

COVID-19 PANDEMIC AND NIGERIA'S INTERNATIONAL LIQUIDITY: IMPACT ANALYSIS

UDC 616.98:578.834]:339.721(669)

Abdurrauf Babalola

Al-Hikmah University, Department of Economics, Ilorin, Nigeria

ORCID iD: Abdurrauf Babalola

<https://orcid.org/0000-0001-8389-6639>

Abstract. *Covid-19 pandemic woes have caught across almost every international activity in the world today, which makes many economies to be in a cross-road whether the COVID-19 pandemic is the cause of these woes or not. In this regard, this study investigated the effect of the COVID-19 pandemic on international liquidity in Nigeria. COVID-19 pandemic was proxied by COVID-19 new cases and new deaths of the pandemic in Nigeria and a dummy which represented the period of the pandemic, and as such, stood in as the explanatory variables in the study, while international liquidity was put as the dependent variable. Daily data sets were sourced from National Centre for Disease Control in Nigeria and the Central Bank of Nigeria statistical bulletin between February and October 2020, employing Auto-Regressive Distributed Lag (ARDL) technique. Findings of the study revealed that, in the short run, the COVID-19 pandemic period had a significant impact on Nigeria's international liquidity. However, the COVID-19 new cases and new deaths could not have any significant impact on the international liquidity. Moreover, none of the COVID-19 pandemic variables could have any long-run impact on the international liquidity in Nigeria. The study, therefore, suggests that Nigerians should know that the depletion of its foreign reserve is not due to policy deficiency but to the COVID-19 pandemic. Also, the government should try to improve quality exports that will be demanded by foreign countries irrespective of any pandemic.*

Keywords: *COVID-19 Pandemic, Dummy variable, International liquidity, Time series*

JEL Classification: F38, F42, I11, I15, I18

Received January 05, 2022 / Revised March 01, 2022 / Accepted March 08, 2022

Corresponding author: Abdurrauf Babalola

Department of Economics, Al-Hikmah University, Adewole Estate, Adeta Road, 240281 Ilorin, Kwara State, Nigeria | E-mail: abdclment@yahoo.com

1. INTRODUCTION

The woes that have befallen the world as a result of the Corona Virus are an unanticipated and unprojected challenge, and this health challenge has spread to almost all sectors of the world economy. With the declaration of the World Health Organisation (WHO) on March 11th, 2020, that COVID-19 has become a global pandemic, the issue has shaken the world economy as a whole.

To curb the spread of this pandemic, most governments have put in place policies to reduce or regulate the spread. Apart from the use of sanitary materials, which to some extent, has encouraged a quantum level of productive capacity in the pandemic-demanded goods such as face-masks, hand sanitizers, COVID-19 test kits among others, it has, however, drastically paralyzed the demand for a major international product, crude oil, due to the total lockdown experienced in most nations of the world, in which Nigeria is not left out.

The advanced economies were hit by the effect of the pandemic which resulted in the total and partial closure of many sectors that fed their external reserves with the appreciable quantity of foreign currencies. Even though they remain the main producers and providers of these COVID-19 test kits, which brought lots of foreign patronages and hence were expected to boost their economy to some extent, they still cry out as the pandemic bit hard on their economy. The question now is that what will be the fate of the developing economies like Nigeria, in which this challenge has depleted her major source of foreign reserve? Moreover, the developing country has not developed to the extent of exporting COVID-19 test materials to the international market.

Nigeria's economy at the start of the pandemic has been very fragile as it depends solely on the demand and price of oil in the international market and the nation's budget is based. Oil is the main source of improvement in its international liquidity popularly known as external reserve. The price of Brent crude oil was \$26 per barrel at the beginning of April 2020, whereas, the budget is based on \$57 a barrel, showing a negative gap of \$31. This has an adverse consequence on the reserve (Onyekwena & Ekeruche, 2020).

Quoting from a report by the International Monetary Fund (IMF), "Nigeria has been severely hit by the spread of COVID-19 and the associated sharp decline in oil prices. Government policy is responding to both these developments. A range of measures has been implemented to contain the spread of the virus, including the closure of international airports, public and private schools, universities, stores, and markets, and the suspension of public gatherings. A "lockdown" was declared in Lagos, Abuja, and Ogun states. Work at home is also encouraged in several states and government institutions while isolation centres are being expanded in Lagos state. Testing capacity is increasing as National Center for Disease Control (NCDC) now deploys digital platforms for people to get results sooner.

The President ordered the release of inmates in correctional facilities to decongest prisons. On May 4th, phase 1 of the three-phase economic re-opening commenced following a full lockdown that had been placed since March 30th. Phase 1 moved to phase 2 on June 2nd - allowing most offices and schools to reopen. However, a comprehensive list of restrictions remains in place, including a nighttime curfew, a ban on non-essential inter-state passenger travel, the partial and controlled interstate movement of goods and services, and mandatory use of face masks or coverings in public. On September 4th, Nigeria transitioned into phase 3. Night curfew has been reduced to 12am – 4am. Groups of up to 50 people are allowed to attend parties and gatherings. More opening hours were allowed for parks and gardens but clubs and bars remained shut. Schools around the country reopened around October 12th, 2020" (IMF, 2020).

Based on the background of the COVID-19 pandemic in the world and Nigeria specifically concerning the economic sector, the broad objective of this study is to investigate the impact of the COVID-19 pandemic on Nigeria's international liquidity. Specifically, the objectives are:

- i. To examine the impact of COVID-19 cases on international liquidity in Nigeria.
- ii. To determine the effect of the period of COVID-19 on Nigeria's international liquidity.
- iii. To examine the impact of new deaths as a result of COVID-19 on Nigeria's international liquidity.

The rest of the study is organized in sections: Section two presents the relevant literature underpin; Section three showcases the methodology; Section four presents the research findings, and section five concludes and proffers recommendations.

2. REVIEW OF RELEVANT LITERATURE

Cevik and Mutlu (2022) examined the actions taken by different central banks to support various businesses in their respective economies. Their findings indicated that these banks made liquidity to be abundant by keeping a very low-interest rate. Also, quantitative easing was applied during the period of the COVID-19 pandemic. A swap agreement was also implemented to facilitate the access of economies to dollars and euros. The resultant response was the flow of credit into the real economy which boosted the employment rate, reduced the market volatility, and reduced the supply of dollars pressure.

Papyrakis (2022) also studied the impact, drivers and responses of COVID-19 on international development. According to him, the pandemic has reshaped the debates and processes in international development. The crisis has generated a quantum of challenges for developing nations, many of which could not conveniently cope with the situation of high demand for health care which calls for an immediate decision and made a prompt relief to affected economic development outcomes such as climate change, water, education, poverty and migration, among others.

Nikolova (2021) reviewed the role of foreign reserves in the COVID-19 pandemic period in central banks of governments. Simple bar chart methods were employed to compare pre-COVID with the present situation, sourcing data from the Bank for International Settlements and the International Monetary Fund databases. The finding revealed that the foreign exchange reserves are necessary for the central banks and governments, especially in times of crisis and in pandemics, since the reserves are used as a source of last resort for intervention and rescue of the domestic economy.

Marques et al. (2021) studied the foreign intervention and capital flow management measures from a multilateral view. They realized that more caution is warranted in the use of this policy when there are spillovers in a multilateral review from an individual country's view. Also, multilateral cooperation could be more helpful when considering foreign intervention which will also affect the international liquidity of a country.

Dong and Xia (2020) examined the impact of COVID-19 on the balance of payments and foreign reserves in China. The emergence of the pandemic resulted in an expansion in the nation's balance of payment. Moreover, capital inflows and the international liquidity of the country increased appreciably.

Adenomon and Maijamaa (2020) studied the impact of COVID-19 on the Nigerian stock exchange from January to April 2020 employing quadratic and exponential autoregressive

conditional heteroskedasticity. The findings indicated a loss in stock returns and high volatility in stock returns during the COVID-19 period in Nigeria.

Jacob et al. (2020) presented in their study that the COVID-19 pandemic affected higher institutions in Nigeria through the lockdown of schools, reduction of international education, disruption of the academic calendar of higher institutions, cancellation of local and international conferences, creation of teaching and learning gap, loss of human resources in the educational institutions, and cut in the budget of higher education.

The submission of Ozili (2020) was that Nigeria had the highest number of COVID-19 cases in West Africa and the third highest cases in Africa between March and April 2020. Fernandes (2020) studied the impact of the COVID-19 pandemic on industry and countries and stated that in the case of this crisis, the economic impact of the crisis varied between 3.5% and 6% and that this impact would depend on the weight of tourism and dependence of countries on foreign trade. Odhiambo et al. (2020) used a Discrete Markov chain analysis to determine that COVID-19 affects all sectors of the Kenyan economy.

Ohia et al. (2020) foresaw that the consequence of COVID-19 would be severe in Africa since the health systems in countries in Africa are quite fragile. They claimed that the current national health systems of Nigeria could not be able to manage the growing number of infected patients who require admission into intensive care units.

Other studies on empirical literature are the work of Olapegba et al. (2020); Chinazzi et al., 2020; Haleem et al., 2020; Chen et al., 2020; Fornaro and Wolf, (2020) and most recently van der Hoeven and Vos (2022) who examined the various methods carried out in some developing countries using the international financial and fiscal system reforms. They have all contributed to the literature as a whole but could not empirically investigate the impact of COVID-19 on international liquidity, let alone on the Nigerian economy. This is the contribution to knowledge that the paper intends.

3. METHODOLOGY

3.1. Model Specification

To achieve the set broad objective of this study, the impact of Covid-19 was disaggregated into Covid-19 new cases, new deaths as a result of Covid-19, and the period of Covid-19. This study adapted the model of Dineri and Cutcu (2020) which specified that Covid-19 new cases, new death cases, and the period of the Covid-19 pandemic stood as the explanatory variables while international liquidity was put as the dependent variable, thus specified as:

$$I_l = f(C_{nc}, C_{nd}, C_p) \quad (1)$$

where,

I_l is the international liquidity of the Nigerian economy, C_{nc} stands for Covid-19 new cases, C_{nd} is Covid-19 new deaths and C_p is Covid-19 period of attaching.

In this regard, the econometric model becomes

$$I_l = \alpha_0 + \alpha_1 C_{nc} + \alpha_2 C_{nd} + \alpha_3 C_p + \varepsilon_t \quad (2)$$

Where ε_t represents the disturbance error term at present time, which represents all other factors that affect international liquidity outside the model. Since variables have different measurements, it becomes imperative to take the log of international liquidity to make equation 2 a semi-log model, thus,

$$I_t = \alpha_0 + \alpha_1 C_{nc} + \alpha_2 C_{nd} + \alpha_3 C_p + \varepsilon_t \tag{3}$$

Hence, equation 3 was employed in the analysis.

In measuring the effect of this pandemic, three variables were used. They are the daily data of the total number of Covid-19 new cases (C_{nc}) and Covid-19 new deaths (C_{nd}) which were gotten from the National Centre for Disease Control (NCDC). A dummy variable (C_p) was put up for the period of this attack. As usual, the period of the Covid-19 attaches represented 1 while a period of no pandemic represented 0. These were the main variables that represented the pandemic period.

The external reserve measured in United States dollars was employed to cater for international liquidity and it was sourced from the Central Bank of Nigeria (2020) online database assessed in November 2020.

3.2. Estimation Procedure

After taking the natural log of the dependent variable, I_t , a trend analysis was taken, and then the descriptive and correlation statistics. A pre-estimation technique using unit-roots of Augmented Dicky Fuller, Phillip Peron and KPSS was employed which informed the study of the autoregressive Distributive Lag (ARDL) model. Finally, a post-estimation test was carried out.

4. RESEARCH FINDINGS

4.1. Trend Analysis

The graph of the trend of international liquidity and Covid-19 cases in Nigeria is shown in Figure 1 below; the Y-axis shows the number of cases while the X-axis shows the month and year. From the graph, the first Covid-19 case was recorded in March while the first death was recorded in April. The highest daily case number was recorded in July before we start experiencing a fall in the number of daily reported cases.

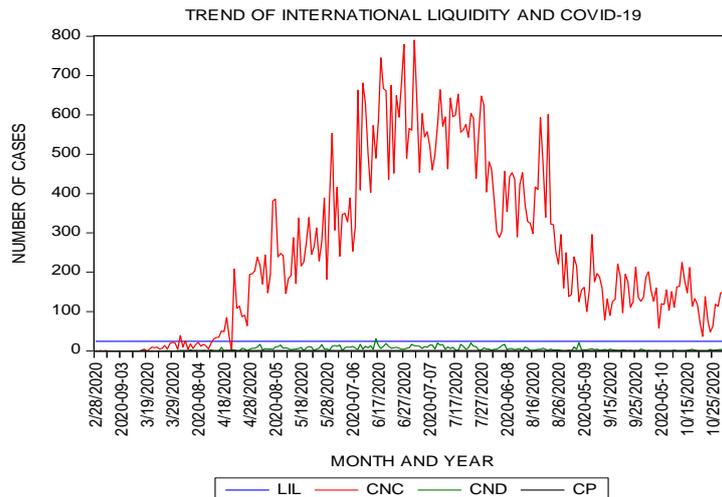


Fig. 1 Trend of International Liquidity and Covid-19 cases in Nigeria
 Source: Author’s extraction from E-view 9

4.2. Result of Descriptive Statistics

Table 1 showcases the descriptive statistics of the dataset with 247 observations. The table shows that International liquidity (Lil) was logged in order to reduce its volatility while Covid-19 cases (C_{nc}), have the highest mean followed by International liquidity (Lil), Covid-19 deaths (C_{nd}), and Covid-19 period (C_p) respectively. Skewness is the measure of the asymmetry of the data around its mean, C_{nc} and C_{nd} are positively skewed while Lil and C_p are negatively skewed. The standard deviation shows the rate of the volatility of the dataset, the high figures of Covid-19 cases (C_{nc}), is as a result of the fact that the logarithm is not taken while Lil has a low figure because its log was taken.

The Kurtosis shows that only C_{nc} is less than 3 i.e. Platykurtic distribution meaning the distribution is flat relative to normal. The implication of this is that it has a lower likelihood of extreme events compared to a normal distribution (Greene, 2002). While the other three variables are peaked i.e. Leptokurtic distribution because they are more than 3. The Jarque-Bera shows the normality distribution of data. The small Jarque-Bera probability as shown in the table means rejection of the null hypothesis.

Table 1 Descriptive Statistics

	Lil	CNC	CND	CP
Mean	24.29632	254.4696	4.631579	0.874494
Median	24.30400	196.0000	3.000000	1.000000
Maximum	24.32331	790.0000	31.00000	1.000000
Minimum	24.23481	0.000000	0.000000	0.000000
Std. Dev.	0.025422	211.4025	5.290532	0.331965
Skewness	-1.523617	0.602856	1.458866	-2.260810
Kurtosis	4.405047	2.237743	5.403502	6.111260
Jarque-Bera	115.8820	20.94126	147.0677	310.0363
Probability	0.000000	0.000028	0.000000	0.000000
Sum	6001.190	62854.00	1144.000	216.0000
Sum Sq. Dev.	0.158987	10993992	6885.474	27.10931
Observations	247	247	247	247

Source: Authors extract gotten from E-view 9

4.3. Result of Pairwise Correlation Matrix

Table 2 shows the correlation matrix and the probability of the relationship between the variables. C_{nc} , C_{nd} and C_p all show a positive relationship with Lil and they are all significant at a 1% level of significance.

Table 2 Correlation Matrix

Correlation Probability	LIL	CNC	CND	CP
LIL	1.000			
CNC	0.4462 0.000	1.000		
CND	0.3260 0.000	0.5926 0.000	1.000	
CP	0.1496 0.018	0.4494 0.000	0.3277 0.000	1.000

Source: Author's extraction from E-view 9

Being more particular about the explanatory variables, their coefficients (0.59, 0.45 and 0.33) are far from the 0.8 benchmarks of high correlation (Asteriou & Hall, 2011; Gujarati & Porter, 2009). This indicates that the model is not having any issue with multicollinearity.

Table 2(b) Variance Inflation Factor (VIF)

Variable	Coefficient Variance	Uncentered VIF	Centred VIF
C	1.38E-05	6.763498	NA
CC	8.21E-11	4.237576	1.802569
CD	1.18E-07	2.750085	1.588567
CP	2.11E-05	8.832204	1.305929

Source: Author's extraction from E-views 9

Table 2(b) further explains the status of the explanatory variables to ascertain the presence of multicollinearity. From the table, the centred VIF values for the three explanatory variables show that there is an absence of multicollinearity in the variables as the values are less than the usual threshold of 10 (Asteriou & Hall, 2011; Greene, 2002).

4.4. Result of Unit root tests

The Augmented Dickey-Fuller (ADF), Phillip Peron (PP) and Kwiatkowski-Phillips-Schmidt-Shin (KPSS) are the three unit-root tests used in the study (Phillips & Perron, 1988) (Gujarati & Porter, 2009). The ADF and KPSS tests show that *LIL* and *C_{nc}*, are stationary at 1st difference while the others are stationary at level. The PP test, however, shows a little difference that all the variables are stationary at level except *LIL* which is stationary at 1st difference.

Table 3(a) ADF

Variables	At level	Probability	At 1 st difference	Probability	Remark
LIL	-2.155552	0.2234	-15.58850	0.0000***	1(1)
CNC	-1.816755	0.3718	-17.64468	0.0000***	1(1)
CND	-3.274341	0.0172	-	-	1(0)
CP	-2.924887	0.0440	-	-	1(0)

Source: Author's extraction from E-view 9

Table 3(b) PP

Variables	At level	Probability	At 1 st difference	Probability	Remark
LIL	-2.211812	0.2027	-15.58850	0.0000***	1(1)
CNC	-2.702500	0.0750	-	-	1(0)
CND	-10.41699	0.0000***	-	-	1(0)
CP	-2.998643	0.0364	-	-	1(0)

Source: Author's extraction from E-view 9

Since two of the tests have supported the stationarity of the variables at level and 1st difference, we conclude that the order of integration is mixed and this is the justification for employing the ARDL analysis (Alogoskoufis & Smith, 1991; Asteriou & Hall, 2011)

Table 3(c) KPSS

Variables	At level	Probability (5%) Critical Value	At 1 st difference	Probability	Remark
LIL	0.7165	0.4630	0.4465	0.4630	1(1)
CNC	0.5957	0.4630	0.2003	0.4630	1(1)
CND	0.0729	0.4630	-	-	1(0)
CP	0.2273	0.4630	-	-	1(0)

Source: Authors extraction from E-view 9

4.5. Result of Model Selection Criteria

Figure 2 shows the result of the model selection criteria using the Akaike information criteria top 20 of the model. It is clear from the figure that ARDL (1,0,0,1) is the best model and was chosen because it has the lowest AIC of 41.2998.

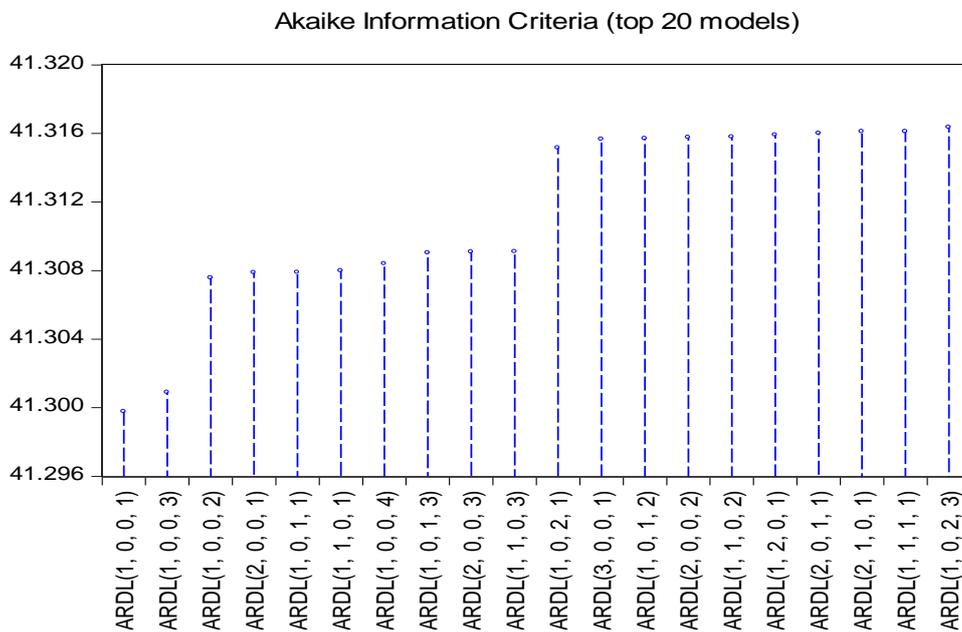


Fig. 2 Graph of selected model criteria

Source: Author's extraction from E-view 9

4.6. Result of ARDL Coefficients

In Table 4, the result of impact analysis in the short run using the ARDL model is showcased. The coefficient of C_{nc} (4666.010) and C_{nd} (4020291.) show that Covid-19 cases and Covid -19 deaths have a positive impact on international liquidity. The impacts are

insignificant at 1%, 5%, or 10% levels. Although international liquidity (*Lil*) shows a positive and significant relationship with itself in the previous period. The coefficient of C_p (-5.27E+08) shows that the Covid-19 period has a negative impact on international liquidity and its impact is significant at a 1% level of significance. It is also shown that the C_p coefficient in the previous period positively impacted international liquidity and its impact is significant at a 1% level of significance.

The R^2 shows that about 93% of the variation in international liquidity is explained by the explanatory variables. This means that 7% of the variation responsible for international liquidity is outside the model. The R^2 adjusted shows about 93% variations which are very close to the R^2 indicating that there is no redundant variable in the model.

The F-statistics (683.1887) and Prob. (F-statistic) (0.000000) show that the goodness of fit is significant at a 1% level of significance. The Durbin-Watson stat (2.000879) is approximately 2 which shows the goodness of fit.

Table 4 ARDL Coefficient

Variable	Coefficient	Std. Error	t-Statistic	Prob.*
LIL(-1)	0.950031	0.018552	51.21009	0.0000
CNC	4666.010	97639.94	0.047788	0.9619
CND	4020291.	3468199.	1.159187	0.2475
CP	-5.27E+08	1.36E+08	-3.869932	0.0001
CP(-1)	5.92E+08	1.35E+08	4.389676	0.0000
C	1.71E+09	6.56E+08	2.601883	0.0098
R-squared	0.934353			
Adjusted R-squared	0.932986			
F-statistic	683.1887			
Prob(F-statistic)	0.000000			
Durbin-Watson stat	2.000879			

Source: Authors extract gotten from E-view 9

4.7. Result of ARDL Bound Test

Table 5 showcases the bound test which is required to ascertain if the explanatory variables (COVID-19: *Cnc*, *Cnd*, and *Cp*) can affect the dependent variable (international liquidity) in the long run. From the table, the F-statistic value (2.383703) is lower than the I0 bound, so the null hypothesis of no co-integration could not be rejected.

Table 5 ARDL Bound test

Test Statistic	Value	K
F-statistic	2.383703	3
Critical Value Bounds		
Significance	I0 Bound	I1 Bound
10%	2.72	3.77
5%	3.23	4.35
2.5%	3.69	4.89
1%	4.29	5.61

Source: Authors extract gotten from E-view 9

This is an indication that the model does not have any long-run relationship. Hence, we only estimated the short-run model which is the ARDL coefficients as presented and interpreted in Table 4.

4.8. Result of Diagnostic Tests

Table 6 presents the result of residual diagnostic tests of serial correlation using the Breusch-Godfrey LM test, the heteroskedasticity using the ARCH test, and Linearity using the Ramsey RESET test.

Table 6 Diagnostic test

Tests	Statistics	Probability values
Breusch-Godfrey Serial Correlation LM Test	0.0077	0.9923
Heteroskedasticity Test: ARCH	0.0091	0.9240
Linearity Test- Ramsey RESET Test	0.1181	0.7312

Source: Authors extract gotten from E-view 9

Their respective probability results are all more than 5% meaning that we accept the null hypotheses that, there are no issues of serial correlation, heteroskedasticity, and specification error.

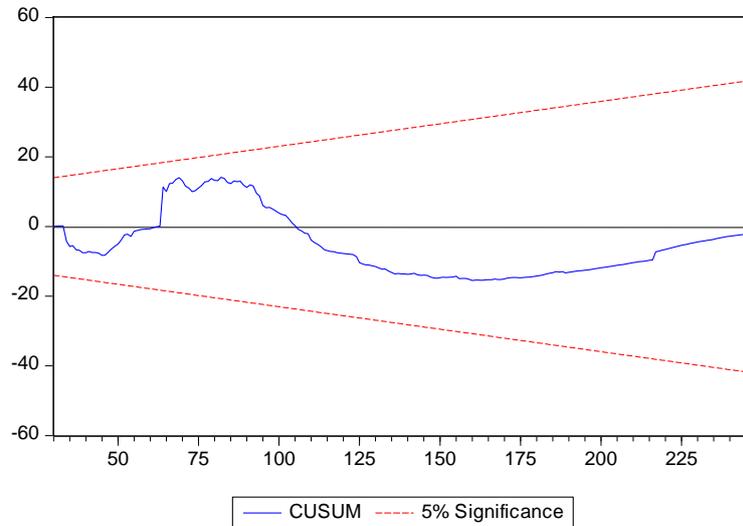


Fig. 3 Graph of Recursive Estimate test- CUSUM

Source: Authors extract gotten from E-view 9

Figure 3 showcases the stability test result using the Cumulative Sum test. From the result, the blue line is within the red lines, and so, we accept the null hypothesis (which is desirable) that the coefficients of the regression are changing systematically and therefore, stable.

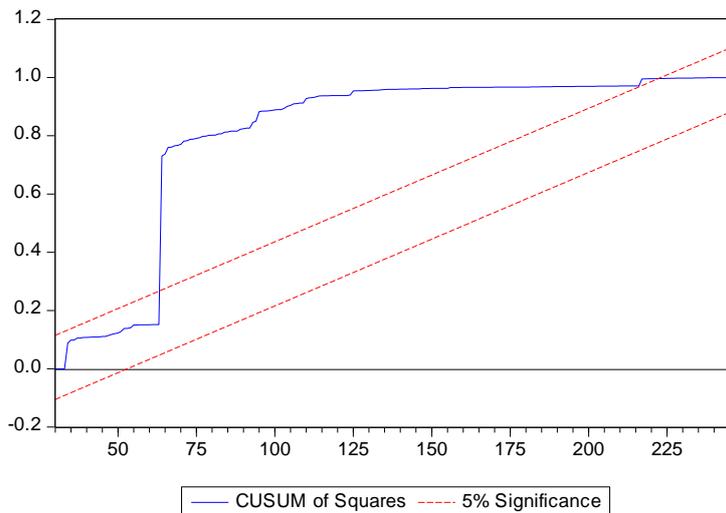


Fig. 4 Graph of Recursive Estimate test- CUSUM Square

Source: Authors extract gotten from E-view 9

Figure 4 presents the stability test result using the Cumulative Sum of Square test. From the result, the blue line is crossing the red line, and so, we reject the null hypothesis (which is not desirable) that the coefficients of the regression are not changing suddenly and therefore, based on this test, are not stable.

Going by the words of Turner (2010), "if the break is in the intercept of the regression equation then the CUSUM test has higher power. However, if the structural change involves a slope coefficient or the variance of the error term, then the CUSUMSQ test has higher power. This may help to explain why the two tests often produce contradictory findings", our regression (ARDL) has an intercept and so the CUSUM is higher and better preferred to CUSUM Squares, thus, we conclude that the coefficients of the regression are stable.

4.9. Discussion of Results and Implications of Findings

This empirical article employed ARDL techniques which were based on the information given by the ADF and PP unit root tests to investigate the impact of the COVID-19 pandemic on international liquidity in Nigeria.

The first objective was to examine the impact of COVID-19 new cases on international liquidity in Nigeria. Though there was an average positive correlation between the new cases and international liquidity, the result of the ARDL cointegration test revealed that, in the short run, COVID-19 new cases did not have a significant impact on international liquidity in Nigeria. There was no long-run relationship as revealed by the bound test result. Hence, the null hypothesis of no significance could not be rejected. Other factors like oil prices would have been responsible for the effect aside from new cases during this period.

The second specific objective was to evaluate the effect of new deaths as a result of COVID-19 on international liquidity in Nigeria. Also, the results of ARDL analysis indicated that new deaths as a result of the COVID-19 pandemic did not have a significant effect on Nigeria's international liquidity within the period under consideration. Thus, the null hypothesis could not be rejected in this regard. This finding is in contrast with the

findings of Dineri and Cutcu (2020), and Odhiambo, Weke, and Ngare (2020), though Fernande's (2020) finding could still be referred to, that, the impact of the COVID-19 pandemic on industry and economies would depend on the weight of tourism and dependence of countries on foreign trade.

The third objective was to examine the impact of the period of the COVID-19 pandemic on international liquidity in Nigeria. Findings of the study discovered that, in both the short run and long run, the period of the COVID-19 pandemic has a very significant impact on international liquidity. This result is in line with our a priori expectation and not different from the study of Dineri and Cutcu (2020) on the exchange rate in the Turkish economy, though they did not use the period as one of their predictors. Hence, we reject the null hypothesis and accept that period of the COVID-19 pandemic has a significant impact on Nigeria's international liquidity.

Moreover, from the results, the predictors in the model were able to explain about 93% of the variation in international liquidity in Nigeria within this period of interest. This applies to real Nigeria's situation since there are still many major contributors to international liquidity like the export of crude oil and other goods that generally have a direct positive impact. Import of goods like used cars, mostly COVID-19 test kits and health care facilities deplete negatively and worsen the international liquidity status of the country. In essence, the high rate of import stretches the Naira exchange rate, in which, for the country to remain within the ambit of the desired exchange rate, the external reserve will have to suffer, mainly due to the COVID-19 pandemic which energized other variables in the negative. Expectedly, as the pandemic rounds off, the international liquidity will keep increasing and moving back to its original point.

6. CONCLUSION AND RECOMMENDATIONS

This study investigated the impact of the COVID-19 pandemic on international liquidity in Nigeria. COVID-19 pandemic was proxied by COVID-19 new cases and new death of the pandemic in Nigeria and a dummy that represented the period of the pandemic, and as such, stood as the explanatory variable while international liquidity was put as the dependent variable in the study. Daily data sets were sourced between February and October 2020, employing Auto-Regressive Distributed Lag (ARDL) technique. The findings of the study revealed that there was an average correlation between the variables of the pandemic and international liquidity. In the short run, the COVID-19 pandemic period had a significant impact on Nigeria's international liquidity. However, the COVID-19 new cases and new deaths could not have any significant impact on the international liquidity. Moreover, none of the COVID-19 pandemic variables could have any long-run impact on the international liquidity in Nigeria. Diagnostic tests revealed that there were no issues of serial correlation, heteroskedasticity, or specification error. Also, the result divulged that the coefficients of the regression were stable.

It is upon the findings of this study that the following recommendations are made:

- Nigerians should know that the depletion of their foreign reserve is not due to policy deficiency but due to the COVID-19 pandemic.
- Also, the government should try to improve quality exports that will be demanded by foreign countries irrespective of the pandemic.

REFERENCES

- Adenomon, M. O., & Maijamaa, B. (2020). On the Effects of COVID-19 outbreak on the Nigerian Stock Exchange performance: Evidence from GARCH Models. <https://doi.org/10.20944/preprints202004.0444.v1>
- Alogoskoufis, G., & Smith, R. (1991). on Error Correction Models: Specification, Interpretation, Estimation. *Journal of Economic Surveys*, 5(1), 97–128. <https://doi.org/10.1111/j.1467-6419.1991.tb00128.x>
- Asteriou, D., & Hall, S. G. (2011). *Applied Econometrics: A Modern Approach Using E View and Microfit* (Revised Ed). Macmillan.
- Greene, W. H. (2002). *Econometric Analysis* (5th edition). Prentice-Hall.
- Çevik, Ü., & Mutlu, B.Y. (2022). Liquidity Steps: Policy Actions Taken by Central Banks during Coronavirus Pandemic. In: Açıköz B., Acar İ.A. (eds) *Pandemnomics: The Pandemic's Lasting Economic Effects. Accounting, Finance, Sustainability, Governance & Fraud: Theory and Application*. Springer, Singapore. https://doi.org/10.1007/978-981-16-8024-3_10
- Central Bank of Nigeria (2020). *Statistical Bulletin*, www.cbn.gov.ng/rates/mnymktind.asp
- Chen, H., Xu, W., Paris, C., Reeson, A., & Li, X. (2020). Social distance and SARS memory: impact on the public awareness of 2019 novel coronavirus (COVID-19) outbreak. *medRxiv*. <https://doi.org/10.1101/2020.03.11.20033688>
- Chinazzi, M., Davis, J. T., Ajelli, M., Gioannini, C., Litvinova, M., Merler, S., ... & Viboud, C. (2020). The effect of travel restrictions on the spread of the 2019 novel coronavirus (COVID-19) outbreak. *Science*, 368(6489), 395-400. <https://doi.org/10.1126/science.aba9757>
- Dineri, E. & Cutcu, I. (2020). The COVID-19 Process and the Exchange Rate Relation: An Application on Turkey. *Research Square*, 1(1), 1-18. <https://doi.org/10.21203/rs.3.rs-49026/v1>
- Dong, J., & Xia, L. (2020). The Impact of COVID-19 on China's Balance of Payments and Foreign Reserves. Retrieved from <https://www.bbvaresearch.com/en/publicaciones/the-impact-of-covid-19-on-chinas-balance-of-payments-and-foreign-reserves-an-update/>
- Fernandes, N. (2020). Economic Effects of Coronavirus Outbreak (COVID-19) on the World Economy. Retrieved from https://papers.ssrn.com/sol3/papers.cfm?abstract_id=3557504
- Fornaro, L., & Wolf, M. (2020). Covid-19 coronavirus and macroeconomic policy. Some Analytical Notes. Retrieved from <https://www.crei.cat/wp-content/uploads/2016/07/CMP.pdf>
- Gujarati, D. N., & Porter, D. C. (2009). *Basic Econometrics* (5th edition). McGraw- Hill.
- Haleem, A., Javaid, M., & Vaishya, R. (2020). Effects of COVID 19 pandemic in daily life. *Current Medicine Research and Practice*, 10(2), 78-79. <https://dx.doi.org/10.1016%2Fj.cmrp.2020.03.011>
- International Monetary Fund (2020). *Policy Responses to COVID-19*. Retrieved from <https://www.imf.org/en/Topics/imf-and-covid19/Policy-Responses-to-COVID-19>
- Jacob, O. N., Abigeal, I., & Lydia, A. E. (2020). Impact of COVID-19 on the Higher Institutions Development in Nigeria. *Electronic Research Journal of Social Sciences and Humanities*, 2(1) 126-135.
- Marques, L. B., Erceg, C., Gelos, G., Gornicka, L., Kokenyne, A. & Pasricha, G. K. (2021). *COVID-19 Shock and Multilateral Aspects of Foreign Exchange Intervention and Capital Flow Management Policies*. Retrieved from <https://www.imf.org/-/media/Files/Publications/covid19-special-notes/enspecial-series-on-covid19covid19-shock-and-multilateral-aspects-of-foreign-exchange-intervention.ashx>
- National Bureau of Statistics (2020). <https://nigerianstat.gov.ng/elibrary/www.statistics/1110871/coronavirus-cases-in-Nigeria/>
- Nikolova, I. (2021). Impact of Covid Pandemic on Foreign Exchange Reserves. *Munich Personal RePEc Archive*. MPRA Paper No. 111261. Retrieved from <https://mpra.ub.uni-muenchen.de/111261/>
- Onyekwena, C., & Ekeruche, C. A. (2020). *Understanding the Impact of COVID-19 on the Nigerian Economy*. Retrieved from <https://www.brookings.edu/blog/africa-in-focus/2020/04/08/understanding-the-impact-of-the-covid-19-outbreak-on-the-nigerian-economy/>
- Ohia, C., Bakarey, A. S., & Ahmad, T. (2020). COVID-19 and Nigeria: Putting the realities in context. *International Journal of Infectious Diseases*, 95, 279-281. <https://doi.org/10.1016/j.ijid.2020.04.062>
- Olapegba, P. O., Ayandele, O., Kolawole, S. O., Oguntayo, R., Gandhi, J. C., Dangiwa, A. L., ... Iorfa, S. K. (2020, April 12). COVID-19 Knowledge and Perceptions in Nigeria. <https://doi.org/10.31234/osf.io/j356x>
- Phillips, P., & Perron, P. (1988). Testing for Unit Root in Time Series Regression. *Biometrika*, 75, 335–346.
- Turner, P. (2010). Power properties of the CUSUM and CUSUMSQ Tests for Parameter Instability. *Applied Economics Letters, Taylor & Francis Journals*, 17(11), 1049-1053. <https://doi.org/10.1080/00036840902817474>
- van der Hoeven R., Vos R. (2022). Reforming the International Financial and Fiscal System for Better COVID-19 and Post-pandemic Crisis Responsiveness. In: Papyrakis E. (eds) *COVID-19 and International Development*. Springer, Cham. https://doi.org/10.1007/978-3-030-82339-9_2
- Weke, O. J., & Ngare, P. (2020). Modelling Kenya Economic Impact of Corona Virus in Kenya Using Discrete-Time Markov Chains. *Journal of Finance and Economics*, 8(2), 80-85.

PANDEMIJA COVID-19 I MEĐUNARODNA LIKVIDNOST NIGERIJE: ANALIZA UTICAJA

Problemi povezani sa pandemijom Kovida 19 su zahvatili skoro svaku međunarodnu aktivnost u svetu danas, što mnoge ekonomije tera da se zapitaju da li je uzrok tih problema sama pandemija ili ne. U tom smislu, ovaj rad istražuje uticaj pandemije Kovid 19 na međunarodnu likvidnost u Nigeriji. Pandemija Kovid 19 se merila brojem novih slučajeva i novih smrti i veštačkom varijablom koja je predstavljala period trajanja pandemije, i kao takva stajala kao objašnjavajuća varijabla u studiji, dok je međunarodna likvidnost bila zavisna varijabla. Dnevni skup podataka dobijen je od statističkih biltena Nacionalnog centra za kontrolu bolesti i Centralne banke Nigerije od februara do oktobra 2020, uz korišćenje ADRL tehnike. Rezultati studije ukazuju da je, kratkoročno, period Kovid-19 pandemije imao značajnog uticaja na međunarodnu likvidnost Nigerije. Međutim, novi slučajevi Kovida 19 i nove smrti nisu imale značajnog uticaja na međunarodnu likvidnost. Štaviše, nijedna od varijabli pandemije Kovida 19 nije mogla da ima značajnijeg uticaja na međunarodnu likvidnost Nigerije. Studija, dakle, ukazuje da Nigerijci treba da znaju da smanjenje njihovih deviznih rezervi nije nastalo usled loše politike nego pandemije Kovida 19. Takođe, vlada bi trebalo da pokuša da poveća izvoz kvalitetnih proizvoda koje će strane zemlje zahtevati bez obzira na pandemije.

Ključne reči: Pandemija Kovid-19, veštačka varijabla, međunarodna likvidnost, vremenska serija