

Bank Credits and Yield of Fisheries Production in Nigeria

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Abstract:- The study examined/investigated bank credits and yield of fisheries production in Nigeria (1980 - 2019). The main aim of the study is to examine the effect of credits from the banking system to fisheries production in Nigeria. Econometric methods: ordinary least square, ADF, co-integration, error correction system and granger tests. Bank credits to fisheries production conform to apriori forecast/expectation and was also statistically significant/important at 5% level. All the independent variables/variants conform to apriori forecast, but arable land rate was not statistically significant. Bank credits was discovered to be necessary influence on the output of fisheries production in Nigeria. Causality runs from bank credits to fisheries production output in Nigeria. Cost of borrowing should be reduced. Government should provide the necessary basic amenities. The federal government should control import to boost agriculture in Nigeria.

Key Words: Bank loans, fisheries production, and growth

I. INTRODUCTION

Funds availability is an essential integer on which most productive ventures relies on. Primal economists known as Schumpeter (1934), McKinnon (1973) and Shaw (1973) identified financial institutions' part in facilitating technological conception through their intervention part. This part according to them is done through the impact of channeling finances in the sort of loans or advances for venture to economic agents who requires them and can make use of them into the most fertile use. Thus, loaning which is settled in this discourse, as the linkage from which resources are designated for capital formation, and facilitates finance which leads to growth. Individual scholars like Fry (1988), King & Levine (1993), Levine (2004), De Serres, Kobayakawa, Slok & Vartia (2006), has corroborated the above declaration about the importance of credits from banks which leads to production development in a country.

Adediran and Obasan (2010) opined that the innovative and developing nations fecundity development tend to be upper in agriculture than in manufacturing, but in position of outturn growth manufacturing keeps doing better than agriculture. Acknowledging these sectors, the federal government of Nigeria place importance to the agricultural sector, enjoined the banks through CBN, to allocate a large proportion of their loanable credits to the agricultural sector, hence to motivate banks to achieve their goal, the Central Bank of Nigeria brought out the Agricultural Credit Guarantee Scheme (ACGS) to ensure funds existence for farmers.

In ensuring that credits are approachable to the real sectors like agriculture, banks release a path that facilitate increment in the creation of numerous products in a system (Adekanye, 1986). Accordingly, there will be enlargement of asset financing which will lead to advancement in the well-being of the people.

Having access to commercial credits has an important enactment in agriculture especially in the rural areas ontogenesis/development. Rahji and Adeoti (2010) are of the notion that 70% of the people are resident in agrarian areas with their prima source of survival and income coming from agriculture. Thus, restraining individuals from credits will lead to greater cost and impoverishment to farmers, unemployment and alterations or lousy of activities.

The agricultural facet has a toughened countrified base; hence, interest for agriculture and agrarian development have become pivotal, with a communal origin (Eze, Awulonu, Lemchi, Eze, Ugochukwu and Okon, 2010). Lemchi, Eze, Ugochukwu, Eze, Okon and Awulonu (2010) stated that funding for agriculture is largely motivated by the public sphere, which has implanted interesting support like agricultural projects, research, goods marketing, material supply, and land acts from government, to quicken agricultural advancement. These confined sector activities does not limit the foreign direct and other investment funding, but also to supporting of exploration/research and insight on farming issues in colleges, susceptibility business for agriculture and, most notably, the supply of credits to agricultural businesses. Non-governmental and governmental authorities including Substance and Agricultural Organization of the United Nations, the World Bank, etc., also encourage agriculture through off-farm and on-farm assistance in the form of funds, material supply, boosting of skilled capacity, etc (Eze, Lemchi, Ugochukwu, Eze, Awulonu and Okon, 2010).

Soludo (2005), stated that agriculture business have been moving at 7% per year in the past 3 years and has been dynamically moving the non-oil forward, and possess the ignition to ontogeny, employment and impoverishment decrease. As regards import and export, Nigeria is a big net importer of products from agriculture. The export import commodity gap has been enlarging since 1999 and this places the policy for agriculture of the people to oppugn. This state of things provides the chance for concluding up or extinguishing this 'farming deficit' through structural or important plans and budgets (Okoro and Ujah, 2009).

Credits and Monetary policy direction have been huge policies were the CBN has aided the funding of agriculture. From 1969 when the initial credits and Monetary policy flier was given to financial institution, CBN has continuously granted advantageous intervention to agriculture which was added in the wide sector cited as creation (priority) sector. This advantageous intervention covers the credits volume apportioned to the agrarian sector and the rate of interest specified for such credits (Okorie, 1993). The plan suggests a minimal allocation portion of banks' aggregate loans/advances to agrarian ventures. From four percentage in 1972, the financial sector allocation spiked to 15 percentage in 1986 and to 18 proportion in 1995 (CBN, 1995), however the "Agrarian policy for Nigeria" written document recommended increment of 25 %.

The rate of interest cost for agrarian productivity was continuously lessened than some sectors in the Nigeria economy from 1978 and the beginning of SAP in 1986. From 1978 to 1979, it orbit between 3 and 5% but other sectors were 8 to 13%. Between 1985 and 1986, agrarian loaning rate was between 8 to 9% and other sectors were between 11.75 to 12 %. From SAP, bit-by-bit liberalization of rate of interest started before the deregulation in 1991. Presently, agricultural loaning in most financial institution attracted emulous rates of interest (ranging from 11 to 50%). These plans were to insure many supplies of loans and to promote ontogeny in the agrarian sector (Okorie, 1993). Uchendu (1995) made clear the example of the 1994 credit and monetary policy procedures were instruments of monetary policy were explicitly stated to involve liquidity ratio (30%), cash reserve ratio (6.0%), and loaning rate with addition of all cost (21%) for deposit banks.

Shan, and Qureshi, Akhtar(1996), argued that loans/advances has the capability to solve the business problems faced by agrarians, because credit provides motivation to enable agrarians to switch quickly to modern technological advancement which can promote the fast-track fecundity and growth. Ijere (1998) and Otubu (2019) viewed financial institutions loans/advances as a catalyst that can ignite the locomotiveness of growth potential that is inherent and to encourage the theorized path. In reinforcement of the said prospect, Umoh (2002) affirmed that financial institution credit is the power or tab to open abilities, latent talents, opportunities, and vision which seriously promote economic ontology. Credits from banks are important to the contribution to economic advancement by ensuring quality production and thus increases in revenue and improved the living standard of the people.

The research/study intends to examine the impact/influence of bank credits to fisheries production in Nigeria.

Statement of the Problem

In Nigeria even with its large orbit of productive soil, huge percent of its population(citizens) do experience starvation

and edacity because of the over-sight of the agricultural system.

Notwithstanding, the truth remains that the financial institution(commercial banks) have not been able to manage the challenges, meaning that credits to the agricultural sector has not really been felt from banks. The complaints was that financial institution like giving loans/advances to commerce or exchange to agriculture, and when the loans/advances is permitted, the interest rate to be paid seems exorbitant accompanied with choky securities, which crest constraints and frighten many prospective agrarians.

The loans/advances decline was exacerbated by the unveiling of SAP in 1986. The financial system was deregulated by SAP. Forces of market started playing huge functions in the negotiation and supplying of bank resources in the country (Okorie, 1993). SAP also led to deregulation of interest rate in 1991 and sectional supply of loans were de-emphasized, open market activities (OMO) commenced. As a brisance ending, from 1987, the viselike controls over rate of interest were evacuated so that banks can demand for market interest rate and also give rates that are competitive in nature to depositors. In 1988, complete riddance of rate of lending differentials in the sectors which could have put agriculture at a "demerit" situation with the substituting of rate of interest preferential but in agreement to the World Bank – and commendation from IMF for withdrawal of subsidy (Okorie, 1993). The cosmos of a banking system which is needed for all the economy due to the needed environment and likely begin growth and advancement by its function in the funds through intermediation. Ezeuduji (1994) stated that one of the path usually used by various economies in order to make the financial sector efficient is the usage of monetary plans. The financial institutions have to look at its monetary procedures in financing real system activities.

The panorama is therefore geared towards the examination/evaluation of the credit capacity from the banking sector as regards the agricultural sector output in Nigeria.

The main aim of this study is to examine the effect of credits from the banking system to fisheries production in Nigeria. Specifically, the objectives are: (i) To evaluate the influence of credits from the banking sector on fisheries production in Nigeria; (ii) To determine the causal relationship between credits and fisheries production in Nigeria.

Significance of the Study

The research will disclose to the agrarians the part of banks in supporting the real sector in Nigeria, since investment is necessary for financing of the sectors that are productive. An agrarian that have accession to credits will be in vantage to better his/her operation.

II. LITERATURE REVIEW

Anyanwu (2010) outlined credit as a fiscal facility given to individuals, companies or authorities for contiguous usage, but with an anticipated remittance at a stipulated future interval. Aryeetey (1996) explained credits as the defalcation protracted out with a future interval of remittance. The Nigeria Deposit Insurance Company prudent procedures of 1990 nonetheless, provides a broader explanation of credit, and this involve the sum of all advances, loans, overdraft, mercantile papers, financier credence, discount bills, lease and warrantees.

Nzotta (1999) and Adekanye (1986) see agrarian credit as loans/advances given to ranch and farmplace operators to aid in cultivating crops to assist in the care and feeding of livestock. Credit to agrarian sector can be in the form of overdraft, with divers time frame depending on the reasons and gravidity period of the work. Such credits given to agrarians to acquire inputs are stipendiary directly to the providers who must supply the bank with grounds of delivery. This is carried out in order to avoid eurythmics of funds.

Muflau (2003), defines agrarian credits as facilities/loans given to agrarians and operators of ranch to help in cultivation and assist in the feeding/care to livestock. Loans/advances to agrarian sector can be overdraft, short to long term which depends on the reason and length of the work.

The cost, size and availability of credits ascertain the intensity of economic operations/activities in the system. The funds allocation efficiency is achievable when there is financial intermediation efficiency. Essentially, this call for organizing lending rate that is real. (i.e., inflation calibrated) and deposit rate of interest levels which shows the danger of lending and permit enough return to creditors on their capital also by pleasing depositors befittingly.

Beck, Levine and Loayza (2000) said that private loans/advances are good forecaster of growth while the work by Crowley (2008) hardback this position. These are production factors, aggregate component productivity like human capital, advancement/technological modification which is seen as the Schumpeterian approach (Odedokun, 1998).

Rajan and Zingales (1998) in their research about growth and financial issues made vital contribution. They discovered that companies in need of external investment grew quicker in nations with much advanced financial markets. They made use of U.S companies' level statistics to evaluate the external investment reliance of divers sectors. Their canonical premise is that the financial markets are better developed in the U.S., and so the companies can take up desired funds, which are squared up only by the need of the company for such external investment/finance. Which suggest that financial market with exclusive and lower competitive banks will not ontogeny at their superfine potential, since companies are not having accession to credit, this leads to less ontogeny due to lack of credit.

Villalpando (2015) said that credit cannot be adequate enough to foster companies' productivity. He said that companies may have accession to loans/advances but without lucrative chances, they will use adopted funds for non-financial purposes, like daily operations financing, or not applying for financial loans/advances. This averment is in consonant with Ijere's (1998) perspective. Thusly, accession to loans/advances without investment opportunities can cause ineffectiveness in production and ontogeny. The part of transmittal from loans/advances to productivity is its effectiveness rather than its amount (De Gregorio and Guidotti, 1995). Credits or loans/advances will have important influence on the firm's productivity if there are investment perspectives (Otubu, 2019).

With the ontogeny in schemes, programmes and institutions, one anticipated significant real sector ontogeny over the period, but the index of these productive sectors GDP has not portrayed any significant ontogeny. Many factors could be accountable for the discouraging premiere of the real sector, like exchange rate, monetary, fiscal policies etc. which are normally used to control productivity in the real sectors apart from the agricultural sector (Nwankwo, 2013).

The Loanable Finance Theory

The loanable finance concept or neo-classical thought was formulated by Wicksell (1898), but later vulgarized and reinforced by Robertson. The concept opined that interplay of demand and supply for loanable finance ascertains the interest rate. That is, interest rate is ascertained where the market pressure of demand for and supply of loanable finance interpose. This concept is a revitalization of the classical concept of interest rate in the consciousness that provision of loanable finance is wider in ambit and contain not only keeping aside out of the current revenue but also financial institution loans. The concept theorizes that financial institution loans and also dis-investment symbolizes important finance, that are available when the borrower devote interest. Also, financial institutions loans could become approachable for investment purposes. Dis-invested riches are an added source of finance gettable by the borrowers. Financial institutions loans are anticipated to be invested in projects that are viable, that will raise productive sector operations and also energize the economy seriously.

Keynes critiques as regard loanable finance hypothesis are in research publicized from 1937 to 1939, of which Keynes replied to the critique at General Theory. Robertson (1937) and Ohlin (1937b), specially critiqued the Keynesian hypothesis that interest rate reckons on money supply and demand, and is autonomous of investment and savings decisions. They instead hold that interest rate reckons on loans supply and demand, thus on savings and investment decisions.

Financial/Fiscal Intermediation Theory

Financial institution loans have important operations in fiscal intermediation noesis or process that channel finances to units or sectors that make use of them for productivity. The

simulation that introduces the relationship between the real sector, financial intermediation and growth is enclosed in the study of Shaw and Mckinnon (1973), Schumpeter (1934), and Goldsmith (1969). They disclosed the main part that financial intermediation does in promoting ontogeny in a system or economy. Jovanovich and Greenwood (1990) opined that fiscal growth and advancement increases outgrowth and development quickly in a system. Also, Smith and Bencivenga (1991) expostulated that growth and advancement of financial institution in furthering fiscal intermediation operation plays an important part in growth and advancement of a system by moving savings to activities that are productive.

Empirical Literature

Researches from Odedokun (1998), Beck and Levine (2002), and Boyreau-Debray (2003) observed negative or antagonistic stats between financial institution credit debt and growth because the Chinese financial institutions were pulling together and channeling monies into the diminishing regions of the nation's ventures, which make the system not to advance growth.

Ijaiya and Abdulraheem (2000) examined the influence of financial institutions credit to the agrarian sector on reducing poverty in Nigeria. The outcome of the investigation showed that financial institutions credit to agrarian systems variable turn out with its anticipated sign or signal. The outcome showed that financial institutions loans/advances to agrarian system have significant influence on reducing poverty, and that demand deposit influenced reducing poverty also. This shows that financial institution loans/advances received by beneficiaries were effectively used for the reason it was collected. The research also recommended that steps should be put in place to enhance the existing plans or schemes for credit disbursal by financial institutions to agrarian sector or system so that reducing poverty can be attained.

Financial institutions loans/advances in generic, improves independence production if the company have investment areas or opportunities. This is correct if enterprisers that get these financial institution credits for investment would effectively make use of the loans/advances.

Bashir, Mehmood and Hassan (2010) analysed the influence of credit/loan on the production of wheat in Lahore, Pakistan utilizing OLS. Primary information or data were compiled with the help of questionnaire. Only two communities were chosen indiscriminately from each socio-economic group, and from the loanees supplied by the financial institution, 10 responders were indiscriminately interrogated from each community. The same quantity of non-loanees was sampled for the comparison purpose. Observations of the research showed that agrarian loan promoted the agrarian sector transmutation and also increased the agriculturalists participation in productivity. This demonstrates that if agrarian bank loans is accessible and adequately used, there will certainly be agrarian performance improvement.

Akujuobi and Chima (2012) investigated the influence of bank loans to the productive or real sector on economic advancement in Nigeria, from 1960 to 2008 utilizing OLS method. The banks' loans to the sub-sector of the real sector was however regressed against GDP. The outcome showed that long-term subjugation is in existence between loans to the real sector and growth. The outcome is in consonant to the findings of Otubu (2019).

Simsir (2012) looked at credit and agrarian growth relationship in Turkey using OLS method/technique and causality diagnostic. The study displayed that credit has positive significant impact on agricultural wages/incomes and employment opportunities. Also, the causality test showed unidirectional result between loans/advances and agricultural yields at 95% level of confidence.

Haruna, Nasiru and Yahya (2013) examined the subjugation between private sphere/sector loans and growth in Nigeria, utilizing times series information or data, from 1974 to 2010. Their ARDL bound result for cointegration shows that long-term equilibrium subjugation lie between private sphere/sector loans and growth, but causal test shows no causal subjugation between private sphere and growth.

Okulegu, Okoro and Ewno (2014), utilized cointegration, granger test and ECM. From the research, change in agrarian sector or sphere contribution to GDP was regressed against bank loans to agriculture, ACGS funds, and government spending/expenses on agriculture. The outcome of the research revealed that bank loans has significant and positive long term influence on agrarian sector or sphere contribution to GDP. The outcome of the research also showed that bank loans to agricultural activities granger cause agrarian sector or sphere contribution to GDP since the bank loans to agrarian activities F-coefficient displayed 951.1429 bigger than the F-critical 3.034 at 5percent level. On the basis of this result, the research recommends that one or different rural/agrarian saving organizations (co-operative institutions, savings organization etc.) should be introduced or constituted in all the autonomous/independent regions in Nigeria.

Oni, Oladepo and Akinlo (2014) investigated the influence of bank loans to yield growth in the agricultural and manufacturing sector in Nigeria, from 1980 to 2010 utilizing ECM method. The findings of the research displayed that bank loan has significant influence on manufacturing yield increase in the short term. Nevertheless, bank loan had insignificant influence on agrarian yields growth in the long and short term.

Villalpando (2015) evaluated the influence of bank loan on the productivity of Mexican companies with data/information from the surveil of ENAFIN executed by Inter-American advancement bank and National Bank Commission. Villalpando embraced OLS method. The research showed that significant and positive influence existed from bank loans to companies' productivity. This impact was bigger for those companies with accession to bank loans and investment

paradigm than for companies that have only bank loan or investment possibility. The necessary parameters displayed a positive influence of bank loans to productivity and exhibited consistency between the estimation methods.

Chinweoke, Elizabeth and Egwu (2015) examined the effect of banks' credits to the manufacturing and agrarian sector on the growth/advancement in Nigeria, from 1994-2013 utilizing OLS method. The outcome of the research displayed that bank credits to manufacturing and agrarian sectors have significant influence on growth. This is in consonant with Anthony (2010). This may be due to stringent steps taking by CBN in ensuring that acquired credits were effectively utilized in the period of the research.

On the basis of theoretical and empirical literature that were reviewed, this research will stretch the duration of the research as against previous works reviewed which terminated at 2013. This is due to policy modifications and historical information that are frequent. The time extension gives the chance to capture these modifications. Also this research will seriously evaluate the influence of bank loans on the agrarian sector yields in Nigeria.

Bashir, Hassan and Mehmood (2010) examination of agrarian credit influence was not broad enough to include causality variables to agrarian output. Okulegu, Okoro and Ewno (2014) study did not include interest rate which is quite necessary because it determines the amount of loans/credits that the farmers will be willing to make use of in their quest for credit. Oni, Akinlo and Oladepo (2014) did not include other necessary variables in the model, which could be the reason they have negative subjugation between bank loans and agrarian yield. Chinweoke, Elizabeth and Egwu (2015) investigation reveals that there is statistical subjugation between banks' credits/loans and agrarian sector, however did not include labour and government spending on agriculture in their model.

III. METHODOLOGY

Model/Framework Specification

Framework/model is a simple perspective of realities pattern to assist the researcher expound the inter subjugation and significance within the system or phenomenon it represents. (Yomere and Agbonifoh, 1999).

The framework/model for the research is given as follow:

$$FPO = f(BCA, ALR, INTR, GCF \text{ and } ER) \quad 3.1$$

FPO = Fisheries Production Output

BCA = Bank Credits/Loans to Agricultural Sector

ALR = Arable Land Rate/Percent

INTR = Interest Rate

GCF = Gross Capital Formation

ER = Employment Rate

Equation (3.1) can be stated/expressed in the econometric pattern below:

$$\text{Linear Specification: } FPO_t = \beta_0 + \beta_1 BCA_t + \beta_2 ALR_t + \beta_3 INTR_t + \beta_4 GCF_t + \beta_5 ER_t + U \dots\dots\dots 3.2$$

Where:

t = time

β_0 = Autonomous/Intercept

β_1 = Coefficient of the Regressors

The Apriori Expectations: $\beta_1 > 0, \beta_2 > 0, \beta_3 < 0, \beta_4 > 0$ and $\beta_5 > 0$

(a) The dependent variant

Fisheries Production Output: This is fisheries sphere contribution to GDP in Nigeria. Known as the nominal output.

(b) The independent variants

- 1) Bank Credits/Advances for Agriculture (BCA): This is the aggregate credits given to agriculturalists in the agrarian sphere to promote the sector's output. This excites growth in the Nigerian economy. β_1 is expected to show positive effects/signs because an accretion in bank credits/loans to agriculture should result to accretion in fisheries productivity.
- 2) Arable Land Rate (ALR): It is the viability of land for agriculturalists activities. Increase in arable land will lead to more agricultural output through cultivation. β_2 is expected to be positive because accretion in arable land should promote fisheries production.
- 3) Interest Rate (INTR): This is the lending/borrowing cost. High interest rate lead to difficulty and expensive credit, and it will lead to decline in output. Meaning, yield and interest rate have opposite direction. β_3 is expected to have negative coefficient because interest rate decrease should boost fisheries production.
- 4) Gross Capital Formation (GCF): This is the nominal spending/expenditure on buildings, machineries, etc. for replacing or addition to the already existing assets. β_4 is expected to have positive coefficient because increase in gross asset would lead to increase in fisheries production.
- 5) Employment Rate (ER): This is employed as proxy for labour/man power. This is the per centum of citizens engaged or occupied in the Nigeria as regards agrarian/agricultural GDP contribution. β_5 is expected to display positive effects since increase/enhancement in employment percent will result to an increase in fisheries production.

Data/Information Collection

The data employed for this research is secondary information from FBS and CBN bulletins. Onwumere (2005) reckoned

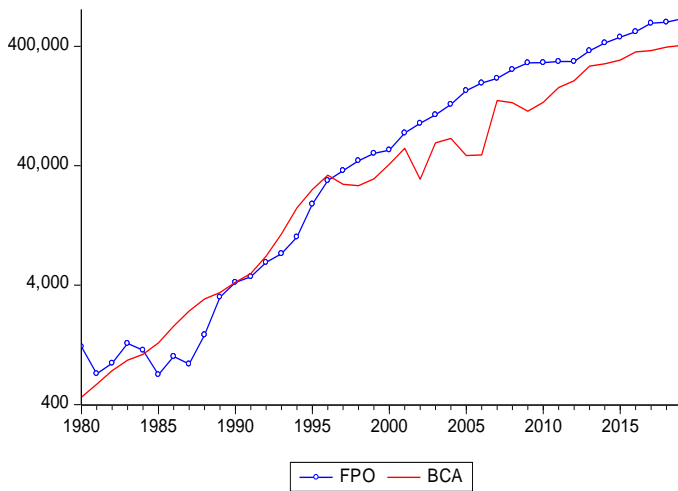
that secondary information/data are data that were already in existence and used or publicized.

Method of Data/information Analysis

OLS technique/method which contains T-test, Durbin-Watson, F-test, and determination of coefficient. ADF and unit root – which is for stationarity . Cointegration for long term analysis. ECM for short and long term dynamics. Granger for causal effects.

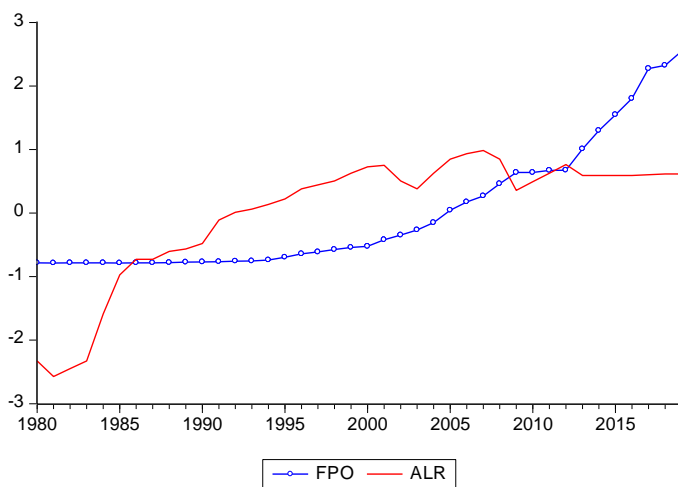
IV. RESULTS AND ANALYSIS

Trend Analysis for Fisheries Production Output and Bank Credits to Agriculture



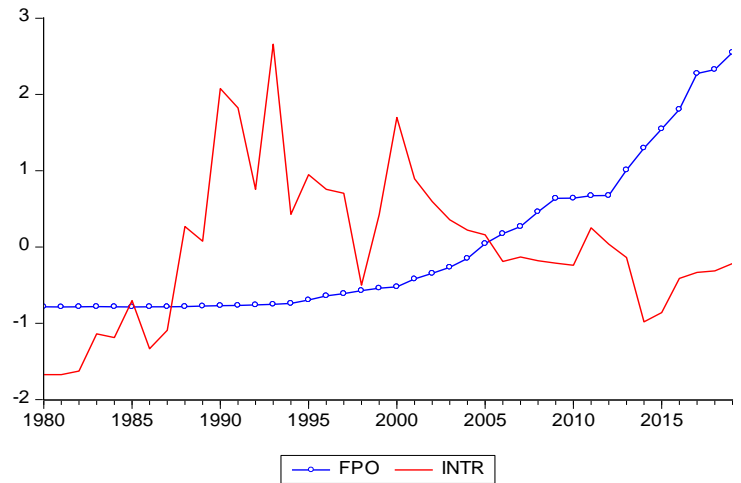
The above graph shows from 1984 to 1989, and between 1996 and 2019 FPO(twig graph) was more than BCA, this could be effective usage of BCA, as both FPO and BCA increase steadily from 1980 to 2019. The upward trend movement of FPO, especially from 1996 to 2019 depicts that bank credits is necessary for improve output of fisheries production.

Trend Analysis for Fisheries Production Output and Arable Land Rate



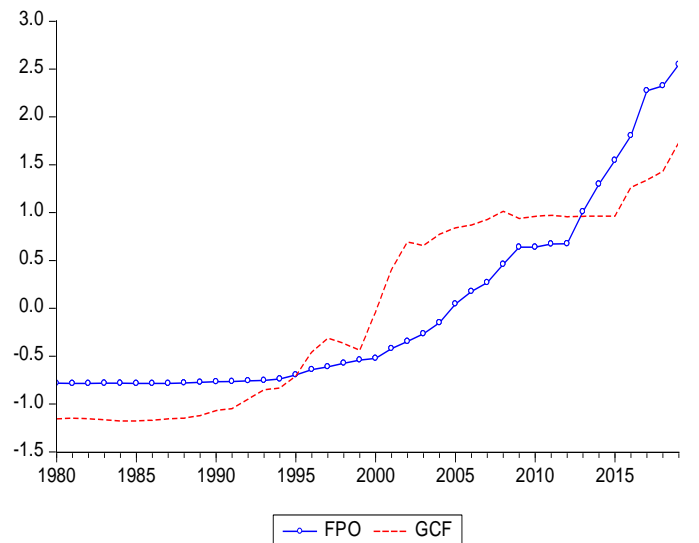
The above graph shows that from 1980 to 2005 FPO(twig graph) has been relatively stable, and from 2006 to 2019 FPO started upward trend movement. The ALR has fluctuated and increased between 1980 and 2019. But from the graphs it seems ALR and FPO does not have strong connection like that of CPO and ALR.

Trend Analysis for Fisheries Production Output and Interest Rate



From the graph above, INTR has been fluctuating seriously from 1982 to 2016, from 2017 to 2019 the fluctuation became less. FPO(twig graph) was relative low from 1980 to 2002 due to high INTR as the husbandmen shy-away from bank credits because of high interest rate. But FPO started increasing relatively from 2003 to 2019 as the interest rate dwindles down.

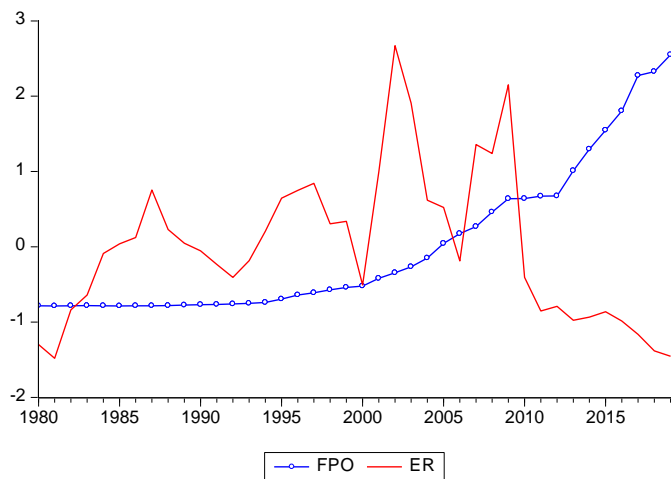
Trend Analysis for Fisheries Production Output and Gross Capital Formation



From the graph above, GCF was relatively low from 1980 to 1988, and from 1989 to 2019 it increases with some

fluctuations. From 1980 to 1995, and from 2013 to 2019 FPO(twig graph) was higher than GCF, this could be attributed to purposeful usage of GCF towards agriculture.

Trend Analysis for Fisheries Production Output and Employment Rate



ER has been dwindling up and down from 1980 to 2010, and attains its peak point in 2002, and ER started down-ward movement from 2010 to 2019. The upward movement of FPO(twig graph) from 2010 to 2019 shows that less of human labour were needed in this period.

Unit Root Test

$$\Delta y_t = \alpha_0 + \alpha_1 y_{t-1} + \sum \alpha_i \Delta y_i + \delta_t + U_t$$

Variables	ADF Test	Critical Values			Order of Integration	P-Value
		Critical Value 1%	Critical Value 5%	Critical Value 10%		
FPO	-3.151162	-3.621023	-2.943427	-2.610263	1(1)	0.0313
BCA	-5.504643	-3.621023	-2.943427	-2.610263	1(1)	0.0001
ALR	-6.133748	-3.920350	-3.065585	-2.673459	1(1)	0.0002
INTR	-5.522033	-3.626784	-2.945842	-2.611531	1(1)	0.0001
GCF	-3.954343	-3.621023	-2.943427	-2.610263	1(1)	0.0042
ER	-6.250368	-3.621023	-2.943427	-2.610263	1(1)	0.0000

Source: Authors' Computed Result from E-views 9

The test for stationarity result from above revealed that respective variables were stationary at first difference. Meaning, fisheries production output (FPO), bank credits to agriculture (BCA), arable land rate (ALR), interest rate (INTR), gross capital formation (GCF) and employment rate (ER) were all integrated at order 1(1).

Cointegration

Sample (adjusted): 1982 2019			
Included observations: 38 after adjustments			
Trend assumption: Linear deterministic trend			
Series: FPO BCA ALR INTR GCF ER			
Lags interval (in first differences): 1 to 1			
Unrestricted Cointegration Rank Test (Trace)			
Hypothesized	Trace	0.05	
No. of CE(s)	Eigenvalue	Statistic	Critical Value Prob.**

None *	0.683421	120.2049	95.75366	0.0004
At most 1 *	0.559134	77.64823	69.81889	0.0104
At most 2	0.413468	47.34466	47.85613	0.0558
At most 3	0.318959	27.60413	29.79707	0.0877
At most 4	0.297671	13.39123	15.49471	0.1012
At most 5	0.008535	0.317143	3.841466	0.5733
Trace test indicates 2 cointegrating eqn(s) at the 0.05 level				
* denotes rejection of the hypothesis at the 0.05 level				
**MacKinnon-Haug-Michelis (1999) p-values				

The Johansen Cointegration Test using the Trace Statistic over the Critical values reveals that there are two cointegrating equations. Implying that, FPO has a long-run relationship with other variables (i.e., BCA, ALR, INTR, GCF, and ER). The result reveals that cointegration exist among the variables which is a vital pre-requisite for conducting or carrying-out error correction mechanism.

Parsimonious Error Correction Mechanism

Dependent Variable: D(FPO)				
Method: Least Squares				
Time: 09:50				
Sample (adjusted): 1984 2019				
Included observations: 30 after adjustments				
Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	4214.172	5032.567	0.837380	0.4241
D(FPO(-1))	0.216088	0.133586	1.617593	0.1402
D(FPO(-2))	0.237538	0.150075	1.582799	0.1479
D(FPO(-3))	0.367077	0.143437	2.559158	0.0307
D(BCA(-2))	0.233580	0.123204	1.895886	0.0905
D(BCA(-3))	0.281370	0.134535	2.091423	0.0260
D(ALR)	1335.080	1434.617	0.930618	0.3763
D(ALR(-2))	1314.994	1298.784	1.012481	0.3378
D(ALR(-3))	1847.162	1362.123	1.356090	0.2081
D(INTR)	-317.5063	387.9359	-0.818450	0.4342
D(INTR(-2))	917.8049	495.9107	1.850746	0.0972
D(INTR(-3))	-164.7379	521.6244	-3.315817	0.7593
D(GCF)	-0.135006	0.103429	-1.305303	0.2242
D(GCF(-1))	0.498629	0.114675	4.348189	0.0019
D(GCF(-2))	-0.659539	0.118853	-5.549209	0.0004
D(GCF(-3))	0.440685	0.111863	3.939504	0.0034
D(ER)	-1072.804	916.3683	-1.170713	0.2718
D(ER(-1))	649.7165	711.7299	0.912869	0.3851
D(ER(-2))	-1273.499	613.9774	-2.074179	0.0679
D(ER(-3))	2925.732	568.3339	5.147909	0.0006
ECM(-1)	-0.291546	0.080823	-3.607207	0.0057
R-squared	0.971769	Mean dependent var	18478.15	
Adjusted R-squared	0.909034	S.D. dependent var	25212.46	
S.E. of regression	7604.202	Akaike info criterion	20.90682	
Sum squared resid	5.20E+08	Schwarz criterion	21.88765	
Log likelihood	-292.6023	Hannan-Quinn criter.	21.22060	
F-statistic	15.49011	Durbin-Watson stat	2.202506	
Prob(F-statistic)	0.000105			

Source: Authors' Computed Result from E-views 9

The ECM can be formulated as follows:

$$FPO_t = \lambda_0 + \sum_{i=1}^n \lambda_{1i} BCA_{t-i} + \sum_{i=1}^n \lambda_{2i} ALR_{t-i} + \sum_{i=1}^n \lambda_{3i} INTR_{t-i} + \sum_{i=1}^n \lambda_{4i} GCF_{t-i} + \sum_{i=1}^n \lambda_{5i} ER_{t-i} + \delta_1 ECM_{t-1} + U_{1-t}$$

$$FPO = 4214.172 + \Delta_{t-3} (BCA) 0.281370 + \Delta_{t-3} (ALR) 1847.162 + \Delta_{t-3} (INTR) -164.7379 + \Delta_{t-3} (GCF) 0.440685 + \Delta_{t-3} (ER) 2925.732$$

$$t\text{-test} = (0.837380) \quad (2.559158) \quad (1.356090) \\ (-3.315817) \quad (3.939504) \quad (5.147909)$$

The ECM outcome above shows that the R², which measures the goodness of fit, is 0.97. Meaning, 97% changes in the dependent variable (fisheries production output) are explained by the changes in the independent variables. Leaving 3% for the disturbance or stochastic term. The result displayed that the variables taken together are significant at 5% level based on the f-test value of 15.49011. The Durbin-Watson value (2.202506) shows lesser level of autocorrelation. The error correction model result was correctly signed (i.e., negative). The respective variants showed/displayed the expected coefficients signs.

Granger Causality

Equations for the Granger Causality Test

$$FPO_t = \sum_{i=1}^n a_{1i} FPO_{t-i} + \sum_{i=1}^n a_{2i} BCA_{t-i} + \sum_{i=1}^n a_{3i} ALR_{t-i} + \sum_{i=1}^n a_{4i} INTR_{t-i} + \sum_{i=1}^n a_{5i} GCF_{t-i} + \sum_{i=1}^n a_{6i} ER_{t-i} + \epsilon_{1t}$$

$$BCA_t = \sum_{i=1}^n \beta_{1i} BCA_{t-i} + \sum_{i=1}^n \beta_{2i} FPO_{t-i} + \sum_{i=1}^n \beta_{3i} ALR_{t-i} + \sum_{i=1}^n \beta_{4i} INTR_{t-i} + \sum_{i=1}^n \beta_{5i} GCF_{t-i} + \sum_{i=1}^n \beta_{6i} ER_{t-i} + \epsilon_{2t}$$

$$ALR_t = \sum_{i=1}^n \lambda_{1i} ALR_{t-i} + \sum_{i=1}^n \lambda_{2i} BCA_{t-i} + \sum_{i=1}^n \lambda_{3i} FPO_{t-i} + \sum_{i=1}^n \lambda_{4i} INTR_{t-i} + \sum_{i=1}^n \lambda_{5i} GCF_{t-i} + \sum_{i=1}^n \lambda_{6i} ER_{t-i} + \epsilon_{3t}$$

$$INTR_t = \sum_{i=1}^n C_{1i} INTR_{t-i} + \sum_{i=1}^n C_{2i} ALR_{t-i} + \sum_{i=1}^n C_{3i} BCA_{t-i} + \sum_{i=1}^n C_{4i} FPO_{t-i} + \sum_{i=1}^n C_{5i} GCF_{t-i} + \sum_{i=1}^n C_{6i} ER_{t-i} + \epsilon_{4t}$$

$$GCF_t = \sum_{i=1}^n j_{1i} GCF_{t-i} + \sum_{i=1}^n j_{2i} INTR_{t-i} + \sum_{i=1}^n j_{3i} ALR_{t-i} + \sum_{i=1}^n j_{4i} BCA_{t-i} + \sum_{i=1}^n j_{5i} FPO_{t-i} + \sum_{i=1}^n j_{6i} ER_{t-i} + \epsilon_{5t}$$

$$ER_t = \sum_{i=1}^n M_{1i} ER_{t-i} + \sum_{i=1}^n M_{2i} GCF_{t-i} + \sum_{i=1}^n M_{3i} INTR_{t-i} + \sum_{i=1}^n M_{4i} ALR_{t-i} + \sum_{i=1}^n M_{5i} BCA_{t-i} + \sum_{i=1}^n M_{6i} FPO_{t-i} + \epsilon_{6t}$$

Pairwise Granger Causality Tests			
Time: 12:08			
Sample: 1980 2019			
Lags: 2			
Null Hypothesis:	Obs	F-Statistic	Prob.
BCA does not Granger Cause FPO	38	5.08633	0.0121
FPO does not Granger Cause BCA		8.50496	0.0011
ALR does not Granger Cause FPO	38	0.84327	0.4396
FPO does not Granger Cause ALR		0.01423	0.9859
INTR does not Granger Cause FPO	38	0.24051	0.7876
FPO does not Granger Cause INTR		0.93072	0.4047
GCF does not Granger Cause FPO	38	2.14972	0.1330
FPO does not Granger Cause GCF		0.04098	0.9599
ER does not Granger Cause FPO	38	0.14909	0.8621
FPO does not Granger Cause ER		2.34894	0.1117
ALR does not Granger Cause BCA	38	0.32733	0.7232
BCA does not Granger Cause ALR		0.00627	0.9938
INTR does not Granger Cause BCA	38	0.00014	0.9999
BCA does not Granger Cause INTR		0.58209	0.5645
GCF does not Granger Cause BCA	38	2.42330	0.1047
BCA does not Granger Cause GCF		0.40813	0.6683
ER does not Granger Cause BCA	38	0.91206	0.4119
BCA does not Granger Cause ER		2.27952	0.1187
INTR does not Granger Cause ALR	38	0.57339	0.5693
ALR does not Granger Cause INTR		0.02808	0.9723
GCF does not Granger Cause ALR	38	1.01657	0.3732
ALR does not Granger Cause GCF		1.91710	0.1635
ER does not Granger Cause ALR	38	1.60458	0.2167
ALR does not Granger Cause ER		0.85303	0.4356
GCF does not Granger Cause INTR	38	1.15103	0.3291
INTR does not Granger Cause GCF		0.78814	0.4633
ER does not Granger Cause INTR	38	0.28258	0.7557
INTR does not Granger Cause ER		1.14607	0.3306
ER does not Granger Cause GCF	38	0.15120	0.8603
GCF does not Granger Cause ER		8.17725	0.0014

Source: Authors' Computed Result from E-views 9

From the result above, bank credits to agriculture (BCA) granger cause fisheries production output (FPO), and fisheries production output (FPO) also granger cause bank credits to agriculture (BCA), which means bi-directional causality exist between fisheries production output and bank credits to agriculture. Arable land rate (ALR) and fisheries production output (FPO) have no causality. There was independence causality between interest rate (INTR) and fisheries production output (FPO). Gross capital formation

(GCF) granger cause fisheries production output (FPO), but fisheries production output (FPO) does not granger cause gross capital formation (GCF), meaning that unidirectional causality exist between gross capital formation and fisheries production output. Employment rate (ER) does not granger cause fisheries production output (FPO), but fisheries production output (FPO) granger cause employment rate (ER), implying unidirectional causality between employment rate and fisheries production output. There was independence causality between arable land rate (ALR) and bank credits to agriculture (BCA). There was also independence causality between interest rate (INTR) and bank credits to agriculture (BCA). Gross capital formation (GCF) granger cause bank credits to agriculture (BCA), but bank credits to agriculture (BCA) does not granger cause gross capital formation (GCF), meaning unidirectional causality exist between gross capital formation and bank credits to agriculture. Employment rate (ER) does not granger cause bank credits to agriculture (BCA), but bank credits to agriculture (BCA) granger cause employment rate (ER), implying unidirectional causality between employment rate and bank credits to agriculture. There was no causality between interest rate (INTR) and arable land rate (ALR). There was no causality between gross capital formation (GCF) and arable land rate (ALR). There was independence causality between employment rate (ER) and arable land rate (ALR). There was no causality between gross capital formation (GCF) and interest rate (INTR). There was independence causality between employment rate (ER) and interest rate (INTR). Employment rate (ER) does not granger cause gross capital formation (GCF), but gross capital formation (GCF) granger cause employment rate (ER), implying unidirectional causality between gross capital formation and employment rate.

Findings

Fisheries production output reveals that the t-statistic value of bank credits to fisheries production was statistically significant at 5 percent level. This entails that the null hypothesis is rejected, and the alternative hypothesis is accepted. Implying that, bank credits have impacted on fisheries production in Nigeria for the period. Bank credits to agriculture conform to apriori expectation. This means that increase in bank credits to agriculture will lead to increase in fisheries production output in Nigeria. The t-statistic value (2.091423) was statistically relevant. Attributing the positive influence to recipients (farmers) making use of the acquired credits to purchase the necessary inputs. This research work is also in agreement with Akujuobi and Chima (2012), stating that there is strong long-run relationship from bank credits. This will bring about increase in fisheries production output and in-turn lead to economic growth in Nigeria.

- a. Arable land rate conforms to apriori expectation, but was not statistically significant at 5 percent level. Increase in arable land has influence on fisheries production according to the apriori expectation result conformity. Though the t-statistic value (1.356090)

depicts that more of water (ponds, rivers, seas, oceans etc) than land may be required for fisheries production in Nigeria for the period under review. However, oil spillage and other water pollutants should be stopped.

- b. Interest rate coefficient was negative which is good, as decrease in interest rate will enable farmers to borrow more for fisheries production. It was also statistically significant at 5 percent level, meaning that interest rate has large role to play as regards farmers' demands for bank credits for fisheries production in Nigeria.
- c. Gross capital formation was correctly signed, implying that, increase in gross capital formation will influence fisheries production in Nigeria. It was also statistically significant, implying that gross capital formation is necessary in Nigeria for the period under review. Smith and Bencivenga (1991) said that capital formation is very necessary for fisheries productivity.
- d. Employment rate with respect to agriculture conforms to apriori expectation and was also statistically significant at 5 percent level. Meaning, increase in labour will lead to increase in fisheries production. This is in agreement with the study of Simsir (2012), stating that bank credits use for labour (skilled and unskilled) employment has positive significance on fisheries production.

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

Summary

The research work looked at "bank credits and yield of fisheries production in Nigeria from 1980 to 2019. Fisheries production model unit root results reveals that all the variables were stationary at first difference. Fisheries production model has two co-integrating equations, which leads to error correction examination.

The error correction mechanism for fisheries production output reveals coefficient of determination (goodness of fit) of 97% or 0.97, F-statistic of 15.49011 indicates that the FPO Model is statistically significant, Durbin-Watson of 2.202506 shows absence of autocorrelation. Bank credits to agriculture (BCA) conform to apriori expectation, having positive coefficient and was statistically significant at 5% level. Arable land rate (ALR) coefficient was positive, which conforms to apriori expectation but was not statistically significant at 5% level. Interest rate (INTR) conforms to apriori expectation, having negative coefficient and was also statistically significant at 5% level. Gross capital formation (GCF) conforms to apriori expectation, having positive coefficient and was also statistically significant at 5% level. Employment rate (ER) shows positive coefficient, which conforms to apriori expectation and was also significant at 5% level.

Granger causality runs from bank credits to fisheries production output only (uni-directional causality).

Conclusion and Recommendations

The research work provides empirical exposure as regards bank credits and crop production output for meaningful development in Nigeria. The Bank credits to fisheries production has significant impact on fisheries output due to its positive coefficient and 5% significant level.

Arable land rate does not have impact fisheries production – this could be due to the fact that water bodies are what is needed most. Interest rate has serious implications on bank credits to fisheries production in Nigeria, as low rate of interest will spur agrarians to borrow more money for increase in outputs/yields as reflected (sign of coefficients/t-statistic). Gross capital formation affected fisheries production in Nigeria for the period as reflected in the positive coefficient and t-statistic value. Employment rate (labour) impacted fisheries production output – as skilled and unskilled labour is required for fisheries production in Nigeria – as shown in the results (employment rate coefficient sign and t-statistic value in fisheries production model). From the R^2 , it shows good relationship existed between fisheries production and bank credits which leads to increase in fisheries yields in Nigeria for the period. The borrowing cost should be reduced, the pertinent authorities should try and maintain a sustainable efforts aimed at ensuring that banks strictly adhere to credits concession granted to the agricultural sector. This will surely make young, old and intending farmers access funds at low cost in Nigeria. This will surely lead to increase in outputs of fisheries production in Nigeria. The federal government can make use of direct control of imported goods: this is aimed at promoting self-reliance and support for local agricultural products in Nigeria. The federal government can place embargo on some products or restrict the importation of products that can be produced through agricultural produce, by placing heavy import duties, quotas system fixing etc. The federal government can at the same time allow lower import duties for essential capital goods to assist farmers in the country, so that farmers can have outputs that can be exported to earn from foreign exchange or trade, which will boost gross national product.

CONTRIBUTION TO KNOWLEDGE

The study was able to reveal that sustainable increase in fisheries outputs needs flow of bank credits to the agricultural sector. The boost or assistance from the banking sector is vital for sustainable growth and development of the agricultural sector and other real sectors. This is evident on the fact that developed nations motivate banks to support the real sectors in divers ways.

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