial crisis, the Central Bank of Nigeria reduced the Monetary Policy Rate (MPR), formerly called Minimum Rediscount Rate (MRR), from 10% to 9.75%, in order to reduce the rate at which Nigeria Commercial banks lend to the entire public for the promotion of investment and encourage saving to enhance credit creation; but this was still high. The Bank retained its policy of a market-based interest rates regime in 2008. The MPR remained the operating instrument to influence the direction of interest rate since 28th of November, 2006, when the Monetary Policy Committee of the Central Bank adopted a new monetary policy framework that took effect from December 11, 2006. The framework introduced a new Monetary Policy Rate (MPR) to replace the Minimum Rediscount Rate (CBN, 2005). In order to influence the direction of interest rate, in line with monetary conditions, the MPR was reviewed upward by 50 and 25 basis points in April and June 2008, respectively. The rate was however reviewed downward by 50 basis points in September 2008 to minimize the contagion effect of the global financial crisis.

The liquidity condition was mixed in 2008. Liquidity in the money market was relatively high in the second quarter of 2008 compared to the first quarter. The rise was mainly as a result of the enhanced statutory allocations to the three tiers of government, following the phenomenal

increase in crude oil prices in the international market and the monetization of part of the proceeds of the excess crude account. At ₦1,247.2 billion, the Bank met the September reserve money indicative benchmark of ₦1,358.7 billion. The reserve money for March, June and December, of ₦1,200.0 billion, ₦1,517.7 billion and ₦1,549.3 billion respectively, however, exceeded their respective benchmarks of ₦1,155.2 billion, ₦1,124.8 billion and ₦1,445.0 billion.

In order to ensure an optimum banking system liquidity, a number of monetary policy measures were undertaken. The measures included a review of the Monetary Policy Rate (MPR) and the cash reserve requirement (CRR) as well as the issuance of treasury bills. In the second quarter, when the system witnessed liquidity surfeit, contractionary policy measures were implemented, including an aggressive utilization of open market operations (OMO) as the main tool for managing liquidity and the upward review of the Monetary Policy Rate (MPR) from 9.5 per cent in January to 10.0 and 10.25 per cent in April and June, respectively. In addition, treasury bills were issued for liquidity management, while the cash reserve requirement (CRR) was increased by 100 basis points, from 3.0 per cent to 4.0 per cent in June 2008. By September 2008, when liquidity tightness was experienced and as a measure necessary to pre-empt the effects of the global liquidity and credit crunch on the domestic financial markets, a special meeting of the Monetary Policy Committee (MPC) was held at which the monetary policy stance was relaxed. The major monetary policy decisions taken to ensure money market liquidity were the reduction in the MPR by 50.0 basis points from 10.25 to 9.75 per cent; a reduction of CRR from 4.0 to 2.0 per cent; and a reduction of the liquidity ratio from 40.0 to 30.0 per cent (CBN, 2008).

2.3 Major Challenges in Monetary Policy and Liquidity Management in Nigeria

A major weakness in the strength of monetary policy transmission has been the unreliability of the three-year revenue and expenditure forecasts used in the medium-term expenditure and revenue frameworks. This is borne out of the unpredictability of crude oil prices and production volumes that are exogenous to the fiscal authorities. Other challenges include the lack of coordination among the tiers of government and the absence of a constitutional provision that backs the creation of an excess crude account where excess revenues could be saved. The constitution provides that all revenues should be transferred to the Federation Account and shared among the three tiers of government (CBN, 2011).

On the part of liquidity management, the financial system in Nigeria is largely structured along the dividing lines of urban/rural and formal/informal dichotomy. The combined effects of financial dualism and low level of investor awareness impede the responsiveness of market-based liquidity management initiatives. Also, unreliability of forecasts of fiscal revenue and expenditure profile, owing to the volatility of oil output and price on which about 80.0 per cent of the fiscal revenue is based, is a major challenge to liquidity management in Nigeria. In addition, the state of the payments system infrastructure is another challenge to liquidity management in Nigeria. The existing payments system infrastructure is limited in terms of reach, depth and credibility. Finally, the current bank branch to population ratio is inadequate for effective flow of liquidity in the Nigerian economy (CBN, 2011).

2.4 Empirical Review

Banks are major providers of liquidity in an economy. The field of research on the role of banks as liquidity providers started long time ago (Diamond and Dybvig, 1983). There are several documented studies on the link between monetary policy instruments and other sectors of the economy. However, some of the well-known studies are the ones, which incorporated various monetary tools in analyzing the effect of macroeconomic stability on banks' lending and activities, commodity prices, stabilization, profitability et al. Some of these studies are reviewed in this section.

Amidu and Wolfe (2008) examined the implication of monetary policy on bank lending in Ghana between 1998 and 2004 using a large panel dataset of 978 banks from 55 countries, and employing the Lerner Index Model as measure of market structure. Their study revealed that Ghanaian banks lending behaviour is affected significantly by the country's economic support and change in money supply. Their findings also support the finding of previous studies that the central bank prime rate and inflation rate negatively affect bank lending. Prime rate was found to be statistically significant while inflation was insignificant. Based on the firm level characteristics, their study revealed that bank size and liquidity significantly influence bank's ability to extend credit when demanded.

Younus and Akhta (2009) examined the significance of Statutory Liquidity Requirement (SLR) as a monetary policy instrument in Bangladesh. Using descriptive analysis techniques like trend analysis and summary statistics, they found that statutory liquidity requirement has

experienced infrequent changes. SLR and Cash Reserve Requirement (CRR) were found to be significant tools of reducing inflation and are used only in situation of drastic imbalance resulting from major shocks. They posited that Bangladesh Bank has used open market operations (OMOs), more frequently rather than changes in the Bank rate and SLR as instruments of monetary policy in line with its market-oriented approach.

Masagus, Henri, Peter and Piet (2010) present the findings of a meta-analysis identifying the causes of variation in the impact of monetary policies on economic development. The sample of observations included in their meta-analysis was drawn from primary studies that uniformly employ Vector Autoregressive (VAR) models. Their findings reveal that capital intensity, financial deepening, the inflation rate, and economic size are important in explaining the variation in monetary policy outcomes across regions and over time. Differences in the type of models used in the primary studies also significantly contribute to the explanation of the variation in study outcomes.

Amassoma, Nwosa and Olaiya (2011) appraised monetary policy development in Nigeria and examined the effect of monetary policy on macroeconomic variables in Nigeria for the period 1986 to 2009. They adopted a simplified Ordinary Least Squared technique and conducted the unit root and co-integration tests. The findings showed that, monetary policy has witnessed various policy initiatives and has experienced sustained improvement over the years. The result also shows that, monetary policy has a significant effect on exchange rate and money supply but insignificant influence on price instability. The implication of this finding is that monetary policy has a significant influence in maintaining price stability within the Nigerian economy. The study concluded that, for monetary policy to achieve its other macroeconomic objective such as economic growth; there is the need to reduce the excessive expenditure of the government and align fiscal policy along with monetary policy measure.

Okwu, et al (2011) examined the effects of monetary policy innovations on stabilization of commodity prices in Nigeria. Consumer price index (CPI), broad money aggregates (BMA) and monetary policy rate (MPR) were applied to a multiple regression model specified on perceived functional link between the indicators of Central Bank of Nigeria's monetary policy innovations and commodity prices indicator. The result showed that positive relationship exists between the respective indicators of monetary policy innovations and indicators of commodity

prices. Also, monetary policy rate had more immediate effect than broad money on consumer price index. And that commodity prices responded more to monetary policy rates than to broad money aggregates. Although both broad money and monetary policy rate exerted positive effect on commodity prices, only broad money exerted significant effect at 0.05 level of significance. However, overall effect of both on commodity prices was statistically significant. Consequently, the study recommended, among other things, that the Central Bank of Nigeria should always determine optimal mix of both policy variables to ensure stabilization of consumer goods and other commodity prices, and engender confidence in the Bank's monetary policy.

Abiodun and Tokunbo (2006) examined the efficacy of monetary policy in controlling inflation rate and exchange rate instability in Nigeria. The analysis performed was based on a rational expectation framework that incorporated the fiscal role of exchange rate. Quarterly data from 1980 to 2000 were used to conduct time series test. The result showed that monetary policy has influenced government fiscal deficit through the determination of the inflation tax rate which affects both the rate of inflation and the real exchange rate, thereby causing volatility in their rates. The study reveals that inflation affects volatility of its own rate, as well as the rate of real exchange. The policy import of the paper is that monetary policy should be set in such a way that the objective it hopes to achieve is well defined.

Mbutor (2010) evaluated the role of monetary policy in enhancing remittances for economic growth. The vector autoregressive method was applied with two stage deductions. Monetary policy rate was found to have impact on intervening variables – exchange rate, interest rate and inflation, which in turn impact remittance flows. The data set were tested for temporal properties, including unit roots and co-integration. Preliminary evidence shows that domestic economic prosperity increases remittances to Nigeria, while exchange rate depreciation depresses remittances. The latter outcome reflects remitters' perception that a stronger Naira is a sign of things-getting-better-back-home.

Hameed, Khaid and Sabit (2012) presented a review of how monetary policy influences Gross Domestic Product (GDP) of Pakistan. The method of OLS was used to explain the relationship between the variables under study. Tight monetary policy with balanced adjustments in independent variables (money supply, interest rates, exchange rates and inflation) showed a positive relationship with dependent variable.

The work of Somoye and Ilo (2009), on the impact of macroeconomic instability on the banking sector lending behaviour in Nigeria between 1986 to 2005, also revealed the transmission mechanism of monetary policy shocks to banks operation. The result of co-integration and Vector Error correction showed that there exist long-run relationship between bank lending and macroeconomic instability.

Folawewo and Osinubi (2006) investigate how monetary policy objective of inflation control and intervention in the financing of fiscal deficits affect the variability of inflation and real exchange rate in Nigeria. The analysis was done using a rational expectation framework that incorporates the fiscal role of exchange rate. Using quarterly data spanning over 1980: 1 to 2000: 4, and applying time series test on the data used. The study reveals that inflation affects volatility of its own rate as well as the rate of real exchange. The study concludes that, monetary policy objective should be well defined and be set in an achievable way.

3.0 Method of Study

This study adopted the Ordinary Least Square (OLS) technique for data analysis. The OLS is employed to measure the causal effect relationship between monetary policy and liquidity management in the Nigerian economy from 1986 – 2013. To examine the impact of monetary policy on liquidity management in Nigeria, this study took a clue from Onyeiwu (2012) which also adopted the Keynesian Liquidity Preference Theory to specify his model.

However, in this study, the models are modified to fit the stated objective. The dependent variable in the model is Money Supply Growth Rate (M_2). Banks are the ultimate supplier of liquidity in the economy; hence the effectiveness of monetary policy will be examined under the framework of commercial banks for the purpose of measurability.

Cash Ratio (CR), Liquidity Ratio (LR), Minimum Rediscount Rate (MRR), Interest Rate (INR) and Treasury Bills Rate (TBR) are used as explanatory variables in the models. The secondary data was obtained from Central Bank of Nigeria (CBN) Statistical Bulletin and World Bank Estimates for Nigeria. The model is specified below:

The definitional equation is given as;

$M_2 = f$ (CR, LR, MRR, INR, TBR)

The stochastic form of the equation is given as;

$M_2 = \beta_0 + \beta_1 CR + \beta_2 LR + \beta_3 MRR + \beta_4 INR + \beta_5 TBR + \mu$

Where; M_2 = Money Supply Growth Rate

CR = Cash Ratio

LR = Liquidity Ratio

MRR = Minimum Rediscount Rate

INR = Interest Rate

TBR = Treasury Bills Rate

$\beta_0, \beta_1, \beta_2, \beta_3, \beta_4, \beta_5$ are parameters to be estimated

μ = the error term

4.0 Data Analysis

4.1 Data Presentation

The table below shows the mean of the variables (CR, LR, MRR, INR and TBR), their standard deviation (which is the divergence of a variable from its mean), the median, maximum and minimum values and other descriptive statistics.

Table 1: Descriptive Statistics

	CR	INR	LR	M2	MRR	TBR
Mean	8.303571	22.56250	45.70000	26.85750	13.74786	12.72857
Median	9.550000	21.44500	45.75000	24.23000	13.50000	12.37500
Maximum	12.00000	36.09000	64.10000	57.88000	26.00000	26.90000
Minimum	1.000000	12.00000	29.10000	1.200000	6.130000	3.720000
Std. Dev.	3.178572	4.704404	9.229983	15.57419	4.064923	4.943600
Skewness	-1.051487	0.808493	0.102519	0.289866	0.727977	0.670881
Kurtosis	2.763090	4.525392	2.638890	2.209056	4.407347	3.917257
Jarque-Bera	5.225059	5.765042	0.201181	1.121961	4.783832	3.081969
Probability	0.073349	0.055993	0.904303	0.570649	0.091454	0.214170
Sum	232.5000	631.7500	1279.600	752.0100	384.9400	356.4000
Sum Sq. Dev.	272.7896	597.5483	2300.200	6548.994	446.1373	659.8579
Observations	28	28	28	28	28	28

Source: Author's Computation from Eviews 7

Deductions made from table 1 above show that the mean (or average values) for the variables M_2, CR, LR, MRR, INR and TBR for the period 1986 – 2013 were 26.86, 8.30, 45.70, 13.74, 22.56 and 12.73 respectively. The maximum value for CR is 12.00 and was recorded in year 2013 while the minimum value is 1.00 recorded in 2009. INR has its maximum value to be 36.09 in 1993 with its corresponding minimum value as 12.00 in 1986. 64.10 in 2000 and 29.10 in 1992 were the maximum and minimum values respectively for LR. In 2013 INF recorded its

lowest rate of 1.20 while its highest value was 57.88 in 2008. MRR has its maximum and minimum values to be 26.0 in 1993 and 6.13 in 2010. For TBR the maximum value is 26.90 in 1993 and its corresponding minimum 3.72 in 2009. The estimated standard deviation of the parameter estimates are 3.18, 4.70, 9.22, 15.57, 4.06 and 4.94 for CR, INR, LR, M_2, MRR and TBR while the median of the same parameters are 9.55, 21.45, 45.75, 24.23, 13.50 and 12.38. Note, the variables used in the model, are all expressed in their respective growth rate.

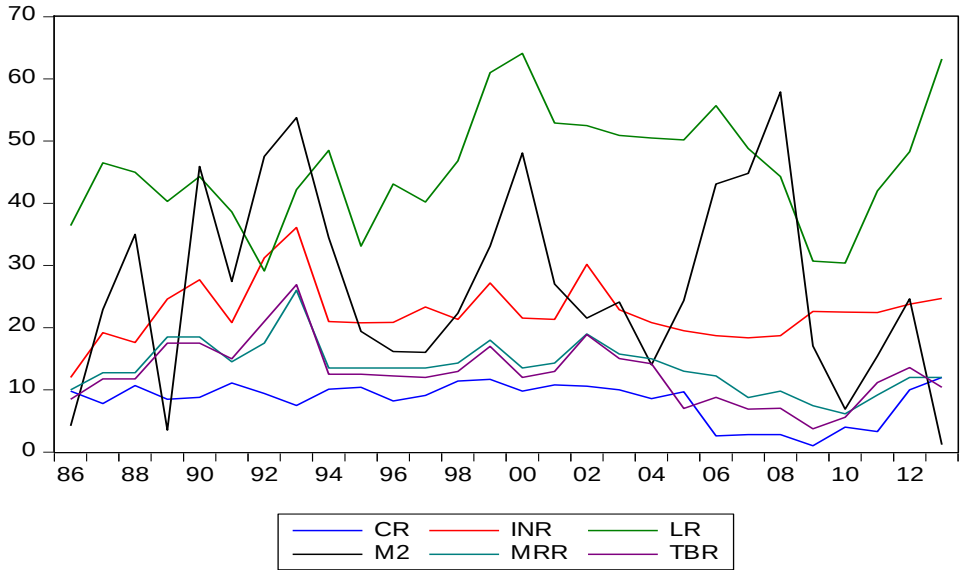
The Jarque-Bera test of normality is conducted to determine if the data being analysed using OLS technique conforms to the conditions of normality i.e. having a mean of 0 and constant variance. The JB test of normality is based on OLS residuals – using skewness and kurtosis (under normality, S = 0 and K =3). It is used to determine the joint hypothesis that S and K are 0 and 3 respectively. Skewness is the measure of asymmetry of a probability distribution about its mean while kurtosis is the measure of tallness or flatness of the slope.

If K < 3, then it is platykurtic (flat or short tailed); if K > 3, then it is leptokurtic (slim or long tailed) and if K = 3, then it is mesokurtic (normal distribution). Hence, from the table above: INR, MRR and TBR are positively skewed and leptokurtic; CR is negatively skewed and platykurtic while LR and M_2 are positively skewed and platykurtic. This shows that the data have violated the normality assumption of OLS. This is further substantiated by the high probability values of the statistics, which have reported above 5% level of significance. This, therefore has set the basis for further tests.

4.2 Graphical Trend of Data

This shows the trend in the data specified for the analysis

Figure 1: Data Trend



The graphs above show the trend of monetary policy tools and money supply for the past 28 years. Liquidity Ratio has been a bit stable. Stable in the sense that commercial banks have been able to meet up with the prescribed minimum by the Central Bank over the last 27 years. Unlike Liquidity Ratio the Central Bank has been unable to control Money Supply over the last 28 years. For Money Supply, apart from 1986 and 1989 which recorded a 4.23% and 3.54% growth rate, money supply has been high even though fluctuating and this trend averaged about 35% growth rate before dropping to 6.91% in 2010 – 21 years later. However, the growth rate of 1.20% in 2013 portends hope for the future.

The Minimum Rediscount Ratio have been relatively stable ranging from 6.13% - 26% between 1986 and 2013 indicating low interest rates charged to commercial banks which encourages borrowing. Similarly, Cash Ratio has also been relatively stable with a drastic reduction from 9.7% in 2005 to 2.6 in 2006 and maintained that average until it rose to 10% in 2012. Treasury Bills Rate has also been stable though high with its lowest rate as 12% recorded in 1986 and has never been less which is favourable for a contractionary monetary policy stance.

Subsequent sections will reveal if this wobbling trend of monetary policy variables has actually impacted significantly on liquidity management in the Nigerian economy or not.

4.3 Result and Discussion

The result of the unit root test which is a prerequisite to the regression analysis is as follows.

Table 2: Stationarity Test

Variables	ADF Test Statistics	1% critical value	5% critical value	10% critical value	Order of Integration
TBR	-5.93	-3.71	-2.98	-2.63	I(0)
M_2	-3.75	-3.70	-2.98	-2.63	I(0)
INR	-4.22	-3.69	-2.98	-2.62	I(0)
CR	-5.84	-3.71	-2.98	-2.63	I(0)
MRR	-5.43	-3.72	-2.99	-2.63	I(0)
LR	-4.78	-3.71	-2.98	-2.63	I(0)

Source: Author's Computation from Eviews 7

The result reveals that the variables are stationary at level series. The ADF test statistic (taking absolute values) for each variable in comparison to the critical values buttresses this point – since the former is greater than the latter (for each variable) at all significant levels.

The granger causality test was used to determine whether one time series is useful in forecasting another. The Granger causality tested the direction of causation between monetary policy variables and liquidity ratio in Nigeria and whether the former contains possible information about the latter in the future. The result is presented below:

Table 3: Granger Causality Test

Null Hypothesis:	Obs	F-Statistic	Prob.
M2 does not Granger Cause LR	26	3.34988	0.0546
LR does not Granger Cause M2		0.03523	0.9654
MRR does not Granger Cause LR	26	3.88531	0.0367
LR does not Granger Cause MRR		1.49827	0.2465
TBR does not Granger Cause MRR	26	3.35058	0.0546
MRR does not Granger Cause TBR		3.14874	0.0637

Source: Author's Computation from Eviews 7

The result shows that there is a unidirectional relationship between M_2 and LR; MRR and LR and TBR and MRR. It further reveals the dominance of M_2 and MRR in predicting the outcome of LR in future but not vice versa. This is established from the probability which indicates a value of 5% or less to nullify the hypothesis that M_2 and MRR do not granger cause

LR. Also TBR granger causes MRR but not vice versa. The result of the other combinations reveals no causality between the variables. This clearly portends that none of the monetary policy tools except TBR contain future information about M_2 given the period of study.

The result of the regression analysis is given as follows.

Table 4: Regression Analysis

M_2 = 11.21 – 2.88CR + 0.46LR + 1.28MRR – 0.61INR + 1.18TBR					
$S(b_i)$ =	**(21.26)**	**(1.15)**	**(0.34)**	**(2.14)**	**(1.02)**	**(1.95)**
t*	**= (0.53)**	**(-2.49)**	**(1.34)**	**(0.60)**	**(-0.60)**	**(0.60)**
$t_{(0.025)}$ = 2.06, R^2 = 0.31, Adjusted R^2 = 0.15, F* = 1.96, $F_{0.05}$ = 2.66, DW = 2.01					

Source: Author's Computation from Eviews 7

The adjusted R^2 which gives a better measure of the proportion of the total variation in the dependent variable explained by the variation in the independent variables reveal that 15% of the variations in M_2 are accounted for by CR, LR, MRR, INR and TBR. However, 85% of the total variation in M_2 is unexplained by the regression equation. The 0.15 coefficient of determination shows a weak relationship between the explanatory variables (CR, LR, MRR, INR and TBR) and the dependent variable (M_2). This implies that monetary policy tools are still ineffective in controlling money supply in the Nigerian economy and this is in line with observed realities.

The values of the coefficients imply that a 1% increase in CR will reduce M_2 by 2.88%. Similarly, a 1% increase in INR will cause M_2 to decrease by 0.61%. However, a 1% increase in LR will increase M_2 by 0.46%. The same holds for MRR and TBR with a 1% increase spurring M_2 growth by 1.28% and 1.18% respectively. All variables conform to a priori expectation except MRR and TBR.

Apart from CR, all other explanatory variables are statistically insignificant. From the result, it is clear that the estimates of LR, INR, MRR and TBR are not statistically significant ($t^* < t_{0.025}$) at 5% level of significance. This result therefore reveals that monetary policy has no significant effect on liquidity management in Nigeria.

The F-statistic shows that the F calculated (1.96) value is less than the F tabulated (2.66). This shows that the overall explanatory power of the regression equation is statistically insignificant. This insignificance also supports the fact that in reality, monetary policy tools have over time failed to exert as much influence on the Nigerian economy due to the high level of

financial non inclusion in the economy. A large volume of transactions in the economy are carried out in the informal sector, completely independent of the banking and other organized financial institutions through which monetary policy operations are channeled.

The Durbin Watson test of autocorrelation validates the null hypothesis of no autocorrelation. The result of the regression analysis shows the estimated *d* value to be 2.01 suggesting the near absence of serial correlation. From the Durbin Watson tables, we find that for 28 observations and 5 explanatory variables, $d_L = 1.028$ and $d_U = 1.850$ at the 5% level. Since the computed *d* value lies in the region ($d_U < d < 4 - d_U$), we conclude that there is no autocorrelation in the data series either positive or negative.

5.0 Conclusion and Recommendations

The study concludes that, monetary policy has not significantly impacted liquidity management in Nigeria. This is in line with the works of Folawewo and Osinubi (2006) and Amassoma, Nwosa and Olaiya (2011). Though the time period covered 1986 – 2009 as against the 1986 – 2013 of this study differs minimally, the finding of non significant impact buttresses the fact that the challenges of monetary policy effectiveness in Nigeria still persists. These are issues of cash based economy, large proportion of informal sector, weak payment system and general non popularity of the monetary policy tools that are been deployed.

This study recommends therefore that, the Central Bank should maintain a flexible Monetary Policy Rate so as to prevent commercial banks from suffering liquidity surfeit but enable them channel funds to their most remunerative alternative employments such as converting investment opportunities, meeting unexpected cash withdrawals, and reducing the tendency of having excess idle cash, which may be detrimental to profit maximization. Furthermore, the commercial banks should adopt measures in addition to profitability that will ensure effective liquidity management. The measures will help to minimize or avoid cases of excess liquidity or illiquidity.

The government should complement the Central Bank by providing a good regulatory environment that will encourage the conduct of monetary policy rather than being a liability to the CBN. In addition, the CBN should effectively control money supply in the Nigerian economy to curb inflation (enhancing the store of value function of money) subsequently leading to a high

purchasing power parity of money. A contractionary stance of monetary policy will be more effective in regulating the quantity of broad and base money supply.

Due to the nature of liquidity management in the Nigerian economy, a regulatory authority should be put in place with appropriate policy and compliance measures to check high volume of cash transactions endemic in the economy. This is important because Nigeria operates solely on large volume of cash transactions as a result of the dominance of fiscal policy over monetary policy (due to large percentage of informal sector). In view of this, the conduct of monetary policy in checking liquidity may be limited. Efforts should therefore be made by the authorities to expand the payments system infrastructure and strengthen the supervisory and regulatory framework of the banking sector in Nigeria.

REFERENCES

Abiodun, O. F. and Tokunbo S. O. (2006) "Monetary Policy and Macroeconomic Instability in Nigeria: A Rational Expectation Approach." *Journal of Social Sciences*, Vol. 12(2): 93-100.

Adesoye, A. B. Maku, O. E. and Atanda, A. A. (2012) "Is Monetary Policy a Growth Stimulant in Nigeria?" A Vector Autoregressive Approach. *Munich Personal RePEc Archive (MPRA)*. Paper No. 35844, pp. 1 – 24.

Ajayi, S. I. (1999) "Evolution and Functions of Central Banks." *Central Bank of Nigeria Economic and Financial Review.* Vol. 37, no. 4, pp. 11 – 27.

Ajayi, F. O. and Atanda, A. A. (2012) "Monetary Policy and Bank Performance in Nigeria: A Two Step Cointegration Approach." *African Journal of Scientific Research.* Vol. 9, No. 1, ISSN 2220-9433

Aliyu, U. R. and Englama, A. (2009) "Is Nigeria Ready for Inflation Targeting?" *Journal of Money, Investment, and Banking*. Issue 11, pp. 27 – 44.

Amassoma, D. Nwosa, P. I. and Olaiya, S. A. (2011) "An Appraisal of Monetary Policy and Its Effect on Macro Economic Stabilization in Nigeria", *Journal of Emerging Trends in Economics and Management Sciences* (JETEMS) 2 (3): 232-237.

Amidu, M. and Wolfe, S. (2008) "The Impact of Monetary Policy on Banks' Credit in Ghana." IAABD 2008 Proceeding, Track 1.

Binks, M. And Jennings, A. (1986) "Macroeconomics in Focus." *McGRAW HILL Book Company (UK) Limited*. ISBN 0-07-084888-2.

CBN (2008) "Annual Report and Statement of Account," CBN, Abuja.

CBN (2011) "Understanding Monetary Policy Series: Liquidity management in Nigeria." Series No. 4.

CBN (2011) "Understanding Monetary Policy Series: Monetary Policy Framework." Series No. 2.

Diamond, D. and Dybvig, P. (1983) "Bank Runs, Deposit Insurance, and Liquidity." *Journal of Political economy*, pp 91.

Diamond, R. (2003) "Irving Fisher on the International Transmission of Boom and Depression through Money Standard." *Journal of Money, Credit and Banking*, Vol. 35 Pp 49 online edition.

Ezema, C. C. (2009) "Monetary Policy Framework in Nigeria: Formulation and Implementation Challenges." *African Institute of Applied Economics (AIAE):* Monthly Seminar

Folawewo, A. O. and Osinubi, T. S. (2006) "Monetary Policy and Macroeconomic Instability in Nigeria: A Rational Expectation Approach." *Journal of Social Science*. Vol. 12, no. 2, pp. 93 – 100.

Friedman, M. (1968) "The Role of Monetary Policy." *American Economic Review*, Vol. 58, No 1.Pp 1-17

Hameed, G. Khaid, M. and Sabit, R. (2012) "Linkage between Monetary Instruments and Economic Growth" *Universal Journal of Management and Social Sciences Vol. 2, No.5: 69-76.*

Keynes, J. M. (1936) 'Treatise on Money' London, Macmillian. P. 90

Masagus, M. R. Henri L. F. G. Peter, N. and Piet, R. (2010) "The Impact of Monetary Policy on Economic Activity: Evidence from a Meta-Analysis." *Tinbergen Institute Discussion Paper*. Tinbergen Institute is the institute for economic research of the Erasmus Universiteit Rotterdam.

Mbutor, O. M. (2010) "Can Monetary Policy Enhance Remittances for Economic Growth in Africa? The case of Nigeria", *Journal of Economics and International Finance* Vol. 2(8): 156-163

Mishran, P. K. and Pradhan, B. B. (2008) "Financial Innovation and Effectiveness of Monetary Policy." http://ssrn.com/abstract=1262657.

Okwu, A. T. Obiakor, R. T. Falaiye, O. B. and Owolabi, S. A. (2011) "Empirical Analysis of the Effects of Monetary Policy Innovations on Stabilization of Commodity Prices in Nigeria." *European Journal of Economics, Finance and Administrative Sciences*: 64-79.

Onyeiwu, C. (2012) "Monetary Policy and Economic Growth." *Journal of Economics and Sustainable Development*. Vol. 3. No. 7.

Somoye, R. O. C and Ilo, B. M. (2009) "The Impact of Macroeconomic Instability on the Banking Sector Lending Behaviour in Nigeria. *Journal of Money, Investment and Banking*, Issue 7.

Younus, S. and Akhta, M. (2009) "The SLR as a Monetary Policy Instrument in Bangladesh." *IMF Occasional Paper* No. 234, Washington, International Monetary Fund.

APPENDIX - RAW DATA (GROWTH RATE)

YEAR	LR	M_2	MRR	CR	TBR	INR
1986	36.4	4.23	10.00	9.8	8.50	12.00
1987	46.5	22.92	12.75	7.8	11.75	19.20
1988	45.0	34.99	12.75	10.7	11.75	17.60
1989	40.3	3.54	18.50	8.5	17.50	24.60
1990	44.3	45.92	18.50	8.8	17.50	27.70
1991	38.6	27.43	14.50	11.1	15.00	20.80
1992	29.1	47.53	17.50	9.4	21.00	31.20
1993	42.2	53.76	26.00	7.5	26.90	36.09
1994	48.5	34.50	13.50	10.1	12.50	21.00
1995	33.1	19.41	13.50	10.4	12.50	20.79
1996	43.1	16.18	13.50	8.2	12.25	20.86
1997	40.2	16.04	13.50	9.1	12.00	23.32
1998	46.8	22.32	14.31	11.4	12.95	21.34
1999	61.0	33.12	18.00	11.7	17.00	27.19
2000	64.1	48.07	13.50	9.8	12.00	21.55
2001	52.9	27.00	14.31	10.8	12.95	21.34
2002	52.5	21.55	19.0	10.6	18.88	30.19
2003	50.9	24.11	15.75	10.0	15.02	22.88
2004	50.5	14.02	15.00	8.6	14.21	20.82
2005	50.2	24.35	13.00	9.7	7.00	19.49
2006	55.7	43.09	12.25	2.6	8.80	18.70
2007	48.8	44.80	8.75	2.8	6.91	18.36
2008	44.3	57.88	9.81	2.8	7.03	18.70
2009	30.7	17.07	7.44	1.0	3.72	22.62
2010	30.4	6.91	6.13	4.0	5.60	22.51
2011	42.0	15.43	9.19	3.3	11.16	22.42
2012	48.3	24.64	12.00	10.0	13.60	23.79
2013	63.2	1.20	12.00	12.0	10.42	24.69

Source: CBN Statistical Bulletin and World Bank Estimates (Nigerian Statistics)

WOMEN-OWNED SMALL SCALE BUSINEESSES; A TOOL FOR ACHIEVING THE MDGs IN VANDEIKYA LOCAL GOVERNMENT AREA OF BENUE STATE

D. T. NOMOR

Department of Economics,

Benue State University, Makurdi

Email: tenoms@yahoo.com

Dr. C. O. OBUTE

Department 0f Economics,

Benue State University, Makurdi

Email:coobute@yahoo.com

Abstract

This research examines the impact of small scale businesses on poverty reduction as a way toward achieving the Millenium Development Goals in Vandeikya Local Government Area. The study focuses on those businesses owned by women and the impact of the income earned by women from these businesses on poverty reduction in Vandeikya Local Government Area of Benue State. Primary data were collected from structured questionnaires administered on a sample of 270 women who own small scale businesses in Vandeikya Local Government Area. The data were analyzed using descriptive statistics and Logit regression Model. Results from the study showed that women-owned small scale businesses have a significant impact on poverty reduction in the study area but that the impact is not as expected. The study recommends that government should provide access to credit facilities for women and should provide vocational and skill training for the women, their husbands and members of the public should provide support to women, women should develop a savings culture among others.

KEY WORDS: Women-owned Small Scale Businesses, Million Development Goals, Vandeikya Local Government.

1. INTRODUCTION

Poverty is a problematic issue which has a negative effect on people in various ways. According to Ajala, Fakoya and Ajala (2003), the phenomenon is common in various parts of the

world but is more pronounced in developing countries of the world. According to Satya (2002), about 2.8 billion people live in absolute poverty. The World Bank report (2009) also confirmed this same fraction of the world population to be living below the poverty line. Alegieuno and Attah (2005) noted that, the area that is hardest hits is countries in Sub-Saharan Africa and South Asia. According to Faiola (2008), not less than 50 percent of African population still lives below the poverty line. In Nigeria, the Nation-Master (2008) reported that about 70% of the population is poor. The incidence of poverty in Nigeria became alarming in 2010 when the Millennium Development Goal (MDG) report for the year suggested that more than 50% of Nigerians lives in chronic poverty. The recent poverty profile report of the NBS for 2010 corroborated this position. Thus, poverty reduction presupposes the development of every economy.

In view of the above, alleviating poverty has become the most important goal of human development. Indeed, it is now widely believed that development must be about improvement of human well being, removal of hunger, disease and promotion of productive employment for all. A nation's first goal must be to end poverty and satisfy the priority needs for all its citizenry in a way that will not jeopardize the opportunity for the future generations to attain the same objective (Ibeh, 2007). It is because of this fact that the United Nations in 2000 made eradicating poverty the first of the Millennium Development Goals. Thus, poverty reduction was to be adopted as an overarching goal by every major international and bilateral development agency and as a basis of development co-operation (Kabeer, 2003).

Faced with the problem of poverty in the country, past governments in Nigeria have taken different measures to curtail the impact of poverty on the people. Some of the programmes meant to alleviate poverty are: the Family Economic Advancement Programme (FEAD),

Directorate of Foods, Roads and Rural Infrastructure (DFRRI); The National Directorate of Employment (NDE); The People's Bank; The Better Life Programme (BLP); The Family Support Programme (FSP); among others. It is worrisome however, to note that in spite of all these laudable programmes, the incidence of poverty has continued to be on the increase. For instance, The National Bureau of Statistics (NBS) report of 2011 showed that, incidence of poverty in Nigeria worsened between 2004 and 2010. The report indicates that the number of Nigerians living below poverty line rose from 68.7m to 112.5m (63.7% rises in poverty incidence) during the period. According to Abdullahi (2001), the rural population and mostly women are more affected by this incidence of poverty.

Due to this situation, many families in Nigeria now get involve in small scale business to ameliorate this intractable problem. According to Oluwole (2003), it became necessary for women to leave their traditional role as kitchen executive and get themselves in small scale businesses to complement their families' income. According to Ajala et al (2003), more women than men have gotten themselves involved in small scale businesses since 1980s. International Labour Organization (2003) observed that, the reason for women continuous involvement in small scale businesses are: their limited access to paid jobs; their limited access to land for farming and their limited access to capital used in establishing large business organizations as compared to men. Ajala et al (2003) noted that, women have made a significant impact in the area of self-employment in petty trading and moving of informal business ventures. Such ventures include self employed trading, hairdressing, dress making, operating bars, laundry activities, fetching water for sale, road side food selling and various other small and very few medium scale business activities. They venture into all these activities to generate income for their households and hence contribute to the welfare of their families.

In Benue State in general and Vandeikya in particular, it is observed that, there is a growing number of women involvement in these small scale businesses. Reports by National Association of Small Scale Industrialists (NASSI) and Benue Chambers of Commerce, Industry, Mines and Agriculture (BESCIMA) on entrepreneur activities in Benue State in 2003 showed that, women are involved in small businesses such as, Tailoring; Restaurants; beer Parlours; Food preparation in the areas of meat pies, zobo, kunu, brukutu, ice cream, garri, and yam flour; Hair dressing; etc. The reasons for their involvement are not other than complementing the family's income generation and to be self-employed (Ochugudu, 2003). Thus, a result oriented poverty reduction programme towards the achievement of the Millenium Development Goals in Benue state should embrace this sector of the economy.

Indeed, women involvement in small scale businesses in Benue State in general and Vandeikya Local Government in particular has grown significantly as a result of women's limited access to land for agricultural purposes, lack of capital for other businesses, lack of access to paid jobs etc. In spite of this significant involvement in small scale businesses by women, research studies have not given attention to the extent of the impact of this sector on poverty reduction in the study area and Benue State at large. More so, policy makers and programme have given more attention to the idea of man breadwinner and have neglected the importance of women's breadwinning role as noted by MDG, (2009).

This study is therefore set to assess the impact of small scale businesses owned by women on household poverty reduction in Benue State taking Vandeikya local government area of Benue State as a case study. The hypothesis tested in the study is that women involvements in small scale businesses do not have a significant impact on household poverty

reduction in Vandeikya Local Government. The paper is divided into five sections. After the introductory section; section II presents brief literature review; section III covers the methodology of the study; section IV contains the results and discussions and section V presents the conclusion and recommendations of the study.

2. LITERATURE REVIEW

The concept of small scale business and poverty reduction are clarified in this section. In addition, the theoretical framework as well as the core empirical works is presented.

2.1 Concept of Small Scale Business

A small scale business can be said to be one that requires a small amount of capital to establish it. This kind of businesses usually have a small number of employees or in most cases are personally handled by the owner, and are referred to as micro-businesses (this is the term used by international organizations such as the World Bank and the International Finance Corporations. The term "mini businesses" or "bob businesses" is a common colloquial expression for a single family operated business with few or no employees other than them). These kinds of businesses are common in many countries depending on the economic system in operation. Example of these businesses are, hawking, street retailing, small shop, market place etc. (Wikianswers 2010).

According to Longeneker (2008), a small scale business is privately owned and operated, with a small number of employees and relatively low volume of sales. Small businesses are normally privately owned corporations, partnerships or sole proprietorships. The legal definition of "small" varies by country and by industry. In the United States, the small Business

Administration establishes small business size standards on an industry-by-industry basis, but generally specifies a Small business as having fewer than 100 employees. In the European Union, a small business generally has fewer than 50 employees. However, in Australia, a small business is defined by the Fair Work Act 2009 as one with fewer than 15 employees. By comparison, a medium sized business or mid-sized business has fewer than 500 employees in the US, 250 in European Union and fewer than 200 in Australia (Longeneker 2008).

In addition to number of employees, other methods used to clarify small companies include annual sales, (turnover), value of assets and net profit (balance sheet). These criteria are followed by the European Union, for instance, (head count, turnover and balance sheet totals). Small scale businesses are common in many countries, depending on the economic system in operation. Typical examples include: convenience stores, other small shops, hairdressers, tradesmen, lawyers, accountants, restaurants, guest houses, photocopiers, small-scale manufacturing etc (Longeneker 2008).

In Nigeria, the Federal Government's new National Industries Policy defines small scale business as those with a total investment of between N100.00 and N200.00 exclusive of land but including working capital. In 1989, budget speech by President Ibrahim Babangida, a small business was defined as "any business requiring not more than N100.00 in capital excluding land". National Directorate of Employment (NDE) defines small scale business as "An establishment with capital investment as low as N5, 000.00 and employing as few as 3 persons (Iornem, 1992). These definitions were revised by the National Council of Industries at its 13th meeting (NCI-13) which was held in Makurdi, Benue State, as a business with total cost

(including capital) not exceeding N1m with total employees of not more than ten (Obitayo 2001).

Despite the differences in the definition of small scale business however, all these definitions share the same idea that small scale businesses are generally low in terms of numbers of persons employed, investment, financial strength relative to size and sale volume. As such any business operated by a family with capital less than 1 million naira and with no or less than 10 employees is taken as a working definition of small scale business in this paper.

2.2 Concept of Poverty

Poverty is a complex, multidimensional and hydra-headed malaise that has existed from time immemorial and has affected several facets of lives in Nigeria. It has been defined differently from various perspectives. It is a deadly socio-economic phenomenon that manifests in a people's inability to acquire the basic necessities of life (such as food, clothing and shelter) needed for decent living (Odion 2009).

According to Sen (1985), poverty is the deprivation of basic capabilities rather than lowness of income as indicated by World Bank which defined poverty as a situation when people are living on less than $1 per day. It has also been described as a state of being poor or being unable to have the basic necessities of life (Akinbode, 2003).

Obo and Abua (2008) described poverty in whatever form it may manifest as a condition that signifies a state of complete deprivation, want and inadequacy. To Aluko (1995), poverty means inadequate level of consumption, giving rise to insufficient food, clothing and shelter. This essentially infers to a state of lack.

Imran, Shahnawaz and Abo (2009) looked at poverty as: (i) lack of means in relation to needs, that is, absolute poverty and (ii) lack of means in relation to the means of others, that is, inequality or relative poverty. The World Bank (1990) defines poverty as "the inability to attain a minimum standard of living. Later, the World Bank (2000) defines poverty as lack of command over commodities or as a severe construction of the choice set over commodities, leading to pronounced deprivation in well being or welfare. This definition is much broader and extends beyond food and no food items to include key assets and social determinants of human development. Within this research, the concept of poverty is taken as defined by Imran et al (2009), that poverty is the lack of means in relation to basic needs.

2.3 Theoretical and Empirical Framework

The need to tremendously fight poverty is embedded in the theory of the vicious circle of poverty propounded by Ragnar Nurkse (1953). According to the vicious circle of poverty, poverty is a serious human problem that is self perpetrating which if not properly handled; it will be inter-generational (Jhingan, 2007). Since Benue State is also in this state of poverty, efforts are needed to be made to alleviate poverty. For Benue State in general and Vandeikya Local Government in particular, any result oriented poverty alleviation policy ought to be focus on small scale businesses. However, according to the Social Exclusion theory, everybody irrespective of gender, age, race, religion, ethnicity, location, occupation and social hierarchy must be involve in poverty alleviation projects (Ritzer 1986). Therefore, a result oriented poverty policy should have a focus on women.

The social exclusion theory is supported by the theory of liberal feminism. According to the theory, the society is divided into the private and public sphere. It argued that societal values

are found only in the public sphere. However, these values cannot be achieved except both men and women are found at the public sphere (MDG 2009). Small scale businesses are found at the public sphere and poverty alleviation is value that is essential to every society most especially the developing world which Nigeria is one of. This argument crowns the essence of women participation in small scale businesses.

Empirical studies have also shown that income from small scale businesses owned by women have significant impact on household poverty level. One of such studies was conducted by Ajala et al (2003), to examine the economic utilization of women's small scale businesses activities towards poverty reduction in Ibadan North-East Local Government Area of Oyo State. The study which used primary data revealed that marital status and education are most significantly related factors to poverty status of women that small scale business activities.

To quantify the effect of women's income on household poverty, Holger (2009), took a study on the contribution of female non-farm income to poverty reduction in Tanzania. Results from the study revealed that females off-farm activities are rather a survival strategy than a means to achieved sustainable welfare increases in the long run. The study concluded that the often cited conclusion that off-farm employment leads to poverty reduction may be unrealistic except factors such as illiteracy among women, household work-load, cultural factors, limited access to markets, limited enabling environment, etc are overcome.

Ibro, Filton and Deboer (2006) conducted a study on the factors affecting the success for women entrepreneurs in West Africa. The study revealed that women-owned small scale businesses are very important economic activities. The study thus concluded that the adoption of new technology by women has the potential of making a positive change for their businesses. In

the same vein, studies by Yeshiareg (2009), and ILO (2003), revealed that women entrepreneurial activities are significant in terms of reducing household vulnerability to poverty.

3. METHODOLOGY

The study was carried out in Vandeikya Local Government Area of Benue State. Women owned businesses studied include: petty provision trade; sale of pure water and soft drinks; sale of fried kosai/beans/yam; sales of food/canteen; catering services; braiding of hair; sales of recharge cards; food processing, i.e. making of zobo, kunu, burutu etc; hair dressing; weaving of clothes; sewing and dress making; cosmetics shops and sales of beer. The study was design to cover the twelve council wards of the entire local government. One major town where small scale business activities take place was selected. A stratified random sampling technique was use to select 270 respondents in the study area. Questionnaire instruments of collecting data were adopted. Out of the 270 questionnaires administered, only 228 were returned. Therefore the presentation and analysis of data was base on the 228 returned questionnaire. Data were analysed using the logit regression model.

The logit regression model was used to determine the correlates of poverty of small scale business women in the study area. The logit regression analysis was used to analyse the determinants of poverty. In the model, the endogenous variable is a dichotomous or dummy variable with 1 representing the household as poor and 0 if the household is not poor (Imran et al 2009).

This approach is in line with Allen and Thompson (1990), Appleton (1996) and Ramakrishma and Demeke (2002). The parameters of the model are estimated by the maximum

likelihood function formed by assuming independence over the observations. Ramakrishma and Demeke (2002) implicitly expressed this model as:

$$P_1 = \frac{1}{1 + e^{-(\beta 0 + \beta 1\, Xi1 + \ldots \beta k\, Xik)}} \quad \text{--- -- -- -- -- -- -- -- 3.1}$$

Where,

P_1 = probability that poverty reduced

β_0 = Constant term

β_i = Coefficient to be estimated

X = Independent variable

K = Number of independent variables.

$$\text{Let } Z = \beta_0 + \sum \beta_k X_k \quad \text{--- -- -- -- -- -- -- -- -- 3.2}$$

$$P = \frac{1}{1 + e^{-Z}} \quad \text{--- -- -- -- -- -- -- -- -- -- 3.3}$$

As Z ranges from $-\infty$ to $+\infty$, P ranges from 0 to 1 and P_1 is non-linearly related to Z_i. The logit of the unknown binomial probabilities, that is, the logarithms of the odds, are modeled as a linear function of the X_j. In estimated form, the model is expressed as:

$$\text{Logit } (P_1) = \text{Ln} \frac{P_1}{(1 - P_i)} = \beta_0 + \beta_1 X_{i1} \ldots \beta k\, X_k + U \quad \text{--- --- --- --- --- --- --- --- --- 3.4}$$

The unknown parameters β, are estimated by maximum likelihood. Thus, the model is explicitly expressed as:

$$POVSTAT = \beta_0 + \beta_1 expedu + \beta_2 expfd + \beta_3 fdgfreq + \beta_4 hltfac + \beta_5 capbase + \beta_6 hhhed + \beta_7 clthslf \ldots \quad 3.5$$

Where;

POVSTAT = Poverty status (equal to 0 if non-poor and1 if respondents is still poor).

$\boldsymbol{\beta_0}$ = Constant term

$\boldsymbol{\beta_i}$ = Coefficient of the parameters to be estimated.

expedu = Impact of the business on children education (equal to total annual expenditure on education).

expfd= Expenditure on food(equal to the amount of money spent on food in the day).

fdgfreq = Food consumption (equal to 1 if the family meet three square meal and 0 if the family does not).

hltfac = Access to health (equal to 1 if the family have access to health and 0 if the family does not).

capbase = Business size (equal to the business capital base).

hhhed = household head (equal to 1 if headed by a women and 0 if headed by a man).

clthslf = self clothing (equal to 1 if the woman buy cloth from income earned from involvement in small scale businesses and 0 if otherwise).

4.0 RESULTS OF LOGIT REGRESSION ANALYSIS

The results from the estimated model is presented below

Table 2: Results of Logit Regression Analysis

VARIABLE	B	S.E	SIG	EXP
Constant	-21.805	1.194	0.999	1.000
Expedu	0.001	0.000	0.147	1.000
Expfd	0.001	0.001	0.857	1.000
Fdfreg	-0.838	0.677	0.028**	0.433
Hltfac	-0.908	0.421	0.002*	0.268
Capbase	-0.004	0.002	0.001*	1.000
hhhed	0.010	0.389	0.900	1.010
Clthslf	0.389	0.653	0.063***	1.476
Chi-square	3.668			0.000
Nagelkerke R^2	0.513			

*Note: * means the parameter is significant at 1%, ** means the parameter is significant at 5% ,*** means the parameter is significant at 10%*

The estimated logic regression equation becomes

POVSTAT = -21.805 +0.0001Expedu +0.001expfd -0.838fdgfreg -1.318hltfac -0.004capbase +0.010hhhrd + 0.389clthsf.

From the result, three of the exogenous variables namely feeding frequency in a day, access to health facilities and capital base had negative estimated coefficients which are -0.838, -0.908 and -0.004 respectively. The other variables such as expenditure on education, expenditure on food, household head and clothing were estimated positive at 0.001, 0.001, 0.010 and 0.389 respectively. Except for result of result on household head, the rest of the result conforms to a priori expectations in this paper.

The result also shows that food frequency, access to health care facilities, capital base are significant at 5 percent, 1 percent and 10 percent respectively. The negative sign of the variables indicate that the higher the value of the variables, the higher the likelihood that poverty will reduce. In other words, the higher the variables, the lower the probability that poverty will increase. That is to say that, the variables has negative relationship with poverty status. The positive value of the parameters on the other hand implies that a higher value tend to increase poverty status of the households.

The regression result shows that expenditure on education has a positive value of 0.001 and is statistically insignificant. This result agrees with the expectation that the increase in expenditure on education increases the probability of been poor. This can be explained by the high dependency ratio in the families which limit the business women's capacity to reinvest their profit to expand the businesses. The inability to expand business size limit the household capacity the improve welfare.

The result also shows that the value of expenditure on food is positive (0.001) but statistically insignificant. This implies that the higher expenditure on food from the business

income will take away the capital base and profit that would have been reinvested for business expansion of the business size. This result also conforms to the a priori expectation.

The value for food frequency was negative (-0.838) and statistically significant at 5% level. This result also conforms to apriori expectation. This implies that the ability to meet three square meals in a day increase the probability of reducing poverty of the households. The value of access to health facilities was also negative (-1.318) and statistically significant at 1% level of significant. This result also conform to the expected influence of access to health care facilities on business performance hence reduction in poverty. As access to health care facilities improves the health of small scale business women improve, leading to improve in physical and mental ability to manage the business. The improvement in management of the business lead to increase in the profitability of business, thus, increases the probability that poverty will reduce.

The result for capital base of the business was also negative and statically significant at 1% level of significant. The result is in agreement with the a priori expectation of a negative relationship between capital base and poverty status. This is because increases in involvement with considerable capital will increase profit. This will increase access to food, good shelter, improved health, clothing and education, thus implying a reduction in poverty status of the households.

The value of the household head is positive (0.010) and statistically insignificant. This result agrees with the a priori expectation that the household headed by female are tended to be poorer than the household headed by males.

The result for self-clothing is positive and statistically significant. This result however does not agree with the a priori expectation. It was expected that, if women can clothe themselves from the income they gets from small scale businesses, the income of their husband which should have been for the same purpose will be channeled into other family needs and thus improving family welfare. The result obtained here may probably imply that, women in Vandeikya local government spend so much on buying cloths. This reduces capital and profits to be reinvested into the business thus reducing the probability of reducing poverty.

The Nagelkerke R-square (R^2) is 0.513 meaning that about 51% of the sample variations in the poverty status of household is explained by the independent variables leaving 49% unexplained. The remaining 49% is assumed to be explained by the variables not built in the model.

Also, the chi-square statistic (X^2) is 3.668 and is significant at less than 1% level of significant. The significance of the chi-square statistics is an indication that the estimated model performed well. Therefore, we will reject the null hypothesis and accept the alternative hypothesis that women owned small scale business has a significant impact on poverty reduction in Vandeikya Local Government area of Benue State

More so, the result also shows that constant has a negative sign of -21.805 and this conform to the a priori expectation. The negative relationship between the constant value and poverty status is an indication that holding other variables constant, involvement of women in small scale businesses has the prospects of reducing household poverty.

5. CONCLUSION AND RECOMMENDATIONS

The research has shown a significant impact of small scale businesses owned by women on poverty reduction. This is an indication that women have a lot to contribute to poverty reduction efforts. Small scale businesses are one of the most common economic activities towards poverty reduction engaged in by both men and women. As Ajala et al (2003), argued, women have gotten engaged in this sector more than men. The major reasons are to support their husbands in improving families' welfare. Though it has been shown that the extent of the significance of the impact of these women-owned small scale businesses on poverty reduction is low as confirmed by the significance of the associated chi-square., it is clear that these businesses have great prospects of improving on the significance, if government and private individuals cooperate in tackling the problems that are faced by women. This can be done through: giving skill acquisition training to women on business management know-how by the government; increasing women access to credit facilities by the government; giving of subsidies and tax relief/exemption; recognition of the need to save by the business women; and giving women the support and encouragement to carry out these businesses by their husbands and members of the public. Improving this sector will therefore contribute greatly to the achievement of the goal 1 of the Millenium Development Goals.

REFERENCES

Abdullahi, S. (2001), "Improving the Status of Women in Nigeria: A case Study of Poverty Alleviation". *A Paper Presented at the National Conference of the National Association for the Promotion of Studies in the Arts and Social Science.* University of Akure.

Ajala, C. C. et al (2003). "Women's Small Scale Business Activities towards Poverty Alleviation in Ibadan North-East Local Government Area of Oyo State". *Asset Series. A* Vol. 3. No.1 pp. 1 – 6.

Alegieuno, J. and Attah, Y. A. a. (2005), "Poverty Reduction through Micro-Finance: The Case of Indonesia and Philippines". *A Publication of central Bank of Nigeria.* Vol. 30 No.3, pp 1-10.

Allen, A. A. and Thompson, A. (1990). Rural Poverty Among Racial and Ethic Minorities. *American Journal of Agricultural Economics*. Vol. 75. No. 2. Pp 1161-1168

Aluko, S. (1995), "Poverty: It's Remedy Issues". In Onibokun, A. and Faniran, A. (eds). *Governance and Poverty in Angolophone West Africa.* Ibadan: CASSAD

Appleton. S. (1996), Women-Headed Households and Households Welfare: An Empirical Deconstruction for Uganda. *World Development*. Vol. 24. No 12. Pp 1811-1827

BECCIMA and NASSI (2003). Survey of Entrepreneurships activities in Benue State.

Brain B. (2000), *Social Exclusion, Social Isolation and the Distribution of Income.* htt://www.sticeral.ise.ac.uk/dps/case/cp/paper12.pdf.

Faiola A. (2008), World Bank counts More Poor People. http://www.washingtonpost.com.business.

Holger S. (2009), "The Contribution of Female Non-farm Income to Poverty Reduction". *Paper Presented at the international Association of Agricultural Economics Conference,* Beijing, China.

Ibeh, S. E. (2007), "The Concept of Poverty and Poverty Alleviation". *Journal of Business and Management Studies.* Vol.4, No.2. pp 216-222

Ibro G. et al (2006), "Factors Affecting Success for Women Entrepreneurs in West Africa: The Case of Kosai, a value Added Cowpea product*". A Paper Present at 2006 American Economics Associated Annual Meeting,* Long Beach, California.

ILO (2003), "Ethiopian Women Entrepreneurs: Going for Growth". *Ethiopian International Labour Organization and Women's Affairs Department, Ministry of Trade and Industry.*

Imran et al (2009), "The Impact of Socio-Economic and Demographic variables on Poverty: A Village Study". *The Labore Journal of Economics*. Vol.14 No.1 pp. 39-68.

Iornem, D. I. (1992). *How to start and manage your own Business and Guarantee Success.* Kaduna: YVC Press.

Jhingan, M. L. (2007). *The Economics of Development and Planning.* Delhi: Vrinda Publications.

Longenecker, J. G. et al (2008), "Small Scale Business Management. Launching and Growing entrepreneurial Ventures".
http://www.fbswllc.com/smallbsuiness.htmc.

Mou, I. (2007). "Poverty. The Challenge, the Imperatives". *Zenith Economic Quarterly*. Vol. 2 No.12 pp 19-32.

National Bureau of Statistics. (2012). Poverty Profile in Nigeria.

Nation Master (2008), "Economic Statistics: Population below Poverty Line by Country". http://www.nation-master.com

Obitayo, K.M. (2001), "Creating an Enabling Environment for Small Scale Indusries". CBN Bullion. Vol. 25. No.3.

Obo, U. E and Abua, M. A. (2008), "Democracy and the Dialectics of Mass Poverty: The Nigerian Experience (1999-2006)". *A Journal of Contemporary Research*. Vol.5 pp 298-309

Ochugudu, A. I. (2003). "Women and Entreprenuership Development in Benue State: Issues and Challenges". *Journal of Economic and Social Research*. Vol. 2 No. 2. Pp 12-31

Odion, W. E. (2009). "Millennium Development Goals (MDGs) and the Poverty Question in Nigeria". In Omotor D. G. and Akpotor, A. S. (ed). *Millennium Development Goals and Challenges*. Abraka: Delsu Investment Nigeria Limited.

Ramakrishma, G. and Demeke, A. (2003). An Epirical Analysis of Food Insecurity in Ethiopia. The Case of North Wello. *African Development Bank.* Vol. XXVII. No. I. pp 127-143

Ritzer, G. (1996), *Sociology Theory*. New York.

Satya, R. C. (2002), "Popualtion Growth and Poverty Measurement".
http://www.unstats.un.orglunsd/methods/povety/endowments.

Sen. A. (1985). *Commodities and Capabilities*. North Holland: Amsterdorn.

Wikianswers (2010), "The Impact of Small Scale Business in Nigeria". http//www.wikianswers.com.

World Bank (2005), "Facts and Statistics of Poverty". http://www.globalissues.org.

World Bank (2006), "Report On Nigeria". http.//www.worldbank.org/Nigeria.

World Bank (2009), "Poverty around the World". http.//www.globalissues.org.

Yeshiareg, D. (2002), "Women's Economic Empowerment for Poverty Reduction and Economic Growth". http.//www.bridgenew.edu/SOAS.

Petroleum Product Prices and Inflation in Nigeria (1990-2012)

Bobai, Francis Danjuma

Transport School, Nigerian Institute of Transport Technology, P.M.B. 1148, Zaria – Nigeria

E-mail: fdbobai@gmail.com

Phone Number: +2348062481407

ABSTRACT

In this study effort was made to see if there was any relationship between petroleum products prices (PPP) and inflation (INF) in the country. The study examines the impact of petroleum products prices increases on the level of inflation in the Nigerian economy. The scope of the study covers a period of twenty two years that is from 1990-2012, time series data on quarterly basis were employed for this work. The methodology employed in this study includes; ADF test, VAR model (Vector Autoregression Model), granger causality test, impulse response function and variance decomposition. A stationary test was carried out using the Augmented Dickey-Fuller (ADF) the variable were found to be stationary at difference order at 5% level of significance. The VAR result indicates an increase in PPP leads to rise in the level of inflation. The granger causality test revealed that bi-directional causality existed between PPP and INF, while the accumulated impulse response function and the variance decomposition also indicated a positive relationship existed between INF and PPP in Nigeria. The major findings from this study is that increase in the prices of petroleum products (PMS, AGO, and DPK) has a positive impact on the general price level of goods and services in the Nigeria economy. In conclusion the CBN and policy makers in Nigeria should also pay special attention to the supply management of petroleum products in the country.

Keyword: Petroleum product prices, inflation, VAR, granger causality, accumulated impulse response function, variance decomposition and Nigeria.

1. Introduction

Inflation in Nigeria has been considered as a purely monetary phenomenon. Hence inflation targeting has been through the manipulation of monetary variables such as exchange rate, money supply, interest rate which are aimed at attaining price stability in the economy (CBN, 2004). However,

over the years, Nigeria has experienced unprecedented persistent and appreciable increase in the prices of petroleum products. Petroleum products are major inputs to industrial production, they have a lot of domestic uses, in fact, and they are regarded as the life wire of the nation. Consequently any unprecedented increase in their prices would therefore have a multiplier effect in the economy (Gbadomosi, *et al.,* 2007).

The effect of petroleum products price increase to the growth and development of the Nigerian economy cannot be overemphasized. This is because the price of petroleum products is critical to production cost and the welfare of the people in every economy. Consequently, it has worsened the economic crises in the Nigerian economy. The outrageous price increases has made life unbearable for Nigerians as prices of goods and services have risen and thus causing hardship to most people in the country (Mba-Afolabi, 1999).

Iwayemi (2000) emphasized the use of pricing instruments for correcting disequilibrium in the energy market. Since the demand for the domestically consumed petroleum products are greater than their supply and the government policies cannot match the market forces, this has always led to shortage in supply of the products. According to World Bank (2002), a sizeable number of firms in Nigeria depend on petroleum powered generating sets for their energy supply as electricity supply is grossly inadequate and/or unreliable. With these and other problems, small and medium scale enterprises in the country are faced with problem of high cost of production which has made the whole business environment to be very unfriendly for most of these companies, thereby leading to their closure. Consequently, these led to redundancy, high crime rate, and other social vices in the country at the time. Because domestic prices of petroleum products[2] in the country are much lower than what is obtains in the neighboring countries, some percentage of the petroleum products are smuggled to those countries thereby causing shortage of domestic supplies (Iwayemi et al., 2009). In fact, speculative hoarding of the petroleum products in the country also increase the prices of the products in the economy. The main objective of this study is to examining the impact of petroleum products prices and inflation in Nigeria. The rest of the paper is structured as follows; section two is the literature reviewed, the methodology used is found in section three, the results of the study was discussed in section four, finally section five concluded the study.

2.0 Theoretical literature

In addition to creating wealth transfers from oil importing to oil exporting economies, oil price changes affect macroeconomic activity in a number of ways. Oil price increases reduce production output and wages. They induce inflationary tendencies and raise interest rates thereby reducing

[2] The three major petroleum products mostly consumed in Nigeria; Premium Motor Spirit (Petrol), Automotive Gas Oil (Diesel) and Dual Purpose Kerosene (Kerosene) are the products of interest in this research work. It is to be noted that these products are inadequate in terms of supply most of the time in Nigeria.

aggregate demand (Awerbuch *et al.,* 2004:8). In most developing countries governments act as guardians of the natural resource wealth hence serve as a conduit through which the higher oil revenues flow into the economy through higher public spending. This will not be a problem if the increased oil revenues remain stable, but typically they do not, because oil prices are notoriously volatile (Aizenman and Pinto, 2003:20).

2.1 Theoretical framework

The Structuralist's Approach to inflation is the theoretical framework for this work.

According to the structuralist's view inflation is inevitable in the less developed countries embarking on ambitious development programmes and is caused mainly by the characteristic structural imbalance in such countries. Major structural imbalance include: scarcity in the supply of some major goods and services, resource imbalance, foreign exchange bottleneck, infrastructural bottleneck and social and political constraints (Dwivedi, 2007 p. 428). The implication of the scarcity of petroleum products on the growth of output and price level in the economy cannot be overemphasized. However, this has led to imbalance on the demand for and supply of petroleum products due to inelastic products supply in the country, which had often led to rise in the prices of petroleum products in the country. Some of the reasons for low petroleum product supply are: Technological backwardness, Low level of petroleum infrastructure, Low rate of saving and investment, high rate of mismanagement and corruption in the economy etc which also hold petroleum products supply at low level against the rising demand due to increase in population and urbanization, which bring about a widening gap between demand for and supply of petroleum products in Nigeria. Speculative hoarding of the petroleum products in the country also increase the prices of the products. Since the demand for petroleum products is always greater than supply of the product government has to import the shortage to meet up with the demand. Rise in the prices of petroleum products in Nigeria lies as one of the major price structures in the economy and a cause of inflation in the Nigerian economy.

2.3 Empirical literature

Abah (2000) evaluated the impact of monetary policies on inflation in Nigeria from 1980-1995, the Ordinary Least Square multiple regression method was used. He discovered that impact of money supply in fueling inflation was not as great as was perceived. He indeed established that money supply lagged behind inflation, contrary to the popular belief that growth in money supply adequately explains the phenomenon of inflation in Nigeria. Discovering was made by him that other macro economy factors such as domestic credit, GDP, oil prices and exchange rate of the naira impacted on inflation in Nigeria more than money supply.

Olomola and Adejumo (2006) studied the effects of oil price shocks on output, inflation, real exchange rate and money supply in Nigeria within a VAR framework. They found no substantial role for oil price shocks in explaining movements in output and inflation. Only the long run money supply and the real exchange rate are significantly affected following a shock to oil prices. Based on all these findings, very limited studies have been done to assess the direct effects of oil price fluctuations on the economic growth.

Odularu (2007) in his work "crude oil and the Nigerian economic performance", found out that for the past three decades, crude oil has been a major source of revenue, energy and foreign exchange for the Nigerian economy. Against this background, his paper analyses the relationship between the crude oil sector and the Nigerian economic performance. Using the Ordinary Least Square regression method, the study reveals that crude oil consumption and export have contributed to the improvement of the Nigerian economy. However, one of the recommendations of the study is that government should implement policies that would encourage the private sector to participate actively in the crude oil sector.

Gounder *et al.,* (2007) examined oil price shocks and economic growth in Venezuela using the Vector Autoregressive (VAR) methodology based on quarterly data. Three oil price measures were considered, following the various theoretical implications that oil price shocks have on economic growth. The authors analysed the short-run impact of oil price shocks in a multivariate framework which traced the direct economic impact of oil price shocks on economic growth as well as indirect linkages. Furthermore, the models employed the linear oil price and two leading nonlinear oil price transformations to examine various short-run impacts. A Wald and Likelihood Ratio tests of Granger Causality, was utilized and the results indicated that linear price change, the asymmetric price increase and the net oil price variables were significant for the system as a whole, whereas the asymmetric price variables was not. Following the causality analysis of oil price nexus, the generalized impulse responses and error variance decompositions the authors reaffirmed the direct link between the net oil price shock and growth, as well as the indirect linkages. They concluded that since oil consumption continued to increase in New Zealand, there is a need for policy-makers to consider oil price shocks as a major source of volatility for many variables in the economy.

Apkan (2009) analyses the dynamic relationship between oil price shocks and major macroeconomic variables in Nigeria by applying a VAR approach. The study pointed out the asymmetric effects of oil price shocks; for instance, positive as well as negative oil price shocks significantly increase inflation and also directly increases real national income through higher export earnings, though part of this gain is seen to be offset by losses from lower demand for exports generally due to the economic recession suffered by trading partners. The findings of the study showed a strong positive relationship between positive oil price changes and real government expenditures. Unexpectedly, the result identified a marginal impact of oil price fluctuations on industrial output growth. Furthermore, the "Dutch Disease" syndrome is observed through significant real effective exchange rate appreciation.

In her work the impact of fuel price on inflation Nwosu (2009) used the variance Autoregressive analysis model to assess the relative contribution of fuel price on inflation. The study used available quarterly data series spanning from 1995 to 2008. The finding of the study revealed that the policy of subsidizing the price of fuel should be continued so as to help cushion the economy from the adverse effects of oil-price shock.

From the foregoing, most of the empirical studies carried out have focused on different monetary policies and inflation, oil price shock and demand for petroleum product in Nigeria. However, analyzing the impact of domestic petroleum products prices on inflation using the VAR, granger causality test, accumulated impulse response function and variance decomposition for an oil consuming and exporting country like Nigeria has not yet being carried out. This study intends to fill this gap. It would be interesting to empirically verify domestic petroleum products prices and inflation in Nigeria.

3.0 Methodology

3.1 Sources of data:

The data for this analysis consist of quarterly observations from 1990-2012. The variables considered in the models are petroleum product prices (PPP)[3], government fiscal deficit (GFD), money supply (M1), exchange rate (EX) and inflation rate (INF). These data are extracted from Central Bank of Nigeria (CBN) Statistical Bulletin (2012), and Annual Report Journal gathered from NNPC, text books, and paper presentation on related issue.

3.2 Model specification

To investigate the relationship between petroleum products prices and inflation in Nigeria the Vector Autoregressive model of Akpan (2009[4]) has been adapted for this study because he used the model to analyze the relationship between oil price shock and major macroeconomic variables in Nigeria and this model will also be suitable for this study. The reason has been that the VAR model[5] provides a multivariate framework where changes in a particular variable (PPP) are related to change in its own lags and to changes in other variable and the lags of those variables. The VAR treats all variables as endogenous and does not impose a priori restriction on structural relationships. Since the VAR expresses the dependent variables in terms of predetermined lagged variables, it is a reduced-form model. Once the VAR has been estimated, the relative importance of a variable in generating variations in its own value and in the value of other variables can be assessed.

To estimate the VAR, we need to first check the time series properties of the data in order to help us decide whether the VAR will be estimated in levels, first or second difference. Here we shall use

[3] PPP is the average of the aggregated prices of PMS, AGO, and DPK in Nigeria from 1990-2010

[4] See Apkan (2009) who analyses the dynamic relationship between oil price shocks and major macroeconomic variables in Nigeria by applying a VAR approach.

[5] The VAR methodology has been extensively used by (Canzoneri et al, 2001; Olivo, 2001; Creel 2002; Morekwa, 2008 etc).

a variant of the unit root tests such as the Augmented Dickey Fuller (ADF) or Phillip Perron (PP). Depending on the nature of the time series, a variant of this test that account for structural changes may be more appropriate.

The VAR model is presented below.

$PPP_t = f(PPP_{t-1}, GFD_{t-1}, M1_{t-1}, EX_{t-1}, INF_{t-1}, U_{1t})$ … … (1)

$GFD_t = f(PPP_{t-1}, GFD_{t-1}, M1_{t-1}, EX_{t-1}, INF_{t-1},, U_{2t})$ … … (2)

$M1_t = f(PPP_{t-1}, GFD_{t-1}, M1_{t-1}, EX_{t-1}, INF_{t-1},, U_{3t})$ … … (3)

$EX_t = f(PPP_{t-1}, GFD_{t-1}, M1_{t-1}, EX_{t-1}, INF_{t-1},, U_{4t})$ … … (4)

$INF_t = f(PPP_{t-1}, GFD_{t-1}, M1_{t-1}, EX_{t-1}, INF_{t-1},, U_{5t})$ … … (5)

Where PPP_{t-1} = Domestic prices of petroleum product at time $_{t-1}$

GFD_{t-1} = Government Fiscal Deficit $_{t-1}$

$M1_{t-1}$ = Money Supply $_{t-1}$

EX_{t-1} = Exchange rate at time $_{t-1}$

INF_{t-1} = Inflation rate at time $_{t-1}$

U_t = is the error term

$_{t-1}$ = lag length which be determined by the SC and AK statistics

The study seeks to use the time series values of PPP, GFD, M1, EX, and INF to analyze the relationship of PPP on inflation in Nigeria. Vector Autoregression (VAR) models are useful for policy analysis.

For simplicity, assume a VAR (1) model of the form:

$$\mathbf{X}_t = D + A_1\mathbf{x}_{t-1} + \boldsymbol{\varepsilon}_t \quad \text{...} \quad (6)$$

where the vector $\mathbf{X}_t$ = (PPP, GFD, M1, EX, INF)

The relationship can be represented as follows:

$$\begin{pmatrix} PPP_t \\ GFD_t \\ M1_t \\ EX_t \\ INF_t \end{pmatrix} = \begin{pmatrix} D_1 \\ D_2 \\ D_3 \\ D_4 \\ D_5 \end{pmatrix} + \begin{pmatrix} \beta_{11} & \beta_{12} & \beta_{13} & \beta_{14} & \beta_{15} \\ \beta_{21} & \beta_{22} & \beta_{23} & \beta_{24} & \beta_{25} \\ \beta_{31} & \beta_{32} & \beta_{33} & \beta_{34} & \beta_{35} \\ \beta_{41} & \beta_{42} & \beta_{43} & \beta_{44} & \beta_{45} \\ \beta_{51} & \beta_{52} & \beta_{53} & \beta_{54} & \beta_{55} \end{pmatrix} \begin{pmatrix} PPP_{t-1} \\ GFD_{t-1} \\ M1_{t-1} \\ EX_{t-1} \\ INF_{t-1} \end{pmatrix} + \begin{pmatrix} \varepsilon_t \\ \varepsilon_{2t} \\ \varepsilon_{3t} \\ \varepsilon_{4t} \\ \varepsilon_{5t} \end{pmatrix} \quad \dots\dots\dots\dots \quad 7$$

X_t D A X_{t-1} ε_t

Thus, in all VARS, each variable is expressed as a linear combination of lagged values of itself and lagged values of all other variables in the group.

Testing preceding to the analysis of the VAR model

Since a greater part of economic variables exhibit non-stationary properties, the presence of unit roots for each variable was checked before estimating the VAR model. If unit root exists in any variable, then the corresponding series exhibits non-stationary properties. Thus, estimations based on non-stationary series may lead to spurious regressions (see, Granger and Newbold, 1974). The variables in the models are tested for stationarity using the Augmented Dicky-Fuller *(ADF)* tests. The ADF test is conducted using regression (8) which includes intercept and time trend (see, Gujarati 2003):

$$\Delta X_t = a + bt + \rho X_{t-1} + \sum_{i=1}^{k} \Delta X_{t-i} + \mu_t \qquad (8)$$

Where ΔX_t is the first difference of the series X, k is the lag order, t is the time.

One can test for the absence of Granger causality by estimating the following VAR model:

$Y_t = a_o + a_1 Y_{t-1} + - - - + a_p Y_{t-p} + b_1 X_{t-1} + - - - + b_p X_{t-p} + U_t$ - - - (9)

$X_t = c_o + c_1 X_{t-1} + - - - + c_p X_{t-p} + d_1 Y_{t-1} + - - - + d_p Y_{t-p} + V_t$ - - - (10)

Testing

$H_o : b_1 = b_2 = \dots = b_p$

Against

$H_1 :$ NotH_o

Is a test that X_t does not granger cause Y_t

Similarly, testing $H_o : d_1 = d_2 = \dots = d_p = 0$ against

H_1 : Not H_o is a test that Y_t does not granger cause X_t

In each case, a rejection of the null hypothesis implies there is Granger causality between the variables.

4.0 Empirical results

4.1 Unit Root Test

The empirical analysis began with a prior investigation of stationary properties of the time series using *ADF* tests. The test is reported on Table (1) reveals that all the variables are stationary but at different levels on the basis of this, the null hypothesis of non-stationarity was rejected and it is safe to conclude that the variables are stationary. This implies that the variables are integrated of different order. However, they are stationary at different-order difference (integrated of different order). Since the variables are integrated of different order and the residuals are stationary at level, the variables may not be co-integrated (see Engle and Granger, 1987) else we resort to a VAR model.

Table 1: Augmented Dickey Fuller (ADF) Unit Root Test Result[6]

Trend & Intercept

Variable	Lag	ADF Test Statistic	5%Critical Value	Order of Integration
PPP	2	-5.780483	-3.4724	I(0)
GFD	2	-5.015894	-3.4730	I(1)
M1	2	-4.841698	-3.4721	I(1)
EX	2	-4.321302	-3.4739	I(2)
INF	2	-3.595093	-3.4721	I(0)

Notes:

• Optimal lag for conducting the ADF tests was selected based on the Schwartz and Akaike Information Criteria and also the auto-correlation function of the series. The optimal lag length in all cases was 2.

Mackinnon(1991) critical value for rejection of hypothesis of unit root applied.

Source: Author's Estimation using Eviews 4.0.

The result in the table 1 shows that two of the variables were stationary at level which is PPP and INF while GFD and M1 are not stationary at level but they were stationary at first difference. However, EX rate was stationary at second difference. Hence the variables are stationary at different order. This can be seen by comparing the observed values (in absolute terms) of both the ADF test statistics with the critical values (also in absolute terms) of the test statistics at the 5% level of significance. The table above revealed that all the variables are stationary but at different levels on the basis of this, the null hypothesis of non-stationarity was rejected and it is safe to conclude that the variables are stationary. This implies that the variables are integrated of different order. Tom and

[6] • Optimal lag for conducting the ADF tests was selected based on the Schwartz and Akaike Information Criteria and also the auto-correlation function of the series. The optimal lag length in all cases was 2. Mackinnon(1991) critical value for rejection of hypothesis of unit root applied.

Johansen (1997) assumed that if the cumulated process satisfies an I(2) model, then the results about this model can be phrased in terms of multicointegration. This was proven by Engle and Yoo (1991). Furthermore, since the variables are not stationary of the same order I(1) as can be seen in table one above but stationary at different order we then use the vector autoregression model. For one to test for cointegration the variables must all be stationary at order one I(I).

Engle-Granger Cointegration Test

The Engle-Granger test which is a two way cointegration procedure to check weather the residuals of the model specified in the work is cointregrated I(0) has revealed the following results.

Variable	ADF t-statistics @ Level	Critical value			Order of integration	Prob.
		1%	5%	10%		
Residual	-2.433275	-3.505	-2.894	-2.584	I(0)	0.1356

Source: Authors computation using Eviews 7.1

The Engle-Granger cointegration test above reveals no cointegration in the series at the 1%, 5% and 10% significance levels, and therefore justifies the adoption of a VAR process.

4.2 Optimal lag length in the VAR

A major requirement in conducting Johansen (1992, 1995) cointegration tests and estimation of a VAR system, either in its unrestricted or restricted Vector Error Correction (VEC) forms, is the choice of an optimal lag length. In this study, this choice was made by examining the lag structure in an unrestricted VAR originally specified with two lags, using a combination of VAR lag order selection criteria and examination of the roots of the characteristic polynomial to verify if the VAR is stable. Table 3 presents the evidence based on the VAR Lag Order Selection Criteria and suggests that two lags should be accommodated in the VAR. while Appendix (1) shows that the VAR satisfies the stability condition, and appendix (2) shows the inverse roots of the AR characteristic polynomial associated with the different lag orders specified by the selection criteria is within the unit circle for the VAR specification involving two lags. This indicates that the VAR Equation will be unstable if only one lag is accommodated. Thus, subsequent analyses were based on VAR with two lags. We found the optimal lag length that makes the residuals free from autocorrelations to be two.

Table: 2 OPTIMUM LAG ORDER SELECTION CRITERIA

Lag	LogL	LR	FPE	AIC	SC	HQ
0	40.24900	NA	2.58E-07	-0.979139	-0.821037	-0.916198
1	332.7583	536.2670	1.53E-10	-8.409952	-7.461341	-8.032307
2	527.3294	329.6900*	1.40E-12*	-13.12026*	-11.38114*	-12.42791*

* indicates lag order selected by the criterion

LR: sequential modified LR test statistic (each test at 5% level) FPE: Final prediction error

AIC: Akaike information criterion SC: Schwarz information criterion

HQ: Hannan-Quinn information criterion

Source: Author's Estimation using Eviews 4.0

4.3 The vector autoregression model

The vector autoregression (VAR) is commonly used for forecasting systems of interrelated time series and for analyzing the dynamic impact of random disturbances on the system of variables. The VAR approach sidesteps the need for structural modeling by treating every endogenous variable in the system as a function of the lagged values of all of the endogenous variables in the system. Since only lagged values of the endogenous variables appear on the right-hand side of the equations, simultaneity is not an issue and OLS yields consistent estimates. Moreover, even though the innovations ε_t may be contemporaneously correlated, OLS is efficient and equivalent to GLS since all equations have identical regressors, we proceed to estimate VAR result. The table 3 below shows that the variables PPP, GFD, M1, and EX all depend on INF.

Table: 3 VECTOR AUTOREGRESSION MODEL RESULT

Vector Autoregressive Result of ΔINF

Regressor	Coefficient	T-value
Intercept	0.203557	3.62205
D(PPP(-1))	0.418467	2.27761
D(PPP(-2))	-0.119698	-1.07177
D(GFD(-1))	0.118426	3.65894
D(GFD(-2))	-0.092723	-2.84762
D(M1(-1))	0.276980	1.56548
D(M1(-2))	0.147303	0.80445
D(EX(-1))	0.258227	1.19753
D(EX(-2))	-0.640478	-3.09303
INF(-1)	1.676764	23.8878
INF(-2)	-0.761518	-10.9129

Source: Author's Estimation using Eviews 4.0

R-squared	0.987
Adjusted R-squared	0.985
S.E equation	0.099
F-statistic	479.58

The results of the VAR produced some salient features that are worth explaining. The VAR result in the table 3 above shows that positive relationship existed between PPP and INF at lagged one and it is statistically significant, while at lagged two it showed a negative relationship and is statistical insignificant. A one naira increase in the price of petroleum product brought about 42 percent increase in the inflation rate in Nigeria economy. However, rise in PPP has a multiplier effect on the cost of production of goods and services as well

as the welfare of people in the whole economy. It was found that the demands for the domestically consumed petroleum products are greater than their supply and government policies unable to meet up with the supply in the country. Petroleum products serve as the major input to most firms, since electricity supply is unreliable in Nigeria. Whenever there is a rise in prices of petroleum product, scarcity in petroleum products or problem with the supply of petroleum products in the country etc, these seriously affected all economic activities in Nigeria by causing hardship to most people, making life to become unbearable for Nigerian, this has contributed in worsen the economic crises where the transportation fare has skyrocketed, this is in line with (Bobai 2012) findings.

However, this alone is not good enough to proof the positive relationship between PPP and INF in the Nigerian economy. The Pair wise granger causality test, accumulated impulse response function and the variance decomposition were used to confirm the above results.

4.4 Granger Causality Tests

Causality can be described as the relationship between cause and effect. Basically, the term 'causality' suggests a cause and effect relationship between two sets of variables, say, Y and X. Recent advances in graphical models and the logic of causation have given rise to new ways in which scientists analyze cause-effect relationships (Pearl, 2012). In testing for Granger causality, two variables are usually analyzed together, while testing for their interaction. All the possible results of the analyses are four:

* Unidirectional Granger causality from variable Y_t to variable X_t

* Unidirectional Granger causality from variable X_t to Y_t

* Bi-directional causality and

* No causality

Below is the main results obtained from the Pairwise Granger-causality analysis done in the study.

Table 4: Pairwise Granger Causality Tests

Pairwise Hypothesis	Obs	F-Statistic	P-value	Decision	Type of Causality
EX↗PPP	73	7.75237	0.00093	Reject H_o	Uni-directional causality
PPP ↗EX	73	0.87207	0.42271	DNR H_o	Uni-directional causality
GFD ↗PPP	73	2.02172	0.14031	DNR H_o	Uni-directional causality
PPP ↗GFD	73	7.88420	0.00083	Reject H_o	Uni-directional causality
M1 ↗PPP	73	0.74081	0.48054	DNR H_o	No causality
PPP ↗M1	73	0.51650	0.59892	DNR H_o	No causality
INF ↗PPP	73	6.03915	0.00385	Reject H_o	Bi-directional causality
PPP ↗INF	73	8.15711	0.00067	Reject H_o	Bi-directional causality
GFD ↗EX	73	2.24647	0.11357	DNR H_o	Uni-directional causality
EX↗GFD	73	4.13542	0.02019	Reject H_o	Uni-directional causality
M1↗EX	73	4.24751	0.01827	Reject H_o	Uni-directional causality
EX ↗M1	73	0.18992	0.82746	DNR H_o	Uni-directional causality
INF ↗EX	73	3.35611	0.04074	Reject H_o	Bi-directional causality
EX ↗INF	73	5.01961	0.00926	Reject H_o	Bi-directional causality
M1 ↗GFD	73	3.55164	0.03411	Reject H_o	Uni-directional causality
GFD ↗M1	73	0.69557	0.50230	DNR H_o	Uni-directional causality
INF ↗GFD	73	9.46889	0.00024	Reject H_o	Bi-directional causality
GFD ↗INF	73	9.35576	0.00026	Reject H_o	Bi-directional causality
INF ↗M1	73	1.26378	0.28913	DNR H_o	Uni-directional causality
M1 ↗INF	73	6.03997	0.00385	Reject H_o	Uni-directional causality

Source: Author's Estimation using Eviews 4.0

Alpha (α) = 0.05 Decision rule: reject H_0 if P-value > 0.05.

Key: DNR = Do not reject;

↗ = does not Granger cause.

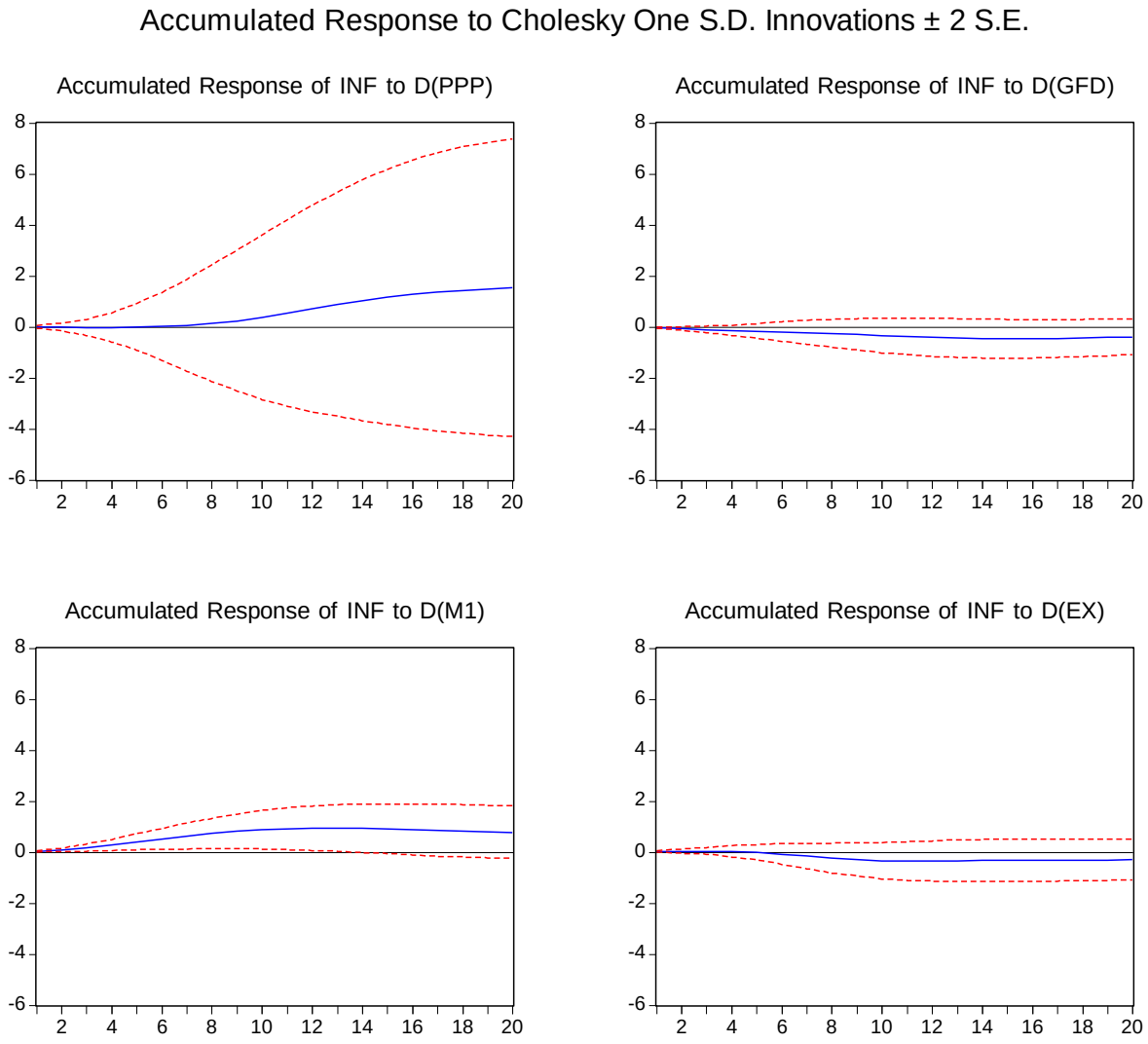
Based on the granger causality test result in table 4 above it was very obvious that uni-directional causality existed between Exchange Rate and Petroleum Products Prices, Petroleum Products Prices and Government Fiscal Deficit, Exchange rate and Government Fiscal Deficit, Money Supply and Exchange Rate, Money Supply and Government Fiscal Deficit and Money Supply and Inflation Rate. However, a bi-directional causality existed between Inflation Rate and Petroleum Products Prices, Inflation Rate and Exchange Rate, and Inflation Rate and Government Fiscal Deficit. Furthermore, there was no causality between Money Supply and Petroleum Products Prices.

4.5 ACCUMULATED IMPULSE RESPONSE FUNCTION OF PPP, GFD, M1, EX AND INF

The Accumulated Impulse responses in figure 2 below trace out the response of current and future values of each of the variables to a one unit increase in the current value of one of the VAR errors, assuming that this error returns to zero in subsequent periods and that all other errors are equal to zero. The implied thought experiment of changing one error while holding the others constant makes most sense when the errors are uncorrelated across equations, so impulse responses are typically calculated for recursive and structural VARs.

The extent at which shock in different variables influence PPP, GFD, M1, EX and INF can be assessed, through impulse response function. The simulation horizon covers 20 quarters. The solid lines are impulse response. In this study impulse response function is depicted for horizons of 20 quarters in figure one (1) below which enables us to trace out the response of PPP, GFD, M1, EX and INF to a shock in policy variables. The impulse response function depicts the growth rate relative to the base period when the shocks occurred.

Figure 1: Accumulated Response of INF to PPP, GFD, M1, and EX.



Source: Author's Estimation using Eviews 4.0.

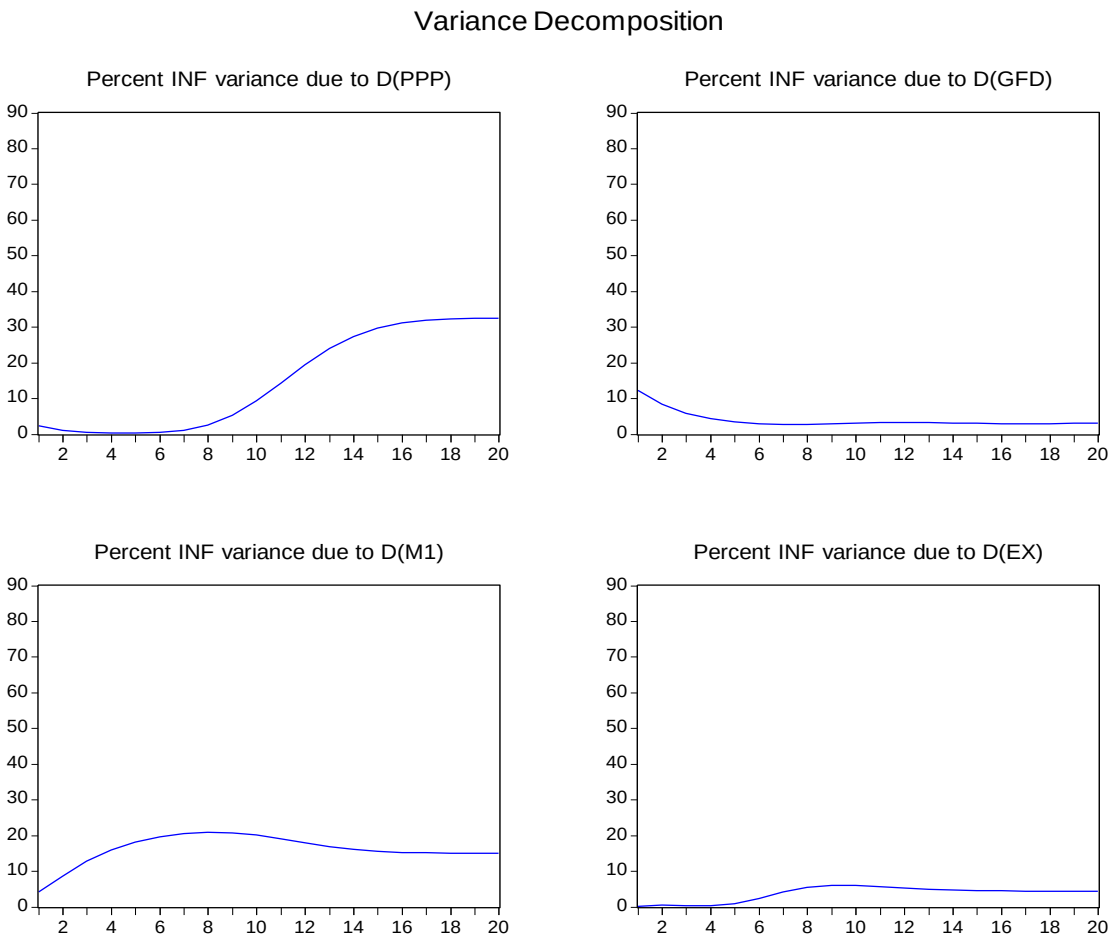
The response of INF to PPP from the above graph has shown that from the 1st to the 7th quarter inflation does not response to any change in the prices of petroleum product. However, response of INF to PPP began to show positive impact from the 8th quarter and this persisted into the long-run that is the 20th quarter. This indicated that increases in the prices of petroleum product have a positive impact on inflation in Nigeria from the 8th - 20th quarter and remained positive. The positive impact was being noted in the 8th quarter because whenever the prices of petroleum products are increased in Nigeria, people always believe that these prices will be reduced to their previous prices but after sometime they

realize that this has come to stay. This is in line with our a-priori expectation that positive relationship exist between PPP in INF in Nigeria. The accumulated response of INF to GFD show that a slight negative relationship between the two variables from the 3rd quarter to the 20th quarter. So with the response of INF to EX this implies that negative relationship exit between inflation rate and exchange rate in Nigeria. An increase in exchange rates lead to a decrease inflation rate in Nigeria and vice verse. Furthermore, inflation rate response positively to change in money supply in the country.

4.6 VARIANCE DECOMPOSITION OF PPP, GFD, M1, EX, INF

We now proceed to examine the relative strength of various processes through which petroleum product prices impulses are transmitted to inflation. This is accomplished by carrying out a decomposition of PPP, GFD, M1 EX and INF with a view to determining the size of the fluctuation in a given variable that are caused by different shocks. In this particular study, we calculated variance decomposition at forecast horizons of four through 20 quarters. VAR for each variable was estimated which included 2 lags. The results are reported in the table below, indicating the percentages of variance of the variable forecast as attributed to each variable at a 20 quarter horizon.

Figure 2: Percent INF variance due to PPP



Source: Author's Estimation using Eviews 4.0.

According to Figure 2 the percent INF variance due to PPP graph shows that a positive relationship existed between INF and PPP in the study. About 32 percent of the inflation rates in the long-run are influenced by increase in petroleum prices in Nigerian economy as can be seen in the variance decomposition graph above. The percent INF variance due to GFD, M1 and EX graphs above all shows that positive relationship exists between INF and all the variables. While about 15 percent of the inflation rates in the long-run are also influence by increase in money supply.

Therefore, since the accumulated impulse response function and the variance decomposition have both shown that there is a positive relationship between PPP and inflation in Nigeria. These are in accords with the supply shock inflation and structuralist view of inflation in the less developed countries like Nigeria, indicating how rise in the prices of petroleum products in Nigeria lies as one of the major

price structures in the economy and a cause of inflation in the Nigerian economy. The major findings from this study is that whenever, there is an increase in the prices of petroleum products (PMS, AGO and DPK) in Nigeria, this has a positive impact on the general price level of goods and services in the economy and also has direct negative implication on the standard of living of the populace.

5. Conclusion

The Central Bank of Nigeria as well as the policy maker in the country should as a matter of urgency have a second thought, by not perceiving inflation in Nigeria as purely a monetary phenomenon rather begin to pay special attention to the supply management of petroleum products in the country. In this study, it was revealed that domestic increase in the price of petroleum products is another serious cause of inflation in Nigeria from the VAR result and this was further proven by the causality test, accumulated impulse response function and variance decomposition graphs'. Therefore, the following recommendations were made:

Firstly, since the prices of petroleum product has a chain effect on the prices of other goods and services in the country. Government must stop the price control regime of petroleum products in Nigerian economy and allow market forces to determine their prices, this in the long run will help in stabilizing the prices of petroleum product in the economy and will stabilizes prices of other goods and services and this will go a long way in reducing the rate of inflation in Nigeria.

Secondly government should make sure that our existing refineries are functioning at full capacity and also build new ones; by so doing the existing refineries can meet Nigerians internal petroleum products needs and some excess for export and strategic reserve of product demand. This can be made possible when the nation refineries Turn-Around-Maintenance are consolidated with transparency and accountability.

Reference:

Abah, I. E. (2000) "Impact of Monetary Policies on Inflation in Nigeria". M. Sc Thesis. An unpublished M Sc Thesis. Department of Economic, A.B.U. Zaria.

Abedi, J.O. (1997), "*Economics for College*" Global Publishers, Lagos.

Aizenman, J. and Pinto, B., (2003) "Volatility employment and the patterns of FDI in emerging markets". Journal of Development, Economics, Elsevier, Vol. 72 (2) pp 585-601.

Akpan, E. O. (2009) *Oil Price Shocks and Nigeria's Macro Economy*. Paper published Department of Economics University of Ibadan, Nigeria.

Anyanwu, J.C. (1997), "Nigerian Economy", Benin University Press, University of Benin, Benin City.

Awerbuch, B., Azar, Y., Epstein, A., (2004) The Price of Routing Unsplittable Flow. In: Proc. 37th STOC, pp 57-66

Bobai, F. D. (2012) "Petroleum Product Prices and Inflation (1990-2008)". An unpublished M Sc Thesis. Department of Economic A.B.U Zaria

CBN, Economic and Financial Review, March 2004

CBN, Jubilee Statistical Bulletin 2008

Dwivedi, D.N. (2007), *"Macroeconomics Theory and Policy"*, 2nd Edition Tata McGraw-Hill Publishing Company Ltd. New Delhi.

Engle, R. F. and Granger, C. W. J. (1987). Co-integration end error correction: representation, estimation, and testing, *Econometrica,* 55 251- 276.

Engle, R. F. and Yoo, S. B. (1991). Cointegrated economic time series: an overview with new results. In Engle, R. F. and Granger, C. W. J. (eds.) Long-run Economic Relations: Readings in Cointegration. pp. 237-266, Ox-ford University Press, Oxford.

Granger, C. W. J. and Newbold, T. H. (1974). In Multicointegration: Advances in Econometrics: Cointegration, Spurious Regressions and unit Roots, JAI Press, Greenwich, CT, 8, 71-84, .

Gbadamosi, Kupolokun & Oluleye (2007) "*Deregulation of the Nigerian Downstream Oil sector"*. Abuja

Gounder, R and Bartleet M. (2007) "Oil Price Shocks and Economic Growth: Evidence for New Zealand. 1989-2006" Paper Presented at New Zealand Association of Economist Annual Conference Christchurch, 27th to 29th June, 2007.

Gujarati, D.N. (2003), *"Basic Econometric"* 4th Edition. The McGraw-Hill/Irwin NewYork.

Hamilton, James D (1996) "Thus is what happened to the Oil Price-Macroeconomic Relationship". *Journal of Monetary Economics* 38: 215-220

Iwayemi, A (2000) Modellin Energy Demand in Nigeria: A Co-integration Analysis Mimeo.

Iwayemi, A. Adenikinju A. and Babatunde M. A.(2009), *"Estimating Petroleum product demand elasticise in Nigeria:* A Multivariate Cointegration approach. .

Mba-Afolabi, J. (1999) The Oil Price of Hike Blunder, *Newswatch, January 18*, pp.8 – 16.

Nwafor, M. Ogujiuba, K. and Asogwa, R. (2006) "Does Subsidy Removal Hurt the Poor?' *Secretariat for Institutional Support for Economic Research in Africa* s/c CRDI/IDRC – BP 11007 Peytavin – Dakar – Sénégal Tél. : (221) 864 00 00 – Fax : (221) 825 32 55 http://www.crdi.ca/sisera

Nwosu, Chioma P. (2009) "Import of Fuel Prices on Inflation: Evidences from Nigeria". *Research Department, Central Bank of Nigeria [SSRN:* http://ssm.com/abstract=1365820]

Odularu, O. A. (2007) "Crude Oil and the Nigerian Economic Performance" Research Journal of International Studies, Issue 8

Olomola, P. A. and Adejumo, A. V. (2006) "Oil Price Shock and Macroeconomic activities in Nigeria" International Research Journal of Finance and Economics. Issue 3

Pearl, J. (2012). Correlation and Causation-the Logic of Co-habitation. Written for the European Journal of Personlity, Special Issue.

Toganes, A. (1989), "The Monetarist Explanation of Inflation. The Experience of Six African Countries", *Journal of Economic Studies, Vol. 16, Pg. 5 – 18 (1987).*

Tom, E. and Johansen, S. (1997) Granger's representation Theorem and Multicointegration European University Institute Economics Department EUI Working Paper ECO No. 97/15

World Bank (2002) A Report on Nigeria. Washington.

Appendix 1: Roots of Characteristic Polynomial

Roots of Characteristic Polynomial

Endogenous variables: D(PPP) D(GFD) D(M1) D(EX) INF

Exogenous variables: C

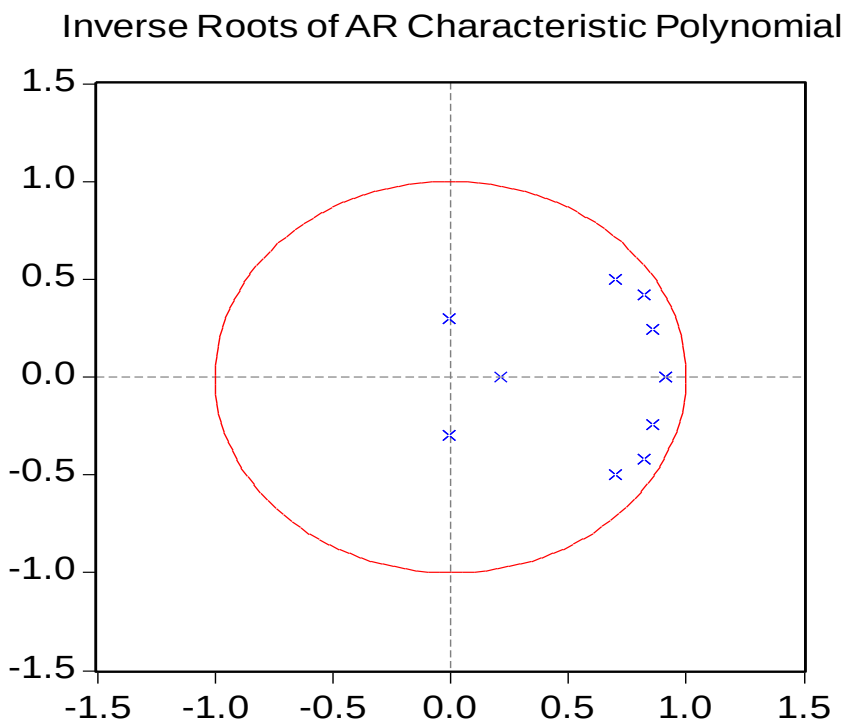
Lag specification: 1 2

Root	Modulus
0.823125 - 0.419210i	0.923727
0.823125 + 0.419210i	0.923727
0.915259	0.915259
0.856023 - 0.246222i	0.890731
0.856023 + 0.246222i	0.890731
0.701963 - 0.496042i	0.859540
0.701963 + 0.496042i	0.859540
-0.004548 - 0.297690i	0.297725
-0.004548 + 0.297690i	0.297725
0.212320	0.212320

No root lies outside the unit circle.

VAR satisfies the stability condition.

Appendix 2: Inverse Roots of AR Characteristic Polynomial



Cointegration Test using the Engel- Granger Test

Null Hypothesis: RESID01 has a unit root

Exogenous: Constant

Lag Length: 1 (Automatic - based on SIC, maxlag=11)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-2.433275	0.1356
Test critical values:	1% level	-3.504727	
	5% level	-2.893956	
	10% level	-2.584126	

*MacKinnon (1996) one-sided p-values.

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RESID01)

Method: Least Squares

Date: 02/05/12 Time: 15:23

Sample (adjusted): 1990Q3 2012Q4

Included observations: 90 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RESID01(-1)	-0.101383	0.041665	-2.433275	0.0170
D(RESID01(-1))	0.275054	0.074954	3.669639	0.0004
C	0.003315	0.020114	0.164793	0.8695

R-squared	0.164527	Mean dependent var	0.009887
Adjusted R-squared	0.145321	S.D. dependent var	0.205224
S.E. of regression	0.189727	Akaike info criterion	-0.453695
Sum squared resid	3.131683	Schwarz criterion	-0.370368
Log likelihood	23.41629	Hannan-Quinn criter.	-0.420093
F-statistic	8.566310	Durbin-Watson stat	1.994632
Prob(F-statistic)	0.000402		

Groundnut Production and Poverty Reduction in Buruku Local Government Area of Benue State

Joseph Fefa

Department of Economics,
Benue State University,
Makurdi-Nigeria.
josephfefa@gmail.com

+234-8060828498

Bridget Ngodoo Mile

Department of Economics,
Benue State University,
Makurdi-Nigeria.

Victor Ushahemba Ijirshar

Department of Economics,
Benue State University,
Makurdi-Nigeria.

Abstract

This paper examined groundnut production and poverty reduction in Buruku Local Government Area Benue state. Various literatures were reviewed on the effect of groundnut production on poverty reduction. Vicious cycle of poverty and unbalanced growth theory were reviewed in the study. A survey design was used to obtain cross-sectional data through questionnaires, focused group discussions (FGDs) and oral interviews. The research adopted the multistage random and purposive sampling techniques and obtained a sample size of 340. The study used descriptive statistical tools, Foster-Greer-Thorbecke (FGT) Index and logistic regression to analyze the data for this research. The study revealed that, the annual income and consumption expenditure of the respondents improved drastically during groundnut production and marketing. The logistic regression revealed that, groundnut production has significant effect on poverty reduction in Buruku Local Government Area of Benue state. The study also revealed the factors militating against groundnut production as lack of capital and extension services, poor roads, inadequate technical knowledge, Low seasonal prices and high price fluctuations, Low returns from small-scale production of groundnut among others. The study recommended that, Government and Institutions should strengthen extension services to deliver improved technologies to the farmers and farmers should source for loans through cooperatives, banks and other available sources at low charges so as to improve their capital base and a policy strategy should be adopted that eschews the long run neglect of rural infrastructural development in Benue state and Nigeria at large.

KEYWORDS: Poverty, poverty reduction, Marketing, Groundnut Production, Logistic Regression

1.1 Introduction

It is a regrettable fact that over one billion people in the world are living in extreme poverty today that depend on less than $1 per day to survive on. This is a chronic and pathetic problem facing mankind ever since humanity (Etim and Edet, 2009). It is estimated that out of the world's over 6 billion people, about 2.8 billion live on less than US $2 per day and 1.2 billion can spend less than US $1 per day. Poverty in its extreme sense is highly prevalent among the developing countries of Africa, Asia and Latin America and manifests itself in various dimensions (World Bank, 2006).

Nigeria is one of the most resource-endowed nations in the world. But unfortunately socio-economically, Nigerians are also among the poorest in the world (Etim and Edet, 2009). According to UNDP (2010; 2014) Nigeria is one of the poorest among the poor countries of the world. Nigeria's HDI value for 2012 is 0.47- in the low human development category- positioning the country at 153th out of 187 countries and territories. Between 2005 and 2012, Nigeria's HDI value increased from 0.434 to 0.471, an increase of 9 percent or average annual increase of about 1.2 percent (National Bureau Statistics, 2014).

The National Bureau of Statistics (NBS, 2008; 2014) report show that the national poverty rate in Nigeria increased from 28.1% in 1980 to 64.2% in 2013. As in many developing countries, poverty in Nigeria is mostly a rural phenomenon, as over 68% of the impoverished people live in the rural areas, where they derive their livelihood from farming. Poverty in Benue State presents a paradox, considering the vast human and physical resources that the state is endowed with; it is even more disturbing given the huge human and material resources that have

been devote to poverty reduction by successive governments, apparently with limited success. Poverty reduction has continued to occupy a centre stage in the development agenda of various nations all over the world. The strategies for poverty reduction have however been greatly dependent upon the perceived extent and level of poverty, the vision for its reduction, and the available human and material resources at the disposal of each country.

There is however, a wide consent that agriculture plays a major role in economic development and poverty reduction. Agriculture can contribute to economic growth through different channels such as provision of food and employment (Ranis et al; 1990). Agriculture has the highest contribution to the Nigerian gross earnings which has been rising from 30% in 2009 and 37.9% in 2013, respectively (NBS, 2014). A larger population of Nigeria depends on agriculture for subsistence farming, through the production of crops such as cereals, Vegetable and fruits. According to Ekpebu (2002), about 80 percent of the population is directly involved in agriculture, producing varieties of food and cash crops like yam, cassava, rice, groundnut, beniseed, soybeans, citrus among others. Groundnut is produced, consumed and marketed in Benue state and the neighboring states.

Groundnut (Arachis Hypogaea) is one of the dominant crops in Nigeria that enable most small-farm holders to earn both food and income. It is one of the biggest sources of fats, protein, carbohydrates and vitamins for human consumption and also as animal's feeds. Its nutritional values help in developing one's health, which is one of the major determinants of economic growth of a nation (Akobunde, 1998) as cited in Etim and Edet (2009). Groundnut is thus, considered beneficial to Nigeria because of its potential to providing employment, food for consumption and to a larger extent serving as a remedy for poverty reduction in the study area.

There is no doubt that groundnut is produced in Buruku L.G.A of Benue state. But there is dearth of information about the extent of opportunities for enhanced income generation and employment creation that groundnut production provides.

It is against this background that, the paper seeks to investigate the effects of groundnut production on poverty reduction in Buruku local government of Benue state. The paper seeks specifically to:

i. investigate whether groundnut production contribute to income generation in Buruku local government area of Benue state

ii. examine the extent to which groundnut production has reduced poverty in Buruku local government area of Benue state

iii. identify the constraints on groundnut production in Buruku local government area of Benue state

1.2 Research Hypothesis

Ho: Groundnut production has no significant effect on poverty reduction in Buruku local government of Benue state.

2.0 Conceptual Framework

2.1 Poverty and Poverty Reduction

In the words of Aboyade (1995) as cited in Fefa (2012), "Poverty is like an elephant, it is more easily recognized than defined". But as Anyanwu (1997) point out that any study of poverty must begin with a definition of poverty in order to provide a focus by which one can determine the limits of understanding. The World Bank (2000) defined poverty as a condition

of life degraded by diseases, deprivation and squalor. On the other hand, the essence of poverty, in relative terms, is "inequality". Rocha (1998) however notes that the persistence of chronic deprivation of basic needs nowadays makes absolute poverty the obvious priority in terms of definition, measurement, and political action from the international point of view. According to Chamber (1997) as cited in Abaluk (2012), poverty embraces physical weakness, material poverty, vulnerability, powerlessness, spiritual poverty and isolation. By physical weakness is meant lack of strength, poor health, inadequate nutrition and too many dependents.

The concept of poverty reduction, poverty eradiation and poverty alleviation are most times used interchangeably to mean the same. Poverty reduction according to Vanderschueren (1996), refers to as a situation where specific manifestation of poverty are systematically reduce resulting in a short and long term condition. According to Evbuomwan (2006) the overriding objectives of government poverty reduction policy is to broaden the opportunities available to the poor and ensure that every citizen has access to basic needs of life; food, services, and nutrition, basic education and communication''

2.2 Groundnut Production

Groundnut (*Archis hypogaea L.*) is an important annual legume in the world; it is mainly grown for oilseed, food, and animal feed. It is the chief crop rotation component in many Sub Saharan countries (Pande *et al*., 2003).

According to Taru *et al.* (2008) groundnut requires 500 mm to 1 600 mm of rainfall, which may last for 70 to 200 days of a single rainy season. Groundnut also requires well-drained

light coloured loosed friable sandy loam soil, with optimum moisture in pod-zone and mean daily temperature of about 30°. Rainfall should be well distributed during pre-sowing operations, that is, 100 mm to 150 mm for sowing, and for flowering and pod-development the required rainfall is about 400 mm –500 mm. Groundnut cannot withstand frost longer, as it can do for severe drought or water stagnation. However, the crop does best in sandy-loam and loamy soils, and in black soils with good drainage. Heavy and sticky clays are not suitable for groundnut cultivation because the pod development is hampered in these soils.

Groundnut is one of the most popular and universal crops cultivated in more than 100 countries in six continents. It is grown in 25.2 million hectares of land with a total production of 35.9 million metric tons. It is the 13th most important crop and the 4th most important oilseed crop of the world.

2.3 Theoretical Framework

2.3.1 The Vicious Circle of Poverty

The vicious circle of poverty was propounded by Ragnar Nurkse (1953). The theory emphasized the link between lack of capital and underdevelopment. The basis of vicious circle stem from the fact that total productivity is low due to deficiency of capital, market imperfections, economic backwardness and underdevelopment. This study emphasized that Buruku poverty is linked to a circular constellation of forces that emanate from both the demand side and the supply side. On the demand side, it is obvious that people are poor with low level of income. The low level of real income leads to a low level of demand by the people. This in turn leads to a low rate of investment and hence back to deficiency of capital, low productivity

and low income, low productivity is thus reflected in low real income. On the supply side the low level of real income makes the people saving to be low. The low level of savings leads to a low investment by people and to deficiency of capital, in turn, contains the capability of the people to produce high, leading to a low level of productivity and back to low income. In this way, the people remain stagnated and are occasioned by the vicious bond of poverty to act poor, remain poor, think poor and so the vicious circle of poverty continues.

The vicious circle of poverty presupposes that poverty is a serious human problem. It is a curse as it is self-perpetuating and if not checked can spread fast and wide to assume an inter-generational dimension. It must therefore be tackled. Human survival is precipitated on some basic needs such as food, shelter, clothing, water, air and health. These needs constantly beg for attention in the face of poverty. To this end many Nigerians have taken their destinies into their hands to go out, work hard and earn a living for themselves in order to meet their basic needs and those of their relations. Armed with this knowledge, either consciously or unconsciously, many people in Buruku Local Government Area are engaged in groundnut production and marketing. They work hard to meet their needs and those of their relations and possibly break out of the vicious circle of poverty.

2.3.2 The Unbalanced Growth Theory

The concept of 'unbalanced growth' theory was popularized by Hirschman. The tenet of the theory upholds that there should be a deliberate unbalancing of the economy, according to a pre-designed strategy, which is the best to way achieve economic growth in an underdeveloped country. According to Hirschman (1953), investments in strategically selected industries or

sectors of the economy will lead to new investment opportunities and so pave the way for further economic development. He maintains that development has of course proceeded in this way, with growth being communicated from the leading sectors of the economy to the followers, from one industry to another, from one firm to another" He regards development as a "chain of disequilibria" that must keep alive rather than eliminate the disequilibria, of which profits and losses are symptoms in a competitive economy. If the economy is to be kept moving ahead, the task of development policy is to maintain tensions, disproportions and disequilibria.

Hirschman (1953) sums up his "Strategy of Economic Development" in these words, "Economic development typically follows a path of uneven growth; that balance is restored as a result of pressure, incentives, and compulsions; that the efficient path towards economic development is apt to be somewhat disorderly and that it will be strewn with bottlenecks and shortages of skills, facilities, services, and products; that industrial development will proceed largely through backward linkage, that is, will work its way from the 'last touches' to intermediate and basic industry". Groundnut production and marketing are agro-allied activities with significant backward and forward linkages to enhance income generation and employment creation capable of breaking the vicious circle of poverty in the study area.

2.3.3 The Basic Development Needs Theory

> *The rich people are not sick because they can afford good houses, clean water, food and health care necessary to avoid disease. But living in poverty, how can we afford to avoid disease?*(Statement of a poor farmer from Sudan, cited in Sheikh, 2000:766).

Under the *International classification of disease* "absolute poverty is categorized as a disease."(WHO, 1992). The poor lack the basic needs to lead the quality of life that is devoid of disease. In addition to ill health among the poor, there exists a persistent combination of unemployment and underdevelopment, economic poverty, a low level of education, poor housing

, malnutrition, gender sensitivity, social apathy and a lack of the will and initiatives to make changes for the better.

The basic needs theory aims at collectively addressing all determinants of health through integrated socioeconomic development of both men and women. See Figure 1.

Figure1: Components of Basic Development Needs and their Synergistic effects on quality of life. **Source**: Adapted from Sheik, 2000.

The basic needs theory stipulates that for the quality of life to improve, there must be implementation of strategies that facilitate the access of local communities to social services, appropriate technologies, information and financial credit with the explicit aim of promoting fair distribution of resources to achieve equity at the grassroots level.

Groundnut production is a rural farm activity that is aimed at accessing income with the possibility of translating it into a basis for improving the quality of life through further access to food, water, education, security, communication, health and shelter among others as specified

Figure 1. Once achieved, the quality of life is improved and the vicious circle of poverty could be broken.

2.4 Assessment of Poverty Reduction Strategies in Nigeria

Efforts at improving the rural areas of Nigeria predated the independence of the country in 1960. The major efforts made in pre-independence and the early days of independent Nigeria according to Omale and Molem (2003) were in the area of farm settlement schemes. The aim of these farm settlements was to bring scattered small communities together so that they could take advantage of economies of scale in farm inputs, agro services, marketing, etc. These schemes recorded little or no achievement because the target beneficiaries were not involved at the planning stages. Since then, a number of government programmes have been put in place to improve basic services, infrastructure and housing facilities for the rural population, extending access to credit and farm inputs, and creating employment.

Ilori (1999) categorized rural poverty-related programmes into three: development programmes, palliative measures popularly known as the Social Dimension of Adjustment (SDA), and the sector-specific poverty related programmes. Examples of development programmes are: rural electrification schemes; rural banking scheme; and Operation Feed the Nation (OFN), later re-named Green Revolution. Palliative measures include programmes such as the Directorate of Food, Roads and Rural Infrastructure (DFRRI), the National Directorate of Employment (NDE), Family Support Programme (FSP) the National Agricultural Land Development Programme (NALDA), NEEDS, SURE-P, as well as micro credit schemes such as Peoples Bank, and Community Bank

among others. All the programmes put together were meant to provide a catalytic impetus for the take-off and subsequent advancement of the rural areas towards:

a) Linking them to the national and international economic systems;

b) Increasing rural household income;

c) Providing basic socio-economic and physical infrastructure;

d) Efficient resource allocation to shift attention and interest of the private sector towards investment in rural areas to enhance rural development; and,

e) Enhancing rural welfare.

2.5 Empirical Literature

Taphee and Jongur (2014) carried out a study on the Productivity and Efficiency of Groundnut Farming in Northern Taraba State. The objectives of the study were to determine the technical efficiency of groundnut farmers, analyse the influence of some socio-economic characteristics of farmers on technical efficiency. Data were collected with the aid of structured questionnaire administered to 150 randomly selected farmers in the study area. Data generated from the questionnaire were analysed using Stochastic Frontier Production Function. The study revealed that the variance of parameters gamma (γ) and sigma-squared (δ^2) of the frontier production function were statistically significant at 1 percent level of significance. The coefficients of seed and fertilizer were positive and significant at 10 percent level of significance, while farm size and family labour were statistically significant at 1 percent respectively. Mean technical efficiency index was 0.97, while minimum and maximum technical efficiency were 0.63 and 0.99 respectively.

Katundu, Mhina, Mbaiyererwa and Kumburu (2014) carried out a research in Tabora region on the limitation to the production of groundnut in the area. Their major objective to the study was to identify the key factors that are naturally agronomic, and are potentially contributed to limited agriculture expansion of the crop amongst smallholder producers in the area. A multivariable regression analysis was adopted so as to both identify and quality such potential caused factors; whereas, the chi-square test was used to compare levels of smallholder income received from government production over the previously past three years harvest seasons. The sample size for the study comprised about 400 farmers for both groundnut producers and non-producers. A semi-structured questionnaire for the focus group discussion (FGD) was used to solicit data on qualitative aspects of the study, and a statistical package for social science (SPSS) was used for estimation of the data. The study results suggest that lack of markets, capital, low price, inadequate extension services including lack of credit facilities were major constraints, additionally, the cultivated land size, was identified as another important factor in determining groundnut production. Very few respondents reported pest and diseases as major constraints in groundnut farming. Basically, the overall contribution of groundnut production on household's income was significant.

Baba, Dabai, Senchiand and Umar (2013) examined Groundnut production and its capability to provide employment and increase the income level of farmers in Nigeria. The study evaluated cost and returns of groundnut production in Zuru Local Government Area of Kebbi State, Nigeria. Specifically, it estimated the profitability and constraints involved in Groundnut production. Simple random sampling technique was used to select 100 Groundnut producers between April and July 2013. A well-structured questionnaire was used to obtain information on input-output data and other relevant variables. Descriptive statistics was used to analyse data on socio-economic characteristics of respondents and constraints involved in groundnut production, while farm budgeting technique was employed in order to determine the profitability of groundnut production in the study area. The result revealed that variable cost constituted 49.84%

of the total cost of groundnut production in the study area, while the fixed cost constituted 50.16%. However, the average total cost of production was ₦121, 471.30, the average total revenue was ₦267, 095.60, gross margin was ₦206, 555.60 and the net income was ₦145, 624.30 indicating that groundnut production was profitable. The problems encountered include transportation problem, price fluctuation, poor storage facilities, lack of organised market and lack of capital among others. The study therefore recommended that, farmers should be encouraged to form cooperatives so as to access credit easily and avoid unnecessary exploitation of middlemen in the study area.

3.0 Methodology

3.1 Study Area

The research covered Buruku Local government area of Benue State. The local government was created in 1991 out of Gboko local government area was once existed in 1982 as Ambighir local government area but was phased out among numerous other local governments created by the 2nd republic. The local government was named in honour of late Pa Buruku Akeji, who established a market in his home. It was created and named the local government headquarter. The local government area is bounded by Logo local government area by the East, Gboko local government area by the West, Ushongo local government area by the south, Guma local government area by the North respectively. Administratively, the local government is divided into two (2) major constituencies with Thirteen (13) council wards which include; Binev, Mbaikyongo, Mbaatirkyaa, Mbaapen, Mbaya, Mbaikyaan, Mbayaka, Ishorov, Mbaade, Mbaazagee, Mbaakula, Mbatyough and Etulo. It has the projected population of 203,721 and population density of about 285 per square mile. Buruku local government lies in the open grass land Savannah vegetation of Northern Nigeria. The local government is purely

agrarian with no single industry. The soil produces conducive atmosphere for the growth of economic trees and other food crops such as; organs, mangoes, cashew, yam, groundnut, maize, etc. It also provides in large commercial quantities cereals crops such as rice, guinea corn and soya beans.

3.2 Study Design

The study adopted a survey design (quasi-experimental design) technique via a cross-sectional approach that involves field and sample surveys. The study adopted purposive and random sampling techniques in order to select households that produces groundnut in the study area. The study covered only those participating in groundnut production in the study area. A pre-survey of the area shows that, groundnut producers are the same as marketers, therefore, out of the total population of about 203,721 (2006 census figure) only 340 persons were sampled.

Data were collected through an open-ended and structured questionnaire, personal observations and Focused group discussion (FGDs), because the study was aimed at eliciting both qualitative and quantitative information pertaining the effect of groundnut production in the study area.

3.3 Method of Data Analysis

Data was analysed using descriptive statistics and logit regression analysis. Descriptive statistics including, tables, percentages, Foster-Greer-Thorbecke (FGT) Index and means were used to analyse the socio-economic characteristics of the respondents. The study also made use of multivariate logit regression model to test hypothesis using maximum likelihood estimation procedure, while the Hosmer-Lemeshow test was used in testing for goodness of fit of the model

3.4 Model Specification

A Multivariate logit regression is used when the dependent variable in question is nominal, in logit model, the dependent variable is a dummy, or a nominal variable, with (1) representing household as poor and (0) if the household is not poor (Imran et al 2006).

The parameters are estimated by maximum likelihood, with the likelihood function formed by assuming independence over the observations, thus, the model for this study is structurally stated as:

$P(y) = \frac{e}{1+e}$ …….. 1

If y measure poverty status, y might be poor (1) or non-poor (0), by taking natural logs and simplifying equation (1), the log likelihood transforms the structural equation to:

$InY_i log = \frac{p_i}{1-pi} = B_o + \sum_{j=1} B_K X_{Ki} + u_i$ --------2

Where

In Y_i = natural log of Y (Poverty status)

X_{ki} = A set of house hood socio- economic characteristics

B_k = Parameters

U_i = Random disturbance

From the specified model (2), the model is stated implicitly as

PTY=f(QTYG,FMLS,ACMT,LEED,FMEX,HSTA,TECH,NMH,PRST,LNDF,INCOME)…3

Where

PTY = dependent variable (poverty status)

Calculate as

Pty= Average annual income of household from groundnut production

Total number of days in a year (356)

If the poverty status was less than $1^1/_2$ USA dollar, it means, the household is poor in which case, (1) will be assigned, and if it is $1^1/_2$ USA dollar or above, it therefore means, the household is non-poor, in which case (0) will be assigned

QTYG = Quantity of groundnut produced in bags (50kg)

FMLS = Family size

ACMT = Accessibility to the market, (1) will be assigned if the respondent has every access and (0) if other wise

LEED = Level of education of respondent (1) if respondent attains secondary school and above, (0) if otherwise

FMEX = Farming experience (1) if the respondent has farming experience of about 3 years and above, and (0) if otherwise

HSTA = Health status of the respondent, (1) if healthy and (0) if otherwise

TECH = Technology (1) if used mechanized or modern system and (0) if otherwise

NMHC = Number of hectares cultivated per annum

PRST = Price stability of the product (1) if stable in the marketed area, and (0) if otherwise

LNDF = Land fertility (1) if fertile land is used and (0) if otherwise.

Thus, the specific form of the model become

INCOME = Income of the Household from Marketing of groundnut Products

B_1-B_{11} = Parameters

Stochastically as:

$$PTY = Bo+B_1QTYG,+B_2FMLS+B_3ACMT,+B_4LEED+B_5FMEX,+B_6HSTA +B_7TECH,+B_8NMHC+B_9PRST,+B_{10}LNDF+B_{11}INCOME+U_i \ldots.(4)$$

Where

Bo = Intercept of the model

Ui = a random disturbance

In this study, B_1, B_3-B_{11} are expected to be negatively signed, implying that, these parameters will reduce the probability of households studied being a absolute poverty. This indicates that, the parameters have inverse relationship with PTY and this is because, groundnut production is capable of increasing the income, education, health, fertility of land, markets, technology which implies that absolute poverty of a respondent will reduce while B_2 is expected to be positively signed.

3.5 Decision Rule

The likelihood ratio (LR) statistic will be used to test the null hypothesis to ascertain if all the slope coefficients are simultaneously equal to zero (ie $B_1=B_2=B_3=B_4=B_5=B_6=B_7=B_8=B_9=B_{10}=B_{11}=0$). Therefore, if the likelihood ratio statistic value is greater than it's p value, the null hypothesis will be rejected and the alternative accepted, that not all B's are equal to zero. Also, any McFadden R-squared (Pseudo-R-Squared Adjusted or Proxy R- Squared) level greater than 0.50 (50%) will suggest a strong relationship between the dependent variable (P) and the predictor variables (the X's). Any probability value of the coefficient greater than or equal to a = 0.05 will also imply that the variable is statistically

4.0 Data Presentation and Analysis

4.1 The Impact of Groundnut Production on Income Generation

Below is the examination of the effect of groundnut production on income generation among sampled farmers in the study area. Taking income as a continuous variable, the class boundaries were set as shown in Table 1.

Table 1: Distribution of the respondents by annual Income before and during groundnut production

	Before Groundnut production		During Groundnut production	
Amount (N)	Frequency	Percentage	Frequency	Percentage
≤ 100,000	194	57	24	7
100,000 - 200,000	69	20.3	55	16.2
200,000- 300,000	56	16.5	86	25.3
300,000 and above	21	6.2	175	51.5
Total	340	100	340	100

Source: Field Survey, 2014.

Table 1 showed the annual income of the sampled respondents before and during groundnut production. It is evident from the table that majority (57%) of the respondents have

annual income of less than or equal to N100 000 before they started producing groundnut; 20.3% of the respondents have annual income of between N100 000 and N200 000; 16.5% of the respondents have annual income of between N200 000 and N300 000 while the remaining 6.2% of the respondents have annual income of above N300 000 before groundnut production. During groundnut production however, the annual income of the sampled respondents showed significant improvement. This indicates that 51.5% of the sampled respondents have annual income of above N300 000 as compared to the 6.2% when the respondents had not started producing groundnut. The percentage of those who have annual income of between N200 000 and N300 000 rose from 16.5% to 25.3% while the percentage of those with annual income of below N200,000 has reduced during groundnut production which indicate an increase in the annual income of the respondents after engaging in the farming/production of groundnut.

4.2 The Impact of Groundnut Production on Annual Consumption Expenditure

Data on the impact of groundnut production on the annual consumption expenditure were collected and are presented in Table 2.

Table 2: Distribution of the sampled respondents by the annual consumption expenditure before and during Groundnut Production

	Before Groundnut Production		During Groundnut Production	
Amount (N)	Frequency	Percentage	Frequency	Percentage
≤ 50,000	188	55.3	11	3.2
50,000 - 100,000	84	24.7	49	14.4
100,000- 150,000	64	18.8	86	25.3
150,000 and above	4	1.2	194	57.1

Total	340	100	340	100

Source: Field Survey, 2014.

Table 2 revealed that 55.3% of the sampled respondents were spending less than or equal to N50, 000 on consumption annually before groundnut production. 24.7% of the respondents were also spending between N50 000 – N100 000 on consumption expenditure. More so, 18.8% of the respondents were also spending between N100 000 – N150 000 on consumption expenditure while the remaining 1.2% spent above N150 000 spent on consumption expenditure before groundnut production. However, during groundnut production, consumption expenditure significantly improved. Only 3.2% as against the 55.3% spends below N50 000 on consumption expenditure. 14.4% of the respondents spend between N50 000 -100,000 on consumption expenditure as against 24.7% when they had not started groundnut production. 25.3% and 57.1% of the respondents spend between N100 000-150 000 and N150 000 and above on annual consumption expenditure respectively. The drastic improvement in the amount spent on consumption expenditure is as a result of the proceeds from groundnut production. This implies that households that are involved in this enterprise fare better in terms of accessing basic needs.

4.3 Determination of Poverty Status of the Sampled Respondents

In determining the poverty status of the sampled respondents, the poverty line of US$1.5 per day was used to estimate the respondents' status before and when involved in groundnut production. The estimates were further used to classify the respondents into poor or non-poor category. Two major ways were used in arriving at these categorizations:

(a) A moderate poverty line equivalent of $^{2}/_{3}$ of the mean income per year.

(b) A core poverty line equivalent of $^1/_3$ of the mean income per year.

Three mutually exclusive groups emerged, separated by the lines as core poor, moderate poor or non-poor (Fefa, 2012; Akighir, 2011; Yusuf, et al. 2008). Using this criterion and the Foster-Greer-Thorbecke (FGT) index, the different dimensions and incidence of poverty, $P_{o,}\ P_{1,}\ P_2$ were calculated and the results presented in the Table 3.

Table 3: Distribution of sampled respondents by their poverty indices before and during Groundnut Production

Index	Before Groundnut Production	During Groundnut Production
(i) Total Average Annual Income	₦19,800,000	₦67,654,000
Mean Average Annual Income	₦159064.44	₦45154.65
$^2/_3$ Mean Income	₦12224.32	₦43122.36
$^1/_3$ Mean Income	₦54764.34	₦164765.43
(ii) Headcount Index (P_0)		
Core Poor	0.52 (52%)	0.22 (22%)
Moderate Poor	0.31 (31%)	0.34 (34%)
Non-Poor	0.17 (17%)	0.44 (44%)
(iii) Poverty Gap Index (P_1)		
Core Poor	0.53	0.21
Moderate Poor	0.34	0.13
(iv) Severity of Poverty (P_2)	0.48	0.18
(v) Gini Coefficient	0.41	0.07

Source: Authors' Computation

Table 3 showed poverty lines of the respondents before and after during groundnut production. The table showed respondents estimates on total average annual income, mean average income (2/3 and 1/3 mean income), headcount index (P_0), poverty gap index (P_1) and the severity of poverty (P_2) and the Gini coefficient for both periods. An upper poverty line of ₦12224.32 implied that, a respondent with an average annual income greater or equal to ₦12224.32 before groundnut production was considered to be non-poor or rich and any

respondent with an average annual income below the amount but greater or equal to ₦54764.34 was considered moderately poor. While a respondent with an annual income of below ₦54764.34 was considered extremely or core poor. Therefore, the total percentage of poor respondents before groundnut production is 83% in the ratio of 52:31 percent for core poor and moderate poor respectively while 24% of the respondents were non poor even before groundnut production. Similarly, during groundnut production, an upper poverty line of ₦43122.36 separated poor respondents from the non-poor respondents while the minimum poverty line of the respondents during groundnut production shifted to ₦164765.43 implying that, any respondent whose annual income fell below the amount was considered core poor hence, the percentage of poor respondents during groundnut production dropped to 56% in the ratio of 11:17 percent for core poor and moderate poor respectively. This analysis points to the fact that, groundnut production has reduced the poverty level of the sampled respondents in the study area.

Therefore, groundnut production has the potentials of not only reducing the incidence of poverty but also reducing the intensity of the poverty in the study area.

The severity of poverty (P_2) index which in addition to the distance of the poverty line measures the variation in the distribution of welfare among the poor for the both periods thus severity index for the period before groundnut production was more severe (0.48) than one for the groundnut production era (0.18). This implied that the respondents are better-off after during groundnut production than not.

The degree of the inequality of income among the respondents for both periods is further validated by the Gini coefficient which showed that before the respondents started producing groundnut, there was a high level of income inequality (0.41) but again, the magnitude of the

inequality was reduced to 0.07 during groundnut production. This suggests that the income of the respondents during groundnut production do not significantly diverge from one another. This is in line with the findings of Ali and Thorbecke (2000), which revealed that reducing inequality has a larger positive impact on poverty than it does to growth.

4.4 The impact of Groundnut Production and Marketing on Poverty Reduction

To effectively capture the extent of the response of the dependent variable (Poverty status) to the activities of groundnut producers, the study estimated the logistic regression result is presented below;

Table 4: Logistic Regression Results of the Model

Dependent Variable: PTY

Variable	Coefficient	Std. Error	z-Statistic	Prob.
QTYG	-1.101706	0.462106	-2.384098	0.0245
FMLS	2.230310	0.442869	5.036035	0.0011
ACMT	-1.298064	0.322928	-4.019670	0.0047
LEED	-0.102921	0.024505	-4.192097	0.0045
FMEX	-0.917580	0.371644	-2.468967	0.0219
HSTA	-0.134131	0.026699	-5.023933	0.0016
TECH	-0.875022	0.282854	3.093546	0.2000
NMHC	-0.096627	0.040418	-2.390692	0.0259
PRST	-0.704502	0.221906	-3.174776	0.0073
LNDF	-0.417350	0.131960	-3.162685	0.0073
INCOME	-0.750622	0.235854	3.182571	0.0200
C	1.993774	0.507138	3.931423	0.0079

McFadden R^2 = 0.93 LR stat. = 397.922 Prob(LR stat. = 0.0007)

S.E of regression = 0.34

Source: Eview7 output.

The logit regression in Table 4 above indicated that, all the explanatory variables were correctly signed and statistically significant at 5% alpha level. A change in quantity of groundnut produced (X1), accessibility to the market (X3), Level of education (X4), Farming experience (X5), Health status (X6), technology used (X7), number of hectares cultivated (X8), price stability of the product (X9), land fertility (X10) and income (X11) of the respondents have negative impact on the respondent's poverty status. That is, a unit change in each of these variables would partially reduce poverty by 1.102, 1.298, 0.103, 0.875, 0.918, 0.134, 0.097, 0.705, 0.417and 0.7506 units respectively. On the other hand, the logit result showed that, family size (X2) exerted positive impact on the poverty status of the respondents by 2.23.

All the standard errors of the individual variables are minimum thereby producing high z-statistic and below 0.05 probability values which indicate that, all the variables are statistically significant at 5% level of alpha. The McFadden R^2 of 0.93 implied that, all explanatory variables included in the model explained total variations in the dependent variable (Poverty status) by 93%. The LR stat. of 397.922 coupled with prob(stat.) of 0.0007indicated the reliability of the explanatory variables with regards to the dependent variable and the minimum value of the standard error of regression proved the robustness of the model.

The Hosmer-Lemeshow Test is used extensively to assess the fit of the logistic regression model. The Hosmer-Lemeshow tests the fact that there is a linear relationship between the predictor variables and log odds of the criterion variable. Cases are arranged in order by their predicted probability on the criterion variable. These ordered cases are then divided into ten groups. Each of these groups is then divided into two groups on the basis of actual score on the criterion variable. Expected frequencies are computed based on the assumptions that there is a

linear relationship between the weighted combination of the predictor variables and the log odds of the criterion variable. The goodness of fit evaluation for binary specification using Andrews and Hosmer-Lemeshow tests shows 0.1737 and 155.2068 respectively.

Decision: Since the prob(LR statistic) 0.0002 is less than the 0.05 critical value, we reject the null hypothesis in favour of the alternative and conclude that; groundnut production has significant effect on poverty reduction in Buruku Local Government Area of Benue State.

4.5: The Constraints on Groundnut Production and Marketing among operators in Buruku local government area

Data on the constraints on Groundnut Production and Marketing among operators in Buruku local government area were collected and are presented in Table .

Table 5: Constraints on Groundnut Production and marketing in the Study Area

Constraints on Groundnut Production and marketing	Percentage(No of Respondents)
1. Lack of capital and extension services	98.2% (334)
2. Poor access roads in transporting groundnut products to market centres.	89.1% (303)
3. Inadequate technical knowledge in the use of improved production technologies.	79.4% (270)
4. Low seasonal prices and high price fluctuations of the groundnut products.	90.3% (307)
5. Low returns from small-scale production of groundnut.	67.1% (228)

Source: Authors' Computation

Table 5 shows five constraints on agricultural production in Buruku L.G.A. The last column shows the proportion of the respondents who have mentioned the constraints. The most frequently cited challenges are lack of capital and extension services (98.2%) and low seasonal prices and high price fluctuations of the groundnut products (90.3%).

5.0 Conclusion and Recommendations

By rejecting the null hypothesis in favour of the alternative hypothesis, the study concluded that; groundnut production and marketing has reduced poverty in Buruku Local Government Area of Benue State and it has the potentials for income generation for poverty to be further reduced among operators by continuous participation in the enterprise. Therefore, we can conclude that groundnut production and marketing in the study area could be seen as poverty alleviating farm activity in Buruku local government area of Benue State, Nigeria. Based on the findings, the study made the following recommendations

1. Government and institutions should strengthen extension services to deliver improved technologies to the farmers.
2. Farmers should source for loans through cooperatives, banks and other available sources at low charges so as to improve their capital base in the production of groundnut.
3. Subsidies should be paid for groundnut products to producers and price floors should be set for the products to make the prices very attractive. This would tend to make the activity itself quite attractive and more profitable and will generate more income for producers and create more employment opportunities.
4. Lack of rural roads impedes marketing of agricultural commodities generally, and groundnut products in particular, and this prevents producers from selling their products at reasonable prices, due to high cost of transportation. Limited accessibility cuts small-scale producers off from sources of equipment and new technology and this keeps production low. A policy strategy should be adopted that eschews the long term neglect of rural infrastructural development in Nigeria, and Benue State in particular, so that easy accessibility of producers to markets would tend not only to increase profitability, but also, attract others to join the enterprise and rural poverty would be reduced.

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REFERENCES

Abaluk, A.K. (2012) "Microfinance a means to poverty alleviation: a case of Masara N'ariziki farmers Association . Thesis/Dissertations

Angelista, K. (2011) An analysis of Technology and management Gaps for Groundnut producers in Kenya . Msc. Thesis, University Connecticut

Anyanwu, J. C. (1997). "Poverty: Concepts Measurement and Determinants". NES Conference of Poverty Alleviation in Nigeria, Department of Economics, University of Ibadan, Ibadan.

Anyanwu, J.C. (1997). "Poverty in Nigeria: Concepts, measurements and Determinants" Selected papers from Nigerian Economic society's annual conference.

Apata, T.G, Apata, O.M, Igbalajobi, O.A, and Awoniyim S.M.O(2010)Determinants of Rural poverty in Nigeria. *Journal of Science & Technology education Research.* Vol. 1(4) pp 85-91.

Baba, J.S., Dabai, D. B., Senchiand, A. and Umar, F. (2013). "Cost and Returns of Groundnut Production in Zuru Local Government Area of Kebbi State, Nigeria", *Advances in Agriculture, Sciences and Engineering* Vol 3 No 11

Barbier, E.B. (2000). "Linkages between rural poverty and land Degradation, Some evidence from Africa". *Agricultural Ecosystem Environment*.

Colliers, A.J. (2003) "Groundnut production concise Guide.

D'Silva, E. and Bysmonth, K. (1992). "Poverty alleviation through Agricultural projects" Economics development Institute of the World Bank policy seminar-Report No. 30

Ekpebu, D. (2003). "The Trend in Cassava and Yam Production in Benue State, Nigeria". *Journal of Economic and Social Research*, Vol. 1, No. 2.

Englama, D. (1997). Measurement issues in poverty selected papers from the Nigerian economic society's Annual Conference.

Etim, N. A and Edet, G. E (2009) "Comparison of Poverty Among Peri-Urban Farming Households in Uyo, Nigeria" *Nigerian Journal of Agricultural, Food and Environment* 5(1):38-43

Evboumwam, G.O (1997) "Poverty as a social issues: A theoretical Note in Nigerian poverty", in Teriba(ed), the Nigerian Economic society, Ibadan.

Fefa, J. (2012) Processing and Marketing of Cassava and Poverty Reduction in Benue State, (Unpublished Masters Dissertation), Department of Economics, Benue State University Makurdi

Gore, C (2002) Globalization, the International poverty Trap and Chronic poverty in the least Developed Countries.

Hirschman, A. O. (1953). "The Strategy of Economic Development", 1st Edition, New Haven.

Hulme, D and Mosley, P (1996) Finance Against poverty Journal Vol. 1, London, Rout ledge.

Idinoba M. E, Idinoba P. A, Gbadegesin A, and Jagtapss (2008). "Growth and evapotranspiration of groundnut (Arachis hypogaea) in a transitional humid zone of Nigeria." *Journal of Agricultural Research*. Vol 3(5), 384-388.

Jhingan M.L (2007) Economics of Development and Planning, 35th New Delhi ; Vrinda publications Ltd.

John Okokoh Shiyam(2010) "Growth and yield Response of Groundnut (Arachis hypogaea) to plant Densities and phosphorus on an ultisol in Southeastern Nigeria. *Libyan Agriculture Research center journal International* 1(4):211-214

Kassie, M., Shiferaw, B. and Muricho, G. (2010) "Adoption and Impart of Improved Groundnut Varieties on Rural poverty : Evidence from Rural Uganda.

Katundu, Mhina, Mbeiyererwa and Kumburu (2014) "Socio-economic factors limiting smallholders of Groundnut production in Tabora Region" Research Report 14/1; Dar es Salaam REPOA

National Bureau of Statistics (NBS)(2005). Poverty Profile for Nigeria. Nigerian Bureau of Statistics. Abuja, Nigeria.

National Bureau of Statistics (NBS)(2008). Poverty Profile for Nigeria.

National Bureau of Statistics (NBS)(2008;2014) Poverty Profile for Nigeria.

National Bureau of Statistics (NBS)(2014). Poverty Profile for Nigeria.

Nguyen, V. C. (2010) "Does Agriculture Help poverty and Inequality Reduction? Evidence from Vietnam. *Agricultural Economic review*.

Nurkse, R. (1953). Problems of Capital Formation in Underdeveloped Countries. Oxford: Blackwell.

Omotola, J.S. (2008) Combating poverty for sustainable Human development in Nigeria. Journal of poverty 12(4) 496-517.

Research on poverty alleviation(2012) "Agronomic Factors limiting Groundnut production: A case of smallholder farming in Tabora Region. At 17th Annual Research Workshop.

Rocha, S. (1998). "On Statistical Mapping of Poverty: Social Reality, Concepts and Measurement". Background Paper prepared for the Expert Group Meeting on Poverty Statistics, Santiago, Chile, May 9.

Sheikh, M. R. (2000). Basic development needs approach in the Eastern Mediterranean Region: from theory to practice, *La Revue de Sante de la Mediterranee Orientale*, 6(*4*), 766-774.

Singh, F. and Oswalt, D.L. (1995). Groundnut production practices. *International crops Research Institute for the semi-Arid Tropics.*

Tanu, V. B., Kyaga, I. Z, and Mshelia, S. I (2010). "Profitability of groundnut production in Michika Local government area of Adamawa state, Nigeria. *Journal of Agric. Sc.* Vol 1(1) 25-29

Taphee and Jongur (2014) "Productivity and Efficiency of Groundnut Farming in Northern Taraba State, Nigeria" *Journal of Agriculture and Sustainability* Vol 5 No 1:45-56

Umaru A, and Zubairu A. A (2012). "An Empirical Analysis of the contribution of Agriculture and Petroleum sector to the growth and development of the Nigeria Economy from 1960-2010" International Journal of soc. Sci edu.

UNDP (2010). "Human Development Report Nigeria 2008-2009. Achieving Growth with Equity". United Nations Development Programme.

UNDP (2014). "Human Development Report Nigeria. Achieving Growth with Equity". United Nations Development Programme.

Vanderschueren (1996) "Policy Programme Options for Urban Poverty Reduction. Second editions.

World Bank (2000). "Poverty and Welfare in Nigeria" in Collaboration with Federal Office of Statistics and National Population Commission, Nigeria. Lagos: Impact Press.

World Bank (2000). Poverty in the Age of Globalization. Washington DC.

World Bank (2006). World Development Report: Agriculture for Development, Washington, D. C.

World Bank Report (2000/2001). Attacking Poverty. New York: Oxford University Press Inc.

World Health Organization (1992). *International Statistical Classification of diseases and related health problems*, 10th rev. Geneva.

Youdeowei.A, Ezedinma F.O & Onazi, O.C(1986) "Introduction to Tropical Agricultural science.

CORRUPTION AND NIGERIA'S SOCIO-POLITICAL ECONOMY:

IMPLICATIONS FOR ECONOMIC DEVELOPMENT

AMEH EMMANUEL OCHEJENI
Department of Economics,
College of Advanced and Professional Studies, Makurdi,
Benue State, Nigeria
GSM No: 07064928471; 08082278632

Abstract

This paper examines corruption in the context of Nigeria's Socio Political economy in addition, its implications for economic development. In the study, the nature and character, the causes and consequences of corruption and its implications for economic development were critically and dispassionately examined. The findings have established that there is negative relationship between corruption and economic development as the incidence of corruption has been proved to have deleterious effect on economic development. This being the case, it is advocated that corruption be seriously tackled through the institution of the principles and practice of good governance to ensure income equality, through massive increase in employment and wealth creation activities and by effecting a change in the moral values of society to ensure compliance with due processes. This is required to boost transparency and accountability in public and private transactions.

Keywords: Corruption, Economic Development, Good Governance.

Introduction

Corruption is a global phenomenon whose activities transcend all cultures, religions, traditions and political setups. It permeates the entire socio- economic and political structures of a society. This is because its incidences and effects are debilitating since they can be found in every social setup. This includes the individual, group and society. Hence, corruption is perceived to significantly and negatively impact on economic development as it hampers investment spending.

Nigeria like many other developing nations is battling with myriad of problems that are associated with corruption. Such include incessant ethnic conflicts, youth restiveness, and boundary crisis, the prevalence of deadly diseases such as tuberculosis, HI V/AIDs, Malaria, Polio and widespread poverty that is partly caused and curdled by corruption. Hence, Oseni (2008) has observed that, Nigeria. Since independence from colonial rule, has been struggling to better the lot of its citizen by instituting policies in all facets of life. This goal however is yet to be achieved due to the increasing incidences of corruption whose practice has permeated the

Nigerian family, the educational and governmental systems. This informed the decision of successive governments to frontally fight corruption to ensure that its deleterious effect on the socio — political economy is minimized.

In spite of all these, the incidence and the practice of corruption seems to be heightening as it is pervading every facet of the Nigerian society. This is evidenced in the manner in which corrupt practices are perpetrated with alarming alacrity. Thus, Zowam (2008), argued that, "Even though several attempts have been made in the media, polity and the entire Nigerian to society to stem the tide of corruption in Nigeria, its incidence is getting worse and it is pervading every facet of the Nigerian society.

This paper therefore examines the nature of corruption and its consequences for Nigeria's quest to ensure rapid and sustained economic growth to foster sustainable development. The primary objective of this study is to examine how corruption is hampering Nigeria's march towards substantially reducing her poverty in line with the targets set by the Millennium Development Goals (MDGs) by 2015. The attainment of this singular objective, it is argued, would enable her to be among the 20 leading economies of the world by the year 2020.

Conceptual Framework

Corruption and poverty are among the social evils that have plagued Nigeria since independence. It is therefore not a surprise that Nigeria as a nation that is so richly endowed with resources is ridden with these twin evils which are causing the nation to suffer widespread underdevelopment. Consequently, Oseni (2008) submits that, Corruption is slowing down Nigeria's greatness as most Nigerians have failed to perceive democracy as a means to development. Corruption therefore is perceived as a key variable that retards development. Thus, in spite of the Federal Government's effort to combat corruption, it has remained a recurring decimal in the nation's socio-political economy. Hence, corruption has become a major obstacle to the nation's quest to develop her infrastructure and economy. In validating this view, the Nigerian Labor Congress, (NLC) has observed that between 1980 and 1999, over $400 billion dollars was embezzled from the nation's treasury. This was ostensibly done through the inflation of contracts .This is causing other development projects to suffer the problem of insufficient funding. Equally, Ukura (2010) summits that corruption and insecurity retards the nation's socioeconomic development.

Against this backdrop, it is postulated that corruption causes poverty even as poverty causes corruption. This dual negative relationship is intrinsic and problematic because for one to go, the other also must have to go. According to Oseni (2008) Corruption is a major cause of poverty since it is a barrier to overcoming poverty. This implies that the scourge of poverty and corruption feed on each other as they lock their populations in a cycle of misery. Hence, it is

posited that Corruption must be controlled if foreign aid is to make a real difference in freeing people from the shackles of poverty.

Attempts to define the concept of corruption have not been easy due to paucity of literature that define it in the context of it determinants, its severity, and its impact on economic development. The reason for this is due to the near absence of relevant data that are required to prove the magnitude of the existence of corruption and the people that engage in it. To overcome this problem, Nguou (2000), Tanzi et al (2005) and Ackernam (1992) in their various studies in an attempt to define the concept of corruption have established its determinants and its impact on economic development.

According to Nguou (2000) corruption manifests in the exploitation of Public positions for private benefits; it exist because civil servants of all categories lack the civil spirit which causes them to be corrupt by misappropriating public funds. To Tanzi et al (2005), corruption can be found in both the public and private sectors. As such, Akindele (2005) describes it as a behavior, which deviates from the former rules that govern the actions of someone in a position of authority. This is against the backdrop that corruption manifest in various forms. Thus, to Osunyinkanmi (2009) the term corruption is synonymous with fraud, bribery, settlement etc; it is a euphemism for bribery in the Nigerian parlance. Hence, to Ackerman (1992), corruption can assume several forms. Such includes bribery, embezzlement, fraud etc. In a situation where bribery assumes the most prominent form of corruption, then bribery can manifest in incentive payments, which are made with the intentions to obtain lower costs or to buy or influence votes. To the Dwivedi 1967, corruption manifest itself in nepotism, favoritism, bribery graft and other unlawful means that are adopted by government employees and the public to extract some socially and legally prohibited favors. In this vein, Scout (1972), submit that the act of corruption entails deviation from certain acceptable standard of behavior. Therefore, corruption can be defined as an act that causes the perpetrator to misapply, misappropriate and misuse Public resources for personal gain. This is facilitated by embezzlement, extortion to gratify self. This is because corruption enhances the personal enrichment of public officials and the provision of benefits to the corrupt. To the UNDP (1999), it is an act that is committed by an official or a judicial person to lawfully and wrongfully use his position or character to procure some benefits for himself or for another person contrary to duty and the right of others. As such, corruption is a crime that is committed with the intent to confer some advantage that is inconsistent with the official duty and right of others.

In the light of the above, Nye (1967) and Bray (1999), have argued that since Corruption entails the abuse of Public positions for Private or sectional gain, if is exhibited as a behavior that deviates from the former duties of Public role. This is derived from the fact that the perpetrator desires some Private gains either for himself or for a proxy. As such, it is an act of dishonesty that is displayed by people in positions of power. To Wokiki (1994), and Thompson (1994),

corruption is practiced as an act of embezzlement, diversion, expropriation and the misuse of public funds for purposes other than that for which funds was intended or meant. Hence, it is argued that even though corruption is a universal phenomenon, there is a type that is peculiar to the Third World Countries such as Nigeria. This form of corruption is practiced by politicians and highly placed public officials who siphon public resources away from social and economic development to fulfill personal and group or sectional gain. Ayittey (1992), 'Grand Corruption', which is considered a crime against humanity, refers to this type of corruption.

In explaining the concept of grand corruption, Ayittey (1992), submits that, it is that type of corruption that is peculiar to politicians and high-ranking officials. This is most rapacious and destructive since Third World politicians and high-ranking public officials whose duty it is to promote accountability and transparency to ensure probity corruptly enrich themselves and get away with it by hiding their loot in secret foreign bank accounts. Thus, in an attempt to define the concept of corruption, Ogala (2008), Black (1990) and Homby (2000) ,submit that to be 'corrupt' entails the use of power to do dishonest or illegal things in return for money ; it involves the use of illegal and unfair methods especially bribery to gain an advantage in business or politics. According to Ajegi (2003), "By whatever name corruption is known, it is an anti-social, self centered activity whose primary objective is the enhancement of the satisfaction of the perpetrator to the detriment of the larger society". This is because corruption entails the abuse of power that is held by the perpetrator whether in the Public or Private Sector which generally results in collective social loss. This implies that Corruption is perceived as a dishonest or an illegal behavior that is exhibited by people in positions of authority to gain advantage in business, politics etc. over others particularly for personal gain.

An Overview of Corruption in Nigeria

Regarding corruption in Nigeria, the UNDP report (2001) observed that despite the fact that Nigeria possess vast amount of mineral, crude oil and gas, Water, land and human resources, most Nigerians live on less than 1 a day. Hence, Nigeria is rated the 26 poorest country in the world. Consequently, Oseni (2008) notes that, "The poverty line is so thick and wide that no one can rightly write about Nigeria without talking about the mass poverty that stalks partly due to corruption and mismanagement. Hence, Nigerians are poor and corrupt because prolonged military rule promoted poverty and corruption among Nigerians since the military nursed and nurtured these twin evils ostensibly, due to their lack of administrative skills, democratic virtue and values and sheer demonstration of autocratic recklessness.

In assessing the state of corruption and poverty since the inception of democratic rule, it is noted that corruption and poverty have continued to grow. In validating this, the Transparency International's Corruption Perception Index (CPI), revealed for instance that in 200land 2003, Nigeria was rated the second most corrupt nation in the world after Bangladesh. In 2005, Nigeria was rated the Third along with Côte d'Jvoiré, Equatorial Guinea and Haiti. In explaining the

rational for these ratings, Ogiemwonyi (2008) and Unegbu (2003), submit that, corruption in most establishments in Nigeria thrives because power is concentrated in the hands of a few who operate without regard for due process. This is because government officials are reluctant to enforce the law by proceeding against the perpetrators of corrupt acts. This is further complicated by the fact that Nigerian banking and financial regulations are made deliberately ineffective to allow corrupt officials and their cohorts to siphon Public money.

Deriving from these submissions, experts in assessing the Public sector corruption have established that a strong correlation exists between corruption and poverty in Nigeria. This has been established by the Corruption Perception Index, (CPI) report of the year (2000) in which it was observed that, "most countries that face serious perceived levels of domestic corruption are poor". Hence, the report, ranked Nigeria as the world's third most corrupt nation. In addition, the African Development Report (2001), posited that Nigeria scored 1.2 in 2006 as she ranked 46th most corrupt nation out of 63 countries that were surveyed. This is against its 2005 rating in which she was ranked the 152' out of 159 countries surveyed.

In buttressing these, Ribadu (2007), asserts that, "Corruption and mismanagement gulps 40% of Nigeria's over $20 billion annual oil income; at least 100,000 barrels of Crude Oil which represents 40% of national oil exports are stolen everyday in Nigeria. Furthermore, it has been established that even though Nigeria is the eighth largest exporter o f crude oil, 70% of her population live below the poverty line. This is attributed to the rising incidences of corruption and mismanagement. Hence, Ribadu (2006), submits that, Nigerian leaders at all levels of governance are corrupt and are criminally ingenious since as Politicians, they not only steal Public funds, they have the uncanny ability to deceive and blackmail to cover up their corrupt acts.

Equally highlighting the evils of corruption in Nigeria's socio-Political economy, the Washington Post observed that "Corruption robs Nigeria's economy of an estimated $2-$3 billion annually". In substantiating this, the Okigbo report (1994) which was instituted to reform and re-organize the Central Bank of Nigeria (CBN), observed that between 1988 and 1994, Nigeria's military rulers squandered more than $12 billion of oil revenue without proper records. The money, which was placed in special accounts that were designed in 1988 to cater for special projects that were to be funded by oil export receipts from the Gulf War, was improperly handled and mismanaged. This is a manifestation of the gross abuse of Public trust as $21.2 billion, which represents more than 1/3 of the country's total foreign debts, was spent in less than 6 years on what could be adjudged genuine high priority but not freely regenerative investment. This is because the CBN could not account for the money spent as budgetary expenditures. Hence, it is observed that corruption, which is costing Nigeria more than $148 billion annually, is increasing the cost of goods by as much as 20%. This is deterring investments by holding back

development. Most of the costs that are occasioned by the prevalence of corruption are borne by the poor.

These corrupt and criminal acts are committed against fellow citizens without any rational justification except that "the end justifies the means". As such, one finds it difficult to understand why Nigerian citizens have declared war against themselves. In explaining the reasons for this abnormal behavior, Mama (2008), observed that in Nigeria, there are few Public officials today who are not corrupt. This is because the reward system is faulty. This accounts for the wide spread poverty in the midst of plenty. Thus, in spite of Nigeria's abundant wealth, corruption thrives because our value systems have been seriously compromised and misplaced since money has become the god of the nation.

However, it is important to note that the practice of corruption cannot be said to be limited to any social strata or human setting. This is because corruption is a universal phenomenon, which transcends the customs and the culture of a people. Thus, its practice is universal. In validating this view, Akindele (1999), observed that corruption is not found only in Nigeria but is equally found in other countries. Hence, corruption can be found in every country. This is because corruption exists everywhere. While in other climes, corrupt people are treated s unpatriotic elements, criminals and villains, in Nigeria however, the reverse is the cas&since corruption and corrupt peo0000ple are being celebrated and defended. Nobody cares to know the source of any body's wealth. This point can be illustrated by two scenarios: The case of former Bangladesh Prime Minister, Khaleeda Zia and the former Governor of Bayelsa State, Chief D.S.P Alamieysiegha. While Zia was arrested and imprisoned for corrupt enrichment, tax evasion and extortion during her tenor as the Prime Minister of Bangladesh, Chief Alamieysiegha of Nigeria did not only jump bail from a British prison like his counterpart Chief Joshua Dariye the former governor of Plateau state who is now a serving senator of the Federal Republic of Nigeria in the seventh republic, both were awaiting trial for money laundering, after being convicted for various financial crimes, by the courts in Nigeria. Chief Alamieysiegha after being tried by the Courts of Law was sentenced to 12 years imprisonment on a 6-count charge of diverting billions of Naira of his oil rich state funds to personal use served only a 2-year jail sentence and was out barely 2 weeks after. Even though he forfeited several choice properties both local and abroad to his prosecutor, the Economic and Financial Crimes Commission, (EFCC), he arrived Bayelsa state house, Yenagoa in a chartered helicopter and was treated to a brief but a warm reception by his successor, Chief Temipreye Sylvia before he departed for his home town, Amaseoma where he was given a grand reception. He was not only driven in a black jeep, he was driven in a long convoy to a mammoth crowd that awaited his arrival. According to Akosile (2007), the reception granted Chief Alamieysiegha was likened to a huge carnival that consisted of thousands of Ijaws from Bayelsa, Rivers, Delta, Ondo, Edo and Akwa-Ibom who were there to give Alamieysiegha a rousing welcome from prison. Alarnieysiegha who was

overwhelmed by such a reception, expressed his gratitude to God for keeping him alive to see the true love of his people.

Causes of Corruption in Nigeria

Like any other phenomenon, corruption is caused by many factors. In identifying such factors, Akunyili (2008), observed that, corruption in Nigeria is thriving because Nigerians do not believe in the Nigeria project. This is evidenced by the lack of the spirit of nationalism, patriotism and discipline in most Nigerians. This is the major reason why most Nigerians defend corruption, corrupt practices and corrupt politicians and leaders who brazenly loot public treasuries for personal benefits. In addition, corrupt people in Nigeria are protected and defended because of tribal considerations. As such, villains and criminals consider the theft of public money by corrupt officials a norm and a convention and not really an unpatriotic, un-nationalistic crime. This sort of defense of the corrupt negates the genuine spirit of nation building which among others can only be achieved more expeditiously through rapid and sustained economic growth and development Accordingly, Mama (2008), submits that corruption in Nigeria thrives because of sycophancy and the prevalence of mass poverty. According to him, Nigerian leaders sometimes do not assume leadership with the intention to be corrupt. They become corrupt, because sycophants mislead them.

Second, is the obsession for materialism fuels the compulsion for a shortcut to affluence as approbation for ill-gotten wealth by the general public are among the many reasons why corruption persists in Nigeria. According to Dike (2007), through corrupt means, many political office holders have acquired wealth and properties in and outside the country. This has made politics a big business in Nigeria as anything spent to secure a political office is regarded as an investment, which matures immediately one gets into the office.

Third, to Gaisie (2003), corruption is caused by the extravagant and ostentatious life styles of the elites who are fund of throwing great parties, owning fleets of expensive vehicles and houses because they have access to money beyond their salary; command wide respect as few in society question their source of wealth. The practice of corruption therefore in the third world is widespread and institutionalized, as it has thrived for decades even as law enforcement agencies have ignored it. Thus, it is observed that African elites steal so much because of sheer greed, ostentatious and family pressure because corruption is perceived as a way of life and a means of self-preservation in the third world countries.

Fourthly, to Werilin (1972), Corruption is caused by widespread poverty that is due to the near absence of adequate checks and balances in the bureaucracy. Hence, corruption is regarded as a means as lubricating a tightly, rigid and sluggish bureaucracy. Even though these reasons seem plausible, they do not convincingly justify the theft of .public funds. This essentially brings to the fore the need for governments at all levels in Nigeria to institute and enforce good

governance as a basic pre-requisite that is required for democratic governance to succeed. Hence, it is imperative that policies and institutions be put in place to promote good corporate governance that is if our genuine desire is to rid the nation of the debilitating and deleterious effects of corruption.

The significance and the relevance of good governance cannot be under estimated neither can it be over emphasized. This is against the backdrop that corporate good governance is a framework of policies and procedures that large organizations use to protect the financial interest of stakeholders. This is because; it is argued that in an establishment where good corporate governance is put in place, it will, create a balance in such an establishment. This can be established by the fact that in a situation where one group is unable to dominate the actions of others in an establishment where good corporate governance is put in place, good corporate governance tools and mechanisms can used to outline the roles, responsibilities and the purpose of a job position. This segregation will play a vital role in governance since it can shift power from executive manager to shareholders who are the owners of a publicly quoted firm and the board of directors who act in the interest of the shareholders.

Organizations may restructure their governance structure and culture to enhance their internal control that defines how a firm completes assigned tasks or activities according to the internal or external guidelines that have been put in place. This is because it is argued that in an establishment where good governance is instituted, it will remove internal control guidance as the sole responsibilities of executive managers to make sure that they do not have the ability to override the controls. Hence, the institution of good corporate governance is aimed at enhancing a high level of transparency and accountability in a firm's operations. This essentially means that both Private and Public entities need these attributes at all levels of their operations to regulate their operations internally and externally. This is because good corporate governance is concerned with three basic issues: the issue of integrity, the issue of bonus culture and the issue of regulatory framework

Integrity entails the governing board of an establishment carrying out their duties in an ethical way. The issue of topicality on its part deals with the bonus culture. Here, the question is, can better corporate governance in financial institutions and their remuneration policies prevent a credit crunch that can result to financial crises? Third, is the regulatory framework: it has been observed that the introduction of more regulations has clearly failed. Hence, we need better regulations that will make sure that businesses recognize the important role that good corporate governance plays as an integral part of management. This is against the backdrop that good governance is concerned with the regular training of directors to increase their knowledge of principles and practices of good corporate governance. This is because good governance as an indeterminate term is used in development literature to describe how Public institutions conduct public affairs and manage public resources. To Ijnescap (2009), governance is the process of

decision-making and the process by which decisions are implemented or not implemented. Hence, the term governance can apply to corporate international, national, local or the interaction between other sectors of the economy.

In stressing the imperative for good governance, Fashola (2007), observed that, Corruption is among the greatest obstacle to Nigeria's quest for rapid socio-economic, and political development. In his view, Corruption destroys trust, accelerates crimes, hurts investments and stultifies the growth of nations as it bleeds national budgets. In the Private Sector, corruption increases the cost of doing business as it facilitates the inflation of the prices that are charged for goods and services. This is due to the bribes that are paid out by company managements to government officials in the cause of negotiating Contracts. The act of bribing government officials heightens the risk to breach contract as it prevents the detection of faulty clauses that are hidden in corruptly tainted contracts.

Fifthly, to Akunyili (2008), corruption in Nigeria is caused by the failure of the reward system which has favored mediocrity to the detriment of the competent and men of high integrity. Hence, the failure to reward hard work promotes corruption. As such, it is posited that when hard work, transparency and high integrity are not celebrated, then corruption would thrive.

In rationalizing these arguments, Annan (2000), argued, that since the pillage that is facilitated by corruption occurs where the socio economic indicators are weak, Billions of Dollars of public funds will continued to be stashed away by some African leaders even as the roads are crumbling, health systems are falling, school children have neither books, desks, nor teachers; while phones do not work. The responsible elites shamelessly rape their constituencies and then seek healthcare and education overseas, sometimes at public expense.

Consequences of Corruption in Nigeria

Corruption has debilitating and deleterious consequences for the growth and development of every socio-political economy. Among others, corruption breeds disenchantments as it disrupts social cohesion by promoting conflicts that result to wars. This disrupts the pace of economic growth and development as investments in volatile socio-political economies are discouraged due to persistent instability, rising crime wave and other forms of disturbances that hamper the smooth functioning of every socio-political setup.

Secondly, corruption retards development efforts. In validating this view, Akindele (2005), in his econometric investigation into the relationship between some key variables in Nigeria, using a modified production function found out that the coefficient of the corruption index is negative. This implies that it is consistent with the hypothesis that corruption retards development efforts since it has been established that where corruption exist, even in a highly endowed nation like Nigeria which is rich in human and natural resources, it may fail to develop

in a beneficial way since development efforts will not benefit the great majority of its citizenry. This has been the case with Nigeria since the magnitude and intensity of corruption has been increasing year in, year out. Hence, it is posited that the average Nigerian is corrupt. This is notwithstanding the fact that even though data on this is hard to come by, corruption in Nigeria still manifest in the forms of bribery fraud and embezzlement.

Thirdly, corruption hampers the growth and development of nations. According to Ekpo anid Agbenebo (1985) and Obadan (2001) corruption introduce distortions into an economic system as it impairs hard work, diligence and efficiency; it diverts resources from social to private or personal use; subverts honest selection process and distorts prices. In buttressing this, Tanzi (1995), and Ackerman (1998) observed that corruption weakens institutions, undermines investments and retards economic development. Against this backdrop, Nyerere (1999) submits that corruption is an enemy of progress and development as it undermines the well-being of society. This corroborates Akindele (2005) who established that a strong significant relationship exists between corruption and development.

Fourthly, corruption is one of the root causes of poverty. According to Wolfowitz (2007), corruption is one of the root causes of poverty since the prevalence of the culture of poor governance that is fueled by the cancer called corruption hampers the attainment of the goals of the development process. This is established by the fact that currently, over 300 million people, half of whom reside in the African sub continent live in extreme poverty. Hence Wolfowitz regards corruption as the core root cause of poverty.

In a similar context, Gaise (2005), in identifying the evils of corruption, argued that corruption and management hurt social and economic activity by undermining a nation's quest to accelerate her pace of development. Against this backdrop, it is argued that corruption erodes investor' confidence, robs the economy of buoyant economic activities as it causes low public moral since miscreants and enemies of the people use corruption as a vehicle to undermine the entire working mechanism of society. Hence, it is posited that where democracy and political accountability are not entrenched, economic crimes would be rife; politics would be made unstable to cause the devastation of millions of people living in a society. Against this backdrop, it is posited that where corruption and mismanagement are rife, this will promote mass poverty to fuel social discontentment and brutality to foster civil conflicts that are likely to result to wars.

Hence, the UNDP (1997), describes corruption as second best response to government failure as it is a highly distortional method of public choice. This is because a state that is infected and infested with endemic corruption can be especially brutal to the very poor who have no resources to compete with those who are willing to pay bribes. Deriving from this, it can be submitted that corruption restricts investments, retards economic growth, and undermines programmes that are designed to specifically aid and benefit the poor. The poor are most harmed by the existence of systemic corruption. Systemic corruption therefore is suspected to be a major

cause of deep-seated poverty since the effect of corruption is as devastating to millions of people as Cholera, Meningitis, and HIV/AIDS and civil strife which culminate into wars. This is because it aids brutality in armed conflicts since it is not in tandem with the overall aspirations of most people that live in democratic societies and free market economies. Hence, Good governance is defined as an ideal, which must be attained in its totality. From this, it is implied that actions must be taken to ensure that the ideal of good governance is instituted and enforced to foster the attainment of the prime goal of attaining sustainable human development.

Still on the consequences of corruption, Silverstein (1999),argued that, corruption and mismanagement hurt socio-economic development as it causes the stagnation of economic activities. This has diminutive effects on Public morality, as miscreants become the enemies of the people. As such, where democracy and political accountability are not entrenched, economic crimes would be rife since politics will be made unstable. Such was the case with Ghana and Brazil even as it explains Nigeria's current dilemma in which terrorism and insecurity, kidnapping, oil bunkering, money laundering etc which are the products of corruption and mismanagement are currently the bane of the nation. ..Same can be said of those of other nations that suffer the debilitating consequences of corruption. Such include Chile, Argentina, Philippines, Congo Democratic Republic, Liberia, Sierra Leone and Indonesia whose development indices are currently negative. This is because thrice the number of their populations that die of preventable and curable diseases such as HIV/IIDS, Malaria, Tuberculosis, Polio and Acute Lower Respiratory infections is the result of corruption and wide spread mismanagement of scarce state resource. Using Nigeria as an example, Table 1 explains Nigeria's corruption perception rating from 1996 to 2010.

Table:1 Nigeria's Corruption Perception Index 1996-2010

Year	Perception index	Number of countries evaluated	Rating
1996	1.20	54	54
1997	1.30	52	52
1998	1.90	85	81
1999	1.90	99	98
2000	1.90	90	90
2001	1.60	102	100
2002	1.70	91	90
2003	1.40	133	132
2004	1.60	145	144
2005	1.90	158	154
2006	2.20	163	142
2007	2.20	183	127
2008	2.20	183	127
2009	2.70	180	130
2010	2.40	178	

Source: Transparency International Agencies

A critical examination of Table 1 revealed that in 1996,of the 54 countries surveyed, Nigeria scored 1.2 on the Corruption Perception Index (CPI) and occupied the fifty-fourth position. While in 1997, of the 52 countries surveyed, she scored 1.3 on the (CPI) and was rated the fifty-second. Subsequent ratings from 1998 to 2010 however indicate deterioration as her position worsened. This is because of the 178 countries that were surveyed; Nigeria scored 2.40 on the Corruption Perception Index (CPI) and occupied one hundred and thirty fourth positions on the rating scale.

Deriving from the above submissions, it can be posited that corruption not only causes poverty, strangulates and hampers development, wastes skills and constrains productivity by undermining the quality and the standards of goods and services that are made available to people, but also stymies development and taints a country's business environment. This is because it drains the economy of its essence and its potentiality for viability, it robs an economy of opportunities to garner in foreign investments as it scares away foreign investors and causes brain drain by promoting the rapid flight of human capital. It also destroys governmental structures and capacities by undermining the effectiveness of government's policies and programs that are aimed at improving the lot of the citizenry.

Thus, Ajegi (2003) submits that corruption is certainly not a purely African phenomenon neither is it within the African setting a purely acceptable convention. This is because its incidences transcends all continents and cuts across religious, national, cultural, political,

economic and social boundaries. Hence, the lowly and the highly are all involved as each operates in consonance with the degree of power that is conferred on and are exercised by the perpetrator.

From a disaggregated perspective, Table 2 illustrates the preponderance and pervasiveness of corruption in various Public institutions in Nigeria.

Table 2: Top Corrupt Organizations in Nigeria

Organization	Year 2005 %	Year 2007 %
The Nigeria Police Force	96	99
Power Holding Company of Nigeria. (PHCN)	83	87
Ministry of Education (Universities, Polytechnics, Colleges of Education)	63	74
Custom & Excise Dept.	65	61
Federal Road Safety Corp. (FRSC)	42	51
The Nigeria Immigration Service	56	48
Joint Admissions and Matriculations Board	41	47
Local Govt. Authorities	47	46
Independent National Electorate commission (LNEC)	-	38
Federal Inland Revenue Service (FIRS)/Tax officials Federal Inland Revenue Service (FIRS)/Tax officials	36	36
Health Ministry/ Primary Health / Teaching Hospital	30	32
Ministry of Justice	27	31
The Presidency	24	29
Nigeria National Petroleum Corporation (NNPC)	27	28
Federal Housing Authority	26	28
Nigeria Ports Authority/ Nigeria Maritime Authority	33	24

Source: Nigeria corruption Index by Institution (2007)

From Table 2, it can be seen that the Nigeria Police Force is the most corrupt Public Institution in Nigeria while the Federal Housing Authority is the least corrupt may be due to its exposure to the Public. From this, it can be implied that corruption is a universal phenomenon that harms society to such an extent that it creates the increasing tendency for people to support their tribesmen to go and loot public treasury. As such, the wealth so accumulated is used to pay for chieftaincy titles, which traditional rulers who are the custodians of our culture are ever ready to jettison their ethical principles and responsibilities to confer on corrupt persons and leaders. Hence, the display of stupendous wealth by the rich and the corrupt has increased the desire to amass wealth at all cost. This largely accounts for the rising tide of armed robbery, smuggling, kidnapping, hostage taking, drug and currency trafficking, oil bunkering, frauds, embezzlement and counterfeiting which has become necessary avenues that corrupt Nigerians use to make

money at all cost. Hence, the means by which money is made is nobody's business as the end ultimately justifies the means.

In a similar vein, Omoregbe (2008), argued that since corruption in the Political sphere undermines democracy; since it grounds the entire democratic process which has largely contributed to high level of corruption that pervades the Nigerian political dispensation, the "money for votes" culture has become an integral part of Nigeria's electoral process. This is detrimental to the country's quest for a stable democracy and prosperous economy. Hence, it is further posited that corruption has severe negative consequences on national economies, as corruption is both morally and economically wrong and harmful since its practice undermines the operation of society's entire Socio-Political, and economic structures and institutions.

In corroborating this view, Collier (2000), argued that if corruption were not morally and economically wrong and harmful, then most economists would not have had a say about it. Thus, Ajegi (2003) argued that Corruption is directly related to financial crimes, as it is perceived to harm both nations and individuals.

Consequently, it is posited that the practice of corruption distorts and hampers the quest for economic development as it rewards the dishonest to the detriment of the competent. Therefore, Vinod (2001) argues that since corruption reduces domestic 'and foreign investments, lowers tax revenues as it encourages tax evasions by potential tax payers, it distorts the composition of Public expenditure as it equally promotes the diversion of budgeted revenues from the financing of social services tha tare required to sustain and bring succor to the society especially the poor. Corruption therefore promotes income inequalities between nations, individuals and the various groups in a society as it distorts income distribution and facilitates the diversion of resources from poverty reduction and alleviation programmes to personal uses.

Against this backdrop, Ajegi (2003) and Dike (2007) submit that corruption promotes financial crimes by facilitating theft from Public Treasuries, 90% of which are stacked away in foreign private accounts. Hence, since such loots occur mostly in the developing economies, it has the dual effect of boosting the domestic economies of the custodian of the looted funds while it constrains and worsens the economic conditions of the country whose treasury was looted. This enhances income inequality as the gap between the rich and the poor nations of the world are ever widening. Dike (2007) further observed that experts have blamed the low level of investments in the Nigerian economy to the existence of pervasive corruption. Thus, to Gabriel (2006), corruption in Nigeria's Ports and tax evasions are among the major obstacles to the inflow of foreign investments. This is because inexplicable obstacles bedevil the Nigerian economy. Such include corruption at the ports, tax evasions and avoidance and the inefficient collection of value added taxes. These crimes occur because most companies in Nigeria including some multinational corporations are not registered and so do not pay tax. This is disincentive to foreign investments, as investors whose firms are not registered and are fond of

evading taxes cannot transact with the government and other foreign partners. Specifically, bribes that are paid to port officials are called facilitation fees.

The Imperative of Good Governance

The challenge facing Nigeria like any other society is the need to create a system of governance that is capable of promoting, supporting and sustaining the task of building its human capacities. Thus for Nigeria to be able to institute and enforce the principles of good governance, she must articulate the concept of governance that is predicated on the rule of law to ensure transparency, accountability, and probity in both Public and Private Lives and transactions. This is against the backdrop that corruption is currently one of the major causes of wide spread poverty in Nigeria.

In substantiating this, the United Nations Economic and social commission on Asia and The pacific (UNESCAP) argued that since the term "governance" and "good governance" are being increasingly used in development literature to stress the need for transparency, accountability and probity in the daily conduct of a society's Public and Private transactions, the term "Bad Governance" is increasingly being used to describe and perceive those negative actions and practices that manifest as corruption. Corruption is the root cause of the evils that are perpetrated within societies. Hence, good "Governance" is defined as the process of decision-making and the process by which decisions are implemented or not implemented.

To the United Nation Development Program UNDP (1997), "Good governance" is defined as the exercise of political, economic, and administrative authority to manage a nation's affairs; it is the complex mix of actions, processes, relationships and institutions through which citizens and groups articulate their interests, exercise their rights and obligations and mediate their differences. Hence, the term, "Governance" is used to embrace both the good and the bad which abound in all societies. This is established by the fact that the use of Power to distribute and manage Public resources to solve societies' problems implies that the term "bad governance" is used as a subset of governance which when used inefficiently and in response to the criminal needs of a society would truncate a society's aspirations. This is because effective, democratic forms of governance rely on Public participation, accountability, transparency, criticisms, orientation and responsiveness, are required to be effective, efficient, and equitable to facilitate the equitable distribution of incomes and wealth in societies. This must be dictated by the tenets of the rule of law which states that the application of the concept of Good governance must entail a substantial reduction in the prevailing level of corruption in a society. This is of utmost importance if consideration is to be given to the voices of the most vulnerable in the society, such voices must be heard in the decision making and implementation process. This is required

to enable the government to elicit the required response and support of the governed to enable it to correctly ascertain the future and the present needs of society.

Summary, Conclusion and Recommendations

From the foregoing, the study has revealed that corruption, like cancer, is a symptom of an abnormality which entails the mismanagement, misapplication and misdirection of given state resources which rather than being used to foster the collective gain of society are rather used to foster the personal gain of individuals and groups. Hence, it is postulated that corruption hampers the efficient working of institutions that are designed to govern relationships between the state and its citizens. This is because corruption enhances the personal gain of the individual and group to the detriment of the collective aspirations of the public. As such, the desire for financial enrichment is the most powerful motivating force that propels corruption the world over.

In Nigeria, corruption among other things is caused by greed, widespread poverty and a faulty reward system that is fueled by a faulty governmental mechanism, which promotes mediocrity rather than merit in the conduct of the nation's Public and Private transactions. This has debilitating and deleterious consequences for the nation's socio political economy as it hampers Nigeria's quest for rapid and self-sustaining economic growth and development. Hence, the need therefore exists for Nigeria to urgently institute policies and institutions that will foster good governance that is predicated on the rule of law. This should be aimed at bringing to book all public office holders who are found to be corrupt particularly those that are directly responsible for managing Nigeria's oil wealth and who equally possess broad constitutional immunity from legal prosecutions.

This recommendation is motivated by two scenarios, which were highlighted in this study. Such revealed the various responses of the Nigerian and the Bangladeshi Publics who both experienced various manifestation of corrupt deeds by their leaders in which Khaleeda Zia was arrested, prosecuted, convicted and imprisoned for acts of corruption and theft while her counterpart in Nigeria in the person of Chief. D.S.P. Alameisagha and Chief Joshua Dariye of Bayelsa and Plateau states did not only jump bail, Chief D.S.P Alameseigha experienced a brief imprisonment and forfeiture of some of his property, while up till date Dariye is yet to be convicted of corruption even when the EFCC has over whelming evidence against him. On the other hand, Alameseigha was convicted and imprisoned for money laundering and other financial crimes for 12 years on six count charge that were expected to earn him 2 year imprisonment that was expected to run concurrently, he was released after two weeks after being sentenced. He was received from prison with over whelming ovation. So while Khaleed Kia was shamed, Joshua Dariye and Alameseisgha are being celebrated with the latter now a serving senator of the Federal Republic of Nigeria.

The above scenario highlights two major lessons. The first is that any nation that is committed to the fight against corruption must not be afraid to arrest and prosecute its citizens who are suspected to be corrupt and are otherwise considered to be sacred cows. They must be prosecuted from the top most level of governance to the lowest level of ward committee. Government need not mind whose ox is being gored. To realize her quest for rapid and self-sustaining economic development, it is imperative that the Nigerian government make transparency, probity and accountability its watchdog and guiding principle. To realize these laudable objectives, it is imperative that she institutes and enforce the principles of good governance, which must be based on the rule of law. This is because accountability, transparency and probity are the hallmarks and the essential ingredients of good governance. This should be its primary and fundamental goal.

Secondly and more importantly, in a nation where citizens embrace corruption and corrupt leaders, such a nation cannot be said to be serious and committed to the fight against the scourge of corruption and corrupt leadership. This is because even though reports did not confirm whether the welcoming crowd was hired like the Abacha one million man march, the fact remains that the same citizens who had for long openly protested the loot of their Public treasuries would now turn around to embrace the very persons that are perpetuating the poverty, which is ravaging them. This leaves much to be desired.

Even though it is observed that, it would be very difficult to completely banish crime and corrupt practices from Nigeria's lexicon and its daily existence in a jiffy, Nigeria can do more than frown at corruption and corrupt practices and its accompanying shame by publicly shaming the practitioners to serve as deterrent to would be looters. By arresting, prosecuting and convicting offenders at the highest official and unofficial levels all corrupt persons, this will send the right signals to the less corrupt agents. Until this is done, we cannot expect to see the gains of corruption free governance.

As such, this work concludes that even though corruption would be difficult to be completely banished in Nigeria, the world at large, good governance should be instituted and strictly enforced to make sure that the deleterious and the debilitating effects of corruption on Nigeria's socio-Political economy are minimized. This will enable her to resume and accelerate her pace of economic growth and development via the Millennium Development Goals whose primary objective is the substantial reduction of prevailing poverty by 2015. With the attainment of the Millenium Development Goals, it is expected, that Nigeria would be among the 20 most developed nations by 2020.

For this to happen, it is required that an improved governance mechanism be instituted and enforced within the ambits of the rule of law to enable her promote accountability, transparency and probity. To attain this primary objective, it is suggested that the developed nations work in partnership with the developing countries to stop providing a safe haven for

stolen wealth. This is against the backdrop that good governance that is predicated on the principles of probity, transparency, accountability and the rule of law are the key to tackling corruption in any society. This is essentially so because corrupt leaders cannot wage an effective war against corruption where good governance is absent.

For the fight against corruption to be effective, it is suggested that government should:

Sign into law, the Freedom of Information (FOl) Bill that if complemented by the Due Process Act would ensure transparency, accountability and probity not only in the Public Sector but also in the Private sector. For this objective to be attained, Nigeria must allow a vibrant press, an effective and vibrant opposition, ombudsman, criminal justice system and other institution that are required to expose and punish corruption to thrive. This suggestion is informed by the fact that our leaders who are vested with the responsibility to promote accountability, probity and transparency in the management of the nation's scarce but limited resources who are expected to safe guard such for the collective interest of the Public to ensure maximum welfare are the worst offenders. This is because they get away with their corrupt acts by hiding their stolen wealth in secret foreign bank accounts. Such command respect when they exhibit extravagant life styles even when they are known to finance such life styles with stolen wealth;

Recognize and reward hard work, transparency, accountability and integrity to inspire people that are doing well to propel others to work hard to be transparent and accountable. This is because, money is not everything that matters in life; a good name is also important. Hence, we must chase corruption out of our lives; we must not pass it to our children;

Stop the litany of bad governance by taking drastic measures to minimize the deleterious and the debilitating effects of corruption as the world rallies to help the needy to develop through development and cooperation. This suggestion is informed by the fact that development aid programs that are driven by altruistic charity rather than economic justice and common sense have failed to lift the poor out of poverty. Hence, the poor must be saved from their thuggish and brutish leaders; donors equally deserve reliabletccounting for their gifts. This essentially means that those who cry for help must show that their scarce resources are lawfully and judiciously utilized to ameliorate the poverty conditions of the led.

Drawing from this, it is further recommended that for corruption to be minimized in Nigeria, good governance mechnism must be instituted and enforced in the context of a market economy that is in tandem with our political and democratic ideals. To do this, all anti-corruption agencies should be granted full autonomy and insulated from partisan politics; divorced from the direct supervision of the Office of the Attorney —General of the federation.

For the government to attain this objective, she should possess the political will, which is required to enable her to persuade people in both public and private sectors to eschew corruption and promote good governance from the top most level of leadership to the lowest. This should be

done while the economy is being diversified to alleviate mass poverty through massive job and wealth creation opportunities and capacity building to bring about rapid and self-sustaining economic growth and development.

REFERENCES

Ackerman, R (1990) Corruption and governance: Causes, Consequences and Reforms UK Cambridge University press.

Ade, 13.A (2007) "The Impact of Cost of Doing Business in Nigeria" Lagos " Daily Independent Wednesday, October 17, 2007, Vol. 3, No1334.

Africa Development Report (2001) Abidjan.

Ajegi, SO (2003), Corruption and economic underdevelopment in Nigeria: any symbiotic relationship? Makurdi: Journal of Economics and Management Studies, voLl: Nol, July — Dec. 2003

Akindele, ST(1990) Corruption and Economic Retardation: A Retrospective analysis of Nigeria's experience since independence in Readings in the political economy of Nigeria since independence. Bamisaye,O.A (ed) Lagos: ventues limited.

Akindele, ST(2005) A Critical analysis of corruption and it problems in Nigeria. Anthropologist 7(1)

Akosile, A (2007) "Nigeria: Corruption Beyond a perception index". Lagos; This Day, Sept. 25, 2007.

Akunyili, D. (2008) "Lack of Reward For Hard work Promotes Corruption, Lagos, Daily Independent, Wednesday, March 3,2008 Vol. 3, No 1451.

Annan K. (2000) "Our debts to Africa: Once it was our Greed that bled the Continent Dry, now we could kill our Boredom. Lagos, the Guardian, April 2, 2000.

Ayittey, G. (1992) 'Grand Corruption: A crime against humanity' Cited in Africa Betrayed. New York St Martins Press, Macmillan.

Black, H.L (1990) "Black's Law Dictionary 30th Edition, St. Paul Minn: West Publishing Co.

Bray, J (1999). "Power without Accountability: How corruption is killing Africa" Cited in Business in Africa, June 1999. Johannesburg Golden city Ventures limited,

Cohen, H (1994). Africa Insider" July 1994

Collier, P. (2005) "How to Reduce Corruption" Abidjan: African Development Review Vol. 12, ADB, Abidjan.

Dike V. E. (2007) "Corruption paradigm in Nigeria: Beyond the Corruption Perception Index Belgium, Brusseils: A Word Bank Sponsored Conference on improving Governance and fighting corruption. Cited in New Frontiers to Public- Private Partnerships

Dike V.E.(2002) Poverty in Nigeria. "Lagos: the Daily Independent, October 16th 2002

Dwivedi, O.P (1967) Bureaucratic corruption in developing countries. Ancient review April

Ekpo, A.H and Agbenebo T (1985) Corruption and prices: A Theoretical Note. The Nigerian journal of Economics and social studies 27(3)

Fashola, B. (2007) "Corruption: Obstacle to National Development" Lagos .This Day, Friday, October 12 2007, 2007 Vol. 12, No 4556.

Gaisie, G.A. (2005) "Grand Corruption: A Crime against Humanity" Global Business and technology Association. Cited in UNDP (1997) Report, "Corruption and Good Governance, Discussion paper 3". New York. UNDP Management Development Division, July 1997

I4ornby, A.S (1995) "Oxford Advanced Learner's Dictionary" fifth Edition, London; Oxford University Press.

Igbuozor, 0. (2007) "Action Aid Blames Poverty on the poor distribution of Resources" Lagos: Muir and Stiglitz (eds) Ibadan; Oxford University press Daily Independent, Wednesday, October 3, 2007. Vol. 3 No. 1324.

Mama, J (2008) PPA Gubernatorial Candidate Calls For Revolution Lagos: Daily Independent, Friday, April 18, 2008, Vo13 No1465.

Nguou L (2000) Responsibility and Transparency in organizations in the Cameroun. In Makadala,R S (ed) African Public Administration Zimbabwe. Apps books

Nnmani, K. (2007) "PTDF Probe; Senate president wants capital punishment fo'r corrupt officials" Lagos Daily Sun, Thursday March 15 2007.

Nuhu, R (2006) "All our leaders are Corrupt" Lagos Daily Independent, Thursday, July, 20, 2006. Vol. 3, No. 10103.

Nye (1967) cited in Ajegi (2003) Corruption and Economic Underdevelopment in Nigeria:Any Symbiotic Relationship. Makurdi: Journal of Economic and Management Services Vol 1 No 1, July —December 2033.

Nyerere J (1999) Governance in Africa. African Association of political science News letter 4 (2) Harare 4(2)

Obadan M (2002) Corruption, Public investment and growth in Nigeria: some stylist facts. NESG economic indicators 2(2)

Ogiemwonyi; C.O (2008) "To Stop Corruption, Take a cue from the NNPC" Lagos; Daily Independent, Friday, May 16, 2008. vol 3, No. 1485.

Olayinka A. (2007) "Nigeria improves in TI Corruption Rating", Lagos; Daily Independent, Friday, Sept 28, 2007, Vol.3, No. 1321.

Okigbo P. (1994). "A Report on the Reform and Re-organization of the Central Bank of Nigeria" Abuja, the presidency.

Omar, A. (2010) "Corruption Remains Endemic-NLC Lagos: This Day Tuesday, September, 21, 2010.

Omoregbe, J. (2008) Corruption as an Existential Reality" Lagos, Saturday Vanguard, April, 26, 2008, Vol 13, No 602.

Oseni, 1 (2008) Corruption and Poverty: Nigeria's Siamese twins" Lagos: The Financial Standard, Thursday, May 15, 2008 Vol. 19, No. 147.

Osunyinkami, P0 (2007) Development implications of Nigerian's economic crises. Journal of development perspectives 2(l)

Ribadu, N (2007) "EFCC Perspective" Lagos: This Day, Sept. 25, 2007

Scott, J (1972) Comparative political corruption. Eaglewood Cliff: Prentice Hall Inc

Silverstein K. (1999) "Millions of Viagra, Pennies for Diseases of the Poor: Research

Money goes to Profitable lifestyles Drugs. The Nation, July 19, 1999. Tanzi, V et aT (2006) Fighting corruption in Nigeria: challenges for the future. Ibadan: PPC

The Guardian (2002) "Nigerians are Among the Poorest people in the Common Wealth" Lagos: the Guardian March 12, 2002.

Thompson, A.L. (1994) "Corruption in Public Life: Counseling as a Tool for Change, in Counseling Issues for the Nigerian polity" Caisson No. 2.

Ukura, S. (2010) Auditor General Decries Corruption, Rising insecurity Lagos: This Day, Tuesday, September 21.

UNDP (1997) "Corruption And Good Governance" Discussion Paper 3, NV ; UNDP Management Development Division, Basic For Policy And Prograrnme Support, July 1997.

UNDP Report (2001) "Poverty Reduction Strategies: What have learnt?" Bergen, Norway: March 15 17th 2001.

Unegbu O.C (2003) "Nigeria; Bellwether of Africa Democracy" World Policy Journal Vol. xx No. 12003.

UNESCAP (2008) "What is Good Governance? Thailand: UNECZCAP, In Building, Bangkok.

Vinod, T (2001) 'Revisiting the Challenge of Development'. Cited in (Muir and Stiglitz, J. (Eds) "Frontiers of Development Economics". Ibadan: Oxford University Press.

Werllin, H.H (1972) "The Roots of Corruption in the Ghanaian Enquiry. Journal of Modern Africa studies, Vol. 10 No. 2.

Wokiki, T. (1989) "Why Corruption is Persistent" Lagos; This Day 5 September 1989

Wolfowitz, P. (2007) "Words of Wolfowitz" Belgium:Brussells "World Bank International Conference on Improving Good Governance and Fighting Corruption" march 2007.

Zowam, 0 (2008) Strategy for a Final Assault on Corruption" cited in "The Way out of Corruption" Lagos: The Nation on Sunday May 18, 2008, Vol. 2, No. 658.

ACCESS TO HEALTHCARE SERVICES IN BENUE STATE:

EVIDENCE FROM OBI AND USHONGO LOCAL GOVERNMENT AREAS

SOKPO, Joseph Tarza
sokpojoe@yahoo.co.uk
phone: 0805599682

ABSTRACT

This study investigated the critical issues that surround access to needed healthcare services in Benue State. . A total of 1019 households were surveyed using a cluster survey method to collect data on socio-economic and health-service- related information from Obi and Ushongo LGAs. Descriptive methods such as frequencies, percentages and averages were used at various stages in the analysis of data. The findings of the study among others were high cost of health services limiting access; absence of qualified medical personnel; low patronage of rural health centres; and poor outcome of healthcare services. The study recommends among others a review of the National Health Policy on Financing with particular reference to user fees that limits access to healthcare by the poor households.

Key Words: Access, Healthcare, Utilization, Households, Poverty.

Introduction

Access to healthcare is a health and development issue. Most governments declare that their citizens should enjoy universal and equitable access to good healthcare. This is due to the fact that poverty and ill-health are intertwined. It is observed that within countries, poor people have worse health outcomes than better-off people (Wagstaff, 2002). The association between poverty and ill-health reflects causality running in both directions. Poor people are thus caught in a vicious circle: poverty breeds ill-health, ill-health maintains poverty. This makes a study on access to health care in the light of livelihood insecurity an imperative especially in a poverty ridden State like Benue.

Of all the risks facing poor households, health risk probably poses the greatest threat to their lives and livelihoods. A health shock leads to direct expenditures for medicine, transport

and treatment as well as to indirect costs related to a reduction in labour supply and productivity (Asfaw, 2003). Access to healthcare in Nigeria is limited in terms of distance and cost. A core welfare indicator questionnaire survey by the National Bureau of Statistics (2006) revealed that the ability to reach a health facility within 30 minutes at the national level was 55.5 percent for the population; and only 42.0 percent for Benue state. The introduction of user charges without reference to clients' needs and resources in the health financing policy also holds grievous implications for the poor and thus makes a study on access to health care services in the State an imperative.

In view of the importance of healthcare in the poverty alleviation process, it is pertinent to critically examine if households have access to the medical care they need. Thus the main thrust of this study is to investigate the critical issues that surround access to needed healthcare services in Benue State.

The specific objectives include:

- To examine availability of medical care facilities;
- To ascertain utilization of healthcare services in the State;
- To investigate ease of physical access to healthcare facilities; and
- To ascertain satisfaction from utilization of healthcare services.

Two local government areas Obi and Ushongo were selected by design to fully capture the effects of access to healthcare services across the State. Obi LGA was selected as result of been identified with high level of poverty (DFID 2002) and also the fact that poor people are worst hit by health shocks (Asfaw, 2003). Ushongo LGA on the other hand was selected based on it been predominantly rural where the poor usually reside and its location in Senatorial Zone A where access to healthcare services is lowest (FOS 2001).

Conceptual Issues and Literature Review

Access to Health Care

Access is a complex notion. It encompasses a number of dimensions which mean that it is not synonymous with use. Mooney (1983) points out that 'equality of access is about equal opportunity: the question of whether or not the opportunity is exercised is not relevant to equity defined in terms of access.' Therefore, looking at health service utilization alone does not explain what form of access people have, or whether their or others' health care needs are being met. What people do when they are ill, or need preventive health care, is determined by a range of factors including knowledge, beliefs, availability of health facilities, drugs and money (Hausmann-Muela *et al*., 2003).

For instance, if people do not attend a health facility, does it mean:

- that they do not need to attend it?
- that they do not realize that they need to attend it?
- that they do not know it is there?
- that they cannot afford to get to it?
- that they do not like it and would prefer to go elsewhere?

Aday and Anderson (cited in Gulliford *et al*., 2002) first made the distinction between 'having access' (potential to utilize a service if required) and 'gaining access' (initiation into the process of utilizing a service). Building on this, Gulliford *et al*. proposed a number of components to equity of access:

i. *Health service availability* – is an adequate supply of health services available?

ii. *Health service utilization* – which may include overcoming personal barriers, financial barriers, or organizational barriers.

iii. *Health service outcomes* – what is the relevance and effectiveness of the services? Are they of decent quality?

iv. *Equity of access* – do different groups of people get access to services in equal proportion according to their need?

An initial prerequisite of access is the availability of services, but whether these services can be used by their intended beneficiaries is of equal importance. Factors that will determine this second type of access (utilization) include geographical availability and financial and cultural accessibility. Determinants of the acceptability of services include the attitude of health workers to patients, the condition of premises, waiting times and the duration of consultations. Even strong performance in these features does not, however, equate to access to good health service outcomes, the third aspect of access. Even if services are accessible for the poor, there is still the question of whether they meet their health needs. Consumers are often poorly equipped to judge the technical merits of alternative services. Therefore, they may access services that provide poor quality of care. They may do so because there are no alternatives or because such services meet other qualitative criteria that they value (e.g. short waiting times, low cost). Equally, they may not attend a service that is of good technical quality because they perceive it to be of poor quality (for instance, because it is a public sector clinic) or because they fear that they will be treated badly (Sara *et al*.,2008). The various aspect of access discussed above shall be investigated from the selected local government areas in the State.

Empirical Literature on Access to Healthcare Services

In their study on access, Bulatao and Ross, (2002) carried out rating of maternal and neonatal services in 49 developing countries. Using the survey method, their findings revealed that 68 per cent of urban pregnant women and 39 per cent of rural pregnant women have access to an adequate range of maternal health services. Full immunization coverage is also alarmingly low in many countries. Waters *et al*., (2004) in their study on Coverage and costs of childhood

immunizations in Cameroon came to the conclusion that only between 34 and 37 percent of children in the country were fully immunized. In Nigeria, 39 per cent of children below one year of age have been routinely immunized with at least three doses of oral polio vaccine (OPV).

As for curative care, studies suggest that a large number of those who report having been ill did not access any form of formal care. For instance, Ahmed *et al.,* (2003) in their study on changing health care seeking behavior in Matlab, Bangladesh found that 55 per cent of people who had had fever, bodily pain or gastrointestinal illness reported that they self-treated. In Kenya, Ruebush *et al*., (1995) investigated self-treatment of malaria in a rural area of western Kenya and found that of 138 episodes of febrile illness, 60 per cent were treated at home with herbal remedies or with medicines purchased from a local shop. In Ghana, Hill *et al*. (2003) in their study on recognizing childhood illnesses and their traditional explanations asked respondents to rank the severity of the illness and found that, 50 per cent of children considered by their caregivers to have had an illness that was 'severe/could have killed' were not taken to a health facility. Prata *et al*., (2005) analyzed demographic health survey (DHS) data from 22 countries and found that only 34.3 per cent of children from the poorest quintile who were sick with diarrhea consulted a medical practitioner.

A study by Cunningham and Kemper (1988) on the ability to obtain medical care for the uninsured across communities in the United States (US), using the survey method showed significant community variation in reported access to healthcare for the uninsured after accounting for need and a set of socio-demographic variables. Adedini *et al*., (2014) looked at barriers to accessing healthcare in Nigeria: implications for child survival using data from 2008 Nigeria Demographic and Health Survey. Applying Cox Proportional hazard models in the analysis they found higher under-five mortality risk for children whose mothers had cultural, resource-related and physical barriers in accessing health care relative to children whose mothers reported no barriers.

Methodology

Measure of Access to Care

The measure of access to care is derived from the Household survey 2013 from Ushongo and Obi local government areas of Benue State. A total of 1019 households were surveyed using a cluster survey method to collect data on socio-economic and health-service- related information. Household heads were interviewed using a pretested questionnaire containing structured and open-ended questions. The measure used was very similar to that developed in the Cunninghan and Kemper (1998) study. Individuals were asked two questions. (1) During the past 12 months was there any time when you didn't get the medical care you needed? (2) Was there any time during the past 12 months when you put off or postponed getting medical care you thought you needed? Follow up questions identified specific reasons as to why care was postponed. Access to care was measured dichotomously. Individuals were considered to have had difficulty accessing health care if they answered "yes" to the first question or "yes" to the second question and if the reasons cited for the second question included the cost of care, problems with health insurance or referrals, difficulty finding physicians or making appointments, or proximity to clinicians. We selected these types of access problems to reflect the major obstacles to receipt of needed care; other choices such as "bad experience with doctor," caring for family members, or "didn't think it was serious enough" were not considered genuine health care system related access problems.

Simple statistics such as frequencies, percentages and averages were used in the cross tabulation and analysis of the data.

Presentation and Analysis of Data

Access to Healthcare

In examining access to healthcare services in the study area; the study considered the issue in terms of availability, utilization, physical accessibility and outcomes of the healthcare services.

Availability of Healthcare Services

Information sought from respondents in respect of health centres/hospitals available in the various communities of the sampled local government areas is presented below.

Table 1: Availability of Health Centers/Hospitals in Communities of Sampled Local Government Areas.

RESPONSE	FREQUENCY	PERCENTAGE (%)
Available	976	95.8
Not Available	43	4.2
Total	**1019**	**100**

Source*: Household survey 2013*.

From table 1, it can be seen that healthcare services are available in the sampled communities since over 95% of the respondents have indicated so. This implies that healthcare services are available in the state and may not be considered as a major challenge to access.

Utilization of Healthcare Services

In order to investigate issues surrounding utilization of healthcare services in the state, respondents were asked two questions as to whether they had ever put off or postponed getting medical attention they needed and reason(s) for the postponement. The responses were as presented in tables 2 and 3.

Table 2: Ability to Access Healthcare Services.

Responses	Frequency	percentage (%)
Able to access healthcare services	613	60.2
Not able to access healthcare services	406	39.8
Total	**1019**	**100**

Source*: household survey 2013.*

Table 3: Reasons for Inability to Access Healthcare Services.

Reasons	Frequency	percentage (%)
Cost of healthcare	343	84.5
Absence of health insurance	10	2.5
Absence of health facilities	8	2.0
Absence of qualified medical personal	18	4.4
Distance to nearest health post	11	2.7
Other reasons	16	3.9
Total	**406**	**100**

Source*: Household survey 2013.*

Table 2 indicates that about 40% of the respondents could not access healthcare services due to various reasons. The break down as presented in table 3 shows that over 84% of the respondents that could not access healthcare services was due to cost of healthcare. By implication, healthcare cost is identified as a major factor limiting access to healthcare services in Benue State. It is important to also identify the socio-economic groups based on occupation that suffer most inability to access health care services.

Table 4: Distribution by Occupation of Households Unable to Access Healthcare Services .

Occupation	Number of Households	Percentage (%)
Farming	241	59.4
Trading	46	11.3
Civil Service	61	15.0
Artisan/Crafts	58	14.3 .
Total	**406**	**100**

Source*: Household survey 2013.*

The distribution by occupation of households that were not able to access health care services in Table 4 showed that 59.4% of households whose heads were engaged in farming had the highest challenge in accessing health care services. Next to farming is civil service with 15% followed by artisan/crafts with 14.3% and lastly trading with 11.3%.

Physical Accessibility of Healthcare Facilities

From the household survey 2013, it was established from table 1 that over 95% of the respondents indicated that there was availability of healthcare posts in their communities. Granted that health centres/hospitals are found in most of the communities which are mostly less than ten kilometers in radius is an indication that healthcare services are available to most of the people within 30 minutes reach that is considered ideal (NBS 2006). By implication, access to healthcare facilities in Benue State in terms of distance may not be considered a major challenge.

Outcome of Healthcare Services

About 4.4% of the sampled population that were unable to access healthcare services expressed dissatisfaction with the services rendered. The major reason being the absence of qualified medical personnel. This finding correlates that of FOS 2001 where 31% of patients that made use of health services in the state reported failure of treatment received.

Discussion of Findings and Policy Implications

Arising from the household survey information in tables 2 and 3 on households' access to healthcare services in Benue State; it was found that about 40% of the population where unable to access healthcare services. It was also alarming to discover that over 84% of those that could not access healthcare services were on the ground of high cost of care. These findings correlate with that of FOS 2001 where they reported that only 5% of patients made use of health centres

and all from rural areas. The findings point to the gravity of the issue of high cost of services since over half of healthcare posts in the State are health centres located in rural areas (SMOH, 2006). The implication of the high cost limiting access to healthcare services on the households is that the poor people would continue to remain poor partly due to poor health condition that limits their productivity. This calls for a review of the healthcare financing policy especially with respect to user fees and the principle of self-sustainability that is currently been pursued. Obviously the principle of self-sustainability of the healthcare delivery system as enshrined in the National Health Policy does not give room for the desired subsidy for the needy and runs contrary to the National philosophy of health for all Nigerians.

Upon classification by occupation of those that could not access health care services in the study area, it was discovered that 59.4% of the households were those whose heads were into farming. This state of affairs spells doom for the economy of the State since it heavily dependents on agriculture that sustains over 60% of the population. It could also imply that Nigerians may not experience a drop in food prices given that farmers in the acclaimed food basket State of the Nation have serious healthcare access challenges that stands against their productivity. This finding lend support to the poverty head count report on Benue from the National Bureau of Statistics (NBS) (2008) indicating an increasing trend that estimated the poverty head count in 2004 to be as high as 80.85% of the population.

It was found that poor health outcome upon utilization of services was a limiting factor to use of healthcare services in the State. Absence of qualified medical personnel hindered access to medical services by 4.4% of those that reported inability in accessing healthcare services. Inability in utilization of health facilities in the rural areas apart from cost which accounted for 84.5% was majorly not unconnected to the absence of qualified medical personnel. As such there is every need for the government to make deliberate effort to staff the rural health centres with qualified medical personnel. The policy implication is for the government to put in place policies/incentives that would encourage qualified medical personnel to accept posting to rural areas.

Conclusions and Policy Recommendations

Conclusions

Giving findings about access to healthcare services in the State, the study came to the conclusion that healthcare facilities are available in sufficient quantities; however their utilization is limited due to various reasons. Some of the reasons identified includes: high cost of care; absence of qualified medical personnel and failure in healthcare services outcomes. The study also came to the conclusion that households' productivity shall be limited due to their inability to access healthcare services; thus leading to perpetuation of poverty in the State.

Policy Recommendations

(i) The National Health Policy on financing of healthcare services has to be reviewed to reflect the socio-economic conditions in the society. Payment for healthcare services should be based on individuals' ability to pay and not equity in payment for services as it is today.

(ii) There is need for Benue State government to put in place policies and incentives that would make working in rural areas attractive to medical personnel.

(iii) There is every need for the government to have a change of attitude in terms of giving the health sector its' desired attention as one of the top priority sector, especially at this level of our development where unskilled labour is the major source of production.

References

Adedini, S.A., Odimegwu, C., Bamiwuye, O., Fadeyibi, O. and De Wet, N. (2014) 'Barriers to Accessing Health Care in Nigeria: implications for child survival'; Glob Health Action 2014, web site – http://dx.doi.org/10.3402/gha.v7.23499.

Ahmed, S., Adams, A., Chowdhury, M. and Bhuiya, A. (2003) 'Changing health care seeking behaviour in Matlab, Bangladesh: do development interventions matter?', *Health Policy and Planning*, 18: 306–15.

Asfaw, A (2003): Cost of illness, demand for medical care, and the prospect of community health insurance schemes in the rural areas of Ethiopia. Frankfurt: Peter Lang Eds.

Bulatao, R. and Ross, J. (2002) 'Rating maternal and neonatal health services in developing countries', *Bulletin of the World Health Organization*, 80:721–7.

Cunningham, P. J., and P. Kemper. (1998): ``Ability to Obtain Medical Care for the Uninsured: How Much Does It Vary Across Communities?" Journal of the American Medical Association 280: 921-7.

Department for International Development (2002): Desk study and scoping mission on poverty and well-being in Benue State. London; DFID.

FOS (2001): Core Welfare Indicator Questionnaire Survey, Benue State; Federal Office of Statistics, Abuja in collaboration with Benue State Statistical Agency, Ministry of Finance & Economic Planning Makurdi, Benue State.

Gulliford, M., Figueroa-Munoz, J., Morgan, M., Hughes, D., Gibson, B. *et al*. (2002) 'What does access to health care mean?', *Journal of Health Services Research and Policy*, 7: 186–8.

Hausmann-Muela, S., Ribera, J. and Nyamongo, I. (2003) 'Health seeking behaviour and the health system response', *DCPP* Working Paper No. 14, Disease Control Priorities Project, Washington, DC: World Bank.

Hill, Z., Kendall, C., Arthur, P., Kirkwood, B. and Adjei, E. (2003) 'Recognizing childhood illnesses and their traditional explanations: exploring options for care-seeking interventions in the context of the IMCI strategy in rural Ghana', *Tropical Medicine and International Health*, 8: 668–76.

Mooney, G. (1983) 'Equity in health care: confronting the confusion', *Effective Health Care*, 1: 179–85.

National Bureau of Statistics (2008) 'Annual Abstract of Statistical Bulletin': National Bureau of Statistics pp 393 – 395.

Prata, N., Montagu, D. and Jefferys, E. (2005) 'Private sector, human resources and health franchising in Africa', *Bulletin of the World Health Organization*, 83: 274–9.

Ruebush, T., Kern, M., Campbell, C. and Oloo, A. (1995) 'Self-treatment of malaria in a rural area of Western Kenya', *Bulletin of the World Health Organization*, 73: 229–36.

Sara B, Lucy G, Anne M.(2008): Health, Economic Development and Household Poverty.london and New York; Routledge Taylor and Francis Group.

SMOH (2006): Benue State Health Bulletin 2005 – 2006; State Ministry of Health, Makurdi.

Wagstaff A, (2002): Poverty and health sector inequalities. Bulletin of the World Health Organization; Theme Papers pp 97.

Waters, H., Dougherty, L., Tegang, S.P., Tran, N., Wiysonge, C.S. *et al*. (2004) 'Coverage and costs of childhood immunizations in Cameroon', *Bulletin of the World Health Organization*, 82: 668–75.

EFFECIENCY OF RESOURCE USE IN FISH FARMING: IMPLICATIONS FOR FOOD SECURITY IN BENUE STATE

Kelvins Terhemba Adzer

Department of Economics

College of Education Katsina-Ala,

Benue State

Dominic Zaan Agba

Department of Economics and Development Studies

Federal University Dutsinma,

Katsina State.

ABSTRACT

In spite of Nigeria's efforts over the years to guarantee food security, evidence on ground reveals that the food insecurity virus is getting more entrenched in the country. In view of this, the study examined the extent to which fish farming can be used to reduce food insecurity in Benue State. Data were collected using well-structured questionnaires. The stratified random sampling technique was used to obtain 80 respondents in the study area. Data generated were analyzed using descriptive statistics and Cobb-Douglas production function to determine the efficiency or otherwise of resource use in fish farming. In this regard, the logarithmic linear multiple regression model was estimated using the Ordinary Least Squares (OLS) technique. The result of the adjusted R of 0.62 implied that the explanatory variables accounted for 62.0% variation on the dependent variable. Also, the F-Statistic value of 20.881 is significant at 5% significant level, implying that efficient use of resources impact positively on the output level of fish. It was however noted that efficiency of resource use is not the major determinant of food security in the study area and this is shown by the insignificant values (except that of cash expenditure) of the t-statistics. The results showed among other things, that the farmers were operating in stage I because MPP values are greater than APP values (i.e MPP>APP), implying that the farmers were

technically inefficient in the use of inputs. Also, the MVP of the factor inputs was greater than their marginal costs (MFC), implying that these inputs were not optimally utilized. It is suggested in the study that government should provide improved fish species, provide loans and educate farmers in the fight to reduce food insecurity.

Keywords: Resources use, Fish Farming, Food Security, Cobb-Douglas Production Model, Basic Resource Theory.

Introduction

Available and relevant literature on the Nigeria economy shows that agriculture is the backbone of the nation's economic and political sovereignty. This explains why successive governments in Nigeria have taken various steps to encourage food production in the country. The need to increase food production is emphasized in relation to the population explosion in the country from 55 million in 1963 to about 180 million people in 2013 (Federal Office of Statistics, 1994; National Population Commission, 2006).

According to Abu, G. A; Agbo, S.O and Ater, P.I. (2004), both population increase and the general fall in the production of some staple foods have worsened the food shortage situation such that the country experienced serious food crisis during the early eighties. In the past two decades, the per-capita food production in Nigeria has declined tremendously. This has had adverse effects on both the economy and the human populace. The food problem stems from the inadequacy of domestic food supplies to meet internal demands (Shaib, B; Aliyu, A. and Bakshi, J. 1997; Adewumi, M.O; Ayinde, O.E; Oladeinde, O.A and Muhammad, L.A. 2004).

Fish holds the potential of reducing protein deficiency in the country. It provides a substantial proportion of animal protein in human diets. It constitutes 17-50 percent of the world's animal protein intake while it contributes about 40 percent of animal protein intake of average Nigerians (Adewumi, 1994). However, fish farming is usually faced with prevalence of disease, shortage of feed, inadequate manpower. With a high content of polyunsaturated fatty acids, fish protein is known to be superior to beef protein and it is important in lowering blood cholesterol level (Kent, 1984). However,

the role of fish as a major supplier of protein can only be achieved through optimum consumption by the people.

Sequel to the above, it means anything which hampers or reduces production of fish invariably reduces availability of the essential nutrients to deserving people. It is based on the importance of fish that it becomes imperative to examine the efficiency of farm resources in its production.

The fish farming activity is a recent development in Benue State. Pilot fish farms were established in the state and these were to afford the private investors the opportunity to view the first hand socio-economic merits of operating fish farms. Operations of these projects have not been successful due to inadequate manpower, high initial capital cost of inputs procurement. The farmers also do not measure their efficiency and elasticity of production, neither do they measure yields produced from other fish farmers. Other limiting factors to the farming include inadequate capital, insufficient supply of fingerlings and improper legal framework (Adzer, 2010).

According to the CBN survey of 2006 output of fish, there was an increase of 4.7 percent above its output level in 2005 to 600,000 tones. The production of table fish through fish farming also increased from 30,000 tones to 80, 000 tones in the same period. The 2006 production level of 0.6 million tones was much lower than the national demand of 1.5 million tones. It is on this note that the study assesses the need for fish farmers to expeditiously utilize farm resources in order to improve productivity, enhance income generation and also meet the food demand of the people through fish farming.

To Olayide and Heady (1982), inefficient resources use among small scale farmers is one of the major causes of poor agricultural production. To Koutsoyiannis (1979), a sector or enterprise which uses its resources inefficiently, characterized by low value of marginal product is likely to loose its resources to those industries or sectors with high value of marginal products (VMP).

The study therefore describes the socio-economic characteristics of fish farmers in the study area and also assesses the productivity of the resources employed by the fish farmers and the implication of the findings to the state and Nigeria at large. The

elegance of the choice to assess the productivity of agricultural inputs is that, all things being equal, enhanced productivity guarantees food security. It is on this note that the study assesses the need for fish farmers to expeditiously utilize farm resources in order to improve productivity, enhance income generation and also meet the food demand of the people through fish farming.

The broad objective of the study is to examine the efficiency of resource use as a determinant to food security in the study area. Specifically, the study seeks to assess (i)the benefits of fish farming in the study area (ii)the productivity and efficiency of resource use in fish farming (iii)the problems faced by fish farmers in the study area (iv)the implication of the findings to the study area.

It is hypothesized in this study that there is no significant effect of efficient resource use in fish farming of on output level of fish.

Conceptual and Theoretical Framework

Fish farming is the raising of fish culture principally practiced in ponds, cages and pens such that it permits the supervision and regulation of production, feeding, quantitative growth and control of the size of the fish as well as the stocking and maintenance of the ponds instead of leaving this to nature (Aiyedun, 2004). To Ajekigbe (2007), fish farming is the rearing of fin in restricted water body. It includes the cultivation of shell fish (shrimps and oyster) in restricted water body. This cultivation is aimed at achieving the highest possible fish production in any given circumstances and in the most economic manner. The environment must be such that there is complete control over the physical, chemical and biological factors, which directly affect the rate of production. Adzer (2010) posits that fish farming is the production or rearing of fish done in conditions where all the basic means of production can be controlled within their respective limitations and from which producers aim to obtain optimal economic results.

Food security on the other hand, has been variously conceptualized. As such, Idachaba (1993) defined food security as not necessarily meaning self sufficiency in food supply. It refers to availability of food stuff in desired quantity and quality to all

consumers throughout the year. According to Eicher (1984), food security is the ability of a country to assume on a long term basis that food system provides the total population access to timely, reliable and nutritionally adequate food supply. Food security according to the World Bank Summit held in Rome, Italy in 2006 among other things is the right of everyone to have access to safe and nutritious food, consistent with the right to adequate food and the fundamental right of everyone to be free from hunger.

The concept of efficiency of resource-use can be explained using the production function analysis. According to Olayemi and Olayide (1981), a production function is a mathematical model which expresses the technical relationship between inputs and outputs. That is, a production function defines the factor-product relationship in the production process. It defines the range of technical possibilities in the production process. Heady and Dillion (1994) assert that production is a pure technical relation; it describes the laws of proportion, that is, the transformation of factors into product (output) at any particular time or period. The production function represents the technology of a firm or an industry of the economy as a whole. To Olayide and Heady (1982), technical efficiency and allocative efficiency are two important concepts relating to production function. Technical efficiency refers to the ability of producer to obtain a certain level of outputs, while allocative efficiency is the ability to choose the level of inputs that maximizes profit at a given factor cost.

Theoretical Framework

The basic resource theory and the production function theory have been used here to explain how efficiency of resource use in fish farming can be used to enhance food security in the study area.

The Basic Resource Theory posits that economic growth depends on the presence, quality and the magnitude of basic natural resources within a particular economic region or area. The theory further argues as contained in Ogwumike (1995) that, development of these resources attract investment capital to these areas and increase employment and income. It has been argued that regions or areas where basic

resources abound usually attract higher levels of income and grow at a faster rate than regions or areas without these resources. According to Ker (2006), even the construction of road networks, railways and other basic facilities is a function of the presence of basic resources in such areas. Therefore, fish farming should be encouraged as a means to reduce food insecurity in Benue State since the state has the required farm lands that support fish farms, and the availability of water bodies delivered naturally that supports both seasonal and perennial fish farm practices.

The production function theory looks at the relationship between inputs and output in the production process. Jhingan (2006) posits that the production function expresses a functional relationship between quantities of inputs and outputs. It shows how and to what extent output changes with variations in inputs during a specified period of time. To Olayide and Heady (1982), the production function stipulates the technical relationships between inputs and outputs in any production schema or processes. In mathematical terms, the function is assumed to be continues and differentiable. Its differentiability enables us to establish the rates of return.

Since the production function is assumed to be continues, the farmer will produce as along as he is able to cover the variable cost i.e. where the marginal cost (MC) is equal to or greater than average variable cost (AVC) i.e. MC $\geq$ AVC. In a single input case, the optimum point of resource-use is where the value of the product is equal to input price (i.e. MVP=Px).

The production function depicts three stages of production. Stage I of production ends with the extensive margin. In stage II, the TPP first increases at an increasing rate. In this stage MPP increases and reaches maximum and begins to decrease. APP is also increasing till it reaches a peak and lies above MPP. At the end of stage I and the beginning of stage II, APP=MPP (Heady and Dillion, 1994).

The stage II begins at the extensive margin where TPP continues to increase at a decreasing rate. At this stage the APP>MPP and both APP and MPP are decreasing. At this stage also MPP meets APP at its maximum and where MPP=0 i.e. the boundary of

stages II and III. Stage III of the production lies beyond the intensive margin where TPP is decreasing and MPP is negative (Abu et al, 2004).

According to Heady and Dillion (1994), in stage III the ratios of the variable inputs to fixed inputs are large and reach its maximum of the intensive margin. At this stage of the production, APP>0 i.e. positive and MPP<0 i.e. negative implying that APP is still positive but MPP negative. Therefore, the area of operation is stage II where the ratio of the variable inputs to fixed input is higher such that adjustment between the two extremes is possible. Stage II is the rational stage of production while stage I and III are irrational stages of production. This is because the maximum APP of a variable input occurs at the intensive margin whereas the maximum APP of fixed inputs is at the extensive margin. As long as MPP is greater than APP, the producer will continue to add more of the variable input. In other words, production concentrates on the range of output over which the MPPK, $_L$, although positive, decrease i.e. the range of diminishing but non-negative productivity of factors of production.

The production function is better linked to the Cobb-Douglas production function. This is because the Cobb-Douglas production function is a special case of production, which takes the form:

$Q = ß_0 K^{ß1} L^{ß2} e^u$ .....(1)

Where Q is the output, while $ß_1$ is the elasticity of output (Q) with respect to capital (K) and $ß_2$ is the elasticity of output (Q) with respect to labour (L). In this type of production function, the sum of elasticities, $ß_1$ and $ß_2$ gives the degree of homogeneity of degree 1 of the function. It exhibits either constant, decreasing or increasing marginal productivity.

Empirical Review

Adewuni et al (2004) conducted a study on an empirical analysis of fish farming in Ogun State of Nigeria. The Abeokuta zone of Ogun State Agricultural Development Projects (OGASEP) unified extension services was purposely selected due to the fact that fish farming business are majorly embarked upon by the people in the zone. The study used primary data collected with the aid of structured questionnaires. They also

used descriptive statistic, multiple regression analysis and the farm budget analysis. The double-log production function was used and the equation explained 97.5% of the variation in fish output. They concluded that the variability in fish output was explained by pond size, quantities of fertilizer, lime, finger-lings and labour used.

In analyzing the impact of economic efficiency of resource use on production in traditional agriculture, Olayemi (1974), using primary data collected in Kwara State estimated the marginal products of some production inputs and the use of these in the evaluation of the economic efficiency of small-scale rice producers. The study revealed that Land, Fertilizer, Seeds, Irrigation as resources were grossly underutilized. For instance, he pointed out that improved seeds would generate an incremental revenue of ₦ 42.31 on an incremental revenue of about ₦18 per acre. This shows that their value marginal products were less than output prices. An increment on their costs would have yielded incremental revenues. Labour inputs, both hired and family labour, were on the other hand, found to be overutilized. For instance, one incremental man-day of family labour valued at ₦ 0.60, yielded only ₦ 0.26 in incremental revenue. The study also showed sum of the elastic ties of 1.154 to be statistically greater than unity thereby implying increasing returns to scale.

In a similar manner, Abu et al (2004) conducted a study on efficiency of resource use in tomato enterprises in Tarka Local Government Area, Benue State-Nigeria. Their aim was to identify the problems facing tomato farmers in the study area and to determine the productivity and efficiency of resource use in tomato production. The Cobb Douglas production function was used in estimating the relationship between input and output and it showed that land, labour and capital were significant at 5% level of probability. Their study also showed that the value of marginal product of inputs were greater than their marginal cost, implying that these inputs were not optimally utilized.

Methodology

The study area, Benue State, was created in 1976 by late General Murtala Muhammed. The state lies in the middle belt geo-political zone of Nigeria and shares

boundaries with Nassarawa to the north, Taraba to the east, Cross River to the south, Enugu and Ebonyi to the south and Kogi to the west. The state also shares an international boundary with the republic of Cameroon to the south-east.

Going by the 2006 population figures of 4,219,244, Benue State now has an approximate population of 5,189,137 million people and occupies a landmass of about 30,955km^2. The study is narrowed down to Makurdi and Gboko metropolis in the Zone 'B' Senatorial District. This is because fish farming is predominantly done in this area. The Makurdi metropolis according to Akighir and Nomor (2013) is comprised of Gyado-villa zone, Wurukum, North Bank, Wadata, High Level, Owner Occupiers' Quarters, Modern Market side, Nyiman Layout, Judges Quarters and Terwase Agbadu. In a similar way Gboko metropolis is comprised of Yandev Area, Gboko West (Express Road side), Low-cost Housing Estate Area, Adekaa zone, Gboko South Area, Gboko Central zone, Abagu Area, Rice mill Area and Gboko Government Reserved Area. The population frame in the study area was arrived at following a reconnaissance survey of Adzer (2010), where about 140 fish farms were identified four years ago. Sequel to this, in Makurdi metropolis a stratified random sampling procedure was used to select 40 farmers from the strata. That is, 30 farmers were selected from Wadata and 10 farmers were drawn from Nyiman Layout. In Gboko metropolis, the same procedure was used and 20 farmers were drawn from Gboko West (Express Road side), 15 farmers Low-cost Housing Estates Area and 5 farmers from Rice Mill Area. The reasons for the selection is explained in terms of the good topography in areas farmers were found and inadequate farm space or poor topography in areas farmers were not found. The implication here is that, some strata may be assigned more weight (presence of farmers) and others less weight (absence of farmers), but irrespective of their weights in the sample, each stratum carries the same weight as corroborated by Doki (2013).

The harvested fish were valued at the prevailing producer price of ₦700 per kilogram weight. The average physical product of inputs, APP and values of marginal physical product MPP were obtained in the study. Also, the marginal productivity coefficients, Ex, of the elasticity of dependent variable Y with respect to independent

variable X were obtained. The implication was to enable the researchers make a comparison of the values of marginal physical products (MPPs) and values of average physical products (APPs) in other to determine the efficiency or otherwise of resources used in the study. A comparison of the values of marginal physical products (MVPs) and their corresponding marginal costs (MFCs) was also adopted to determine the efficiency or otherwise of resource use in fish farming in the study. The statistical value of the sum of the elasticity (Ex) was also used to ascertain the state of productivity of fish farmers in the study area.

The primary data were collected with the aid of well-structured questionnaires administered were based on the 2013 production season. The farming season is all year round spanning from the dry to wet season. The acres of land were assumed to be owners' land. Secondary data from existing literature relevant to the study were also used.

Descriptive statistics and the Cobb-Douglas production function analysis were used to realize stated objectives.

Model specification

The Cobb-Douglas production function was specified as:

$Q = ß_0K^{ß1}L^{ß2}$, where variables remain as earlier stated.

Our traditional Cobb-Douglas production function is modified as:

$Q = ß_0X_1^{ß1}X_2^{ß2}X_3^{ß3}X_4^{ß4}X_5^{ß5}X_6^{ß6}e^u$ .....(2)

Where Q = Output level

X_1 = Number of man-days of family labour

X_2 = Cash expenditure on hired labour (in Naira)

X_3 = Amount of fertilizer used (in kg)

X_4 = Fish variety (a binary variable)

X_5 = Fish farm size (in sq. meters)

X_6 = Amount of fish feed used (in kg).

$ß_1$-$ß_6$ = Vector of parameters to be estimated

$ß_0$ = Constant term

e^u = Disturbance term

The double logarithm of equation (2) gives us:

$$\ln Q = \ln\beta_0+\beta_1\ln MHRS+\beta_2\ln CEXP+\beta_3\ln AFERT+\beta_4\ln FVAR+\beta_5\ln FSIZE+\beta_6\ln AFEED+\mu \ldots\ldots\ldots(3)$$

where Q is the output level of fish, MHRS is the number of man-days of family labour, CEXP is the cash expenditure on hired labour (in Naira), AFERT is the amount of fertilizer used (in kg), FVAR is the fish variety (a binary variable), FSIZE is the fish size (in sq. meters) and AFEED is the amount of fish feed used (in kg). β_0 is the constant, β_1-β_6 are the parameters to be estimated and μ is the disturbance term.

The elegance of the log-linear model is to help reduce if not remove completely, the deleterious consequences of the heteroscedastic errors that might creep into both sides of the equation as agreed by Ekpo (1997), Amadi and Osaro (2000); and Ogiji and Akpan (2004). Also, since elasticities are required, transforming the model into logarithmic form will help us to obtain parameter estimates that are straightway elasticity estimates.

A priori Expectation: This is the expected behaviour of the coefficients in our model Thus, it is expected that: $X_1>0$, $X_2>0$, $X_3>0$, $X_4>0$, $X_5>0$ or $X_5<0$, $X_6>0$.

Rules of Thumb: Three rules of thumb have been used in study. There are:

a) If MPP>APP, we can conclude that there is inefficient use of resources, which suggests stage I but if otherwise there is efficient use of resources, which suggests stage II.
b) If MVP>MFC or MVP<MFC we can conclude that there is inefficient use of resources but if they are equal, we can conclude that the resources are optimally utilized as agreed by Olayemi and Olayide (1981).
c) If Ex<1, it shows diminishing returns to scale which suggests stage II, but if Ex>1 it shows increasing returns to scale which suggests stage I.

Result and Data Analysis

Table 1 shows the sources farmers obtain their fingerlings from, whether from government hatchery, owners' hatchery or from the wide (i.e river or stream).

Table 1: Sources of Fingerlings in the Study Area.

Sources	Frequency	Percentage
Government	10	12.5
Hatchery	44	55.0
Wide catch	26	32.5
Total	80	100.00

Source: Field Survey, 2013

The survey revealed that most of the fish farmers, representing 55 percent got their fingerlings from the hatchery while 32.5 percent got their fingerlings from the wide (i.e streams and rivers). 12.5 percent here reveals that the government is not encouraging fish farming in the study area.

Table 2 reveals whether people go into fish farming for profit motive, consumption or for leisure purpose.

Table 2: Reasons for Fish Farming in the Study Area.

Reasons	Frequency	Percentage
Profitability	60	75.0
Home consumption	15	18.75
Leisure/interest	5	6.25
Total	80	100.00

Source: Field Survey, 2013

The study showed that profitability is the main reason that attracted the farmers and this is represented by 75 percent. In as much as the main reason for fish farming is basically commercial, part of the fish is consumed and this is represented by 18.75 percent while 6.25 percent of the people engaged in fish farming for leisure.

Table 3 seeks to explain what those who farm for profit do with the proceeds, whether to reinvest it, maintain family or train children in school.

Table 3: Benefits Accrued from Fish Farming in the Study Area.

Appropriation	Frequency	Percentage
Investment	10	12.5
Maintain family	44	55.0
Train children in school	26	32.5
Total	80	100.00

Source: Field Survey, 2013

The survey revealed that most of the fish farmers, representing 55 percent use proceeds from their farm to maintain their family, while 32.5 percent of the farmers' income is directed to train children in school. Training children in school is *sine qua non* to development in the long run. Farmers who use proceeds from fish farming to invest into other profitable ventures account for 12.5 percent. Also, investment leads to economic growth, ceteries paribus.

Table 4 identifies the common problems faced by fish farmers in the study area; whether it is inadequate capital, inadequate technical services or source of fingerlings.

Table 4: Problems/Obstacles to Fish Farming in the Study Area.

Problem/Obstacle	Frequency	percentage
Inadequate capital	60	75.0
Inadequate technical services	5	6.25
Source of fingerlings	15	18.75
Total	80	100.00

Source: Field Survey, 2013.

The survey revealed that the most inhibiting factor of fish farming in the study area is inadequate capital representing 80 percent of the sampled farmers. The problem of unavailable hatchery sources representing 18.75 percent is another inhibiting factor to fish farming in the study area. Inadequate technical services represented by 7.5 percent are another barrier to fish farming in the study area.

Resource-Use Efficiency

Data collected about the respondents were analyzed using the Ordinary Least Square (OLS) multiple regression analysis to determine the relationship between inputs (i.e man-hours, cash expenditure, amount of fertilizer used, farm size and amount of fish feeds) and output of fish.

On the basis of the statistical and econometric criteria, the estimated log linear regression equation is stated thus:

$$lnQ = -0.907 + 0.141\ln MHRS + 0.114\ln CEXP + 0.082\ln AFERT + 0.741\ln FVAR$$
$$(0.819) \quad (10.203) \quad (1.128) \quad (-0.278)$$
$$- 0.02\ln FSIZE + 0.60\ln AFEED \quad (4)$$
$$(1.863) \quad (1.484)$$

Where figures in parenthesis are t-values

Adjusted R = 0.602

F-Statistic = 20.881

D.W. = 1.323

$$Ex = b_1 + b_2 + b_3 + b_4 + b_5 \ (0.141 + 0.114 + 0.082 + 0.741 + 0.60) = 1.678 \quad (5)$$

The sum of all elasticities obtained from equation (5) was 1.678 and this is found to be statistically higher than unity thereby indicating increasing returns to scale as suggested by economic theory.

From the study, it can be seen that the adjusted R is 0.602, i.e 60.2 percent and the F-statistic is 20.881 at 5 percent significance level implying that both are statistically different from zero and are therefore, significant, so the H_0 was rejected and the H_1 accepted that there is significant effect of efficient resource use on the output level of fish. This implies that efficient use of the farm inputs will result to increased output level of fish and hence food security in the study area.

The coefficients on MHRS, CEXP, AFERT, FVAR, FSIZE and AFEED have signs in accordance with the a priori expectation. A comparison of beta coefficients with their respective standard errors, show that coefficients on CEXP and FSIZE are significant while the other coefficients are not. The positive values of the coefficient exogenous variables also show that a higher value tend to increase the probability of a higher output level of the endogenous variable while the negative coefficient variable needs to be controlled since it impacts negatively on the endogenous variable.

The t-statistic values for the coefficient exogenous variables in our model are insignificant, except that of cash expenditure on hired labour. The significant t-statistic for cash expenditure could be explained that an extra Naira spent on this input yields additional revenue that is greater than the initial capital invested on the input whereas the other inputs do not.

The negative constant is tagged the 'participation level', implying that the more people participate in fish farming, the more food insecurity reduces. It also implies that when all individual explanatory variables are fixed, food insecurity (dependent variables) will decrease by approximately 9 percent, ceteries paribus.

Also, a test for serial correlation using the Durbin Watson (D.W) statistic, indicated the existence of significant positive (1.323) autocorrelation in the multiple regression model, probably, due to omitted variables.

The values of APP were obtained from an average of 203,860kg weight of fish was produced by eighty (80) farmers in the study area using a total of 950 man-hours, 350,000 Naira, 59kg of fertilizer, 184,3m^2 of land and 2000kg of fish feeds. The average physical product of these inputs was estimated to be:

$$\text{App} = \frac{TPP}{X}$$

$$\text{Thus App}_{x1} = \frac{TPP}{X} = \frac{203860}{950} = 214.58$$

$$\text{App}_{x2} = \frac{TPP}{X} = \frac{203860}{350000} = 0.58$$

$$\text{App}_{x3} = \frac{TPP}{X} = \frac{203860}{50} = 4077.2$$

$$\text{App}_{x4} = \frac{TPP}{X} = \frac{203860}{184.3} = 1106.13$$

$App_{x5} = \frac{TPP}{X} = \frac{203860}{2000} = 101.93$

In consonance with the elasticity estimates obtained from the logarithmic model, certain transformations were made to derive marginal productivity coefficients. By definition, Ex, the elasticity of dependent variable Y with respect to independent variable X is:

$Ex = \frac{dy}{dX} \times \frac{X}{Y}$

Thus, $\frac{dy}{dx} = MPP_x = E_X . \frac{Y}{X}$, where, X and Y were measured at their geometric or arithmetic means as the case might be. Hence,

MPP = Ex. APP

So MPP_{x1} =1.678×214.58 = 360.06

MPP_{X2} = 1.678×0.58 = 0.97

MPP_{X3} =1.678×4077.2 = 6841.54

MPP_{X4} =1.678×1106.13 = 1856.08

MPP_{X5} = 1.6758×101.93 = 171.03

Having obtained the marginal physical products of inputs that is, 360.06; 0.97; 6841.54; 1856.08 and 171.03 for man-hours for family labour, cash expenditure on hired labour, amount fertilizer used, fish farm size and amount of fish feeds respectively, they were also valued at the prevailing producer price of fish (i.e ₦700 per kg weight). A comparison of the values of marginal products with optimum level of performance where marginal cost is equal to marginal revenue was made as agreed by Olayemi and Olayide (1981). Given the level of technology and prices of both inputs and output, the marginal productivity is the yardstick for assessing the efficiency of resource use as corroborated by Adewumi et al (2004). That is, a given resource is optimally allocated when its MVP is equal to its acquisition price (MFC). Otherwise, it is not optimally allocated. There can economic optimum yield or optimal allocation of a resource only when production is pushed to the point where the marginal physical product (MPP) of every input used in production is equal to the ratio of its input price

and the output price. That is, $MPP_n = \frac{Pn}{Py}$ or $P_y(MPP_n) = P_n$ for output and input price of product *n.*

Because the MPPs of inputs were valued at the prevailing product price of ₦700 per kilogram weight, the MVPs of man-hours, capital, amount of fertilizer, farm size and amount of feeds were estimated to be ₦252,042, ₦679, ₦4,789,078, ₦1,299,256 and ₦119,721 respectively.

The table below gives clearer illustration as shown.

Table 5: Comparison of APP, MPP, MVP and MFC.

Factor	APP	MPP	MVP	MFC
Man hours	214.58	360.06	252042	34.28
Cash expenditure	0.58	0.97	679	500
Amount of fertilizer	4077.2	6841.54	4789078	3.57
Farm size	1106.13	1856.08	1299256	5.71
Amount of feeds	101.93	171.03	119721	25.71

Source: Researchers' computation, 2013

The comparison of APP and MPP values confirm that the farmer is operating in stage I, that is all values of MPP are greater than those of APP (i.e MPP>APP), implying that the farmers are operating below the food sufficient level. This stage relates to increasing average returns because the TP curve or value increases at an increasing rate. At this stage of production, the fixed factor (i.e farm land) cannot be put to the maximum use due to the non-applicability of sufficient units of the variables factors. The economical and profitable stage of production is where the ratio of the variable input to fixed input is higher such that adjustment between the two extremes is possible. This is at stage II, where APP>MPP and both APP and MPP are decreasing but non-negative productivity of factors of production.

It can also be seen from the study that the MVPs of all variable inputs given as ₦252,042, ₦679, ₦4,789,078, ₦1,299,256, and ₦117,921 respectively are greater than their corresponding costs (₦ 34.34, ₦ 500, ₦ 3.57, ₦ 5.71, and ₦ 25.71) of obtaining

additional units of their inputs. This means that an individual extra Naira spent on each input yields additional revenue that is greater than initial investment on the input. It was therefore, concluded that these inputs were grossly underutilized. To attain maximum output level (food security) and economic optimum, the fish farmers should increase the use of these inputs.

The study reveals that unavailability of improved fish variety, shortage of fish feeds, inadequate technical manpower, inadequate capital, are some of the basic problems faced by fish farmers in the study area. These challenges thus pose a serious threat to increased output level (food security) and proteins needed for the survival of mankind and economic stability.

The findings show that the farmers were operating in stage I because MPP values are greater than APP values (i.e MPP>APP), implying that the farmers were technically inefficient in the use of inputs. Also, the MVP of the factor inputs was greater than their marginal costs, implying these inputs were not optimally utilized. This means that, since the resources are not optimally utilized food security and the proteins needed by man cannot be guaranteed in the study area.

It suggested in the study that:

i. The government through Benue Agricultural and Rural Development Authority (BNARDA) should assist fish farmers in getting improved species of culturable fishes;
ii. The government should provide feed compounding firms so that farmers will stop buying foreign feeds at exorbitant prices that add to farmers' high cost of production;
iii. Micro-finances should be promoted and encouraged to give loans to fish farmers to improve their activities;
iv. Improve farmers' education on the skills required in profitable fish production.
v. Researchers can investigate into other factors in addition to efficient resource use that guarantee maximum output yield in fish farming.

References

Abu G.A; Agbo, S.O. and Ater, P.I. (2004). Efficiency of Resource Use in Tomato Enterprise in Tarka Local Government Area of Benue State, Nigeria. *Journal of Economic and Social Research, Vol. 3, No 1, Dec. 2004*.

Adegeye, A.J. and Dittoh (1982). *Essentials of Agricultural Economics.* Impact Publishers , University of Ibadan, Nigeria.

Adewumi, M.O (1994). Resource Productivity and Efficiency in Fish Farming Enterprises: The Case of Kwara State of Nigeria. *Journal of Rural Development and Administration 25 (2) Spring: 33-42.*

Adewumi, M.O; Ayinde, O.E, Oladeinde, O.A. and Muhammad, L.A. (2004). Economic Analysis of Fish Farming in Ogun State of Nigeria. *Proceeding of the 19th Annual Conference of FISON Ilorin, 29th Nov. – 3rd Dec. 2004; edited by Araoye, P.A., FSN – Lagos, Nigeria.*

Adzer, K.T. (2010). The Potential of Cottage Fish Farming as a Poverty Strategy in Benue State. *Unpublished M.Sc. (Economics) Thesis Submitted to the Post Graduate School, Makurdi, Benue State, Nigeria*.

Aiyedun, J.O (2004). Financial Analysis of Small-Scale Fish Farming Enterprises to Alleviate Poverty in Homestead. 2004 *FISON Conference Proceedings.*

Ajekigbe (2007). Fisheries Development in Nigeria: The Challenge and Prospects of Accessing Funds. *The 2007 FISON Annual Public Lecture.*

Akighir, D.T. and Nomor, D.T. (2013). Empirical Investigation of the Poverty-Fuelwood Consumption Nexus in Makurdi Metropolis. *Journal of Economic and Social Research, Vol. 5, No. 1, October, 2013.*

Amadi, S.N. and Osaro, O. (2000). Security Pricing and Nigerian Capital Market 1985-1994: Some Reflections. *African Journal of Business and Economics Research Vol. 1, No1.*

Central Bank of Nigeria (2006): Annual Report, 2006.

Doki, N.O. (2013). An Assessment of the National Poverty Eradication Programme: Evidence from Benue State. *Journal of Economic and Social Research, Vol. 5, No. 1, October 2013.*

Eicher, C.K. (1984). *Facing up to Africa's Food Crises in Sub-Saharan Africa.* Michigan State University Press.

Ekpo, A.H. (1997). Foreign Direct Investment in Nigeria: Evidence from Time Series Data. *CBN Economic and Financial Review, Vol. 35, No1.*

Federal Office of Statistics (1994). *Abstracts of Statistics*.

Heady E.O and J.L. Dillion (1994). *Agricultural Production Functions*. Iowa State University Press, Ames, Iowa.

Idachaba, F.S. (1993). Quoted in Aregbe, K.T. (ed) (1999). *World Food Day '1999' in Nigeria.*

Jhingan, M.L. (2006). *The Economics of Development and Planning.* 35th Revised and Enlarged E.d., Vrinda Publications (P) Ltd, Delhi-India.

Kent, G. (1984). National Fisheries Policies and Alleviation of Malnutrition in Ogun State. A Case Study of Abeokuta North and Odeba Local Government Area of Ogun State. *Unpublished Thesis.*

Ker, G. (2006). Informal Microcredit and Poverty Reduction in Rural Communities in Benue State. *Unpublished M.Sc (Economics) Thesis Submitted to the Post Graduate School, Benue State University, Benue State Nigeria.*

Koutsoyiannis, A. (1979) *Modern Microeconomics.* Macmillan, London, 2nd ed.

National Population Commission (2006). *Census in Nigeria Conducted in 2006.*

Ogiji, P. and Akpan, E.S. (2004). Implication of (Rural Pricing Pattern on the Incidence of Poverty in Nigeria (1979-2002). *JESR, Vol. 3, No. 1, Dec. 2004.*

Ogwumike, F.O. (1995). The Effects of Macro-level Government Policies on Rural Development and Poverty Alleviation in Nigeria. *Ibadan Journal of the Sciences, Vol. 1, PP.85-101.*

Olayemi, J. K (1974). Swamp Rice Production in Traditional Agriculture: A Case Study of the Kwara State of Nigeria. *The Nigerian Agricultural Journal, Vol. 11, No. 3.*

Olayemi, J.K. and Olayide, S.O. (1981). *Elements of Applied Econometrics.* Card Publishers, Nigeria.

Olayide, S.O. and Heady, E.O. (1982). *Introduction to Agricultural Production Economics.* Ibadan University Press, Ibadan , Nigeria.

Shaib, B; Aliyu. A. and Bakshi, J. (1997). Nigeria: National Agricultural Research Strategy Plan 1996-2010. *Federal Department of Agricultural Science, Federal Ministry of Agriculture and National Resources, Abuja, Nigeria.*

Tober, J.G. (1984). A Review of the Fishing Industry in Nigeria and Status of Fish Production Method and Future Growth Pre-requisition to Cope with Anticipated Increase in Production. *In Nigeria Institute of Oceanographic and Marine Research, Technical paper (17): 1-3.*