

COVID-19 Outbreak, Oil Price Shock and Banking System Liquidity: The Nigeria Evidence

KOCHA, Chukwuneny Nkwadochi

(PhD), IWEDI, Marshal (PhD), BARISUA, Sirab Patience, Department of Banking and Finance, Rivers State University, Nkpoku-Oronorukwo Port Harcourt, Nigeria, E-mail: ivedimarshal@yahoo.com

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Abstract: The study investigates impact of COVID-19 and oil price shock on banking system liquidity in Nigeria from the period dated 1st June, 2019 to 30th June, 2020. Using confirmed cases of COVID-19, global price of crude oil and deposit liabilities as variables of study. The results reveal that there is a positive significant impact between COVID-19 and changes in banking system liquidity in Nigeria. On the other hand, the results of the follows of oil price slump reveal that there is a negative significant relationship between oil price and banking system liquidity. Also the results of Johansen co-integration test reveal that the series are co-integrated that is exhibit a long run relationship. The results of the granger causality tests suggest evidence of bidirectional causality flowing from COVID-19 to banking system liquidity vice versa while there is no evidence of causality running from oil price shock to banking system liquidity vice versa. Based on this, the study concludes that COVID-19 and Oil price shocks impacted significant on banking system liquidity in Nigeria.

Keywords: COVID-19, Oil Price Shock, Liquidity, Banking System, Nigeria

1. Introduction

COVID-19 outbreak arrive the shore of Nigeria when the country was already recovery from economic recession. The health crisis gave rise to a number of challenges such as heightened economic contraction, job losses, high inflationary pressure, increased unemployment rates, increase crime among others (Iwedi, Kocha and Oriakpono, 2020). As at last count oil price which account for bulk of the nation's revenue was as low as 15 USD per barrel and revenue accruing from oil funds the nation budget, this shocks led to spiraling of every other macroeconomic indices in Nigeria.

Thus, as the engine of the Nigeria economy, banking system was impacted and reacted to the double shocks of COVID-19 and oil price slump. The sector was heightened with the risk of reduction in fee and trading income including pressure on net-interest income, increased non performing loan and its attendant impact on overall asset quality, capital and liquidity, breaches in cyber security, operational constraints of meeting customers expectation and staff safety, reduction in domestic deposits level and increase deposits rates with interbank rates. The impact on the sector is so profound that cash inflow from net interest income and trading income have significantly decline while

cash withdrawal by bank customers through various digital platform increased during this period of shocks.

Despite the impact, we still do not know much about how COVID-19 outbreak, oil price slump have empirically impacted on the banking system liquidity. Therefore, the goal of this study is to empirically test the impact of COVID-19 and oil price shock on banking system liquidity in Nigeria.

2. Literature Review

Tesfaye (2020) explore the impact of COVID-19 pandemic on the Ethiopia's private banking system. Ten (10) years historical data from 2010 to 2019 was used to found that the pandemic has effect on both balance sheet and income statement of banks.

Wakode (2020) studied the influence of COVID-19 on the credit exposure of a bank. The study employed the statistical tool of the multivariate analysis of variance to choose and found out that there is a significant impact between COVID-19 and bank risk metrics.

Denurjuc-Kunt, Pediaza and Ruiz (2020) assessed the impact of banking sector performance during the COVID-19 crisis. The study found that the crisis and the countercyclical lending role that banks are expected to play have put banking systems under significant stress with bank stocks underperforming in their domestic market than other non-banking financial firms.

Baret, Celner, O'Reilly and Shilling (2020) investigated the impact of the COVID-19 pandemic on the financial market and banks. The study found evidence of significant effects of COVID-19 on the general financial markets as recently the world experienced fall in share prices, oil prices, equities and bonds' prices.

Mert & Omer (2020) investigate the impact of COVID-19 on emerging stocks markets over the period March 10-April 30, 2020. The study found that there is a negative impact of COVID-19 on emerging stock markets, though this negative impact has gradually fallen and has begun to tape off since mid April.

Nuhu (2020) examined the impact of the COVID-19 on the financial market: Evidence from China and U.S.A. The study applied a regression model time series data from China COVID-19 statistics reports and trading economics from 1st of March 2020 to 25 March 2020. The study used the Shanghai Stock Exchange as a sample for China and the New York Dow Jones as a sample for the U.S.A. The study found that there is a positive significant relationship between the COVID-19 confirmed cases and all the financial markets.

Xinhua (2020) found that there is a significant impact between COVID-19 pandemic and the Chinese financial market such that the financial market in China have remained generally stable compared to overseas markets despite the spread of the corona virus.

Iwedi, *et al.* (2020) assessed COVID-19 global pandemic trade and impact on the Nigerian economy. The study employed descriptive methodology to evaluate Covid-19 pandemic global trade wars and its impact on the Nigerian economy. The study revealed that coronavirus cripple the Nigerian economy in terms of social, religious and economic activities while the measures taken to contain the spread of COVID-19 impacted on Nigerian citizens in many ways including job losses, higher prices, and damage to healthcare and seriously on education services.

Zhang, Hu and Ji (2020) studied financial markets under the COVID-19 global pandemic. The study employed descriptive statistics to map the general patterns of country specific risks and systemic risks in the global financial markets. The researchers analyzed possible consequences of policy intervention like the US implementation of zero-percent interest rate and unlimited quantitative easing (QE) and the extent to which such policies may introduce further uncertainties into financial markets. They observed that the rapid spread of the pandemic has created an unprecedented level of risk causing investors to suffer huge losses within a short period of time. They observed that QE stopped investors panic but may create inconsistencies between investors' short-term and long-term expectations as well as further uncertainties to the global market and create trouble for developing economies as occurred in 2008 global financial crisis leading to greater systemic risk.

3. Data and Methodology

The descriptive and analytical techniques were used to investigate the impact of double shocks (COVID-19 pandemic, crude oil price) on the liquidity of Nigeria banking system. Time series data on Covid-19 confirmed cases for Nigeria, crude oil prices, bank deposits liabilities were use as variables for this study while ordinary least square (OLS) were use as tool for the analysis. Thus, the model for this study is specified as:

$$BLQ = f(\text{COVID19}, \text{OILPRICE}) \quad (1)$$

When equations 1 is transformed into econometric equation, we have equations 3

$$BLQ_t = \beta_0 + \beta_1 \text{COVID19}_t + \beta_2 \text{OILPRICE}_t + \text{eit} \quad (3)$$

Where BLQ_t is dependent variable. BLQ is banking sector liquidity proxy by bank deposits liabilities COVID-19 is confirmed cases of COVID-19 for Nigeria and OILPRICE is the crude oil price proxy by crude petroleum – bonny light.

4. Results and Interpretations

This section presents the descriptive and econometric results of the multiple regressions, Johansen co-integration test and the pairwise granger causality test. The first result is the graphical analysis as label figure 1 and 2

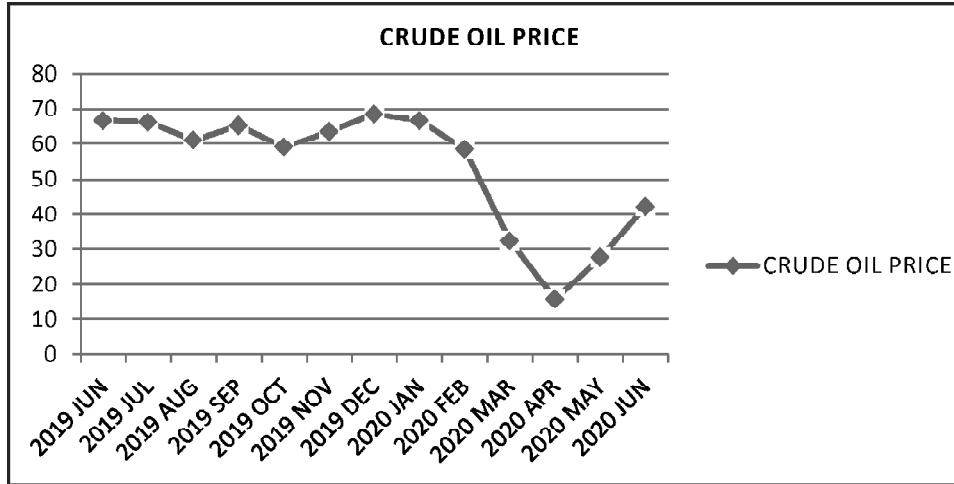


Figure 1

Oil price maintained an irregular trend; it recorded a major peak in December, 2019 and major trough in April, 2020.

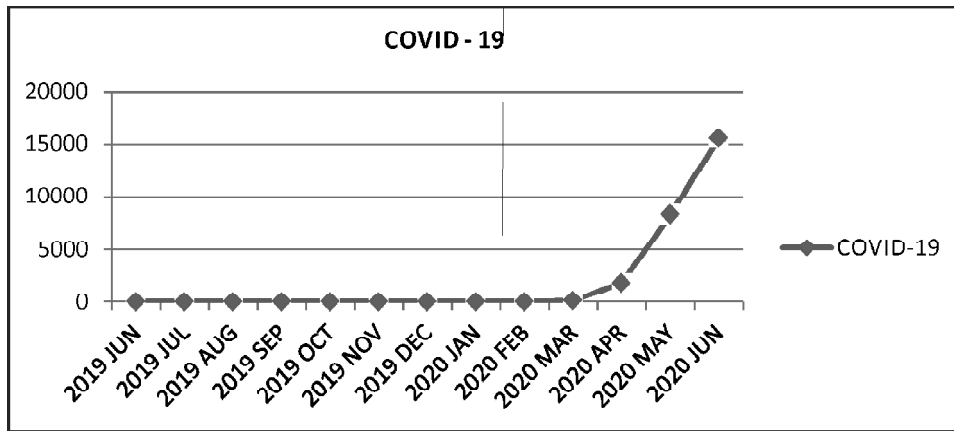


Figure 2

COVID-19 shows a rising trend and recorded major peaks in the month June 2020.

Table 1: Unit Root Test

	<i>D(BANK LIQUIDITY)</i>	<i>D(COVID19)</i>	<i>D(OILPRICE)</i>
ADF Statistics	-3.784051	-10.98561	-4.809839
1%	-3.324070	-4.200056	-3.523070
5%	-2.986225	-3.175352	-2.986225
Probability	0.0001	0.0000	0.0000

Source: Eview 9.0 output

The unit root test in table 1 shows that the variables of double shock COVID-19 pandemic, oil price, and the liquidity of the Nigeria banking system were stationary at first difference. The stationarity properties of these variables were further confirmed by its associated probability which is less than 0.05 level of confidence.

Table 2: Regression Analysis

Dependent Variable: BLQ

Method: Least Squares

Date: 09/25/20 Time: 22:25

Sample: 2019M06 2020M06

Included observations: 13

<i>Variable</i>	<i>Coefficient</i>	<i>Std. Error</i>	<i>t-Statistic</i>	<i>Prob.</i>
C	31032.51	953.2230	32.55535	0.0000
COVID19	0.178813	0.061024	2.930211	0.0150
OILPRICE	-75.81726	16.11813	-4.703849	0.0008
R-squared	0.846213	Mean dependent var		27340.98
Adjusted R-squared	0.815456	S.D. dependent var		2041.616
S.E. of regression	877.0504	Akaike info criterion		16.59018
Sum squared resid	7692174.	Schwarz criterion		16.72055
Log likelihood	-104.8362	Hannan-Quinn criter.		16.56338
F-statistic	27.51250	Durbin-Watson stat		1.915488
Prob(F-statistic)	0.000086			

Source: Eview 9.0 output

The regression result in table 2 shows that there is a positive significant impact between COVID-19 and changes in banking system liquidity in Nigeria. This means that the follows of COVID-19 increase the liquidity position of banks in Nigeria during these periods of crisis in a good way. On the other hand, the follows of oil price slump reveals that there is significant negative relationship between oil price and banking system liquidity. This is because the probability follow of OILPRICE (0.0008) is less than 0.05 percent, which is an indication that the oil price shock explains the liquidity position of banks in Nigeria in a bad way. This implies that, unit increase in oil price shock will lead to -75.81726 unit fall in banking system liquidity in Nigeria. The results of other important statistical tools applied in this study reveal that the coefficient of determination (R²), as used to measure the success of the regression in predicting the value of the dependent variables within the sample and test the goodness of fit, is considered high (over 81.54%). The adjusted R-square, the Durbin-Watson statistics and the entire regression test are statistically significant, including the f-test.

The result of the first hypothesis shows that the value of trace (74.49687) and max-eigen statistic (61.42254) is greater that the critical value (29.79707 and 21.13162) at 5 percent level of significance, therefore, we reject the null hypothesis of there is no co-integration equation in this model. The second

Table 3: Johansen Unrestricted Co-integration Rank Test (Trace)

<i>Hypothesized No. of CE(s)</i>	<i>Eigen value</i>	<i>Trace Statistic</i>	<i>0.05 Critical Value</i>	<i>Prob.**</i>
None * 0.996242	74.49687	29.79707	0.0000	
At most 1	0.634270	13.07432	15.49471	0.1121
At most 2	0.166994	2.009859	3.841466	0.1563

Table 4: Johansen Unrestricted Co-integration Rank Test (Maximum Eigenvalue)

<i>Hypothesized No. of CE(s)</i>	<i>Eigen value</i>	<i>Max-Eigen Statistic</i>	<i>0.05 Critical Value</i>	<i>Prob.**</i>
None * 0.996242	61.42254	21.13162	0.0000	
At most 1	0.634270	11.06446	14.26460	0.1510
At most 2	0.166994	2.009859	3.841466	0.1563

Max-eigenvalue test indicates 1 cointegrating eqn(s) at the 0.05 level

* denotes rejection of the hypothesis at the 0.05 level

**MacKinnon-Haug-Michelis (1999) p-values

Source: Eview 9.0 output

and third null hypotheses say that there is at most 1 or 2 co-integrating equation. A look at the value of trace and max-eigen statistic shows that value of trace and max-eigen statistic are less than the critical value at 5 percent. Therefore, we fail to reject the null hypotheses, so we agree with the null hypotheses that in this model we have at most 1 or 2 co-integration equation. This implies the series are co-integrated that is exhibit a long run relationship.

Table 5: Pairwise Granger Causality Tests

<i>Null Hypothesis:</i>	<i>Obs</i>	<i>F-Statistic</i>	<i>Prob.</i>
COVID19 does not Granger Cause BLQ	12	3.73182	0.0454
BLQ does not Granger Cause COVID19		9.36875	0.0136
OILPRICE does not Granger Cause BLQ	12	0.26752	0.6175
BLQ does not Granger Cause OILPRICE		1.47504	0.2555
OILPRICE does not Granger Cause COVID19	12	44.8491	9.E-05
COVID19 does not Granger Cause OILPRICE		2.15840	0.1759

Source: Eview 9.0 output

The pairwise granger causality tests suggest evidence of bidirectional causality flowing from COVID-19 to banking system liquidity vice versa. This means that the follows of COVID-19 cause banking system liquidity to change. In other hand, there is no evidence of causality running from oil price shock to banking system liquidity vice versa. By implications it suggests that oil price shock does not cause changes in the banking system liquidity.

5. Conclusion

The study investigates impact of COVID-19, oil price shock on banking system liquidity in Nigeria from the period dated 1st June, 2019 to 30th June, 2020. Using confirmed cases of COVID-19, global price of crude oil and deposit liabilities as variables of study. The results reveal that there is a positive significant impact between COVID-19 and changes in banking system liquidity in Nigeria. This means that the follows of COVID-19 increase the liquidity position of banks in Nigeria during this period of crisis in a good way. On the other hand, the follows of oil price slump reveals that there is significant negative relationship between oil price and banking system liquidity. Also the results of Johansen co-integration test reveal that the series are co-integrated that is exhibit a long run relationship. The results of the granger causality tests suggest evidence of bidirectional causality flowing from COVID-19 to banking system liquidity vice versa while there is no evidence of causality running from oil price shock to banking system liquidity vice versa. Based on this, the study concludes that COVID-19 and Oil price shocks impacted significant on banking system liquidity in Nigeria.

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