Response of Fish Output to External Capital Inflows in Nigeria

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ABSTRACT
This study examines response of fish output to foreign capital inflows (foreign private investment, foreign aids and grants and net export earnings) in Nigeria. Time series data were obtained from National Bureau of Statistics and Central Bank of Nigeria Statistical Bulletin from 1980-2013. The ordinary least squares (OLS) regression analysis and cointegration/error correction mechanism were employed in data analysis. Results show that the value of the Error Correction Model (ECM) for fish output appeared with the right sign (-28.03894) and statistically significant at the 5 per cent level. Meaning that the ECM corrected the short run deviation to long run equilibrium. The Durbin Watson value of 1.64 for fish output suggests a lesser level of autocorrelation. The coefficient of determination (R^2) showed that 58% of fish output was explained by changes in the explanatory variables. The F-ratio of 2.447021 for fish output confirmed the overall significance of the model. The beta coefficient (β) of current and lag one forms of Foreign Private Investments (FPI), Foreign Aids and Grants (FAG), Net Export Earnings (NEE) and Exchange Rate (EXR) for fish output model were positively signed but not statistically significant. This result revealed that foreign capital inflows (FPI,FAG,NEE, and EXR) has a positive impact but does not significantly affect fish output in Nigeria. The study recommends that government should put in place a strategy for attracting more foreign investors. Attempt should also be made to attract a higher volume of foreign aids and grants by interfacing with international agencies, organizations and financial institutions. Investment of External capital should be channelled to industrial fishery sub-sector by acquiring hi-tech trawling vessels for indigenous operators in line with the cabotage Act as well as the artisanal and aquaculture sub-sectors for the acquisition of fishery inputs.

Keywords: Output, Fish, Foreign, Inflows, Capital

INTRODUCTION

Nigeria has been a mono-cultural economy that depends so much on crude oil as the main source of foreign exchange. Oil is subject to the vagaries of production and prices at the international market. Therefore, revenue from it may be subject to serious fluctuations. This partly explains why mono-cultural economies are often deficient in investment capital. Attempts to manage this problem often require deep macroeconomic adjustments that may not positively impact on the growth of the economy (Akinlo, 2004). Basically, poor economic management often results in trade imbalances, persistent fiscal deficit, insufficient domestic savings, low capital formation and domestic investment, accompanied by high inflationary pressure, poor infrastructural facilities, unemployment, low output and excess reliance on imports. In order to bridge these

gaps, a few options are open to authorities; either they borrow from outside, attract foreign investments or borrow from the domestic money and capital markets. Each of these alternatives is constrained in terms of its feasibility and effectiveness in the Nigerian context. The often narrowness of the Nigerian financial market poses constraint on its reliance for huge investment capital for the productive sectors of the economy. Therefore, the country must rely on externally sourced funds through foreign direct investments or by borrowing from foreign lenders. External borrowing, however, requires that certain conditions must be met. Some, such as IMF conditionalities are often difficult to meet. However, foreign capital inflow appears to be a lee way to pry loose these challenges given the high benefits it confers to the host economy even though it has its own constraints.

The need for foreign capital to complement domestic resources in the economic growth process has been welcomed as a catalyst of development, since it is considered as the central element of the process of economic growth. Its origin does not matter. In the face of resource deficiency in financing long term development, the capital-deficient economies have heavily resorted to foreign capital as the primary means to achieve rapid growth in all sector of the economy especially the agricultural sector. Both private and public sectors of the Nigerian economy have utilized the foreign capital to boost their sector capabilities in line with government development plans. Over time, government's plan to stimulate inflow of resources was with expectation to speed up growth and transform the economy especially the agricultural sector in line with classical economist's prescription. In particular, rapid increase in Gross Domestic Product (GDP) and GDP per capita were expected. Other expectations included improved balance of payment, creation of employment opportunities and stimulation of the overall development of the economy.

The need for capital inflow into an import dependent economy like Nigeria is crucial. A cursory look at the data indicates that Nigeria has posted trade imbalances in most fiscal years, suggesting that total payments had exceeded total receipts vis-à-vis total imports to total exports relations (Amadi, 2002). Overall balance of payments deteriorated in 1999, 2002 and 2008 mainly due to increased outflow from capital accounts (CBN, 2009). Much of the capital outflow must be attributed to increased importation, declining exports particularly non-oil subsector, and majorly due to external debt servicing required in filling resource gaps.

This study examines the fish output in response to foreign capital inflows (foreign private investment, foreign aids and grants, net export earnings and exchange rate). The result of this study is expected to assist immensely in improving policy design, institutional set up, implementation, monitoring and evaluation of foreign investments and allocation of foreign aid in stimulating economic growth

METHODOLOGY

The following time series data were employed in the study:

- Agricultural output - Index of fish output in Nigeria from 1980-2013.
- Foreign private capital inflow to agriculture data in Nigeria from 1980 – 2013,
- Foreign aid and grants to agriculture data in Nigeria from 1980 – 2013,
- Net export earnings data in Nigeria from 1980 – 2013, and

- Exchange rate data in Nigeria from 1980 – 2013.

The necessary information (data) for the variables above was obtained from secondary sources. This includes data from Central Bank of Nigeria Statistical Bulletin, National Bureau of Statistics, Journals, and textbooks among others.

Analytical Technique

The study employed quantitative techniques of data analysis. Therefore, the study adopted the Ordinary Least Square method (OLS), the Error Correction Method of Co-integration based on Engle-Granger (1987) co-integration theorem and the Granger Causality test. The reasons for these econometric approaches has become necessary due to the fact that time series data are sometimes subject to variation that may lead to false regression result.

Ordinary Least Square Test

This study employed this test to investigate the relationship that exists between the dependent and explanatory variables. The study chose the OLS method because of the requisites advantages associated with it such as the Best Linear Unbiasedness Estimate (BLUE) and efficiency.

The Co-integration and Error Correction Model (ECM) Test

The co-integration estimation technique in analyzing data was adopted in this study. Co-integration is an econometric technique used for testing the correlation between non-stationary time series data. Usually time series data are non-stationary due to fluctuations that do characterize such information. Two variables are said to be co-integrated if they have a long run or equilibrium relationship between them or share a common stochastic drift (Gujarati, 2007). Hence, co-integration technique has been developed to address the problem of spurious correlation (false correlation) often associated with some time series data. Meanwhile, an extension of this, in the co-integration technique is the error correction mechanism (ECM) (Engle and Granger, 1987). These authors have established that co-integration is a sufficient condition for an error correction model formulation.

Unit Root Test

The unit root test is the first stage of co-integration and error correction techniques. This test help to stabilize the spurious nature of the time series. A test of stationarity could be Dickey Fuller, Philip Peron and Augmented Dickey Fuller (Gujarati, 2007). But for this study, the Augmented Dickey Fuller (ADF) test is adopted. This is because it takes care of the problem of autocorrelation associated with the Dickey Fuller Test. A unit root model is presented below:

Unit Root Model

$$\Delta Y_1 = \alpha Y_{t-1} + \sum_{i=1}^{m} \beta \Delta Y_{t-} + \delta + Y_1 + \varepsilon_1 \text{ (for levels)}$$

$$\Delta\Delta Y_1 = \alpha \Delta Y_{t-1} + \sum_{i=1}^{m} \beta \Delta\Delta Y_{t-1} + \delta + Y_1 + \varepsilon_1 \text{ (for first difference)}$$

ΔY is the first difference of the series, m is the number of lags and t is the time.
Suppose two variables A (net export earning) and B(exchange rate), used in our analysis are integrated of order 1 and we are interested in finding out the equilibrium relationship between the two variables, then this method suggests a straight forward test whether two variables are co-integrated of order l(I) or not.

Johansen's Test for Co-Integration: The basic argument of Johansen's procedure is that the rank of matrix of variables can be used to determine whether or not the two variables are co-integrated.

Error Correction Model (ECM): According to Iyoha and Ekanem (2011), error correction model (ECM) involves using lagged residual to correct for deviations of actual values from the long-run equilibrium values.

The error correction model for two variables X and Y is stated generally as:
$\Delta Y_1 = \alpha_0 + \alpha_1 \Delta X_1 + \alpha_2 U_{t-1} + \varepsilon_1$
Where;α_2 is the degree of adjustment.
The decision in favour of this empirical approach is on the ground that time series data usually fluctuate, resulting in spurious short-run regression result due to cyclical behaviour of business activities. Therefore, the chosen methods of analysis will correct inconsistencies in time series data and provide for long-run relationship amongst the variables in this investigation.

Also to be tested in this research work are the following:

- Test for the co-efficient of determination (R^2) as test to knowing the explanatory power of the variables in the models (goodness of fit of the variables).
- Test of significance (T-test) of each of the parameter estimates.
- Overall significance (F-test) of the explanatory variables in the model.
- Durbin Watson test for autocorrelation.

Model Specification

Fish Production Output Model

FUP= f(FPI, FAG, NEE, EXR) (1)

Linear Specification

$FUP_t = c_0 + c_1 FPI_t + c_2 FAG_t + c_3 NEE + c_4 EXR + U_t$ (2)

Log Linear Specification

$\text{Log } FUP_t = \text{Log}c_0 + \text{Log}c_1 FPI_t + \text{Log}c_2 FAG_t + \text{Log}c_3 NEE + \text{Log } c_4 EXR + U_t$ (3)

Where:
f = functional sign

C_0 = Autonomous component of agricultural output
C_1-C_4= slopes of macroeconomic fundamentals

FUP = Output of fish Production

FPI = Foreign private investment
FAG = Foreign aids and grant to agriculture
NEE= Net export earnings
EXR = Exchange rate
t = time.

***A priori* expectations**
On the *a priori*; $C_1 > 0$, $C_2 > 0$ $C_3 > 0$and $C_4 > 0$

Variables in the Model
Dependent Variables
Fish Production Output (FUP): This refers to the sum of price weighted quantities of fish produced in a year. It is measured in (millions) Naira.
Foreign Private Investment (FPI): This a type of investment where a foreign investor of firm has an active and lasting control in an enterprise of the host country. It is measured in millions (Naira). A study by Binuyo (2014) reveals that FDI positively impacted agriculture not only in the short run but also in the long run.
Foreign Aids and Grants (FAG): These are development assistance and other forms of official flows granted by donor organizations and developed countries to developing and less developed countries to make provision for infrastructure and expenditure funding gaps due inadequacies in revenue and weak taxes (Akinlo,2004). It is measured in millions (Naira). Taham (2008) found empirically that the relationship between growth in agricultural output and agricultural aid for rural development is positive and statistically significant.
Net Export Earnings (NEE): This is defined as value of exports less value of imports. It is measured in millions (Naira). Mahadevan (2003) showed that agricultural productivity can be gained from trade openness, along with liberalized trade policies, as agricultural products need to be more competitive to get agricultural production levels. The study stressed a positive link between agricultural production, growth and trade. A similar study by Syed (2015) shows that agricultural exports has positive and significant effect on agricultural productivity. This implies that as export increases so also does agricultural productivity.
Exchange Rate (EXR): This is the value the Nigeria's Naira relative to the value of other countries currency. It represents the equivalent value of the Naira to the US Dollar. It is measured in ₦/$ (Naira/US Dollar). Studies by Oriavwote and Oyovwi (2014) show that exchange rate has a positive and significant impact on the level of agricultural output in Nigeria. Similarly Abiodun and Sheu (2010) assessed agricultural response to prices and exchange rate in Nigeria. Results of the study showed that food crop prices and exchange rate are passed on immediately to agricultural output.

RESULTS AND DISCUSSION

Table1 : Crop, Staples and Fish Outputs, Foreign Private Investment, Foreign Aid and Grants, Net Export Earnings and Exchange Rate (1980-2013)

YEAR	FUP	FPI	FAG	NEE	EXR
1980	198.19	120.8	794800000	5091.100	0.540000
1981	171.45	120.5	101520000	-1816.300	0.610000
1982	176.74	120.5	922900000	-2564.100	0.670000

1983	189.79	127.8	123750000	-1401.200	0.720000
1984	129.20	128.5	90100000	1909.700	0.760000
1985	80.49	126.0	868200000	4658.200	0.890000
1986	89.79	128.2	12300000	2937.000	2.020000
1987	80.63	117.3	119360000	12498.90	4.020000
1988	88.57	128.9	184910000	9747.100	4.540000
1989	115.24	134.8	546250000	27111.00	7.390000
1990	100.00	334.7	383270000	64168.20	8.010000
1991	108.89	382.8	378760000	32047.20	9.910000
1992	108.89	386.4	358120000	62460.50	17.30000
1993	81.27	1214.9	427680000	53140.70	22.05000
1994	86.67	1208.5	270420000	43270.40	21.89000
1995	100.32	1209	261450000	195533.7	21.89000
1996	115.56	1209	246750000	746916.8	21.89000
1997	128.57	1209	277230000	395946.1	21.89000
1998	136.51	1209	287100000	-85562.00	21.89000
1999	140.63	1209	209800000	326454.1	102.1100
2000	146.03	1209	245770000	960700.9	102.1100
2001	157.00	1209	263430000	509773.5	112.9400
2002	158.10	1209	419250000	231482.3	126.8800
2003	160.50	12091	384570000	1007651	137.2200
2004	172.10	1209	654310000	2615736	133.5000
2005	182.10	1209	6954730000	4445679	132.1500
2006	73.24	1209	1238334000	4216161	128.6500
2007	149.60	1329.9	1951130000	4397806	125.8300
2008	134.98	1249.9	1271670000	4971688	126.4800
2009	119.27	1262.7	1671210000	3253851	149.9000
2010	134.62	1280.8	2061960000	3917582	150.4800
2011	129.62	1264.5	1776670000	3993678	158.2100
2012	127.84	1269.3	2061960000	4272836	159.3900
2013	130.69	1271.5	1966860000	4061365	161.5000

Source: *CBN Statistical Bulletin (Various Issues)*

Figure 4.3 Trend Analysis of Output of Fishery Production

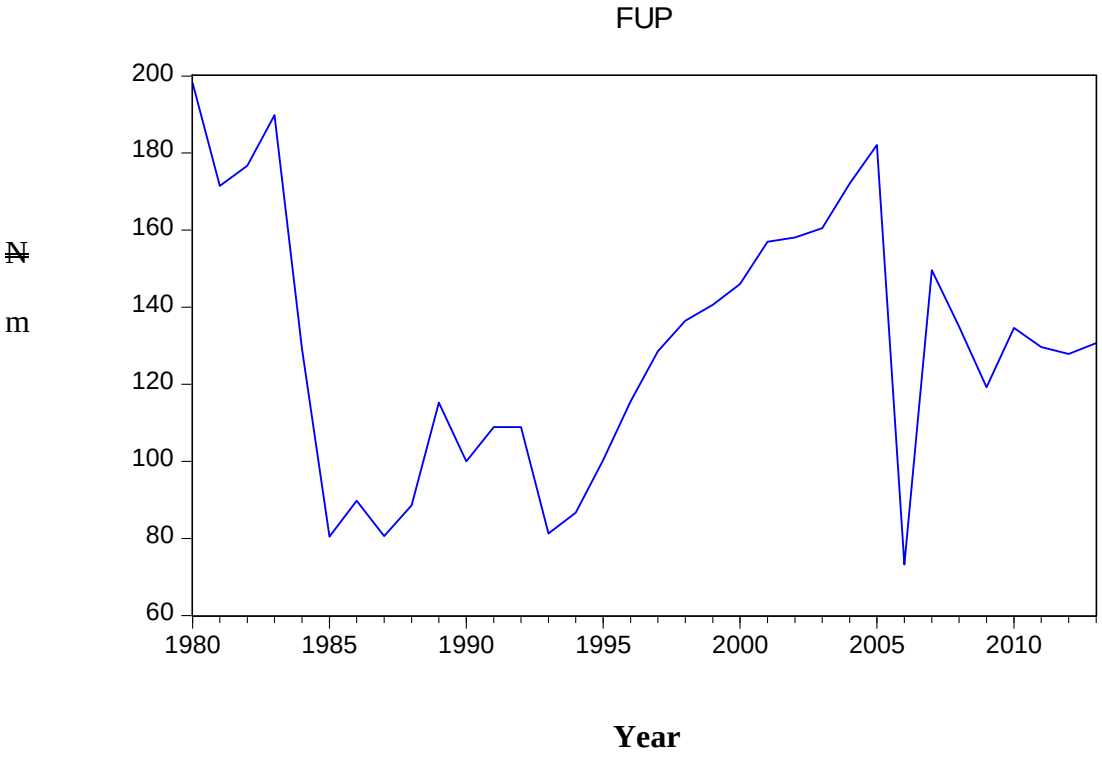

Figure 1 :Trend Analysis of Output of Fishery Production

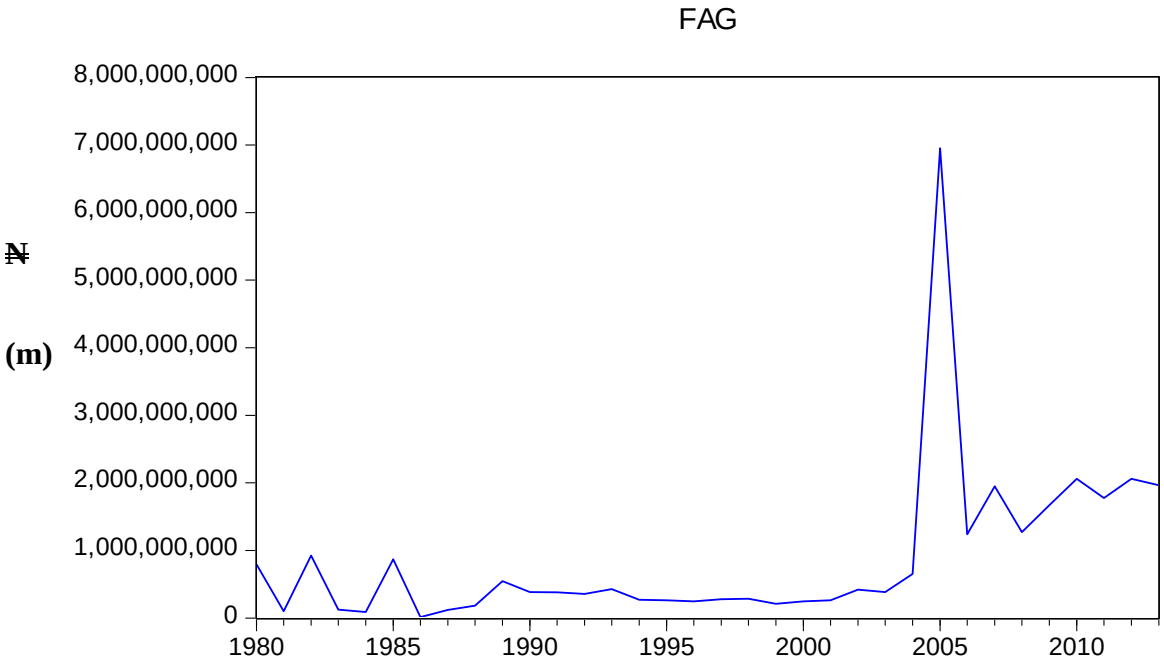

Figure 2: Trend Analysis of Foreign Aids and Grants to Agriculture

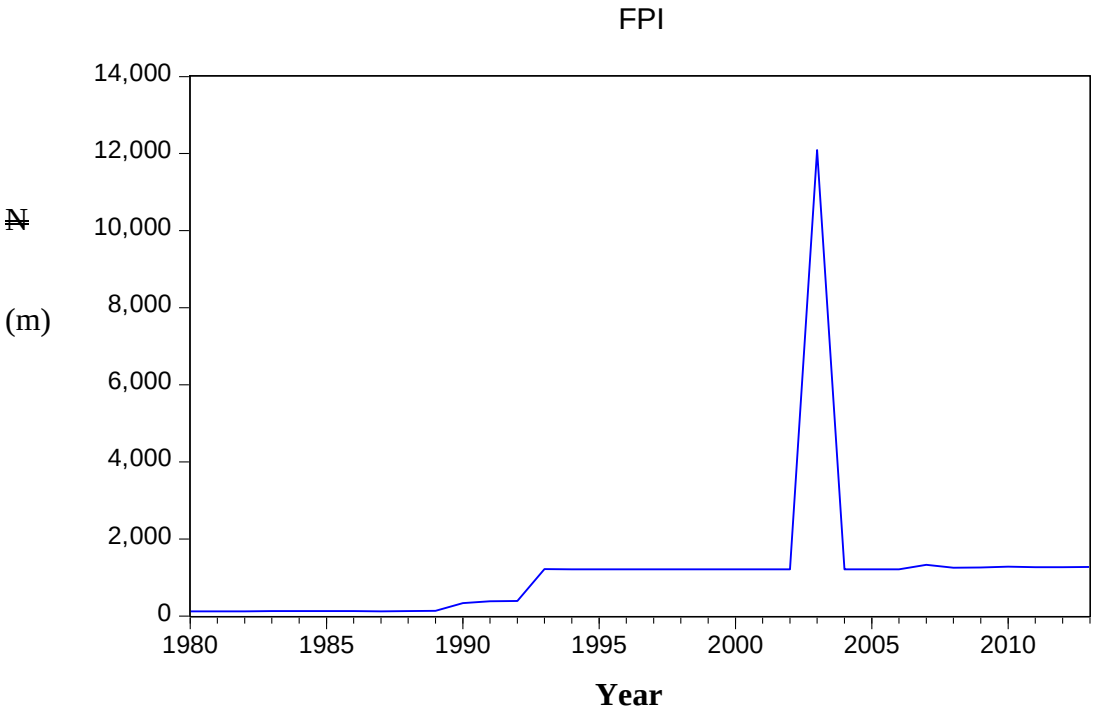

Figure 3: Trend Analysis of Foreign Private Investment

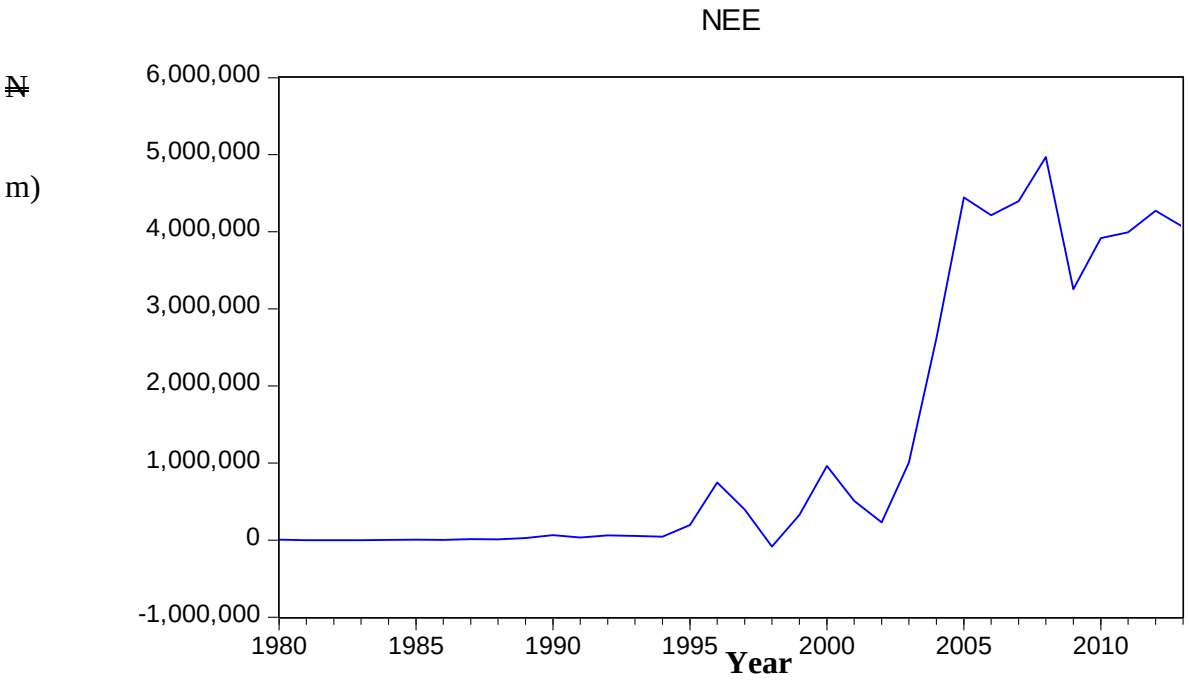

Figure 4: Trend Analysis of Net Export Earning

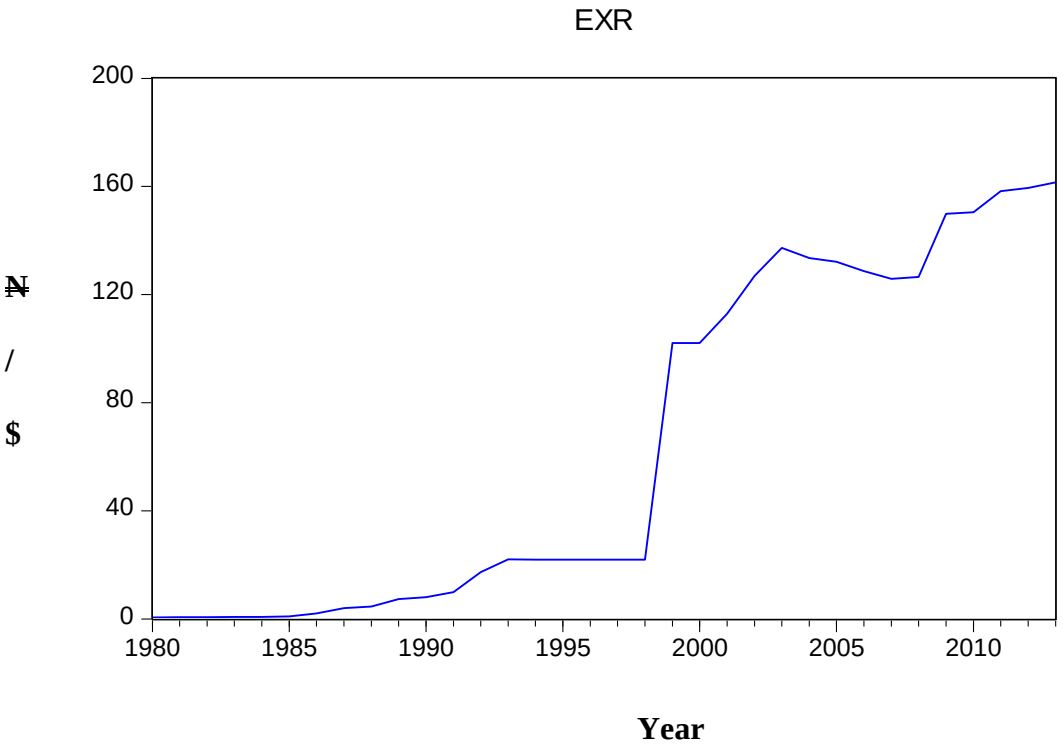

Figure 5: Trend Analysis of Exchange Rate

Regression Analysis at levels

The argument in model specification for fish output was tried with both linear and log-linear specifications. The model that provided the best fit was selected on the basis of magnitude of the coefficients of R^2, magnitude and statistical significance of the regression coefficients and expected signs. The linear specification was selected for fish model on the basis of econometric criteria.

Regression Analysis Result for Fish Production Output Model

Table 2:Linear Regression Result FUP Model

Dependent Variable: FUP

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	116.1241	8.632552	13.45188	0.0000
FPI	0.000604	0.003414	0.176889	0.8608
FAG	1.12E-08	6.51E-09	1.719546	0.0962
NEE	-1.10E-05	7.31E-06	-1.506282	0.1428

EXR	0.269036	0.192543	1.397277	0.1729

R-squared	0.164445	Mean dependent var	129.5026
Adjusted R-squared	0.049196	S.D. dependent var	34.29583
S.E. of regression	33.44158	Akaike info criterion	9.992530
Sum squared resid	32431.84	Schwarz criterion	10.21700
Log likelihood	-164.8730	Hannan-Quinn criter.	10.06908
F-statistic	1.426867	Durbin-Watson stat	0.724370
Prob(F-statistic)	0.250108		

Source: Author's *Computation from (E-View 7.1)*

The Durbin Watson value of 0.72 depicts the presence of serial autocorrelation. The presence of serial autocorrelation may be attributed to non-stationarity of time series data that are used for the study. Having identified the presence of autocorrelation in the DW test, there is the need to conduct stationarity test and the long run analysis to stabilize the time series.

Long Run Regression Analysis

Unit Root Test for Stationarity (Augmented Dickey Fuller)

A stationarity test is necessary to stabilize the spurious nature in most short run analyses. This will be followed by the Johansen co integration test and the error correction mechanism to determine the equilibrium relationship between the variables used in an analysis.

Table 3: Result of Unit Root of Variables in the Models

Variables	**ADF Test**	**Critical Value**			**Order of integration**
		1% critical value	**5% Critical value**	**10% critical value**	
FUP	-7.655660	-3.653730	-2.957110	-2.617434	I(1)= 1st Diff.
FPI	-5.070341	-3.646342	-2.954021	-2.615817	I(0) = At Level.
FAG	-4.247843	-3.646342	-2.954021	-2.615817	I(0) = At Level
NEE	-5.029539	-3.653730	-2.957110	-2.617434	I(1)= 1st Diff.
EXR	-5.835808	-3.653730	-2.957110	-2.617434	I(1)= 1st Diff.

Source: *Author computation from (E-view 7.1)*

The result of the unit root test presented in Table 3 shows that the time series were stationary at various levels of significance of 1%, 5% and 10%. While FPI (foreign private investment to agriculture) and FAG (foreign aids and grants to agriculture) were stationary at

levels. However, all the remaining non stationarity variables become stationary at first difference. That is, NEE (net export earnings), EXR (exchange rate), FUP (output of fish production) were integrated of order one (first difference).

Johansen Cointegration Test Result for FUP Model

Eigen value	**Max-Eigen Statistic**	**5% critical value**	**Prob. ****	**Hypothesized N0 of CE(s)**
0.929925	85.06209	33.87687	0.0000	None *
0.664820	34.97876	27.58434	0.0047	At most 1 *
0.412863	17.03993	21.13162	0.1701	At most 2
0.226992	8.238921	14.26460	0.3549	At most 3
0.001415	0.045324	3.841466	0.8314	At most 4

Source:Author's *Computation from (E-View 7.1)*

Note: * denote rejection of the hypothesis at the 0.05 level. **Mackinnon-Haug-Michelis (1999) p-values. Max-eigenvalue test indicate 2 co-integrating eqn(s) at 0.05 level. Due to the existence of two co-integrating equations, the requirement for an error correction model is fulfilled.

Error Correction Model (ECM)

Error correction model (ECM) is the means of adjusting the short-run behaviour of an economic variable to long-run behaviour.

ParsimoniousECM for FUP Model

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	-1.778249	5.597080	-0.317710	0.7542
D(FUP(-1))	-0.039641	0.200983	-0.197234	0.8457
D(FUP(-2))	-0.133026	0.202262	-0.657691	0.5186
D(FPI)	-0.000396	0.002364	-0.167438	0.8688
D(FPI(-1))	4.33E-05	0.003276	-0.013217	0.9896
D(FAG)	2.82E-09	6.63E-09	0.426162	0.6748
D(FAG(-1))	1.14E-08	5.38E-09	-2.122115	0.0472

D(NEE)	2.72E-06	1.07E-05	0.253513	0.8026
D(NEE(-1))	5.98E-06	9.89E-06	-0.604262	0.5528
D(EXR)	0.116747	0.335406	0.348077	0.7316
D(EXR(-1))	0.097405	0.329172	0.295911	0.7705
ECM(-1)	-28.03894	39.39549	-0.711730	0.4853

R-squared	0.586212	Mean dependent var	-1.485484
Adjusted R-squared	0.346650	S.D. dependent var	30.36799
S.E. of regression	24.54646	Akaike info criterion	9.523658
Sum squared resid	11448.05	Schwarz criterion	10.07875
Log likelihood	-135.6167	Hannan-Quinn criter.	9.704604
F-statistic	2.447021	Durbin-Watson stat	1.648014
Prob(F-statistic)	0.041871		

Source: Author's *Computation from (E-View 7.1)*

Moreover, fish production output (FUP) stood at 198.19 in 1980 and falls to 129.2 in 1984. It later fell to 80.49 in 1985 and rose to 115.24 in 1989. Between 1990 to 1994, it fell from 100.00 to 86.67. Between 1995 to 1999, it drastically increased from 100 to 140.63. It increased steadily from 146.03 in 2000 to 172.10 in 2004. It then fell sharply from 182.10 in 2005 to 199.27 in 2009. Again increased to 134.62 in 2010 but fell to 130.69 in 2013.

Furthermore foreign private investment (FPI), which stood at 120.8 in 1980 increased to 128.5 in 1984. It then fell slightly to 126.0 in 1985 and then increased to 134.8 in 1989. Between 1990 to 1994, it increased drastically from 334.7 to 1208.5. It then fell steadily from 1995 to 1999 (1209). It fell in 2000, 2001, 2002 to 1209 respectively. Then increased drastically to 12091 in 2003 and then fell sharply to 1209 again in 2004. In addition, foreign private investment which stood at 1209 in 2005 increased to 1262.7 in 2009 and then rose or increased steadily throughout the years of study.

The above table also shows that foreign aids and grants to agriculture (FAG) which was 794800000 in 1980 fell to 90100000 in 1984. It fell from 868200000 in 1985 to 546250000 in 1989. Between 1990 to 1994, it fell again from 383270000 to 270420000. From 1995 to 1999 it fell from 261450000 to 209800000. From 2000 to 2004 it increased drastically from 245770000 to 654310000. It fell sharply in 2005 from 6954730000 to 1671210000 in 2009. However it increased in 2010 to 2061960000 and fell to 1966860000 in 2013.

The above table shows that in 1980 net export earnings (NEE) which stood at 5091.100 decreased to 1909.700 in 1984. It increased from 4658.200 in 1985 to 27111.00 in 1989. Between 1990 to 1994, it fell from 64168.20 to 43270.40. It increased from 195533.7 in 1995 to 326454.1 in 1999. From 2000 to 2004 it increased from 960700.9 to 2615736. By 2005 to 2009 it fell from 4445679 to 3253851. Then increased steadily throughout the years of study.

Figure 5 also revealed that the exchange rate moved from its level of N0.54: US $ 1.00 in 1980 to N0.89: US $ N1.00 in 1985. Between 1986 and 1993 when structural adjustment program (SAP) was introduced, it rose from N2.02: US $1.00 to N22.05: US $1.00 from 1994 to 1998, there was a stable exchange rate of N21.89: US $1.00 this is as a result of exchange rate policy that was completely revised in 1994 with the re-introduction of fixed exchange rate regime. Furthermore between 1992 and 2013 the exchange rate rose again from N102.11: US $1.00 to N161.50: US $1.00

Short Run Linear Result for Output of Fish Production Model

The short run result of **Fish Production Output model** as reported in Table 2 shows that the coefficient of determination R^2 is 0.16, indicating that the variation in output of fish production explained by foreign private investment to agriculture, foreign aids and grants to agriculture, net export earnings and exchange rate is 16 percent. Therefore, the explanatory power of the model estimated is16 percent. The coefficient of FPI (foreign private investment to agriculture) variable appeared with positive sign but statistically not significant. Also, the regression coefficient of FAG (foreign aids and grants to agriculture) appeared with positive sign but statistically not significant at 5 percent level. Meanwhile, the regression coefficient of NEE (net export earnings) appeared with negative sign and statistically not significant at 5 percent level. But the estimated result for EXR (exchange rate) is positively related with output of fish production and statistically not significant. The overall model is not significant at 5 percent level given the F-value of 1.426 which is less than the F-table value of 3.47. The Durbin Watson value of 0.72 depicts the presence of serial autocorrelation. The presence of serial autocorrelation may be attributed to non-stationarity of time series data that are used for the study. Having identified the presence of autocorrelation in the DW test, there is the need to conduct stationarity test and the long run analysis to stabilize the time series.

Discussion of Unit Root Test for Stationarity

The result of the unit root test presented in Table 3 shows that the time series were stationary at various levels of significance of 1%, 5% and 10%. While FPI (foreign private investment to agriculture) and FAG (foreign aids and grants to agriculture) were stationary at levels. However, all the remaining non stationarity variables become stationary at first difference. That is, NEE (net export earnings), EXR (exchange rate), and FUP(output of fish production) were integrated of order one (first difference). Having established stationarity of the variables, the Johansen cointegration test will be conducted to establish the long –run relationship among the variables.

Cointegration for Output of Fish Production Model

From Table 4 shows that there are two co- integrating equations at 5% level of significance. Meaning that two variables are co-integrated at 5% significance level. Conclusively, there exists a long-run equilibrium among the variables. This is because, the Max-Eigen Statistics values of only two variables are greater than the critical values at 5% significant level. Due to the

existence of two co-integrating equations, the requirement for an error correction model is fulfilled.

Parsimonious Error Correction Results for Output of Fish Production Model

The analysis of result in Table 5 shows that the coefficient of ECM appeared with the right sign but statistically not significant at the 5% level. Meaning that the ECM will correct the short run deviation to long-run equilibrium. The Durbin Watson value of 1.64 which is not too far from 2.0, suggests a lesser level of autocorrelation. The overall model is satisfactory given the value of R^2 (0.586212). This simply means that about 59 percent of the systematic variation in output of fish production is explained by the ECM. The F-statistic of 2.447 is significant at the 5% level. This showed that independent variables collectively are significant in explaining variability in the regressands.

Moreover, the current form of the independent variable FPI is negatively signed but statistically not significant. But its lag one form is positively signed but not statistically significant. The current form of the independent variable FAG is positively signed and not statistically significant. Meaning that the null hypothesis is accepted for FAG in the current form. Also, the current and lag one forms of the independent variables NEE and EXR were positively signed but statistically not significant. Based on these results, we accept the null hypothesis of the research which states that there is no significant relationship between foreign capital inflow and output of fish production in Nigeria.

CONCLUSION AND RECOMMENDATIONS

If Nigeria's agricultural sector is to return to its place of pride in Nigeria's economy, then the issue of provision of funds and increased availability of capital need to be addressed. The role of external capital inflows as a veritable source of funding for the agricultural sector can go a long way in generating growth , increasing food security and reducing dependence on imports. This study recommends that:

Government should put in place a strategy for attracting more foreign investors capable of generating a higher volume of foreign private investment that can have a significant impact on agricultural output. To this end, government should create an enabling environment and put in place appropriate policies for the influx of foreign investors.

Attempt should be made to attract a higher volume of foreign aid and grants by interfacing with international agencies, organizations and financial institutions. This is in view of the strategic role of agriculture in food security and poverty alleviation. A higher volume of foreign aids and grants to the agricultural sector is expected to have a significant impact on fish output.

. Investment of External capital should be channeled to industrial fishery sub-sector by acquiring hi-tech trawling vessels for indigenous operators in line with the cabotage Act as well as the artisanal and aquaculture sub-sectors for the acquisition of fishery inputs.

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