Quest Journals
Journal of Research in Humanities and Social Science
Volume 9 ~ Issue 10 (2021)pp: 46-63
ISSN(Online):2321-9467
www.questjournals.org

Research Paper

Nigeria Economic Growth: Nexus between Agricultural Output and Oil Industry Output via Variance Decomposition VAR approach (1986 - 2020)

Samuel Olusegun Bewaji[1*], Sunday Alade Agbonjinmi[2], Sunday Timothy Omojuyigbe[3]
[1*]*Department of Economics, University of Abuja, Abuja, Nigeria.*
[2]*Department of Economics, University of Abuja, Abuja, Nigeria.*
[3]*Department of Economics, Veritas University, Abuja, Nigeria.*

ABSTRACT
This research work analyzed the Nigeria economic growth nexus between Agricultural Output and Oil Industry Output from 1986 to 2020. However, the data gathered was presented and analyzed through E-view. The study makes use of analytical statistics for the analysis of the data collected. The Vector Autoregressive model (VAR), ADF and very other diagnostic Tests were employed in order for certainty A reliable results and to guard against obtaining spurious results. Vector Autoregressive model (VAR) in order to forecast in to future behavior of the variables, furthermore, variance decomposition technic was employed to further empirically analyzed the future impact of the variable. The result of VAR shows that AGOUT strongly predict RGDP with 5.37524 t-statistic value and Null hypothesis H_1 is rejected and Alternative hypothesis is Accepted.
Considering the second hypothesis H_2 with the result from VAR, it is obvious that Agricultural output does impact Nigeria economy better than oil industry output. Therefore, H_2 is rejected and Alternative hypothesis is accepted.
More so, the result of variance decomposition further justified the result of VAR which shows that, RGDP is more responsive to AGOUT both is the short-run and at the long-run than the OIOUT. However, the study recommends that, the government in her capacity should revert the current trade-off between Agriculture and Oil sectors in favour of Agricultural sector by increasing the budgeting allocation for Agricultural sector, by strengthening the security of the country especially in the rural areas where farmers lives. And finally, the policy makers should make policies that will enhance value additions in Agricultural sector in the country.
Keywords: *Economic growth, Vector Autoregressive and Variance decomposition analysis.*

Received 04 October, 2021; Revised: 16 October, 2021; Accepted 18 October, 2021 © The author(s) 2021. Published with open access at www.questjournals.org

I. INTRODUCTION

1.1 Background to the Study

Nigeria has the largest economy in West Africa and the most populous country in Africa, with an estimated population of 200 million people of 923,768sq km land mass. Nigeria has 36 states and the Federal Capital Territory (FCT) comprising 774 local government areas Oluwatobi (2011). Stating from pre-independent down to post independent era through the early 1970, Agricultural sector had been the major determinate of Nigeria economic growth with a lot of prove from high agricultural output such as ground nut pyramid in the northern Nigeria, massive coca and kola production in the western Nigeria and palm oil production in the eastern Nigeria. All these were justified by high employment rate across the region with low poverty rate in the country at large. During this period, life expectancy rate was equally high and our currency (Naira) was highly valued coupled with a highly impressive external reserved.

According to Oluwatoyin and Folasade (2010) emphasized that the gospel of economic salvation cannot be preached without due regard to agricultural development in any country. They argued that Agriculture is the major and most certain path to economic growth and sustainable development because its impact cut across all aspect of economics activities in the country.

However, since the discovery of oil and massive exploration of oil that started from late 1970s up to date, there has been a drastic trade-off between agricultural output and oil industry output in Nigeria. The more oil is produced, the less the agricultural output produced. This trade-off between the two major economy determinates has cause and effect on the current economy situation that we find ourselves as a country. The economy of this country is now struggling in the ocean of "Stagflation", an economy situation that is characterized with high inflation rate coupled with high unemployment rate, and a lot of policies such as NEEDS, 7 Points Agenda, Vision 20:20:20 etc and recently vision 2050 were put in place to rescue the economy of this great country from sinking down the ocean of stagflation proved abortive.

However economic growth from the time immemorial has been subject of debate in both academic and non academic circles. i.e, which key sector best measured growth of an economy and how do we ascertain its contribution to the aggregate national economy. The history of oil industry in Nigeria dates to early 1900s when the British Colonial Government shortly after the creation of Nigeria as a legal entity started the first geological survey of the country. From 1956 when the first oil was drilled in Oloibiri to mid-2013 when the price of the commodity crashed beyond imagination of common sense till this day. This crashed in global oil price was an international shocks caused by financial crises, strikes, wars, decreased oil production and covid-19. It is because of these shocks in oil prices and Nigeria's dependence on oil that many economists raise concern about the future of the Nigeria economy. As alternative fuels become more popular and oil importing countries continue to discover their oil deposits. Therefore, the earlier the better for us as a country to start looking forward for alternative source of foreign exchange and government revenue that will spur economic growth in this country.

However, it's on that ground of current economy situation of this country raises the following research questions to be analyzed in this study.

i. Is there any significant impact of agricultural output on economic growth in Nigeria?

ii. Has agricultural output impacted Nigeria economy better than oil industry output?

iii. Does the response of economic growth to agricultural output more impactful than that of oil industry output at the long-run?

Therefore, this study shall be divided into four sections. Section one is the introduction to the study and objectives of the study. Section two shall present related literature concerning and empirical Review. The Research Methodology shall then be stated in section three while data analysis, interpretation, conclusion and recommendations shall be made in section four.

1.2 Hypotheses

The following hypotheses will guide this study.

H_1: There is no significant impact of agricultural output on economic growth in Nigeria.

H_2: Agricultural output does not impact Nigeria economy better than oil industry output.

H_3: The response of economic growth to agricultural output does not impactful than that of oil industry output at the long-run.

1.3 Statement to the Problem

Since the discovery of oil, petroleum industry has played significant role towards the development of Nigerian economy, the impacts are both positive and negative effects on all the economy agents in the country. Various scholars have advocated for the development of other sectors owing to their belief in the negative falconets of the oil industry. While others argued that the sector should be promoted and developed for its impact on the economy of this country.

Nigeria is estimated to have 37.2 billion barrels of oil reserves in 2011 and produces an average of 2.13 million barrels per day (Igberaese, 2013). The hydrocarbon sector also accounts for 82 per cent of the federal government's revenue (World Bank, 2013). This suggests that Nigeria is heavily dependent on the oil sector for the majority of government spending, infrastructure and most economic development activities. However, with the increasing volatility of oil prices, the discovery of oil in other parts of the world and the instability of the global economy, oil imports from Nigeria to major economies such as the United States has steadily decreased. The U.S once imported 9-11% of its crude oil from Nigeria but in the first half of 2012, the share of imported oil from Nigeria to the U.S has dropped to 5% (Igberaese, 2013).

Over dependence on oil revenue tends to distort and discourage sourcing of funds from other source by the government, for example, as a result of huge oil revenue flows; countries tend to de-emphasize income taxes as a source of government revenue. Besides, low tax ratios and high consumption expenditures (typically on imported goods) reinforce inflationary tendencies with regard to expenditure; government pay less or no attention to infrastructural development, encouragement of private sector investment, mechanizing the agricultural and manufacturing sector of the economy because of reliance on petroleum revenue.

On the other hand, Currently according to Ayodele, Obafemi and Ebong, (2013), Nigeria has 75 percent of its land suitable for agriculture, but only 40% is cultivated, which indicates there is much room for the county to focus on. This addresses the food security and agriculture component of their plan along with the focus on employment for all. However, to move forward, the country must increase the low productivity of current agricultural companies, engage competition within the agricultural sector, develop domestic policies and increase funding of agricultural production in the country.

II. LITERATURE REVIEW

2.1 History of Petroleum in Nigeria

Petroleum was discovered in Nigeria in 1956 at Oloibiri in the Niger Delta after half a century of exploration. The discovery was made by Shell-BP, at the time the sole concessionaire. Nigeria joined the ranks of oil producers in 1958 when its first oil field came on stream producing 5,100 bpd. After 1960, exploration rights in onshore and offshore areas adjoining the Niger Delta were extended to other foreign companies. In 1965 the EA field was discovered by Shell in shallow water southeast of Warri.

In 1970, the end of the Biafran war coincided with the rise in the world oil price, and Nigeria was able to reap instant riches from its oil production. Nigeria joined the Organization of Petroleum Exporting Countries (OPEC) in 1971 and established the Nigerian National Petroleum Company (NNPC) in 1977; a state owned and controlled company which is a major player in both the upstream and downstream sectors (Blair1976).

Following the discovery of crude oil by Shell D'Arcy Petroleum, pioneer production began in 1958 from the company's oil field in Oloibiri in the Eastern Niger Delta. By the late sixties and early seventies, Nigeria had attained a production level of over 2 million barrels of crude oil a day. Although production figures dropped in the eighties due to economic slump, 2004 saw a total rejuvenation of oil production to a record level of 2.5 million barrels per day. Current development strategies are aimed at increasing production to 4million barrels per day by the year 2010.

Petroleum production and export play a dominant role in Nigeria's economy and account for about 90 % of her gross earnings. This dominant role has pushed agriculture, the traditional mainstay of the economy, from the early fifties and sixties, to the background.

While the discovery of oil in the eastern and mid-western regions of the Niger Delta pleased hopeful Nigerians, giving them an early indication soon after independent economic development was within reach, at the same time it signaled a danger of grave consequence: oil revenues fueled already existing ethnic and political tension and actually "burned" the country. This tension reached its peak with the civil war that lasted from 1967 to 1970. As the war commenced, the literature reflected the hostility, the impact, and fate of the oil industry.

Nigeria survived the war, and was able to recover mainly of the huge revenues from oil in the 1970s. For some three years an oil boom followed, and the country was awash with money. Indeed, there was money for virtually all the items in its developmental plan. The literature of the postwar years shifted to the analysis of the world oil boom and bust, collectively known as the "oil shock." Starting in 1973 the world experienced an oil shock that rippled through Nigeria until the mid - 1980s. This oil shock was initially positive for the country, but with mismanagement and military rule, it became all economic disaster. The larger middle class produced by the oil boom of the 1970s gradually became disenchanted in the 1980s, and rebellious in the 1990s.

The enormous impact of the oil shock could not escape scholarly attention. For almost twenty years (1970s - 1990s), the virtual obsession was to analyze the consequences of oil on Nigeria, using different models and theories. A set of radical-oriented writers was concerned with the nationalization that took place during the oil shock as well as the linkages between oil and an activist foreign policy. Regarding the latter, the emphasis was on OPEC, Nigeria's strategic alliance formation within Africa, the vigorous efforts to establish the Economic Community of West African States (ECOWAS), and the country's attempts to use oil as a political weapon, especially in the liberation of South Africa from apartheid.

If many had hoped that oil would turn Nigeria into an industrial power and a prosperous country based on a large middle class, they were to be disappointed when a formally rich country became a debtor nation by the 1980s. The suddenness of the economic difficulties of the 1980s "bust years" had an adverse effect on class relations and the oil workers who understood the dynamics of the industry. As if to capture the labour crisis, writings on oil workers during this period covered many interrelated issues, notably working conditions, strikes, and state labor relations. To be sure, labor issues were not new in the 1980s, since the left-oriented scholars had made a point of exposing labor relations in the colonial era. What was new after 1980 was the focus on oil workers, unions, and class conflict [OPEC annual report 1983].

2.2 Agricultural Sector

According to Okolo (2004) he described agricultural sector as the most important sector of the Nigeria economy which holds a lot of potentials for the future economic development of the nation as it had done in the past. Notwithstanding the enviable position of the oil sector in the Nigerian economy over the past three decades, the agricultural sector is arguably the most important sector of the economy.

According to Mabuza (2018) Agriculture is the cultivation of land, raising and rearing of animals for the purpose of production of food for man, animals andindustries. It involves and comprises of crop production, livestock and forestry, fishery, processing and marketing of those agricultural production.

Oji-Okoro (2011), stated that agricultural sector is the largest sector in the Nigerian economy with its dominant share of the GDP, employment of more than 70% of the active labour force and the generation of about 88% of non-oil foreign exchange earnings. Its share of the GDP increased from an annual average of 38% during 1992 to 1996 to 40% during 1977-2001 compared to crude oil the GDP from which declined from an annual average of 13% in 1992-1996 to 12% during 1997-2001.

According to Awokuse, (2009) The impact of agriculture in maintaining sustainable economic growth has been a major subject of controversy in many researches for a very long time now and this is presently still on among scholars with no final conclusion. Though, there is a general consensus among some researchers that Agriculture is less productive than other non-agricultural sectors, early research relating to the impact of agriculture in maintaining sustainable economic growth and development were qualitative in nature emphasizing potential effect of inter-sectorial linkage between agricultural and industrial/manufacturing sector while other scholars argued that growth in Agriculture is a precondition for industrialization (Nurkse, 1953 and Rostow, 1960)

Victoria K. (2019) Nigeria is a Sub Saharan African nation, endowed with abundant natural resources including biological and non-biological resources, with 84 million hectares of arable land, 279 billion cubic meters of surface water and also she possesses, three of the eight major river systems in Africa and 160 million people in population, projected to grow to 470 million by year 2050 which infers a large internal market (CBN, FBN Capital, 2011). A close examination of the agricultural contributions to the economy shows that the sector employs about 75 percent of Nigeria’s work force, as is the case in most sub-Saharan African countries (Philip, Nkonya, Pender and Oni, 2009). It is also of note that agriculture is the major source of food and livelihood in Nigeria, making it a critical component of programs that seek to alleviate poverty and attain food security. The sector’s productivity estimates for Nigeria reveals a fall in agricultural productivity growth since the 1970s.

According to Adesina (2012) in Victoria (2019), the country is still importing what it can produce in abundance and the height of imports dependency is hurting her farmers and displacing local production while creating rising unemployment and much weaker exchange rate. Currently, the Agricultural Sector in the Nigerian economy is largely subsistent, characterized by inefficiency, high risk, low productivity and very little diversification. This sector is at the moment unattractive, not only to entrepreneurs and investors, but most particularly to youths. That is why a large number of youths are now moving away from the rural communities to urban areas and other geo-political regions. The principal explanation for this could be the stagnation of the sector after the Oil boom. Godfrey Nzamujo, (2010).

2.3 Empirical Review

Nweze and Greg (2016)This empirical study examined oil revenue and economic growth in Nigeria between 1981 to 2014. Secondary data on gross domestic product (GDP), used as a proxy for economic growth; oil revenue (OREV), andgovernment expenditure (GEXP) which represented the explanatory variables were sourced mainly from CBN publications. Error Correction Mechanism (ECM) was employed and the result reveals among others. The result of the error correction mechanism (ECM) test indicates that all the variables except lag of government expenditure exerted significant impact on economic growth in Nigeria. However, all the variables exhibited their expected sign in the short-run but exhibited negative relationship with economic growth in the long-run except for government expenditure, which has positive relationship with economic growth both in the long-run and short-run. The study concluded that Government should use the revenue generated from petroleum to invest in other domestic sectors such as Agriculture and manufacturing sector in order to expand the revenue source of the economy and further increase the revenue base of the economy.

Akinlo (2012) assessed the importance of oil in the development of the Nigerian economy in a multivariate VAR model over the period 1960-2009. He model oil sector against other four sectors i.e. manufacturing, agriculture, trade & service and building & construction. Empirical evidence shows that the five subsectors are cointegrated and that the oil can cause other non-oil sectors to grow. However, oil had adverse effect on the manufacturing sector.

Granger causality test finds bidirectional causality between oil and manufacturing, oil and building & construction, manufacturing and building & construction, manufacturing and trade & services, and agriculture and building & construction. It also confirms unidirectional causality from manufacturing to agriculture and trade & services to oil. No causality was found between agriculture and oil, likewise between trade & services and building & construction. The paper recommends appropriate regulatory and pricing reforms in the oil sector to integrate it into the economy and reverse the negative impact of oil on the manufacturing sub sector.

Ogbonna and Appah (2012) Investigated the effects of petroleum income on the Nigerian economy for the period 2000 to 2009 using the gross domestic product (GDP), per capita income (PCI), and inflation (INF) as the explained variables, and oil revenue, petroleum profit tax/royalties (PPT\R), and licensing fees (LF) as the explanatory variables. This study relied mostly on secondary data from Central Bank of Nigeria's Statistical Bulletin, Nigerian National Bureau of Statistics, and the Nigerian national Petroleum Corporation. The results show that oil revenue has a positive and significant relationship with GDP and PCI, but a positive and insignificant relationship with INF. Similarly, PPT/R has a positive and significant relationship with GDP and PCI, but a negative and insignificant relationship with inflation. It was also found that LF has a positive but insignificant relationship between GDP, PCI and INF, respectively. Based on these findings, the study concluded that petroleum income (oil revenue and PPT/R) has positively and significantly impacted the Nigerian economy when measured by GDP and PCI for the period 2000 to 2009.

Iganiga and Unemhilin (2011) studied the effect of federal government agricultural expenditure and other determinants of agricultural output on the value of agricultural output in Nigeria. A Cobb Douglas Growth Model was specified that included commercial credits to agriculture, consumer price index, annual average rainfall, population growth rate, food importation and GDP growth rate. The study performed comprehensive analysis of data and estimated the Vector Error Correction model. Their results showed that federal government capital expenditure was found to be positively related to agricultural output.

Odularu (2008) carried out a study titled Crude Oil and the Nigerian Economic Performance. The aim of the study was to ascertain the impact of crude oil on the Nigerian economy. Ordinary Least Square (OLS) regression method was used to analyzed the data. The study found that crude oil consumption and export have contributed to the improvement of the Nigerian economy. The study conclude that the production of crude oil (domestic consumption and export) despite its positive effect on the growth of the Nigerian economy has not significantly improved the growth of the economy, due to many factors like misappropriation of public funds (corruption) and poor administration.

Eravwoke, Alobari and Ukavwe (2014) carried out a study titled Crude Oil Export and its Impact in Developing Countries: A Case of Nigeria. The objectives of the study centered on an empirical investigation of crude oil export and it impact on growth of the Nigerian economy. The study used ordinary least squares regression method, Augmented Dickey Fuller unit root, co-integration test and the short run dynamics. The study found that there was an inverse relationship between crude oil exports on economic growth in the Nigerian economy, given the coefficient of - 2.115947, which is statistically significant with a t-value of -3.623380. This implies that crude oil exports are a significant factor that can transform the growth of an economy. The study also found that there was a significant relationship between crude oil exports of the Nigeria economy.

Auwal and Mamman (2012), conducted a study on the Downstream Sector: An Assessment of Petroleum Products Supply in Nigeria. The study was necessitated by files of petroleum product scarcity and higher prices confronting the Nigerian economy. Paradoxical is the fact that Nigeria is a nation heavily endowed with oil and yet wallows in scarcity of its products. The main objective of the study was to provide an assessment of the supply of petroleum products (P.P.) in Nigeria, with emphasis on the short and long run effects of petroleum products prices, imports, local refineries output and the sales on its distribution. The study utilized monthly data ranging from 2005 to 2010 and investigated the impact of the petroleum products supply and domestic prices on the domestic distribution using Vector Auto regression (VAR) model and Ordinary Least Square (OLS) estimation to observe the interdependence as well as the impact of the variables on one another.

The study found that because of their non-zero coefficients, the independent variables are responsible for the variations in petroleum products distributed. Based on the lagged and dynamic long-run equilibrium, domestically refined and prices of petroleum products remained insensitive to the quantity distributed, while the imported quantity, though with a low coefficient and weak correlation, remained the key mode of supply that is currently sustaining the economy.

Ojeka, Effiong and Eko (2016)Studied the role of agriculture in accelerating economic growth and development process of any nation cannot be overemphasized. The study investigated the constraints to agricultural development in Nigeria using time series data spanning the period 1970 – 2010 and contemporary econometric methods of unit root test, co-integration and error-correction mechanism. Empirical findings reveal that rainfall, exchange rate and food export (lag one) are the most significant positive determinants of agricultural output in Nigeria. However, food imports, diversion of funds meant for agricultural purposes and low technology diffusion in agriculture are among the factors identified as constraints to agricultural development in Nigeria. The study recommends among others, maintenance of stable and favourable exchange rate regime, and the pursuance of programmes that will bolster partnerships between research institutions and other stake holders in agriculture as a route to facilitating agricultural development and hence, economic development in Nigeria.

III. METHODOLOGY

3.1 Model Specification

A model is adapted from Akinlo (2012), this model is adapted because vector auto regressive (VAR) model allows each variable in the model as endogenous variable, which could impact on itself and every other without the need to impose a theoretical structure on the estimates. Also, the model will affords us the opportunity to carry out variance decomposition (VDCs) in order to estimate the future impact of the variables.

$RGDP_t = a_1 + \sum_{i=1}^{k} b_1 RGDP_{t-1} + + \sum_{i=1}^{k} d_1 Agout_{t-1} + \sum_{i-0}^{k} c_1 OIout_{t-1} + U_{t1}$…………………(1)

$Agout_t = a_2 + \sum_{i=1}^{k} b_2 RGDP_{t-1} + \sum_{i=1}^{k} d_2 Agout_{t-1} + \sum_{i-0}^{k} c_2 OIout_{t-1} + U_{t2}$…………………(2)

$OIout_t = a_3 + \sum_{i=1}^{k} b_3 RGDP_{t-1} + \sum_{i=1}^{k} d_3 Agout_{t-1} + \sum_{i-0}^{k} c_3 OIout_{t-1} + U_{t3}$…………………(3)

Where:
RGDP = Real Gross Domestic Product
Agout = Agricultural output
OIout = Oil Industrial output
From the equations above, the parameters to be estimated are bij, dij and cij, while the k measures the maximum lag length.

IV. RESULTS ANALYSIS

Table 4.1 UNIT ROOT TEST (Augmented Dickey Fuller Test)

Variable	Levels	Critical Values		First differences	Critical Values		Order of Integration	
RGDP	-0.370595	1%	-3.689194	-5.257126	1%	-3.689194	I(1)	**Stationary at 1st difference**
		5%	-2.971853		5%	-2.971853		
		10%	-2.625121		10%	-2.625121		
AGOUT	0.422860	1%	-3.679322	-4.324811	1%	-3.646342	I(1)	**Stationary at1st difference**
		5%	-2.967767		5%	-2.954021		
		10%	-2.622989		10%	-2.615817		
OIOUT	-1.552644	1%	-3.639407	-6.187377	1%	-3.646342	I(1)	**Stationary at1st difference**
		5%	-2.951125		5%	-2.954021		
		10%	-2.614300		10%	-2.615817		

Source: Author's own computation using E-Views Software, Version 9.0

Table 4.1 present the result of the unit root test using Augmented Dickey Fuller Test, the variables are all stationary at first difference as the critical value are significant at 1%, 5% and 10% level of significance respectively. This showed that the variables are integrated of order one.

Cointegration Test

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.311435	16.63679	29.79707	0.6667
At most 1	0.105473	4.322990	15.49471	0.8758
At most 2	0.019350	0.644793	3.841466	0.4220

From the result of trace statistic, two equations indicate that there is long run relationship in the model. i.e equation 2 and 3 since there trace statistic are lesser than 5% critical value, we can not reject null hypothesis.

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**

None	0.311435	12.31380	21.13162	0.5170
At most 1	0.105473	3.678197	14.26460	0.8917
At most 2	0.019350	0.644793	3.841466	0.4220

From the result of Max-Eigen statistic equally justify the result of trace statistic, two equations indicates that there are long run relationship in the model. i.e equation 2 and 3 since there trace statistic are lesser than 5% critical value, we can not reject null hypothesis.

Vector Error Correction Model (VECM)

Cointegrating Eq:	CointEq1		
RGDP(-1)	1.000000		
AGOUT(-1)	-3834178.		
	(765373.)		
	[-5.00956]		
OIOUT(-1)	2.12E+08		
	(1.4E+08)		
	[1.54728]		
C	-5.72E+10		
Error Correction:	**D(RGDP)**	**D(AGOUT)**	**D(OIOUT)**
CointEq1	-0.170148	3.73E-08	-4.27E-10
	(0.08692)	(1.4E-08)	(3.5E-10)
	[-1.95754]	[2.65715]	[-1.21038]
D(RGDP(-1))	-0.021891	7.76E-09	1.75E-11
	(0.07015)	(1.1E-08)	(2.9E-10)
	[-0.31206]	[0.68537]	[0.06148]
D(AGOUT(-1))	2488925.	0.065522	0.001549
	(1215150)	(0.19610)	(0.00494)
	[2.04824]	[0.33412]	[0.31371]
D(OIOUT(-1))	93122641	1.652076	-0.069489
	(4.6E+07)	(7.39236)	(0.18611)
	[2.03296]	[0.22348]	[-0.37338]
C	6.37E+08	364.3180	0.536978
	(8.6E+08)	(138.654)	(3.49073)
	[0.74100]	[2.62754]	[0.15383]
R-squared	0.269690	0.221735	0.062770
Adj. R-squared	0.165360	0.110554	-0.071120
Sum sq. resids	3.13E+20	8149840.	5165.585
S.E. equation	3.34E+09	539.5051	13.58253
F-statistic	2.584970	1.994367	0.468817
Log likelihood	-767.8085	-251.7055	-130.2039
Akaike AIC	46.83688	15.55791	8.194173
Schwarz SC	47.06362	15.78465	8.420917
Mean dependent	1.82E+09	419.7615	1.203030
S.D. dependent	3.66E+09	572.0525	13.12386
Determinant resid covariance (dof adj.)		5.70E+26	
Determinant resid covariance		3.48E+26	

Log likelihood	-1148.857
Akaike information criterion	70.71861
Schwarz criterion	71.53489

Probability value of VECM

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.170148	0.086919	-1.957542	0.0536
C(2)	-0.021891	0.070151	-0.312062	0.7558
C(3)	2488925.	1215150.	2.048245	0.0437
C(4)	93122641	45806328	2.032965	0.0452
C(5)	6.37E+08	8.59E+08	0.740998	0.4608
C(6)	-7.71E-07	2.80E-07	-2.751159	0.0073
C(7)	-9.54E-07	2.26E-07	-4.216626	0.0001
C(8)	-9.122772	3.917712	-2.328597	0.0223
C(9)	78.09519	147.6822	0.528806	0.5983
C(10)	8657.284	2769.979	3.125397	0.0024
C(11)	-4.27E-10	3.53E-10	-1.210379	0.2295
C(12)	1.75E-11	2.85E-10	0.061479	0.9511
C(13)	0.001549	0.004937	0.313707	0.7545
C(14)	-0.069489	0.186109	-0.373380	0.7098
C(15)	0.536978	3.490733	0.153830	0.8781

From the long run coefficient of error correction mechanism, which are C(1), C(6) and C(11) are -0.170148, -7.71008 and -4.270010 respectively shows that the variables will converge at the long run. However, the probability value of C(1) and C(6) are significant at 5% while C(11) is not significant at 5%.

Considering equation1 of VECM probability value, the result show the short run relationship between RGDP as dependent variable with AGOUT and OIOUT. C(3) shows that AGOUT has a short run causal effect on RGDP at 5% of significant, while C(4) equally shows that OIOUT has a short run causal effect on RGDP at 5% of significant.

From equation2 of VECM probability value, the result show the short run relationship between AGOUT as dependent variable with RGDP and OIOUT. C(7) shows that RGDP has a short run causal effect on AGOUT at 5% of significant, while C(9) shows that OIOUT does not have short run causal effect on AGOUT at 5% of significant.

From equation3 of VECM probability value, the result show the short run relationship between OIOUT as dependent variable with RGDP and AGOUT. C(12) and C(13) show that RGDP and AGOUT do not have short run causal effect on OIOUT at 5% of significant.

4.2 Conclusion and Recommendations

However, according to the result of VAR, which shows that AGOUT strongly predict RGDP going by its t-statistic value of 5.37524, which means, a unit change in AGOUT will cause an increase of 1878524 in RGDP. However, the result shows that Null hypothesis H_1 is rejected and Alternative hypothesis is Accepted. i.e, agricultural output significantly impacts economic growth in Nigeria.

Considering the second hypothesis H_2 with the result from VAR, it is obvious that Agricultural output does impact Nigeria economy better than oil industry output, considering the OIOUT t-statistical value which is 1.07880. Therefore, H_2 is rejected and Alternative hypothesis is accepted.

More so, the result of variance decomposition further justified the result of VAR which shows that, RGDP is more responsive to AGOUT both is the short-run and at the long-run than the OIOUT.

Therefore, this study has shown to us that agriculture sector still has a lot to offer this country, considering its impact to the economy of this country since independence and despite several bottlenecks. It remains a resilient sustainer of the populace. In 1960s, Nigeria was the world's largest exporter of groundnut, the second largest exporter of cocoa and palm produce and an important exporter of rubber, cotton etc. But today, the country is listed as first in Africa and fifth in the world importer list in year 2020. Our position on the world list can not be separated from how we have traded off Agriculture sector for Oil sector.

Study concludes that publicly supported agricultural interventions in Nigeria had positive and significant effect on agricultural development though the gestation period is not quick which is justified by the outcome of short run variance decomposition results of this study. However, Policy consistency and commitment is required before such intervention can yield the desired results at the long-run. Therefore, this study recommends that, the government in her capacity should revert the current trade-off between Agriculture and Oil sectors in favour of Agricultural sector by increasing the budgeting allocation for Agricultural sector, by strengthening the security of the country especially in the rural areas where farmers lives. And finally, the policy makers should make policies that will enhance value additions in Agricultural sector in the country.

REFERENCES

[1]. Adesina, A. (2012). Transforming Agriculture to Grow Nigeria's Economy. Convocation Lecture delivered at the Obafemi Awolowo University, Ile-Ife by Honourable Minister of Agriculture and Rural Development. December 13.

[2]. Akinlo, A. E. (2012). How important is Oil in Nigeria‟s Economic Growth? Journal of SustainableDevelopment, 5(4).

[3]. Auwal, U. and Mamman, J. A. (2012). The Downstream Sector: An Assessment of Petroleum ProductsSupply in Nigeria. JEL Classification: L78, Q30, D40, D22, C51.

[4]. Awoke, M. U. (2004). Factors affecting loan acquisition and repayment patterns of small holder farmers in Ika North West of Delta State, Nigeria. Journal of Sustainable Agricultural Resources, 9, 61-64.

[5]. CBN Statistical Bulletin: Various Editions. Central Bank of Nigeria (2012). Annual Statistical Bulletin, Central Bank Of Nigeria, Abuja, Nigeria.

[6]. Eravwoke, K. E. E. Alobari, C. M. and Ukavwe, A. (2014). Crude Oil Export and its Impact inDeveloping Countries: A Case of Nigeria. Global Educational Research Journal, 2(6), 80-92.

[7]. Godfrey N. (2010),Special issue on youth and agriculture. International Fund for Agricultural Development,Issue number 20**.**

[8]. Iganiga, B.O. and Unemhilin, D.O. (2011). "The Impact of Federal Government Agricultural Expenditure on Agricultural Output in Nigeria". Journal of Economics, 2(2): 81-88 .

[9]. Mabuza ML, (2018), Impact of food aid on small wolder. Agricultural development in Swaziland. African Journal of Agriculture, 8 (2): 151-169.

[10]. Ojeka, G.O, Effiong,C.E and Eko, O. (2016) , The role of agriculture in accelerating economic growth and development in Nigeria.ResearchGate. 8(6) .pp: 102-132.

[11]. Oluwatoyin, A. and Folasade, O. (2010) An overview of Nigerian agricultural sectors. Journal of Agricultural Economics, 8 (3): 7-16.

[12]. Victoria K. S. (2019), The role of agricultural sector performance on economic growth in Nigeria. ResearchGate. April 2019.

[13]. World Bank (2013). World Development Report, World Bank, Washington D. C.

Appendix

Null Hypothesis: RGDP has a unit root

Exogenous: Constant

Lag Length: 6 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-0.370595	0.9013
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Augmented Dickey-Fuller Test Equation

Dependent Variable: D(RGDP)

Method: Least Squares

Date: 01/30/21 Time: 11:53

Sample (adjusted): 1993 2020

Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
RGDP(-1)	-0.016336	0.044080	-0.370595	0.7148
D(RGDP(-1))	-0.035347	0.188378	-0.187638	0.8531
D(RGDP(-2))	-0.194399	0.177697	-1.093986	0.2870
D(RGDP(-3))	-0.047145	0.182593	-0.258200	0.7989
D(RGDP(-4))	-0.287425	0.177184	-1.622188	0.1204
D(RGDP(-5))	-0.681640	0.228959	-2.977126	0.0074
D(RGDP(-6))	-0.080817	0.075555	-1.069647	0.2975

C	5.73E+09	3.91E+09	1.463822	0.1588

R-squared	0.456655	Mean dependent var	1.71E+09
Adjusted R-squared	0.266484	S.D. dependent var	3.87E+09
S.E. of regression	3.31E+09	Akaike info criterion	46.91608
Sum squared resid	2.20E+20	Schwarz criterion	47.29671
Log likelihood	-648.8251	Hannan-Quinn criter.	47.03244
F-statistic	2.401290	Durbin-Watson stat	2.369968
Prob(F-statistic)	0.058829		

I(1)

Null Hypothesis: D(RGDP) has a unit root
Exogenous: Constant
Lag Length: 5 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-5.257126	0.0002
Test critical values:	1% level	-3.689194	
	5% level	-2.971853	
	10% level	-2.625121	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(RGDP,2)
Method: Least Squares
Date: 01/30/21 Time: 11:54
Sample (adjusted): 1993 2020
Included observations: 28 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(RGDP(-1))	-2.340668	0.445237	-5.257126	0.0000
D(RGDP(-1),2)	1.300017	0.364068	3.570808	0.0018
D(RGDP(-2),2)	1.101600	0.329154	3.346760	0.0031
D(RGDP(-3),2)	1.049948	0.267418	3.926237	0.0008
D(RGDP(-4),2)	0.765554	0.250348	3.057967	0.0060
D(RGDP(-5),2)	0.075005	0.072375	1.036333	0.3118
C	4.33E+09	1.04E+09	4.170011	0.0004

R-squared	0.671587	Mean dependent var	1.71E+08
Adjusted R-squared	0.577755	S.D. dependent var	5.00E+09
S.E. of regression	3.25E+09	Akaike info criterion	46.85149
Sum squared resid	2.21E+20	Schwarz criterion	47.18454
Log likelihood	-648.9209	Hannan-Quinn criter.	46.95331
F-statistic	7.157328	Durbin-Watson stat	2.393291
Prob(F-statistic)	0.000295		

I(1)

Null Hypothesis: D(OIOUT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*

Augmented Dickey-Fuller test statistic		-6.187377	0.0000
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(OIOUT,2)
Method: Least Squares
Date: 01/30/21 Time: 11:56
Sample (adjusted): 1988 2020
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(OIOUT(-1))	-1.107885	0.179056	-6.187377	0.0000
C	1.342267	2.319196	0.578764	0.5669

R-squared	0.552564	Mean dependent var	-0.087576
Adjusted R-squared	0.538130	S.D. dependent var	19.50599
S.E. of regression	13.25646	Akaike info criterion	8.065539
Sum squared resid	5447.747	Schwarz criterion	8.156236
Log likelihood	-131.0814	Hannan-Quinn criter.	8.096056
F-statistic	38.28363	Durbin-Watson stat	1.989838
Prob(F-statistic)	0.000001		

I(1)

Null Hypothesis: D(AGOUT) has a unit root
Exogenous: Constant
Lag Length: 0 (Automatic - based on SIC, maxlag=8)

		t-Statistic	Prob.*
Augmented Dickey-Fuller test statistic		-4.324811	0.0017
Test critical values:	1% level	-3.646342	
	5% level	-2.954021	
	10% level	-2.615817	

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

Augmented Dickey-Fuller Test Equation
Dependent Variable: D(AGOUT,2)
Method: Least Squares
Date: 01/30/21 Time: 11:57
Sample (adjusted): 1988 2020
Included observations: 33 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob.
D(AGOUT(-1))	-0.881512	0.203827	-4.324811	0.0001
C	366.0219	136.6453	2.678627	0.0117

R-squared	0.376308	Mean dependent var	-33.78242
Adjusted R-squared	0.356189	S.D. dependent var	720.4375
S.E. of regression	578.0637	Akaike info criterion	15.61594
Sum squared resid	10358886	Schwarz criterion	15.70663
Log likelihood	-255.6630	Hannan-Quinn criter.	15.64645

F-statistic	18.70399	Durbin-Watson stat	1.754055
Prob(F-statistic)	0.000147		

Lag structure

VAR Lag Order Selection Criteria
Endogenous variables: GDP
Exogenous variables: C
Date: 01/30/21 Time: 12:00
Sample: 1986 2020
Included observations: 33

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-824.9724	NA	3.22e+20	50.05893	50.10428	50.07419
1	-772.7930	98.03397*	1.45e+19*	46.95715*	47.04785*	46.98767*
2	-772.5659	0.412871	1.52e+19	47.00400	47.14004	47.04977

* 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

VAR Lag Order Selection Criteria
Endogenous variables: AGOUT
Exogenous variables: C
Date: 01/30/21 Time: 12:02
Sample: 1986 2020
Included observations: 33

Lag	LogL	LR	FPE	AIC	SC
0	-329.0318	NA	28461674	20.00193	20.04728
1	-255.8072	137.5735*	357521.7*	15.62468*	15.71538*
2	-255.6618	0.264302	376661.5	15.67648	15.81252

* 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

VAR Lag Order Selection Criteria
Endogenous variables: OIOUT
Exogenous variables: C
Date: 01/30/21 Time: 12:02
Sample: 1986 2020
Included observations: 33

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-156.1896	NA	803.3425	9.526640	9.571988	9.541898
1	-129.9303	49.33565*	173.8242*	7.995773*	8.086470*	8.026290*
2	-129.8771	0.096701	184.1558	8.053156	8.189202	8.098931

* 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

VAR (Vector Autoregression)

Vector Autoregression Estimates
Date: 01/30/21 Time: 12:05
Sample (adjusted): 1987 2020
Included observations: 34 after adjustments
Standard errors in ( ) & t-statistics in [ ]

	RGDP	AGOUT	OIOUT
RGDP(-1)	0.331701	1.44E-08	7.44E-11
	(0.06946)	(8.6E-09)	(2.0E-10)
	[4.77532]	[1.67214]	[0.36614]
AGOUT(-1)	1878524.	0.910231	0.000534
	(349477.)	(0.04320)	(0.00102)
	[5.37524]	[21.0717]	[0.52232]
OIOUT(-1)	52352429	10.06681	0.757089
	(4.9E+07)	(5.99831)	(0.14204)
	[1.07880]	[1.67828]	[5.33004]
C	3.75E+10	-401.3395	1.386074
	(3.6E+09)	(448.324)	(10.6165)
	[10.3274]	[-0.89520]	[0.13056]
R-squared	0.947199	0.990449	0.810923
Adj. R-squared	0.941919	0.989494	0.792015
Sum sq. resids	5.78E+20	8827646.	4950.190
S.E. equation	4.39E+09	542.4526	12.84548
F-statistic	179.3915	1037.031	42.88837
Log likelihood	-800.9938	-260.1836	-132.9179
Akaike AIC	47.35257	15.54021	8.053992
Schwarz SC	47.53215	15.71978	8.233564
Mean dependent	8.26E+10	9145.529	45.86000
S.D. dependent	1.82E+10	5292.310	28.16658
Determinant resid covariance (dof adj.)		9.09E+26	
Determinant resid covariance		6.25E+26	
Log likelihood		-1193.620	
Akaike information criterion		70.91884	
Schwarz criterion		71.45755	

Serial correlation test

VAR Residual Serial Correlation LM Tests
Null Hypothesis: no serial correlation at lag order h
Date: 01/30/21 Time: 12:05
Sample: 1986 2020
Included observations: 34

Lags	LM-Stat	Prob
1	8.185023	0.5156

Probs from chi-square with 9 df.

VAR Residual Normality Tests
Orthogonalization: Cholesky (Lutkepohl)
Null Hypothesis: residuals are multivariate normal
Date: 01/30/21 Time: 12:07
Sample: 1986 2020
Included observations: 34

Component	Skewness	Chi-sq	df	Prob.
1	-0.106343	0.064083	1	0.8002
2	2.081078	24.54169	1	0.0000
3	-0.309212	0.541801	1	0.4617
Joint		25.14758	3	0.0000

Component	Kurtosis	Chi-sq	df	Prob.
1	2.554333	0.281377	1	0.5958
2	12.58983	130.2835	1	0.0000
3	4.341091	2.547911	1	0.1104
Joint		133.1128	3	0.0000

Component	Jarque-Bera	df	Prob.
1	0.345460	2	0.8414
2	154.8252	2	0.0000
3	3.089712	2	0.2133
Joint	158.2603	6	0.0000

Heteroschedascity test

VAR Residual Heteroskedasticity Tests: Includes Cross Terms
Date: 01/30/21 Time: 12:09
Sample: 1986 2020
Included observations: 34

Joint test:

Chi-sq	df	Prob.
81.74851	54	0.0087

Individual components:

Dependent	R-squared	F(9,24)	Prob.	Chi-sq(9)	Prob.
res1*res1	0.481837	2.479716	0.0366	16.38245	0.0593
res2*res2	0.242049	0.851592	0.5784	8.229676	0.5112
res3*res3	0.437689	2.075670	0.0741	14.88144	0.0942
res2*res1	0.318916	1.248662	0.3135	10.84315	0.2866

res3*res1	0.359350	1.495773	0.2058	12.21790	0.2013
res3*res2	0.251034	0.893798	0.5452	8.535163	0.4812

VAR Residual Heteroskedasticity Tests: No Cross Terms (only levels and squares)
Date: 01/30/21 Time: 12:10
Sample: 1986 2020
Included observations: 34

Joint test:

Chi-sq	df	Prob.
48.15658	36	0.0847

Individual components:

Dependent	R-squared	F(6,27)	Prob.	Chi-sq(6)	Prob.
res1*res1	0.276954	1.723674	0.1537	9.416450	0.1515
res2*res2	0.063193	0.303549	0.9296	2.148551	0.9055
res3*res3	0.352524	2.450067	0.0507	11.98582	0.0623
res2*res1	0.239888	1.420181	0.2433	8.156195	0.2269
res3*res1	0.092336	0.457780	0.8331	3.139415	0.7912
res3*res2	0.123135	0.631921	0.7035	4.186603	0.6514

Cointegration
Date: 06/16/21 Time: 11:33
Sample (adjusted): 1988 2020
Included observations: 33 after adjustments
Trend assumption: Linear deterministic trend
Series: RGDP AGOUT OIOUT
Lags interval (in first differences): 1 to 1

Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None	0.311435	16.63679	29.79707	0.6667
At most 1	0.105473	4.322990	15.49471	0.8758
At most 2	0.019350	0.644793	3.841466	0.4220

Trace test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**

None	0.311435	12.31380	21.13162	0.5170
At most 1	0.105473	3.678197	14.26460	0.8917
At most 2	0.019350	0.644793	3.841466	0.4220

Max-eigenvalue test indicates no cointegration at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level
**MacKinnon-Haug-Michelis (1999) p-values

Unrestricted Cointegrating Coefficients (normalized by b'*S11*b=I):

RGDP	AGOUT	OIOUT
1.49E-10	-0.000573	0.031724
1.19E-10	-9.56E-05	-0.065171
-2.27E-11	0.000355	-0.016166

Unrestricted Adjustment Coefficients (alpha):

D(RGDP)	-1.14E+09	-7.48E+08	-1.59E+08
D(AGOUT)	249.5487	-3.806353	-45.95481
D(OIOUT)	-2.861838	2.742117	-1.139749

1 Cointegrating Equation(s): Log likelihood -1148.857

Normalized cointegrating coefficients (standard error in parentheses)

RGDP	AGOUT	OIOUT
1.000000	-3834178.	2.12E+08
	(765373.)	(1.4E+08)

Adjustment coefficients (standard error in parentheses)

D(RGDP)	-0.170148
	(0.08692)
D(AGOUT)	3.73E-08
	(1.4E-08)
D(OIOUT)	-4.27E-10
	(3.5E-10)

2 Cointegrating Equation(s): Log likelihood -1147.018

Normalized cointegrating coefficients (standard error in parentheses)

RGDP	AGOUT	OIOUT
1.000000	0.000000	-7.48E+08
		(2.3E+08)
0.000000	1.000000	-250.4299
		(63.2672)

Adjustment coefficients (standard error in parentheses)

D(RGDP)	-0.259309	723883.2
	(0.10786)	(327745.)
D(AGOUT)	3.68E-08	-0.142546
	(1.8E-08)	(0.05453)
D(OIOUT)	-1.01E-10	0.001377
	(4.4E-10)	(0.00134)

Vector Error Correction Model
Vector Error Correction Estimates
Date: 06/17/21 Time: 13:24
Sample (adjusted): 1988 2020

Included observations: 33 after adjustments
Standard errors in ( ) & t-statistics in [ ]

Cointegrating Eq:	CointEq1		
RGDP(-1)	1.000000		
AGOUT(-1)	-3834178.		
	(765373.)		
	[-5.00956]		
OIOUT(-1)	2.12E+08		
	(1.4E+08)		
	[1.54728]		
C	-5.72E+10		
Error Correction:	**D(RGDP)**	**D(AGOUT)**	**D(OIOUT)**
CointEq1	-0.170148	3.73E-08	-4.27E-10
	(0.08692)	(1.4E-08)	(3.5E-10)
	[-1.95754]	[2.65715]	[-1.21038]
D(RGDP(-1))	-0.021891	7.76E-09	1.75E-11
	(0.07015)	(1.1E-08)	(2.9E-10)
	[-0.31206]	[0.68537]	[0.06148]
D(AGOUT(-1))	2488925.	0.065522	0.001549
	(1215150)	(0.19610)	(0.00494)
	[2.04824]	[0.33412]	[0.31371]
D(OIOUT(-1))	93122641	1.652076	-0.069489
	(4.6E+07)	(7.39236)	(0.18611)
	[2.03296]	[0.22348]	[-0.37338]
C	6.37E+08	364.3180	0.536978
	(8.6E+08)	(138.654)	(3.49073)
	[0.74100]	[2.62754]	[0.15383]
R-squared	0.269690	0.221735	0.062770
Adj. R-squared	0.165360	0.110554	-0.071120
Sum sq. resids	3.13E+20	8149840.	5165.585
S.E. equation	3.34E+09	539.5051	13.58253
F-statistic	2.584970	1.994367	0.468817
Log likelihood	-767.8085	-251.7055	-130.2039
Akaike AIC	46.83688	15.55791	8.194173
Schwarz SC	47.06362	15.78465	8.420917
Mean dependent	1.82E+09	419.7615	1.203030
S.D. dependent	3.66E+09	572.0525	13.12386
Determinant resid covariance (dof adj.)		5.70E+26	
Determinant resid covariance		3.48E+26	
Log likelihood		-1148.857	
Akaike information criterion		70.71861	
Schwarz criterion		71.53489	

Probability Value

System: UNTITLED
Estimation Method: Least Squares
Date: 06/17/21 Time: 13:27

Sample: 1988 2020
Included observations: 33
Total system (balanced) observations 99

	Coefficient	Std. Error	t-Statistic	Prob.
C(1)	-0.170148	0.086919	-1.957542	0.0536
C(2)	-0.021891	0.070151	-0.312062	0.7558
C(3)	2488925.	1215150.	2.048245	0.0437
C(4)	93122641	45806328	2.032965	0.0452
C(5)	6.37E+08	8.59E+08	0.740998	0.4608
C(6)	-7.71E-07	2.80E-07	-2.751159	0.0073
C(7)	-9.54E-07	2.26E-07	-4.216626	0.0001
C(8)	-9.122772	3.917712	-2.328597	0.0223
C(9)	78.09519	147.6822	0.528806	0.5983
C(10)	8657.284	2769.979	3.125397	0.0024
C(11)	-4.27E-10	3.53E-10	-1.210379	0.2295
C(12)	1.75E-11	2.85E-10	0.061479	0.9511
C(13)	0.001549	0.004937	0.313707	0.7545
C(14)	-0.069489	0.186109	-0.373380	0.7098
C(15)	0.536978	3.490733	0.153830	0.8781
Determinant residual covariance		1.45E+29		

Equation: D(RGDP) = C(1)*(RGDP(-1) - 3834178.00847*AGOUT(-1) + 212402262.274*OIOUT(-1) - 57182226192.2) + C(2)*D(RGDP(-1)) + C(3)*D(AGOUT(-1)) + C(4)*D(OIOUT(-1)) + C(5)

Observations: 33

R-squared	0.269690	Mean dependent var	1.82E+09
Adjusted R-squared	0.165360	S.D. dependent var	3.66E+09
S.E. of regression	3.34E+09	Sum squared resid	3.13E+20
Durbin-Watson stat	1.404950		

Equation: D(AGOUT) = C(6)*(RGDP(-1) - 3834178.00847*AGOUT(-1) + 212402262.274*OIOUT(-1) - 57182226192.2) + C(7)*D(RGDP(-1)) + C(8)*D(AGOUT(-1)) + C(9)*D(OIOUT(-1)) + C(10)

Observations: 33

R-squared	-309.611542	Mean dependent var	419.7615
Adjusted R-squared	-353.984619	S.D. dependent var	572.0524
S.E. of regression	10778.06	Sum squared resid	3.25E+09
Durbin-Watson stat	1.105443		

Equation: D(OIOUT) = C(11)*(RGDP(-1) - 3834178.00847*AGOUT(-1) + 212402262.274*OIOUT(-1) - 57182226192.2) + C(12)*D(RGDP(-1)) + C(13)*D(AGOUT(-1)) + C(14)*D(OIOUT(-1)) + C(15)

Observations: 33

R-squared	0.062770	Mean dependent var	1.203030
Adjusted R-squared	-0.071120	S.D. dependent var	13.12386
S.E. of regression	13.58253	Sum squared resid	5165.584
Durbin-Watson stat	1.964476		