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Navigating Recovery: The Influence of Post-Pandemic Dynamics on Oil Revenue and the Financial Health of Nigerian Deposit Money Banks

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Abstract

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This study empirically investigates the spillover effects of post COVID19 on oil revenue and the performance of deposit money banks in Nigeria using monthly time series dataset over the period 2019 - 2021. The study employed autoregressive distributed lag model (ARDL) for the estimation of the parameters. Results from the study show that there is a negative and significant association between COVID 19 and oil revenue in Nigeria over the sample period. The empirical result from the study revealed that there is a negative and statistically significant relationship between COVID19 and the performance of deposit money banks in Nigeria throughout the period under consideration. This implies that the deposit money bank responds negatively to COVID19 pandemic in the country. Result also revealed a positive and significant long run relationship between COVID19 and performance of the deposit money banks in Nigeria. The study recommends among other things more awareness and preventive measures against COVID19 pandemic so as enhance oil revenue and the performance of the deposit money banks in Nigeria.

1. Introduction

The COVID-19 pandemic, which began in December 2019, has affected millions worldwide, with over 275 million confirmed cases and approximately 5.4 million deaths reported by December 22, 2021 (World Health

Organization, 2021). To mitigate the spread and impact of the virus, countries implemented various containment strategies, including social and physical distancing measures (Barasa et al., 2020; Viner et al., 2020). These measures led to widespread business closures, significantly curtailing operations and resulting in job losses across various sectors. The economic downturn posed substantial risks to both the banking sector and oil revenues. As one of Africa's largest oil producers, Nigeria's economy is heavily reliant on oil revenue, which constitutes a vital part of its government income and foreign exchange earnings. The pandemic triggered dramatic declines in oil prices due to reduced demand and disruptions in global supply chains, leading to considerable revenue shortfalls for the Nigerian government and destabilizing deposit money banks (Adeleye et al., 2020).

The impact of COVID-19 on oil-exporting countries has been profound, with the pandemic contributing to an unprecedented global economic downturn. This crisis has coincided with a broader structural decline in the oil market, catching many by surprise as oil prices dropped sharply, with benchmark prices even dipping into negative territory for the first time since 1970 (Lahn & Bradley, 2020; Elgouacemi et al., 2020). During this challenging period, banks faced increased loan defaults, reduced deposit mobilization, and lower profitability. The pandemic forced banks to adjust their lending practices and adopt digital banking solutions, underscoring the need to explore the relationship between COVID-19, oil revenue fluctuations, and the health of deposit money banks in Nigeria (Obinna, 2021). The economic downturn heightened the risk of households and businesses defaulting on loans, which could lead to significant financial losses for banks, given that loans constitute a large portion of their assets. With obligations to depositors and creditors, any significant decline in loan repayments could jeopardize banks' ability to meet their liabilities, potentially leading to failure (Perkins & Gnanarajah, 2020).

Governments enacted various mitigation strategies, including social distancing and national quarantines, to curb the spread of COVID-19. The resulting economic downturn severely impacted oil revenues and businesses,

which struggled to cover operational costs amid declining income. The financial sector. especially banks, is expected to play a crucial role in alleviating this shock by implementing unprecedented measures and policy interventions. These efforts aimed to ease the tightening of financial conditions and support credit flow to businesses by relaxing capital restrictions or through government-sponsored credit lines and guarantees (Demirguc-kunt et al., 2020). Despite the critical link between oil revenue and the performance of deposit money banks in Nigeria, empirical research on how the COVID-19 pandemic has influenced these relationships remains limited. The drop in oil prices during this period not only affected government finances but also posed significant risks to the stability of the banking sector, raising concerns about liquidity and credit risk management. This study aims to investigate the effects of COVID-19 on oil revenue and its subsequent impact on deposit money banks in Nigeria, providing insights that can help inform policy decisions and banking strategies in future crises.

2. Literature review

2.1 Theoretical framework

The COVID-19 pandemic significantly affected oil revenue and deposit money banks in Nigeria, a country heavily dependent on oil exports for its income. The pandemic led to a sharp decline in global oil demand and prices, which in turn impacted government revenues and the financial stability of banks that relied on loans from the oil sector. This analysis is grounded in Keynesian economic theory and financial intermediation theory, which together illustrate the link between oil revenue and the banking sector in Nigeria, showing how external shocks can ripple through the economy. Keynesian economics underscores the importance of aggregate demand in shaping economic performance. During the pandemic, reduced economic activity caused oil prices to fall, which negatively affected government revenues and led to decreased liquidity and credit availability for deposit money banks. Financial intermediation theory, on the other hand, emphasizes the crucial role of banks in facilitating transactions and providing credit. The downturn in oil revenue resulted in a rise in nonperforming loans, impairing banks' ability to lend and maintain liquidity.

In 2020, global oil prices plummeted to historic lows, with the Nigerian National Petroleum Corporation (NNPC) reporting a roughly 30% decrease in the country's oil production at the height of the pandemic (NNPC, 2020). This significant reduction severely impacted government revenue, which relies heavily on oil sales. The fall in oil prices placed many oil companies in financial distress, leading to an increase in non-performing loans within banks. The Central Bank of Nigeria (CBN) noted a significant rise in the ratio of non-performing loans, threatening the stability of deposit money banks (CBN, 2021). Additionally, as economic activity slowed, banks faced a liquidity crisis, hindering their capacity to extend credit.

2.2 Empirical review

Demirguc-kunt (2020) investigated the impact of banking sector amidst the COVID-19 pandemic. The study employed a global database of policy responses during the crisis; the paper also examines the role of financial sector policy announcements on the performance of bank stocks. The results of the study suggested that the COVID-19 pandemic and the countercyclical lending role that banks are expected to play have put banking systems under significant stress, with bank stocks underperforming their domestic markets and other non-bank financial firms. The effectiveness of policy interventions has been mixed. Measures of liquidity support, borrower assistance, and monetary easing moderated the adverse impact of the crisis, but this is not true for all banks or in all circumstances. The borrower assistance and prudential measures for instance worsened the stress for banks that are already undercapitalized and/or operate in countries with little fiscal space. These vulnerabilities will need to be carefully monitored as the pandemic continues to take a toll on the world's economies.

Ross et al. (2020) examined the impact of COVID-19 on money deposit bank in United State of America using weekly data set for the first month of the corona virus outbreak in the country. The study discovers that interest rates at bank branches in counties with higher COVID-19 infection rates fell by more than rates at other branches even branches of the same bank in different counties. When differentiating weeks by the degree of stock market distress and counties by the likely impact of COVID-19 cases on economic anxiety, the evidence suggests that the deposit inflows were triggered by a surge in the supply of precautionary savings. Al-Risheq (2016) examine the impact of oil prices on industrial production in developing countries over the period 1970-2002, using fixed effect model for the analysis of the parameters. Results from the findings indicated that oil price has negative and statistically significant effects on industrial production. The study concludes that oil price shock has significant negative effect on industrial production of developing countries. The study suggested among other things, improvement in the oil reserve in the developing countries so as to reduce the weakness to oil shocks.

Nwonso and Ajibola (2013) investigated the effect of gasoline price on economic sectors in Nigeria spanning from 1980-2010. The study employed co-integration and error correction model techniques for the estimation. The results from the study revealed that gasoline price has significant effects on all the variables except for building and construction sectors in the long run. The results on the short run relationship between gasoline price and other independent variables show that gasoline price affect only output of agriculture and manufacturing sector in Nigeria. The study recommended among other things

stable supply of electricity to reduce over dependence on gasoline as a major source of power. Taghizadeh-Hesary and Yoshino (2015) explored the macroeconomic effects of oil price fluctuations on emerging and developed economies of China, Japan and USA in a model incorporating monetary Variables using annual panel dataset over the period 2000 to 2013. The period covered was divided into two, the first period spanned from 2000 to 2008, and the second period spanned from 2008 to 2013. The study employed Structural Autoregressive (SVAR) for the estimation of the parameters. The result for the first period 2000 to 2008 shows that there is positive and statistically significant relationship between oil price and economic activity among all the countries. The result for the second period 2008 to 2013 revealed that there is no relationship between oil price and economic activity in China. Other results indicated that there is negative and statistically significant association between oil price shock and macroeconomic variables in Japan and USA. Ghalayini (2011) explored the interaction between oil price and economic growth on the US economy using quarterly data spanning from the start of 2000 to the end of 2010. The study employs granger causality test techniques to estimate the parameters. The result from the study indicated that there is causal relationship running from oil price to economic growth. Other findings show that increase in oil price does not cause increase in economic growth. Findings also show that changes in oil price affect the economic growth of the G7 countries. The study concluded that changes in oil price imply changes in gross domestic product. Jiranyakul (2016) examined the response of industrial production to the price of oil: new evidence from Thailand for the period 1993 to 2015. The study employs multivariate test techniques, Johasen co-integration test, granger causality test to examine the impact of oil price shocks on industrial production growth. The results from findings indicated that there is stable long run relationship between industrial production and real oil price. Other results also show that there exists long run causal relationship running from lending rate, oil price level. Also, industrial growth does respond to oil price uncertainty.

Gummi et al. (2018) investigated the effect of oil price fluctuations on manufacturing performance in Nigeria spanning from 2009 to 2017using autoregressive distributed lag model (ARDL). Results from study shows that there exist positive and significant relationship and manufacturing between oil price performance. Also, exchange rate, and interest rate negatively related to manufacturing output in Nigeria. Okoro (2014) explored the effects of oil price volatility and economic growth in Nigeria: A vector auto regression approach using quarterly data for the period 1980 - 2010 and applied VAR model for the estimation of the parameters. The study revealed that oil price volatility has significant influence on economic growth in Nigeria. The study recommended alternative sources of government revenue. Loto (2012) empirically investigated the determinants of output expansion in manufacturing industries in Nigeria. The study employed an ordinary least square methodology for the period of 1980 to 2010. The author argued that when the rate of inflation increases, it reduces both the purchasing power of consumers and the demand for manufactured goods. Consequently, shocks have a negative impact on capacity utilization, and domestic capital formation can also be damaged. Wang and Zhang (2014) investigated the impact of global oil price shocks on China's four fundamental industries, namely grains, metals, petrochemicals, and oil fats. They also examined the asymmetric effect of oil price shocks. The study applied both the autoregressive conditional jump intensity and generalized conditional Heteroskedesticity (GRACH) models on monthly data from October 8, 2001, to November 30, 2011. The results revealed that oil prices negatively affect industries, and asymmetric effects exist. The researchers

suggested that the petrochemicals market suffered most from the oil price shocks, and the grains market was least responsive towards the shocks.

Similarly, Ojapinwa and Ejumedia (2012) explored the industrial impact of oil price shocks in Nigeria, an oil exporting country over the period 1970 to 2010. The study employs the vector autoregressive (VAR) impulse response method. The results of the impulse response function showed that the money supply did not significantly affect industrial output, and that oil price and inflation were negatively related to industrial production. The exchange rate had a positive effect on the industrial output of Nigeria. Aye et al. (2014) examined the effect of oil price shocks on the manufacturing production of South Africa by utilizing monthly data on oil prices and manufacturing production over the period February 1974 to December 2012. For this purpose, a modified bivariate VAR, GARCH-in-Mean VAR, and maximum likelihood tests were applied. The results indicated that oil prices negatively affected South African manufacturing production and the response of manufacturing production towards the positive and negative oil price shocks were asymmetric.

2.3 Gaps from the Empirical study

While numerous studies examined the impact of oil prices on various sectors and economies, there is a notable lack of research specifically focusing on the relationship between oil revenue, COVID-19, and the banking sector in Nigeria. Most existing studies tend to concentrate on broader contexts or other countries, resulting in a gap in insights tailored to Nigeria's unique economic landscape. Although some research addresses the banking sector's response to the pandemic (e.g., Demirgüç-Kunt, 2020; Ross et al., 2020), few have investigated how fluctuations in oil revenue due to COVID-19 directly influence the performance of deposit money banks in Nigeria. This crucial intersection remains underexplored. Many studies utilize data from fixed periods without considering the ongoing changes brought about by the pandemic. There is a clear need for longitudinal research that continuously examines the effects of COVID-19 on both oil revenue and banking performance to capture evolving trends. Furthermore, much of the existing literature adopts a macroeconomic perspective, focusing on aggregate results. More microeconomic studies are necessary to analyze how individual banks respond to oil price shocks and economic downturns during the pandemic, offering a deeper understanding of their vulnerabilities and resilience. While some research (e.g., Al-Risheq, 2016; Gummi et al., 2018) explores the effects of oil prices on specific sectors, limited studies have addressed how the banking sector interacts with other economic sectors impacted by oil price fluctuations, particularly in the context of COVID-19. Additionally, although some studies analyze policy responses, there is a gap in evaluating the effectiveness of specific interventions within the Nigerian context, especially regarding how government and central bank policies influence financial stability, industrial performance, and overall economic resilience in times of crisis. This could involve examining the direct impacts of liquidity support measures, interest rate adjustments, and borrower assistance programs on various sectors, providing insights tailored to Nigeria's unique economic landscape.

3. Methodology

3.1 Research design

This study is a monthly time series analysis over the period 2020 to 2021. Analyzing data from this timeframe allows for a comprehensive understanding of the interconnectedness of health crises, economic stability, and banking performance in Nigeria. The variables employed in this study include covid 19, oil revenue, and deposit money banks. The dataset for all the variable were sourced from the World Development Indicator (2021), a publication of the World Bank. COVID 19 was measured in this study using number of confirmed cases tracking confirmed cases and deaths to assess the severity of outbreaks (WHO, 2021). While oil revenue was measure using oil revenue as a percentage of total government revenue, total revenue from oil exports and its contribution to government finances (International Monetary Fund, 2021). And deposit money banks were measured by capital adequacy ratios (Basel Committee on Supervision, Banking 2010). The study employed inferential test statistic for the analysis of the variables of interest. The Classical Linear Regression Model (CLRM) was employed to establish the existence or otherwise of the relationship, degrees of the relationship, if any, between the dependent variable on one hand and a set of independent variables on the other.

3.2. The model of the study

The study on the effects of COVID-19 on oil revenue and deposit money banks in Nigeria adopted two econometric models with modification which is in line with the work of Ross et al. (2020) and Demirguc-kunt (2020). Hence, the preferred models were specified as:

$$OILR = f(C19, GDP, NFDI, NOILR, DMB,$$

 $NDMI)$ 1
 $DMB = f(C19, GDP, NFDI, NOILR, OILR,$
 $NDMI)$ 2

Where: "OILR" is Oil Revenue, "DMB" denote Deposit Money Banks, "C19" represent Corona Virus Diseases, "GDP" denote Gross Domestic Product, "NFDI" connote Non-Foreign Direct Investment, "NOILR" is Non-Oil Revenue, and "NDMI" represent Non-Deposit Money Bank. Thus, the equation 1 and 2 can be explicitly expressed as follows:

$$OILR_{t} = \beta_{0} + \beta_{1}C19_{t} + \beta_{2}DMB_{t} + \beta_{3}NDMB_{t} + \beta_{4}NFDI_{t} + \delta_{t} \qquad 3$$

$$DMB_{t} = \beta_{0} + \beta_{1}C19_{t} + \beta_{2}DMB_{t} + \beta_{3}OILR_{t} + \beta_{4}NFDI_{t} + \delta_{t}$$

$$4$$

Where: "*t*" represents time variance, " β_0 " is the Constant term, β_1 - β_4 represent the Parameters to be estimated, " δ_t " connote the Error term or Disturbance term. For uniformed scale of measurement and consistent interpretation of results, all variables were transformed to natural logarithms, which allow us to interpret the coefficients as elasticity. Equation (3) and Equation (4) can be restated to capture the natural log as:

$$lnOILR_{t} = \beta_{0} + \beta_{1}lnC19_{t} + \beta_{1}lnDMB_{t} + \beta_{2}lnNDMB_{t} + \beta_{3}lnNFDI_{t} + \delta_{t} \qquad 5$$

$$lnOILR_{t} = \beta_{0} + \beta_{1}lnC19_{t} + \beta_{1}lnOILR_{t} + \beta_{2}lnNDMB_{t} + \beta_{3}lnNFDI_{t} + \delta_{t} \qquad 6$$

Where: "*lnDMB*" is the logarithm of Deposit Money Banks, "*lnC19*" represent the logarithm of Corona Virus Disease, "*lnGDP*" is the logarithm of Gross Domestic Products, "*lnNFDP*" represent the logarithm of Non-Foreign Direct Investment, "*lnNOILR*" denote the logarithm of Non-Oil Revenue, and "*lnOILR*" is the logarithm of Oil Revenue.

3.3 Methods of Data Analysis

This study applied Autoregressive Distributed Lag Model (ARDL) technique for the estimation of the parameters. Other estimations procedure includes unit root test, cointegration test, and diagnostic test. The unit root test requires that the variable must be stationary at a certain level and the probability value must also be significant at that level. Unit root test is a test for stationery and stationery is attained where the value of the test statistics must be negative and greater than the critical value of the chosen level of significance. This study employed Augmented Dickey Fuller and Philips Peron test for the stationary test. The ADF and PP Test are used to know the stationary of the data. These tests are carried out to know the order of integration of a variable, that is to say how many times a given variable has to be differenced or not to become stationary. They are

Where: $\Delta Y_t =$ First difference of Y_t , $Y_{t-1} =$

Lagged value of Y_t , δ = Test coefficient, μ_t =

Error term, β_1 = Constant, β_2 = Coefficient of time variable. The Phillips Peron test (1988) approach makes a correction to the t statistic to account for the serial correlation. In case of a

structural break in the series, the ADF test might

be biased in identifying data as being integrated

even with structural change. In order to

overcome this pitfall, Phillips Peron proposes a

non-parametric test to evaluate the time series

properties in the presence of structural change at

the unknown point. The choice of this type of test

is to guarantee accuracy and consistency.

According to Hamilton (1994) as cited by

Martins (2014), the PP unit root test is usually

considered more reliable than the ADF in the

correlation

serial

used to check for the presence of a unit root in the variable that is having a mean or variance changing over time, (Philips 1988). The equation of ADF with constant terms and trend is stated as follow:

$$\Delta Y_t = \beta_1 + \beta_2 t + \delta Y_{t-1} + \sum_{k=1}^m Y_i \, \Delta Y_{t-1} + \mu_t$$
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Heteroskedesticity. The PP test can be specified as:

$$\Delta MP_t = \partial_t + \beta_t + (\rho - 1)\gamma_{t-1} + \varepsilon_t \qquad 8$$

Where: MP_t = Manufacturing performance is the variable of interest, ∂_t = the intercept, β_t = the linear time trend, Δ = the first difference operator, ε_t = the error term with zero mean and constant variance. The autoregressive distributed lag Model was advocated by Pesaran and Shin (2000) and then by Pesaran *et al* (2000). This approach has an advantage that it does not require the entire variables to be integrated of the same order I (1). It is applicable if there is a combination of I (0) and I (1). The ARDL equation (2) is given as follows:

$$\Delta lnOILR_{t} = \beta_{0} + \sum_{i=1}^{n} \beta_{1} ln \Delta OILR_{i-1} + \sum_{i=1}^{n} \beta_{2} \Delta lnC19_{i-1} + \sum_{i=1}^{n} \beta_{3} \Delta lnDMB_{i-1} + \sum_{i=1}^{n} \beta_{4} \Delta lnNDMB_{i-1} + \sum_{i=1}^{n} \beta_{5} \Delta lnNFDI_{i-1} + \alpha_{1} lnOILR_{i-1} + \alpha_{2} lnC19_{i-1} + \alpha_{3} lnDMB_{i-1} + \alpha_{4} lnNDMB_{i-1} + \alpha_{5} lnNFDI_{i-1} + \alpha_{t}$$

and

$$\Delta lnDMB_{t} = \beta_{0} + \sum_{i=1}^{n} \beta_{1} ln\Delta DMB_{i-1} + \sum_{i=1}^{n} \beta_{2} \Delta lnC19_{i-1} + \sum_{i=1}^{n} \beta_{3} \Delta lnOILR_{i-1} + \sum_{i=1}^{n} \beta_{4} \Delta lnNDMB_{i-1} + \sum_{i=1}^{n} \beta_{5} \Delta lnNFDI_{i-1} + \alpha_{1} lnDMB_{i-1} + \alpha_{2} lnC19_{i-1} + \alpha_{3} lnOILR_{i-1} + \alpha_{4} lnNDMB_{i-1} + \alpha_{5} lnNFDI_{i-1} + \alpha_{t}$$
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Where: n is optimal lag length, Δ is the Difference operator, β_0 represents the Constant Parameter, β_1 - β_7 denote the coefficient of the first difference lagged value of long run dynamic and $\alpha_1 - \alpha_7$ is the coefficient of the short run dynamic of the parameter. There are some basics assumptions that have to be fulfilled for regression model to be valid. When the regression model did not meet up with these fundamental assumptions, the prediction and estimation may become spurious and bias which may result to increase in type I and type II error. Thus, it becomes imperative to conduct diagnostic tests to confirm the breakdown of the regression model in an attempt to correct the breakdown. These diagnostic tests include normality of the residuals and Heteroskedasticity test.

Test for normality of residuals was carried out to see whether the datasets are normally distributed or not. A test whether the frequency distribution of the variable deviates from a normal distribution was done using Jaque-Bera statistics test (Musawa & Mwaanga, 2017). The residuals are said to be normally distributed when the p-value of the Jaque-Bera test is nonsignificant at 5% level of significance. If the test is statistically significant at most 5% level of significance, the residuals are different from the theoretical normal distribution. If not, then they are normal (Garba, 2011). Heteroskedesticity occurs when the variance of the disturbance term is not the same for all observations (Dougherty, 2007). That is the existence of variation in the error variances. Heteroskedesticity is the opposite of homoskedasticity (Garba, 2021).

4. Results and discussions

Table 1 revealed that some of the variables are stationary at a level and some are stationary after first difference which is in conformity with the autoregressive distributed lag model (ARDL). Thus, the null hypothesis that there is no stationarity among the variables is rejected and accepts the alternative hypothesis that there is stationarity among the variables.

Table 1. Results of the Unit Root Test - Augmented Dickey Fuller Test (ADF)

| • | Level | | | | | First Diff. | | | | |
|---|------------|--------|------------|--------|------|-------------|--------|------------|--------|------|
| Var. | Inter. | P-val. | Trend | P-val. | Ord | Inter. | P-val. | Trend | P-val. | Ord. |
| C19 | -2.4999 | 0.129 | -3.4993* | 0.065 | I(0) | -16.918*** | 0.000 | -12.959*** | 0.000 | I(1) |
| LOR | -2.6981* | 0.084 | -0.7346 | 0.999 | I(0) | -1.2668 | 0.633 | -4.5842** | 0.004 | I(1) |
| LDM | -1.1745 | 0.676 | -4.1709 | 0.010 | I(0) | -9.9408*** | 0.000 | -9.8146*** | 0.000 | I(1) |
| LNM | -1.1683 | 0.678 | -6.2755*** | 0.000 | I(0) | -12.992*** | 0.000 | -12.812*** | 0.000 | I(1) |
| LNF | -4.6991*** | 0.000 | -5.1750*** | 0.000 | I(0) | -6.9225*** | 0.000 | -6.8303*** | 0.000 | I(1) |
| Significant at $10'$ (***) $50'$ (***) $100'$ (*) | | | | | | | | | | |

Significant at 1% (***), 5% (***), 10% (*)

Source: Author's Computation, Eviews 10

| Table 2. Philips l | Peron Test | (PP) | Result |
|--------------------|------------|------|--------|
|--------------------|------------|------|--------|

| • | Level | | | | First Diff. | | | | | |
|------|------------|--------|------------|--------|-------------|------------|--------|------------|--------|------|
| Var. | Inter. | P-val. | Trend | P-val. | Ord | Inter. | P-val. | Trend | P-val. | Ord. |
| C19 | -21.433*** | 0.000 | -33.445*** | 0.000 | I(0) | -24.608*** | 0.000 | -18.555*** | 0.000 | I(1) |
| LOR | -1.1460 | 0.688 | -0.7003 | 0.966 | I(0) | -6.9240*** | 0.000 | -7.4290*** | 0.000 | I(1) |
| LDM | -1.7254 | 0.411 | -4.1713* | 0.011 | I(0) | -13.315*** | 0.000 | -13.836*** | 0.000 | I(1) |
| LNM | -2.2691 | 0.187 | -6.2982*** | 0.000 | I(0) | -21.717*** | 0.000 | -21.352*** | 0.000 | I(1) |
| LNF | -4.6915*** | 0.000 | -5.1807*** | 0.000 | I(0) | -24.196*** | 0.000 | -28.084*** | 0.000 | I(1) |

Significant at % (***), 5% (***), 10% (*)

Source: Author's Computation, Eviews 10

Table 2 the result of the Philips Peron unit test revealed that some of the variables are stationary at a level value and some are stationary after first difference which is in conformity with the autoregressive distributed lag model (ARDL). Therefore, the null hypothesis that there is no stationarity among the variables is rejected and accepts the alternative hypothesis that there is stationarity among the variables.

Table 3 shows that there is co-integration among the time series variables. This is because the value of the F-statistic of 8.10 is greater than the critical value of the upper bound I(1) of 4.7, 3.7, 3.2 at 1%, 5%, 10% respectively, and the lower bound I(0) of 3.7, 2.8, 2.4 at both 1%, 5%, 10% level of significance respectively. Hence, the null hypothesis which stated that there is no co-integration is rejected and accepts the alternative one (there is co-integration) among the variables at most 5% level of significance. The implication is that deposit money banks, non-deposit money banks, non-foreign direct investment and non-oil revenue, all have equilibrium condition that keep them together in the long run.

Table 3. Co-integration Tests (Bound Test Result)

| Test Stat. | Value | Sign. Level | Upper Bound | Lower Bound |
|---------------------|-------|-------------|-------------|-------------|
| F-Statistics | 6.6 | 1% | 4.7 | 3.7 |
| Κ | 4 | 5% | 3.7 | 2.8 |
| | | 10% | 3.2 | 2.4 |

Source: Author's Computation, Eviews 10

Table 4.4 indicated that there exists long run and short run negative and significant relationship between COVID19 and oil revenue in Nigeria over the sample period. This implies an increase in the COVID 19 lead to a decrease in oil revenue in Nigeria in both long run and short run respectively. A 1% increase (decrease) in COVID19 will result to about 1.6% decreases (increase) in the oil revenue in Nigeria. The COVID-19 pandemic caused widespread lockdowns and a sharp decline in global economic activity, significantly reducing oil demand and prices. This drops heavily impacted Nigeria's government revenue, as the country relies on oil exports. Supply chain disruptions and operational challenges, such as workforce shortages, further hindered production, contributing to reduced oil revenue.

As the Nigerian economy depends on oil for government spending, declining oil revenue resulted in budget shortfalls, potentially reducing public services and slowing economic growth. Additionally, the pandemic has prompted discussions about diversifying economies away from fossil fuels, which could further impact Nigeria's future revenue streams. Overall, the interplay of reduced demand, operational challenges, price instability, and changing investment strategies has significantly harmed Nigeria's oil revenue due to COVID-19. The influx of oil revenue can lead to improved financial stability for banks. With more funds flowing into the economy, banks may experience lower default rates on loans, which can encourage them to lend more freely and contribute to economic growth.

Similarly, result also show that there is a positive and statistically significant long run and short run association between deposit money banks, non-deposit money banks, and oil revenue in Nigeria. This means that oil revenue in Nigeria encourage the performance of deposit money banks and non-deposit money banks in Nigeria. In another development, result shows that there is long run association between non foreign direct investment and in Nigeria throughout the period of the study. but there is no short run relationship between non foreign investment and oil revenue in Nigeria.

| Long run ARD | L | | | | | | | |
|--------------------------------|---------------------------|----------------|-------------|-----------|--|--|--|--|
| Dependent Var | Dependent Variable.: OILR | | | | | | | |
| Variables | Coefficient | Std. Error | t-Statistic | P-value | | | | |
| C19 | -1.58E-07 | 6.54E-08 | -2.416676 | 0.0363** | | | | |
| DMB | 4.957521 | 2.368875 | 2.092774 | 0.0508** | | | | |
| NDMB | 7.986064 | 2.956624 | 2.701075 | 0.0146*** | | | | |
| NFDI | 9.317837 | 4.786760 | 1.946585 | 0.0674* | | | | |
| Short run ARD | L | | | | | | | |
| Dependent Var | iable.: OILR | | | | | | | |
| Variables | Coefficient | Std. Error | t-Statistic | P-value | | | | |
| ΔC19 | -2.26E-07 | 9.98E-08 | -2.261358 | 0.0473** | | | | |
| ΔDMB | -4.957521 | 2.368875 | -2.092774 | 0.0508** | | | | |
| ΔNDMB | -5.353056 | 2.916578 | -1.835389 | 0.0830* | | | | |
| ΔNFDI | -0.183711 | 3.321529 | -0.055309 | 0.9565 | | | | |
| ECM | -0.231513 | 0.036565 | 6.331577 | 0.0000*** | | | | |
| Result of the O | verall Model | | | | | | | |
| R ² | | 0.97 | | | | | | |
| Adjusted R ² | | 0.94 | | | | | | |
| Dubin Watson | St. | 2.59 | | | | | | |
| F-Statistics | | 30.50 | | | | | | |
| F-Statistics (P - | – value) | 0.000 | | | | | | |
| Results of the Diagnostic Test | | | | | | | | |
| Heteroskedesti | city Test | 0.8887(96.45) | | | | | | |
| Normality Test | - | 0.3371(0.8449) | | | | | | |

Table 4. ARDL Estimation Test

Significant at 1% (***), 5% (**), 10% (*)

Source: Author's Computation, EViews 10

Table 4. shows the result of the Error Correction Model (ECM). The ECM is negative and statistically significant which implies that the model is a good fit. This suggests that automotive oil gas and manufacturing performance converge to long run equilibrium. The ECM results indicate a long-run relationship between COVID-19, oil revenue, and deposit money banks, as confirmed by the unit root and cointegration tests. In Table 4, the regression model yields an R² of 97%, which means that 97% of the variations in oil revenue and the performance of deposit money banks are explained by the variables included in the model. The remaining 3% represents the variation explained by factors not captured in the model, which is accounted for by the error term. This shows a very goodness of fit of the regression. The adjusted R^2 coefficient determination of 94% means that the model can accommodates more variables conveniently without the R^2 declining beyond 94%. Also, the F-statistics coefficient of 30.50(0.0000) is regarded as commendable being positive and statistically significant. This implies that there is statistically significant association between dependent variable and the explanatory variables. The overall F statistics of 0.0000 is rightly signed and statistically significant at 1% level.

Table 4. indicated the result of the diagnostic test. The test was carried out using Heteroskedesticity and Normality test. The primary reason to test for Heteroskedesticity is to detect violation of assumption of the linear regression, which is one of the assumptions needed for the usual statistics accompanying linear regression to be valid. The F-statistics Pvalue for all the tests was found to be nonsignificant, even at the 5% level of significance. This indicates that there is no evidence of serial correlation among the parameters.

4.4 Cointegration Bound Test

Table 5 shows that there is co-integration among the time series variables. This is because the value of the F-statistic of 8.10 is greater than the critical value of the upper bound I(1) of 4.7, 3.7, 3.2 at 1%, 5%, 10% and the lower bound I(0) of 3.7, 2.8, 2.4 at both 1%, 5%, 10% level of significance. Hence, the null hypothesis that there is no co-integration is rejected and accepts the alternative hypothesis that there is co-integration among the variables at most 5% level of significance. The implication is that deposit money banks, non-deposit money banks, non-foreign direct investment and non-oil revenue, all have equilibrium condition that keep them together in the long run.

 Table 5. Co-integration Tests (Bound Test Result)

| Test Stat. | Value | Sign. Level | Upper Bound | Lower Bound |
|---------------------|-------|-------------|-------------|-------------|
| F-Statistics | 8.10 | 1% | 4.7 | 3.7 |
| Κ | 4 | 5% | 3.7 | 2.8 |
| | | 10% | 3.2 | 2.4 |

Source: Author's Computation, EViews 10

Table 6 indicated that there exists short run estimation of the effect of COVID19 on deposit money bank in Nigeria. The empirical result from the study revealed that there is negative and significant relationship between COVID19 and the performance of the deposit money banks in Nigeria over the period of the study. A 1% increase (decrease) in COVID19 will bring about 1.7% decreases (increase) in the performance of deposit money banks in Nigeria. However, findings also show that there is positive and significant relationship between COVID19 and the performance of deposit money banks in Nigeria. A 1% increase (decrease) in COVID19 will result to about 7.2 increases (decrease) in the performance of deposit money banks in Nigeria. In the same way, result revealed that there is positive and statistically long run association between non-foreign direct investment, non-oil revenue and deposit money banks in Nigeria. A 1% increase in non-foreign direct investment and non-oil revenue will bring about 21% and 90% increases in the performance of deposit money banks in Nigeria in the short run. In another development, result shows that there is long run association between non foreign direct investment, non-oil revenue and deposit money banks in Nigeria throughout the period of the study.

Table 6 shows the result of the Error Correction Model (ECM). The ECM is negative and statistically significant which implies that the model is a good fit. This suggests that automotive oil gas and manufacturing performance converge to long run equilibrium. The ECM result confirms that there is long run association between automotive oil gas and manufacturing performance from the unit root test and the cointegration bound test respectively. In Table 4.6 the regressor result produced an R^2 of 96%, this means that 96% of the changes in deposit money banks performance are explained by the variables captured in the model while the remaining 4% represents other variable not captured in the model, but accounted for by the error term. This shows a very goodness of fit of the regression. The adjusted \tilde{R}^2 coefficient determination of 94% means that the model can accommodates more variables conveniently without the R² declining beyond 94%. Also, the F-statistics coefficient of

32.16(0.0000) and is regarded as commendable being positive and statistically significant. This implies that there is statistically significant association between dependent variable and the explanatory variables. The overall F statistics of 0.0000 is rightly signed and statistically significant at 1% level.

| Long run AR | Long run ARDL | | | | | | |
|--|----------------------|----------------|-------------|---------|--|--|--|
| Dependent Variable.: Deposit Money Bank | | | | | | | |
| Variables | Coefficient | Std. Error | t-Statistic | P-value | | | |
| C19 | 7.2525 | 7.6262 | 9.5110 | 0.0000 | | | |
| NDMB | 1.3710 | 0.9721 | 1.4103 | 0.1755 | | | |
| NFDI | 0.3948 | 0.4978 | 0.7931 | 0.4381 | | | |
| NOILR | -0.2891 | 0.2784 | -1.0382 | 0.3129 | | | |
| Short run AR | RDL | | | | | | |
| Dependent V | ariable.: Deposit Mo | oney Bank | | | | | |
| Variables | Coefficient | Std. Error | t-Statistic | P-value | | | |
| ΔC19 | -1.7100 | 7.0900 | -2.4167 | 0.0363 | | | |
| ΔNDMB | 0.7534 | 0.4990 | 1.5099 | 0.1484 | | | |
| ΔNFDI | 2.1443 | 0.5145 | 4.1678 | 0.0006 | | | |
| ΔNOILR | 0.9065 | 0.2463 | 3.6797 | 0.0017 | | | |
| ECM | -0.7431 | 0.1004 | -7.3984 | 0.0000 | | | |
| Result of the | overal model | | | | | | |
| R-square (R ² |) | 0.96 | | | | | |
| Adjusted R ² | | 0.94 | | | | | |
| Dubin Watso | on St. | 1.99 | | | | | |
| F-Statistics | | 32.16 | | | | | |
| F-Statistics (P - value) | | 0.0000 | | | | | |
| Results of the Diagnostic Test | | | | | | | |
| Heteroskedesticity Test | | 1.0375(99.84) | | | | | |
| Normality Te | est | 0.3371(0.8449) | | | | | |
| $S_{intropy}(x) = \frac{10}{(x^*x)} \frac{50}{(x^*x)} \frac{100}{(x^*)}$ | | | | | | | |

Table 6. ARDL Estimation Test

Significant at 1% (***), 5% (**), 10% (*)

Source: Author's Computation, EViews 10

Table 4.6 indicated the result of the diagnostic test. The test was carried out using Heteroskedesticity and Normality test. The primary reason to test for Heteroskedesticity is to detect violation of assumption of the linear regression, which is one of the assumptions needed for the usual statistics accompanying linear regression to be valid. The F-statistics P-value for all tests was non-significant, even at the 5% significance level. This suggests that there is no indication of serial correlation among the parameters.

5. Conclusion and Policy Recommendation

This study examines the short run and long run spillover effects of post covid COVID19 on oil revenue and performance of deposit money banks in Nigeria. The study employed time series regression approach such as Autoregressive Distributed Lag Model (ARDL) for the estimation of the parameters. The empirical results from the study revealed that there is a negative and significant relationship between COVID 19 and oil revenue in Nigeria both in the short run and long run respectively. The pandemic created uncertainty and volatility in oil prices, complicating Nigeria's revenue forecasting. Increased health and safety measures raised operational costs for oil companies, lowering profit margins and taxable revenues. Economic uncertainty also led to decreased investments in the oil sector, reducing production capacity and future output, which negatively affected long-term revenue prospects.

Result of the short run estimation shows that there is negative and significant association between COVID19 and the performance of deposit money banks in Nigeria throughout the period of the study. However, the results of the long run relationship indicated that there exists positive and statistically significant association between COVID19 and the performance of deposit money banks in Nigeria. This implies that in the long run the deposit money banks in Nigeria respond positively to increase in the COVID19; this may be as result of the increase in awareness and preventive measure against the deadly virus. The study recommends that there is need for more preventing measures against the pandemic so that businesses can continue to operates effectively and efficiently, hence improve oil revenue and the performance of deposit money banks in the country.

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