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THE FOREIGN RESERVE CHANNEL OF FOREIGN DIRECT INVESTMENT THROUGH OIL SECTOR TO ECONOMIC GROWTH IN NIGERIA 1970-2022

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Abstract: The study examined the extent to which foreign direct investment through oil export influence employment and hence economic growth in Nigeria. Although it has been difficult to ascertain why oil rich countries similar to Nigeria have benefitted from FDI in oil sector in the area of employment creation but Nigeria has not been able to efficiently benefit from adequately in this regards, it is on this premise that the work offers a practical means of addressing the phenomenon. The study covers the period 1970 -2022, the study is descriptive and quantitative in nature using statistical tools, trends, the Structural Vector Autoregression (SVAR), among other econometric models. The findings of the study showed a relationship among gross domestic Product, Foreign direct investment, oil exports, index of openness, employment and oil price. Finding showed that the lag value of gross domestic product has a positive but a statistically insignificant effect on economic growth in Nigeria. Oil exports have a positive and statistically significant impact on economic growth in Nigeria in the short-run. The analysis implies that a 1% increase in oil exports will lead to a 0.18% increase in economic growth in the economy. The paper concluded by recommended that Pragmatic mechanisms should be put in place to properly channel domestic technology ,improve on local technology and co-engage foreign and local technology for on the job training among others.

Keywords; Oil export, Economic growth, foreign direct investment, exchange rate, inflation, employment.

1.0 INTRODUCTION.

Foreign direct investment (FDI) is an important factor in the globalization process and in recent years has outpaced trade (Almsafir et al, 2011); It is also a vital component of the global economic system and a significant catalyst for the transfer of capital and human resources from one nation to another (OECD, 2017). Thus, foreign direct investment is a component of the economic system that promotes economic growth and infrastructural development. Developed and developing nations have in one way or the other provided incentives to encourage foreign direct investment in their economies (Melnyk, Kubatko, & Pysarenko, 2014); and many academics and policy makers report that foreign direct investment (FDI) can have significant favorable effects on the growth of a host economy along with doestic investment In addition to the funds it provides, foreign direct investment can be a source of useful technology and technical know-how that can improve links with local businesses, which can support economic growth.

Furthermore, it has been observed that since the early 1980s a number of nations have implemented regulations meant to promote foreign direct investment and loosen financial flow restrictions and as a result foreign direct investment rose to prominence as one of the key sources of cash flow and a driving force behind economic growth

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by improving the balance of payments and increasing cash flows, which add more money to the current account and may be used to fund regional projects that are expected to have a favorable impact on the host country's economic performance. In same vein foreign direct investment is seen as a way to improve the the peolples welfare through stimulating economic growth, extending employment possibilities, and increasing trade (Asiedu, 2018). According to Egolum (2011) He posts that in efforts to encourage the inflow of foreign direct investments (FDI), the Federal Government has adopted a variety of policies and measures which have allow**ed** foreign investors to be almost treated in same vein as local investors with tax breaks and incentives. The National Investment Promotion Commission Act, 1995) was established with the purpose of promoting and facilitating investment in Nigeria with a one-stop investment center that brings together and streamlines administrative processes for new firms and investments; this center is supported by cooperation from 27 governmental and parastatal entities by promoting suitable investment climate; with the intention that incentive programs will encourage the inflow of foreign private investments and the government has demonstrated awareness of macro-policy and institutional framework particularly on macro-economic policies which are considered important in influencing investment decisions; eliminated restrictions and ceilings on FDI and permitted 100 percent foreign ownership in all sectors, with the exception of those that are illegal under local and international law **(**Emudainohwo, 2015).Economic potential is well recognized to be the biggest economy in the West African sub region given the country's considerable resource endowment and coastal location it is clear that it posses potential for strong growth, But yet Nigeria has realized very little because the previous efforts at planning and visioning were not sustained (Onyali & Okafor, 2014).

1.1 BACK GROUND TO THE STUDY.

Economic openness is widely acknowledged to increase economic growth in both rich and developing countries. The oil and gas industry in Nigeria draws the greatest FDI inflows, according to a sector-by-sector examination of FDI inflows. $20.83 million and $203.9 million dollars in foreign capital were invested in the oil and gas industry during the first quarter of 2016, and the second quarter's respectively. A total of $171.63 million and $227.3 million were reported in the third and fourth quarters, respectively. In the first six months 2017, foreign investment inflows into Nigeria's oil and gas sector climbed to US$291.47 million. Compared to the 21.21% inflows saw in the first half of 2016, inflows grew by 31.76%. (NBS, 2017) Beginning in 2020, Nigeria's primary trade partner for crude oil was Europe. In the fourth quarter of 2020, crude oil shipments to Europe were worth roughly N853 billion, which is about US$2 billion. However, in the fourth quarter of 2020, exports from Nigeria exceeded N880 billion and reached over US$2.2 billion, making Asia the top destination for Nigerian crude oil. A total, shipments of crude oil drastically declined in the second quarter of 2020. Nigeria's export value is mostly derived from crude oil exports. The Nigerian economy has been significantly impacted by the Covid-19 pandemic epidemic, Due to declining demand, crude oil prices fell precipitously, and the nation continuously reduced daily crude oil output.About 9% of Nigeria's GDP comes from the country's petroleum industry. However, due to the decreased in demand which was occasioned by the COVID-19 epidemic, Nigeria's oil output and exports decreased. The oil sector's share of this total real GDP in 2020 between October and December was roughly 5.9%, which is a decrease of about 3% from the prior quarter. Finally, the oil sector's share of the nation's GDP increased to 9.25% in the first quarter of 2021. The mineral fuels, petroleum, and distillate products industry

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contributed more than 80% of Nigeria's export value in 2019, totaling about $45 billion (NBS, 2021). A downturn in FDI into Nigeria during the past years, coupled with a drop in oil prices on the global market, has slowed Nigeria's oil exports, which has had an adverse effect on economic growth. The government's pursuit of an expansive fiscal policy through public expenditure was simplified as a resultant effect. This decline in her FDI influx will have an impact on employment possibilities, consumption levels, investment levels, and employment growth. Given that global uncertainties decreased net FDI inflows from 1996 to 2019 and that oil exports were influenced by declining oil prices, the current epidemic on FDI is particularly concerning. Majority of the time, rising economies like Nigeria and those in the Asia-Pacific region experience severe shocks brought on by GDP uncertainty (Ho and Gan, 2021). Because of the loss in FDI coming in, host nations like Nigeria may see a drop in oil output and exports, which would cause the economy to contract. This has made it necessary to conduct a research of this kind, which look at how oil exports affect economic growth in Nigeria.

1.2 Statement of the Problem

Nigeria receives a higher proportion of FDI in the petroleum sector than in other industries, similar to other Sub-Saharan African countries. UNCTAD (2020) stated that FDI inflows to Nigeria surged by 71% from $2 billion in 2018 to $3.4 billion in 2019, led by resource-seeking inflows in the petroleum sector. Capital from Nigeria's petroleum sector accounted for the majority of a 17% increase in capital flows to around $11 billion in West Africa. This demonstrates how cash flows to Nigeria's petroleum industry are distorted.

Nigeria's oil exports and FDI have a favorable correlation, according to empirical literature (see Adereni, Azeez, Elufisan and Awomailo 2019; Afolaya and Jimoh 2019; Hussain and Ahmed 2017; Makuchukwu, Salami; Fatimah, Gazi and Oke 2012). Despite an increase in oil exports fueled by FDI inflows, oil money in Nigeria has not had the desired effects, notably in the aspect of economic progress and development. There is no conclusive evidence that the increase in oil exports brought on by FDI inflows has had any direct or indirect effects on economic growth in Nigeria, unlike other oil-rich nations that have frequently exchanged their oil for fixed capital, leading to enormous capital formation and, consequently, economic growth and development. The development and expansion of Nigeria's economy are gravely threatened by this.

Although it is possible that the export of oil would have a direct impact on Nigeria's economic welfare, it is also very likely that this impact will only be indirect. With an increase in oil export profits, the government may decide to spend more or conserve more. Increased government expenditure may be directed toward developing fixed capital or human capital, both of which support economic growth and development. Furthermore, increased government savings add to general savings, which when used can boost the economy. This study aims to conduct an empirical assessment of how oil exports affect Nigeria's economic prosperity.

1.3 Research Questions

This study seeks to solve the following puzzles

i. How has FDI through oil sector impacted Foreign Reserve in Nigeria?

ii. What is the effect of Foreign Reserve on economic growth in Nigeria?

1.4 Objectives of the Study

The objective of this study is to examine the relationship between FDI, Oil export, Foreign Reserve and economic growth in Nigeria. The specific objectives are to:

i. Examine how FDI through oil sector impacts on Foreign Reserve in Nigeria;

ii. Ascertain the effect of Foreign Reserve Earnings from Oil Sector on economic growth in Nigeria

1.5 Research Hypotheses

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This study is guided by the following hypotheses:

H_{O1}: there is no significant relationship between FDI, Oil export, and Foreign Reserve in Nigeria;

H_{O2}: Foreign Reserve Earning from oil sector has no significant impact on economic growth in Nigeria.

1.6 Significance of the Study

Oil export has unsurprisingly been extremely important to Nigeria's political economy. The transmission channels oil sales towards achieving economic growth in Nigeria have not been adequately subjected to any empirical details, despite the fact that these contributions to economic growth in Nigeria have been enormous and have each been the subject of empirical investigation separately. The relationship and nature of transmission between FDI, through oil export to economic growth in Nigeria have not been adequately documented in empirical literature.

Additionally, this research will serve as a resource for decision-makers and aspiring researchers on related subjects, which will incite profound and innovative thoughts that are practically applicable to help improve the management of oil export for the achievement of capital formation for the purpose of achieving real economic prosperity and development in Nigeria and other resource-rich countries.

2.0 REVIEW OF RELATED LITERATURE.

Despite several empirical works on oil export, there is little conceptual literature on oil exports. The entire amount of oil exported, including both crude oil and refined oil products, is measured in barrels per day (bb/day). According to Akighir and Kpoghul (2020), oil exports include semi-finished and unfinished petroleum products, liquid fuel, lubricating oils, solid and semi-solid goods made from distillate and cracking of crude petroleum, and solid and semi-solid products made from liquid fuel. Oil and gas extraction is a key source of export income and, to a lesser extent, source of employment in many developing economies. However, the most significant benefit that a nation may get from its growth is arguably the fiscal role that the oil and gas industry plays in generating tax revenue and other government funds. To ensure that the state, as the owner of the resource, receives a fair share of the economic rent generated by oil and gas development, export strategies and the tax system must be properly established (Sunley, Baunsgaard and Simard, 2002).

2.1. Economic Growth

The expansion of a nation's capacity to produce goods and services from one period to the next is referred to as economic growth. It is also refers to as the gradual rise in the quantity of goods and services an economy generates. Ogunleye(2014). The World Bank (2019) sees economic growth as an increase in the production of goods and services over a specific time period. For precision, the measurement of economic growth must take the effects of inflation into account. Business profits increase as a result of economic growth. The effect is a rise in stock prices. Businesses can invest and increase employee numbers as a result. As more employment opportunities are created, income rises. The consumers have sufficient funds to purchase extra goods and services. Purchases stimulate economic growth at a higher rate. This is why good economic growth is the goal of all nations. As a result, one of the important economic indicators is economic growth.

The most reliable growth metric is the Real Gross Domestic Product (RGDP). It eliminates the detrimental effects of inflation. The World Bank uses Gross National Income (GNI) as a growth indicator rather than GDP. It includes cash sent home by Americans working overseas. It is a key source of revenue for many developing countries like Nigeria. While growth rates are important, the World Bank (2019) Group emphasizes that growth patterns that prioritize increasing opportunities for the disadvantaged and excluded, especially women and youth, can result in more strong and sustainable growth.

Comparisons of GDP by nation will understate the full magnitude of these nations' economies. The GDP does

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not include unpaid services. This excludes daycare, unpaid volunteer labor, and illegal black market activities. Environmental expenditures are not included in. For instance, plastic is cheap since disposal fees are not included in. However, the impact of these costs on social wellbeing is not taken into consideration by GDP. A nation's level of living can be improved when environmental costs are considered. Only the values of a society are measured. The gross domestic product is the most reliable measure of economic growth (GDP). It takes into account the whole nation's economic output, which includes all goods and services produced for export by local businesses whether they are sold domestically or overseas. A measure of output is the GDP. The parts that are created to make a product are not included, though. Because they are made domestically, exports are taken into account. Imports are taken into consideration while adjusting economic growth.

Since 2015, the pace of economic growth has been moderate. After averaging 1.9% in 2018, growth was constant at 2% in the first six months of 2019. Internal demand is still hedged as a result of low private spending and high inflationary episodes (11% in the first six months of 2019). From the perspective of output, the services sector, particularly the telecoms, was the primary engine of development in 2019. The North-East insurgency and ongoing farmer-herdsmen disputes are to blame for the continued underperformance of the agriculture sector. Industry performance is inconsistent due to a worse power sector performance in 2019, manufacturing production is slowing down, while GDP growth is steady. It was predicted that output of food and beverages would rise in response to import restrictions. The construction sector, on the other hand, is still performing well as a result of continuing megaprojects, increased public spending in the first half of the year, and import restrictions. The growth rate is too slow to eradicate poverty among the poorest 50 percent of the population. The agriculture sector's failure harms the chances of poor rural inhabitants, while excessive food inflation has a detrimental effect on the poor in urban regions. Oil production is slowing in 2019 as a result of a poorer power sector performance, GDP growth is constant. In reaction to import limitations, an increase in food and beverage production was anticipated.

On the other hand, the construction industry is still doing well thanks to ongoing megaprojects, increased public expenditure in the first half of the year, and import restrictions. The growth rate is too slow to eradicate poverty among the poorest 50 percent of the population. The agriculture sector's failure harms the chances of poor rural inhabitants, while excessive food inflation has a detrimental effect on the poor in urban regions. Despite growth in some industries, employment growth is still slow and insufficient to keep up with the labor force's rapid expansion, leading to a high unemployment rate (23% in 2018) and 20% of the work force being underemployed. The high rate of poverty in the country's North-East area was also a result of the instability in the Northern region and the resulting population relocation.

Nigeria's medium-term growth is forecast to stay constant at roughly 2% in the absence of major fundamental policy adjustments. As a result, it is anticipated that the economy would expand more slowly than the population and that living standards will decline. Growth is also constrained by a weak macroeconomic environment, high persistent inflation, several exchange rate windows, restrictions on foreign exchange, distorting actions of the central bank, and a lack of revenue-driven fiscal consolidation outcomes. The increase of private sector credit is constrained by increasing public debt as well as more complex central bank policy measures. Nigeria's economy is vulnerable to external risks because fiscal buffers have been exhausted and external balances are unstable due to hot money flows. The opportunity exists for the incoming administration to quicken the pace of structural changes

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in order to create an institutional and regulatory framework capable of controlling the volatility of the oil industry and fostering long-term expansion of the non-oil economy. The abolition of trade and forex restrictions, the elimination of subsidies, enhanced domestic tax mobilization, and more openness and predictability of monetary policy are all bold measures that might have a substantial influence on the economy's trajectory. While raising spending on much needed public services, such measures would help enhance the standard of life for low-income populations. After much consideration, the signing of the Africa Continental Trade Agreement may also provide the economy a boost in the medium run. Economic indicators from the World Bank

3.0 DATA PRESENTATION AND ANALYSIS OF RESULTS

3.1 Method of the Study.

Data was analyzed using descriptive statistics and econometric analytical tools, the unit root test, ADF, KPSS, the SVAR and Variance decomposition tests were carried out. The IRF was also used to track the responsiveness of the regressands in the SVAR to the shocks in the other variables. The variance decomposition explained the extent of movement in the dependent variables explained by their own shocks vis-avis shocks from other factors**.**

3.2 Model specification and Discussion

In tracing the indirect effect of foreign direct investment on the economy, the employment channel will be used as specified. Foreign direct investment inflows create employment avenues in an economy and thus affect economic growth positively.Thus, the transmission which is the pass-through effect of foreign direct investment to economic growth via employment is given as follows:

$$FDI \longrightarrow EMP \longrightarrow GDP \quad - - - - - - - - - - 1$$

Where FDI is foreign direct investment inflows, EMP is employment, and GDP is economic growth (proxy by gross domestic product).

Transposing the transmission yields,

$$GDP_t = f(GDP_{t-1}, EMP_{t-1}, FDI_{t-1}, EMP_t, FDI_t) \quad - - - \quad (2)$$

$$EMP_t = f(GDP_{t-1}, EMP_{t-1}, FDI_{t-1}, GDP_t, FDI_t) \quad - - - \quad (3)$$

$$FDI_t = f(GDP_{t-1}, EMP_{t-1}, FDI_{t-1}, GDP_t, EMP_t) \quad - - - \quad (4)$$

Therefore, the exposition of the normalized SVAR (4.7) system of equation yields the following,

$$GDP_t = \alpha_{11}^1 GDP_{t-1} + \alpha_{12}^1 EMP_{t-1} + \alpha_{13}^1 FDI_{t-1} + \alpha_{12}^0 EMP_t + \alpha_{13}^0 FDI_t + \varepsilon_{1t} \quad - - \quad (5)$$

$$EMP_t = \alpha_{21}^1 GDP_{t-1} + \alpha_{22}^1 EMP_{t-1} + \alpha_{23}^1 FDI_{t-1} + \alpha_{21}^0 EMP_t + \alpha_{23}^0 FDI_t + \varepsilon_{2t} \quad - - \quad (6)$$

$$FDI_t = \alpha_{31}^1 GDP_{t-1} + \alpha_{32}^1 EMP_{t-1} + \alpha_{33}^1 FDI_{t-1} + \alpha_{31}^0 GDP_t + \alpha_{32}^0 EMP_t + \varepsilon_{3t} \quad - - \quad (7)$$

Collecting the contemporaneous effects to the Left Hand Side (LHS) turns,

$$GDP_t - \alpha_{12}^0 EMP_t - \alpha_{13}^0 FDI_t = \alpha_{11}^1 GDP_{t-1} + \alpha_{12}^1 EMP_{t-1} + \alpha_{13}^1 FDI_{t-1} + \varepsilon_{1t} \quad - \quad (8)$$

$$-\alpha_{21}^0 GDP_t + EMP_t - \alpha_{23}^0 FDI_t = \alpha_{21}^1 GDP_{t-1} + \alpha_{22}^1 EMP_{t-1} + \alpha_{23}^1 FDI_{t-1} + \varepsilon_{2t} \quad - \quad (9)$$

$$-\alpha_{31}^0 GDP_t - \alpha_{32}^0 EMP_t + FDI_t = \alpha_{31}^1 GDP_{t-1} + \alpha_{32}^1 EMP_{t-1} + \alpha_{33}^1 FDI_{t-1} + \varepsilon_{3t} \quad - \quad (10)$$

3.1 Descriptive Statistics

This sub-section presents the descriptive analysis of the variables used in the study. The descriptive statistics are presented in Table 3.1.

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Table 3.1: Descriptive Statistics

	Mean	Maximum	Minimum	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob.	Obs.
EMP	53.26226	56.7	50.2	1.522173	-0.0491	2.064909	1.952249	0.376768	53
EXR	92.16336	448.895	0.55	117.9081	0.40282	3.293498	1.877799	0.382326	53
FDI	325097.3	1360308	-403.688	429099.2	0.921931	2.326293	8.510277	0.014191	53
FORD	679050.9	16819151	-1.5E+07	4756740	-0.17554	6.806868	32.27588	0	53
GDP	71329.7	267550	16211.49	71313.98	1.430868	3.575889	18.81761	0.000082	53
INFL	18.27566	72.8	3.5	15.17763	0.991447	3.286542	1.887478	0.489341	53
INTR	14.34283	36.09	2.6	8.204801	0.514613	2.643383	2.620152	0.2698	53
NOILX	144436.7	569167	203.2	201827.9	1.034254	2.366255	10.33578	0.005697	53
OILP	56.60711	185	12.77	46.73164	1.169301	3.300999	12.27758	0.002158	53
OILX	1271025	9659773	509.622	2591585	2.125181	6.080556	60.8515	0	53
OPEC	2004.768	2631	1246	374.6964	-0.31559	1.962881	3.255092	0.196411	53
OPN	44.70089	81.81	16.35	17.27557	0.188195	2.002617	2.509645	0.285126	53
RES	8321.4709	6775510	159.6448	1.60E+10	1.391408	3.054807	17.10812	0.000193	53

Source: Author's Computation using E-views 10

Table 3.1 indicates that, employment has a mean value of 53.26% with a maximum value of 56.7% and a minimum value of 50.2%. Its Jarque-Bera statistic value of 1.95 is not statistically significant at 5% level of significance. This implies that the series is normally distributed. The exchange rate has a mean value of 92.16 and a maximum value of 448.8 and a minimum value of 0.55. The Jarque-Bera statistic value of 1.88 is not statistically significant at 5% level of significance; this suggests that the series is normally distributed.

Furthermore, the table shows that foreign direct investment (FDI has a mean value of USD 325097.3 billion with a maximum value of USD 1360308 billion, and a minimum value of USD -403.688 billion. Its Jarque-Bera statistic value of 8.51 is statistically significant at 5% level of significance. This suggests that the series is not normally distributed. However, the series was transformed using logarithm technique to make it normal. Foreign demand has a mean value of USD 679050.9 billion with a maximum value of USD 16819151 billion and a minimum value of USD-14507068 billion. The Jarque-Bera statistic value of 32.28 is statistically significant at 5% level of significance. This suggests that the series is not normally distributed; but the series was transformed using logarithm technique to make it normal. Again, GDP has a mean value of ₦71329.7 billion with a maximum value of ₦267550billion, and a minimum value was ₦16211.49. The Jarque-Bera statistic value of 18.82is statistically significant at 5% level of significance. This suggests the series are not normally distributed. Thus the series was transformed using logarithm technique to make it normal.

For inflation (INFL) the table reveals that, it has a mean value of 18.28%with a maximum value of 72.8%, and a minimum value of 3.5%; the Jarque-Bera statistic value of 1.89is not statistically significant at 5% level of significance. This implies that the series is normally distributed. Interest rate (INTR) has a mean value of

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14.34%with a maximum value of 36.09%, and a minimum value of 2.6%. The Jarque-Bera statistic value of 2.62 is not statistically significant at 5% level of significance. This means that the series is normally distributed. The series for non-oil export (NOILX) has a mean value of ₦144436.7 billion with a maximum value of ₦569167 billion, and a minimum value was ₦203.2. The Jarque-Bera statistic value of 10.34 is statistically significant at 5% level of significance. This suggests the series are not normally distributed. However, the series was transformed using logarithm method to make it normal. Oil price (OILP) has a mean value of USD 56.61with a maximum value of USD 185 and a minimum value of USD 12.77. The Jarque-Bera statistic value of 12.28 is statistically significant at 5% level of significance. This suggests that the series is not normally distributed; but the series was transformed using logarithm technique to make it normal.

Oil export (OILX) has a mean value of USD 1271025 billion with a maximum value of USD 9659773 billion, and a minimum value was USD 509.622. The Jarque-Bera statistic value of 60.85is statistically significant at 5% level of significance. This suggests the series are not normally distributed. Thus the series was transformed using logarithm method to make it normal. Opec quota (OPEC) has a mean value of 2004.768 million barrels and a maximum value of 2631 million barrels and a minimum value of 1246 million barrels. The Jarque-Bera statistic value of 3.26 is not statistically significant at 5% level of significance; this suggests that the series is normally distributed. The index of openness (OPN) has a mean value of 44.70%with a maximum value of 81.81% and a minimum value of 16.35%. Its Jarque-Bera statistic value of 2.51 is not statistically significant at 5% level of significance. This implies that the series is normally distributed. Lastly, the table reveals that foreign reserves (RES) has mean value of USD 8321.47 billion with a maximum value of USD 6775510 billion, and a minimum value was USD 159.6448. The Jarque-Bera statistic value of 17.11is statistically significant at 5% level of significance. This suggests the series are not normally distributed; but it was transformed using logarithm method to make it normal.

3.2 Unit Root Tests

To test for the stationarity properties of the series, the ADF and KPSS unit root tests were used and the results are presented in Table 3.2.

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Table 3.2: Results of Unit Root tests

Variable	ADFT-Stat	Critical Value 5%	Order of Cointegration	KPSS LM. Stat	Critical Values5%	Order of Co-integration
GDP	-6.018833	-2.921175	I(1)	0.086175	0.463000	I(1)
FDI	-9.921839	-2.919952	I(1)	0.127822	0.463000	I(1)
OILX	-5.656261	-2.919952	I(1)	0.093792	0.463000	I(1)
NOILX	-4.523250	-2.919952	I(1)	0.503535	0.653000	I(1)
OILP	-7.132255	-2.921175	I(1)	0.345675	0.463000	I(1)
OPN	-9.608111	-2.919952	I(1)	0.259866	0.463000	I(1)
EXR	-3.797116	-2.922449	I(1)	0.571181	0.643000	I(1)
OPEC	-5.468524	-2.922449	I(1)	0.162756	0.463000	I(1)
INFL	-3.575974	-2.918778	I(0)	0.179261	0.463000	I(0)
EMP	-7.619487	-2.919952	I(1)	0.086757	0.463000	I(1)
INTR	-3.389927	-2.922449	I(1)	0.131756	0.463000	I(1)
RES	-5.326186	-2.919952	I(1)	0.189924	0.463000	I(1)
FORD	-3.498804	-2.921175	I(1)	0.353904	0.463000	I(1)

Source: Author's Computation using E-views 10

Table 3.2 shows the unit root tests results of ADF and KPSS for all the series used in this analysis. For both ADF and KPSS, the results indicated that all the series are integrated of order one, that is, I(1) except inflation (INFL) which is integrated of order zero, that is I(0). This suggests that the variables have mean reverting ability. The implication is that, any shock to the variables will fizzle out with the passage of time.

In tracing the indirect effect of foreign direct investment on the Nigerian economy, even though other channels exist but the focus of this paper is the employment channel. The result is presented accordingly as follows. As usual, before estimating the SVAR, the optimal lag selection criteria were estimated and the results are presented in the following table.

Table 3.21: Optimal Lag Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-183.9118	NA	0.306131	7.329876	7.443512	7.373300
1	-50.02346	246.7746	0.002287	2.432293	2.886840	2.605988
2	-31.33908	32.23971*	0.001571*	2.052513*	2.847971*	2.356481*

Source: Author's estimation Using E-views 10

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The result shows that both the sequential modified LR test statistic (LR), Final prediction error (FPE), Akaike information criterion (AIC), Schwarz information criterion (SC) and Hannan-Quinn information criterion (HQ) have indicated lag two (2) as the optimal lag length for the SVAR. Following the outcome of the optimal lag section criteria, the Johanson cointegration test was estimated and the results are show in Table 3.22

Table 3.22: Johanson Cointegration Test

Panel A: Unrestricted Cointegration Rank Test (Trace)

Hypothesized No. of CE(s)	**Eigenvalue**	**Trace Statistic**	**0.05 Critical Value**	**Prob.****
None *	0.242386	31.65740	29.79707	0.0302
At most 1 *	0.201362	17.50075	15.49471	0.0246
At most 2 *	0.111574	6.033515	3.841466	0.0140

Trace test indicates 3 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Panel B: Unrestricted Cointegration Rank Test (Maximum Eigenvalue)

Hypothesized No. of CE(s)	**Eigenvalue**	**Max-Eigen Statistic**	**0.05 Critical Value**	**Prob.****
None	0.242386	14.15665	21.13162	0.3523
At most 1*	0.201362	15.46723	14.26460	0.0023
At most 2 *	0.111574	6.033515	3.841466	0.0140

Max-eigenvalue test indicates 2 cointegrating eqn(s) at the 0.05 level
* denotes rejection of the hypothesis at the 0.05 level

Source: Author's Estimation using E-views 10

From panel A, the trace statistics has indicated 3 co-integrating equations, and from pane B the Max-Eigen statistic indicates 2 co-integrating equations. Therefore, the null hypothesis of no long-run relationship among FDI, EMP and GDPwas rejected, implying the existence of long-run relationship among the series.

Given the existence of long-run relationship among the series, the SVAR contemporaneous effect was estimated to trace the pass-through effect of FDI to GDP via EMP channel and the result is presented in the following table.

Table 3.23: SVAR Contemporaneous Effect

	GDP	EMP	FDI
GDP	1	0	0
EMP	0.7399	1	0
FDI	1.8124*	0.0468	1

*Denote 5% significance level

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Source: Author's Estimation using E-views 10

The contemporaneous matrix shows that there is a positive but statistically insignificant relationship between foreign direct investment and employment in the oil and gas industry in Nigeria. Also, the matrix shows that there is a positive but statistically insignificant relationship between employment and economic growth in Nigeria. Foreign direct investment indicates a positive and statistically significant relationship with GDP in Nigeria. This implies that, a 1% contemporaneous increase in FDI in the oil and gas industry will contemporaneously increase GDP in the economy by 0.74%. From this result, it shows that the employment channel in Nigeria has indicated the potentiality of transmitting the spillover effect of FDI in the oil and gas sector to the Nigeria economic growth; however, the channel is weak. This maybe ascribe to the high tech nature of employment in the oil and gas sector in the economy.

Before analyzing the impulse and variance decomposition, various diagnostic tests were performed and the results are presented in the following tables.

Table 3.24: Diagnostic Tests

Type of Test	Test statistic	Probability
VAR Residual Serial Correlation LM Tests	Rao F-stat (0.9973)	0.0879
VAR Residual Normality Tests	Joint Jarque-Bera (2.2675)	0.0620
VAR Residual Heteroskedasticity Tests	Joint Chi-Sq (0.5044)	0.0730

Source: Author's Estimation Using E-views 10

Table shows the various diagnostic tests of VAR residuals, that is,Serial Correlation LM Tests, Normality Tests and Heteroskedasticity Testsand their associated probability values. From the table, all the probability values are greater than 0.05 cut-off threshold which leads to the acceptance of the null hypotheses that there is no serial correlation among the series and the residuals are multivariate normal and are homoscedastic. Furthermore, the stability of the SVAR estimates was conducted using inverse roots of AR characteristic polynomial as shown in Figure 3.12.

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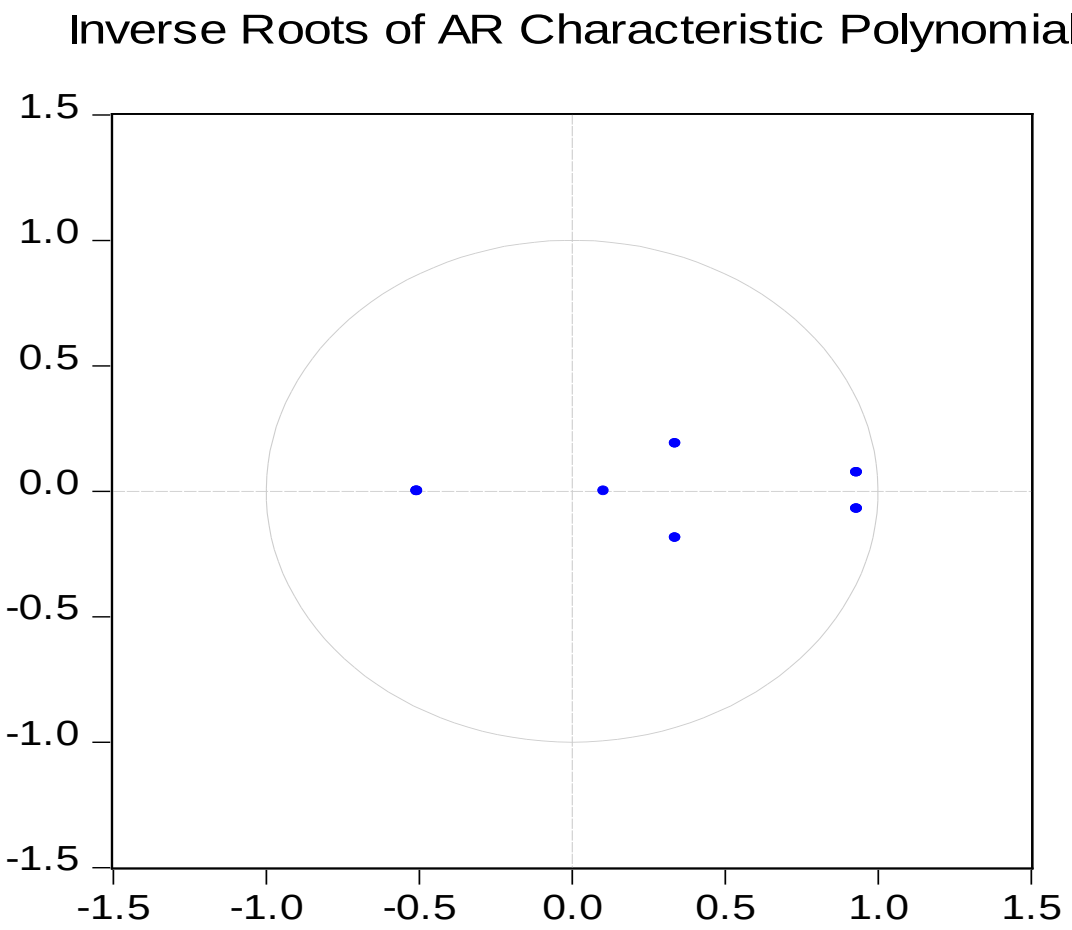

Figure 3.12; Inverse Roots of AR Characteristic Polynomial

Source: Author's Estimation Using E-views 10

The figure shows that the estimates of the SVAR are stable over a period of time since all the dotted lines are within the circumference of the circle.

Based on the outcome of the diagnostic tests, the impulse response functions were used to examine the response of each variable in the system to shocks from the system variables. First, the impulse response of EMP to FDI

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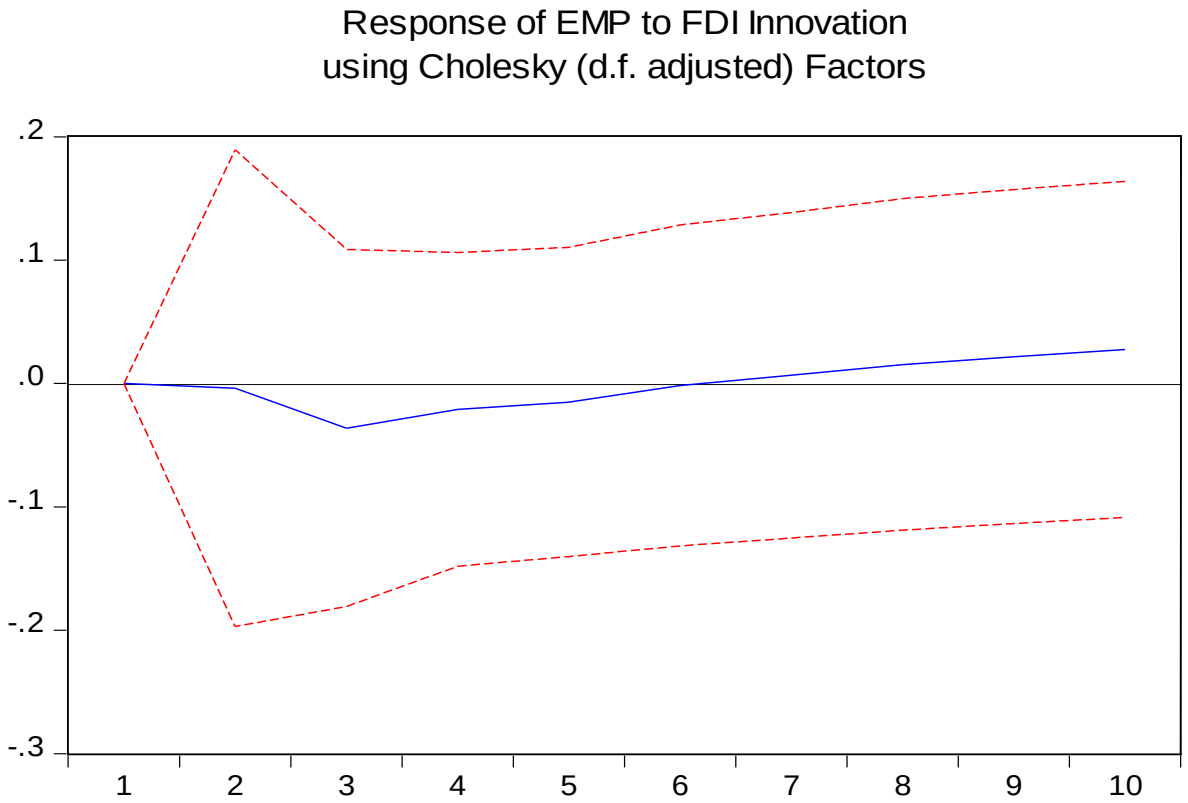

Figure 3.13: Impulse Response of EMP to FDI
Source: Author's estimation Using E-views 10

The figure shows that in the first to second period, innovations in FDI in the oil sector as not significantly exerted any positive impact on employment. Thereafter, EMP exhibited negative response to innovation in FDI in the oil and gas sector up to the sixth period. After the sixth period EMP responded positively to innovations in FDI in the oil and gas sector in Nigeria and the effect appears to be permanent. This suggests that the spillover effect of FDI in the oil and gas sector on EMP in the country is more noticeable in the long-run rather than the short-run. This may be accounted from as a result of technological diffusion and capacity development in the economy overtime.

Furthermore, the impulse response for GDI to EMP was estimated and the result is presented in Figure 3.14 as follows.

Figure 3.14: Impulse response for GDI to EMP
Source: Author's estimation Using E-views 10

Figure 3.14 shows the impulse response for GDP to EMP. it shows that from the initial period to the third period the response of GDP to EMP due to FDI inflows in the oil and gas sector is negative. It turns positive from the fourth period up to the eight periods and responded negatively again. This may ascribe to high tech nature of employment in the oil and gas sector and cases of expatriates employment in the oil and gas sector.

Again, the Forecast Variance Error Decomposition (FVED) was estimated and the results are presented in the following table.

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Table 3.25: Forecast Variance Error Decomposition of EMP

Period	S.E.	GDP	EMP	FDI
1	0.779924	1.131142	98.86886	0.000000
2	0.953081	2.798302	97.20006	0.001641
3	1.009235	5.676026	94.19387	0.130108
4	1.037951	8.855630	90.98059	0.163778
5	1.060426	11.93294	87.88996	0.177094
6	1.080026	14.65386	85.17518	0.170958
7	1.097659	17.01159	82.81925	0.169161
8	1.113465	19.02057	80.79608	0.183350
9	1.127559	20.72574	79.05822	0.216041
10	1.140025	22.16259	77.56770	0.269709

Source: Author's estimation Using E-views 10

The variance decomposition result reveals that own shocks of EMP are dominant throughout the forecast periods. It however declined from 98.87% in the first period to 77.57% in the tenth period. This suggests that FDI and GDP are predictors of EMP in the oil and gas sector. FDI in the second period accounted for 0.002% in the innovations in EMP in the oil and gas sector and the effect increased gradually to 0.3% in the tenth period. GDP accounted for 1.13% in the innovations in EMP in the first period and the effect increased significantly to 22.2% in the last forecast period. This suggests that GDP is a stronger predictor of EMP in the oil and gas sector in Nigeria.

Again, the variance decomposition for GDP was estimated and the result is presented in Table 3.26 as follows.

Table 3.26: Forecast Variance Error Decomposition of GDP

Period	S.E.	GDP	EMP	FDI
1	0.112094	100.0000	0.000000	0.000000
2	0.174149	68.83202	0.353199	30.81478
3	0.202943	68.02729	0.299374	31.67334
4	0.227244	62.56682	0.279429	37.15375
5	0.242766	59.91350	0.322324	39.76417
6	0.255232	56.96030	0.348328	42.69137
7	0.264145	54.72906	0.344140	44.92680
8	0.271140	52.69596	0.328139	46.97590
9	0.276446	51.01088	0.318314	48.67081
10	0.280673	49.57348	0.324858	50.10166

Source: Author's estimation Using E-views 10

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The table indicates that own shocks of GDP are dominant throughout the forecast periods. It however declined from 100% in the first period to 49.6% in the tenth period. This suggests that EMP and FDI are predictors of GDP in the economy. FDI in the second period accounted for 30.8% in the innovations in GDP and the effect increased rapidly to 50.1% in the tenth period. EMPaccounted for 0.35% in the innovations in EMP in the second period and the effect declined gradually to 0.32% in the last forecast period. This suggests that FDI in the oil and gas sector is the strongest predictor of GDP Nigeria.

Lastly, the variance decomposition for FDI was estimated and the result is presented in Table 3.27.

Table 3.27: Forecast Variance Error Decomposition of FDI

Period	S.E.	GDP	EMP	FDI
1	0.430757	23.10166	0.711492	76.18685
2	0.471083	32.19913	2.242720	65.55815
3	0.547802	38.28722	3.335717	58.37706
4	0.594779	43.74115	4.849614	51.40924
5	0.644484	48.00444	5.962131	46.03343
6	0.686118	51.66868	6.912354	41.41897
7	0.725017	54.75149	7.596736	37.65177
8	0.759649	57.36520	8.123737	34.51106
9	0.791106	59.57429	8.510230	31.91548
10	0.819327	61.42638	8.799232	29.77439

Source: Author's estimation Using E-views 10

The variance decomposition result shows that own shocks of FDI are dominant from the first period to fourth period. It however declined from 76.2% in the first period to 51.41% in the fourth period, after which GDP became a dominant shock in the fifth period and the effect increased significantly to 61.43% in the tenth period. EMP accounted for 0.71% in the innovations in FDI in the oil and gas sector and the effect increased significantly to 8.80% in the tenth period. This suggests that GDP is a stronger predictor of FDI in the oil and gas sector in Nigeria. Lastly, the variance decomposition for FDI was estimated and the result is presented in Table 3.27

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4.1 Summary

The study investigated the nexus among foreign direct investment, oil export and economic growth in Nigeria from 1970 to 2021. Specifically, the study examined the pass-through effects of foreign direct investment to economic growth via oil exports. The study utilized the Autoregressive Distributive Lag (ARDL) model and the Structural Vector Autoregressive (SVAR) model in the investigation.

Findings of the study revealed that, first, foreign direct investment in oil and gas industry has positive and statistically significant relationship with oil exports both in the short and long-run in Nigeria. Second, the study found that oil exports have positive and statistically significant impact on economic growth in Nigeria. Third, findings indicated that, there is positive and statistically significant relationship between foreign direct investment in oil and gas sector and economic growth of the Nigeria both in the short and long-run.

Furthermore, the study investigated the indirect channels through which foreign direct investment in oil and gas transmits spillover effects on economic growth in Nigeria. The channels investigated were weak; the employment, foreign reserves and exchange rate channels. For the employment and foreign reserve channels, the study established that, there is a weak positive transmission effect of foreign direct investment in oil and gas to economic growth in Nigeria. This suggests that, these channels have exhibited positive potentiality of the spillover effects to economic growth. For the exchange rate, the study found that, the channel has exhibited negative and weak transmission effect of foreign direct investment in oil and gas to economic growth. This suggests that foreign direct investment in oil and gas has the potential of reducing exchange rate in the

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country with its positive attendant consequences on economic growth in Nigeria. Finally, the study established a strong positive pass-through effect of foreign direct investment in oil and gas to economic growth through oil exports in Nigeria.

4.2 Conclusion

On the basis of the findings of this study, it is concluded that, directly, foreign direct investment in oil and gas exerts strong positive impact on oil exports. Also, oil exports impacts positively on economic growth in Nigeria. Again, foreign direct investment in oil and gas exerts strong positive impact on economic growth in Nigeria. Indirectly, foreign direct investment in oil and gas through employment, foreign reserves and exchange rate channels transmits weak spillover effects to economic growth; but through oil exports, there is a strong pass-through effect to economic growth in Nigeria.

4.3 Recommendations

On the basis of the findings the study recommends the followings among othres:

1. The Government through the ministry of industry, trade and investment in collaboration with the ministry of petroleum and gas should make concerted efforts in attracting and retaining foreign direct investment in the oil and gas sector. This can be done by improving on the investment climate in the country through control of rising insecurity and economic policies that can ensure economic stability. Also, by ensuing full implementation of the Petroleum Industry Bill in the country.
2. To improve on the positive potentiality of employment transmission effect as a spillover of foreign direct investment in the oil and gas industry, they should be adaptation of indigenous technology and indigenous manpower engagement to acquire skills from the expatriate's on the job.

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