

Effect of Selected Macroeconomic Variables on External Reserves Management in Nigeria (1981-2022)

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ABSTRACT

This study examined the Effect of selected macroeconomic variables on External Reserves Management in Nigeria (1981-2022) with external reserves as a dependent variable and international crude oil price movement, exchange rate volatility, inflation, monetary policy rate, public expenditure, economic growth, external debt service payment, and trade Openness as independent variables. With dataset from the Central bank of Nigeria Statistical Bulletin and Autoregressive Distributive Lag (ARDL) model as the key estimation technique, the study found that crude price movement, economic growth, public expenditure growth, all had positive and significant impact on external reserves management. Exchange rate volatility, monetary policy rate and trade openness were found to have adverse and significant effects on external reserves. It is therefore recommended that effective and efficient fiscal and monetary policy measures be adopted to enhance the management of external reserves.

Keywords: Effect, Macroeconomic, Variables, External Reserves Management, Nigeria

INTRODUCTION

External reserves with its management have remained a relevant topic of discourse in any economy. Discussions on reserves and its management dominates the activities of most developing economies and the policy directives of most regulatory agencies (CBN, 2007, The IMF 2009, Nneka 2012, Adegboyo and Efundade, 2019). Central banks possess assets that are held in various reserve currencies like the Dollar, Pound Sterling, Euro, and Yen. These reserve currencies serve the purpose of supporting the liabilities of central banks, which include the local currency in circulation, reserves held by different deposit money banks (DMBs), as well as government and other financial institutions. It is important to note that foreign exchange reserves held by individuals, banks, government agencies, and corporate entities are not considered part of a nation's external reserves.

Before 1939, external reserves were in the form of gold reserves, but this was ended by the collapse of the gold system and the establishment of the Bretton Wood Institutions to rebuild the world economy in 1945. This led to the use of the US dollars as the reserve currency.

In Nigeria, before 1959, the West African Currency Board managed external reserves but this changed with the establishment of the Central Bank of Nigeria (CBN) (Aizenman and Lee 2005 and Aizenman, 2013). The apex bank empowered by the enabling act became responsible for the management of external reserves and took charge of the responsibility of managing the reserve kept in gold and pound sterling. This role also has some appendages like management of the monetary and the price system.

China, Japan, and Saudi Arabia were first, second and third respectively as at June 2009, in external reserves holdings (Opata and Ogunleye, 2010) and the global estimates in 1996 to 2013 rose from US\$1.57 trillion to US\$11.69 Trillion (Gong, 2012 and Akims, 2013). Conversely, it came down to US\$11.6 Trillion in March 2015 after reaching an all-time high of US\$12.03 trillion in August 2015 and this was blamed on the strengthening of the US Dollars (CBN, 2015, Bloomberg, 2015).

In Africa, changes in commodity prices such as crude oil led to an increase in external reserves of most countries and a consequent depletion of the reserves of the importing countries. For example, currency devaluation by Egypt three times in 2015 due to the dwindling reserves, which caused a 10 percent depletion

of reserves within the period (Namatalla, 2015). Libya used over 25% of its foreign reserves to cushion the effect of sharp fall in oil revenue. Many other African countries have faced mixed fortune in reserves movement over time (Bloomberg, 2015).

Nigeria's external reserves in December 1995, stood at US\$1.611 billion and have been fluctuating over time. It was US\$ 9.386 billion in 2000, increased by 5.09% in 2001, fell to US\$7.467 billion by December 2003, and rose by 127% to US\$ 16.9 billion in 2004. It increased from 66.80% in 2005 to US\$28.279 billion and reached an all-time high of US\$42.298 billion in 2006 (Osuji and Ebringa, 2012; Udo and Antai, 2014). Up until 2009, when the economy saw another decline in reserves, totaling 20% from 2008's reserves position of US\$42.38 billion, the external reserves trended upward. This undulating trend continued. In December 2014, it stood at US\$34.24 billion, while in December 2022 it stood at US\$37.059 billion. It is necessary to note that Nigerian external reserves reduced to about US\$ 33.00 billion in September 2023 from US\$34.24 billion in December 2022, (CBN 2015, CBN, 2022). The upward and downward trend is very worrisome, hence, the need for this study.

Some researcher has looked the impact of reserves and economic indicators See: Olokoyo, Osabuohien and Salami (2009), Prakash (2016), Akaninyene (2016), Osuji and Ebiringa (2012) Fukuda and Kon (2007), for researchers like Fapetu and Oloyede (2014), Krušković & Maričić (2015), Kashif, et al (2017), Akinwunmi and Adekoya (2016), Nwafor (2017), Aluko (2007), Obaseki (2007), Gokhale and Ramana (2013) Samih & Wael (2017), Awoderu, Ochalibe, and Obekpa (2017) and Adhikari (2018). This study is organized into five (5) sections. This study differs markedly by not just looking at a developing and reserves-depleting economy but also using a plethora of domestic and foreign dependent indicators in showing the influencers of external reserves.

The study is organized thus: The first section is the Introduction, while the second section is the literature review, which consists of a theoretical framework and an empirical review. The third section is research methodology. In Section Four, the study presented data, results, and discussion of findings. The paper conclusion and recommendation is in section five.

LITERATURE REVIEW

Various accounts exist in literature on the reasons for the upward and downward trend in external reserves between 1981 and 2023 in Nigeria. One of the identified factors is international crude oil price movement or volatility. Proponents associate the earlier periods of high external reserves with corresponding periods of significantly higher world crude oil prices.

International crude oil volatility has also demonstrated a slightly different trend from that of external reserves in Nigeria. The International Crude Oil Price showed \$31.84 in 1981, \$24.09 in 1985, \$21.54 in 1991, \$18.43 in 1995, \$25.98 in 2001, \$31.08 in 2005, \$79.45 in 2010, \$48.66 in 2015, \$39.68 in 2020, \$68.17 in 2021, and \$94.53 in 2022 per barrel.

The exchange rate has also been considered as a major influencer of external reserves in Nigeria. The exchange rate of the dollar for the Nigerian Naira moved from N0.61 in 1981, to N0.89 in 1985, to N2.02 in 1986, N9.91 in 1991, again to N21.89 in 1995, it stood at N92.34 in 1999, N152.33 in 2011, N192.30 in 2015, N253.49 in 2016, N380.25 in 2020 and drastically fall N426.00 in 2022 as the official exchange rate while the black market rate is fluctuating around N1000.00 per dollar today (CBN, 2022), which is quite worrisome.

Changes in monetary policy aggregates are also associated with changes in external reserves in Nigeria. Monetary policy rates have also been considered as an influencer of external reserves in Nigeria? Monetary policy rates that were formerly mirrored as Minimum Re-discounting Rates (MRR) till 2006 stood at 6% in 1981, 15.50% in 1991, 13.50% in 1995, 20.50% in 2001, 6.25% in 2010, 11.00% in 2015, 11.50% in 2020 and 14.00% in 2022. Different perceived macroeconomic variables have different trends and patterns, (CBN, 2022).

Beyond the effect of fluctuations in global world oil prices, exchange rate volatility, monetary aggregates, and others on external reserves, one will not overrule other factors and the lack of maintenance or sustainability culture by successive governments after between overtime especially between 1981 and 2023. A slowdown in foreign direct investment and portfolio sales, inadequate foreign exchange earnings, a decline in government revenue brought on by crude oil theft, and pipeline vandalism have all been linked to Nigeria's declining external reserves. Additional considerations include the government's increased use of the Excess Crude Account, the Central Bank of Nigeria's (CBN) enhanced defense of the naira expenditure, massive fiscal spending, and the resulting strain on the nation's financial obligations. It is important to note that Nigeria is a monocultural nation with a high debt load, large and rising governmental spending, and a strong reliance on crude oil, the price of which is set externally.

Several proponents such as Orji and Ebiringa (2012), have defined external reserves but the most reliable definition tend to come from IMF (2007), which sees external reserves as foreign public financial assets, which are readily available and controllable by the monetary authorities for diverse local and international application. These may take the form of monetary gold, IMF special drawing rights (SDRs), currency and deposits, fixed-income securities, financial derivatives, and other claims (IMF, 2009).

Reserve management is described as the procedure that guarantees sufficient public foreign assets that are available and controlled by the monetary authorities for achieving set objectives.

The practice of external reserve management guarantees that the appropriate authorities have control over the overseas assets to address set goals for the holder nation (IMF, 2013). As such, it is a component of official public policy and needs to be consistent with reaching the goal of the national economy. Given that external reserve management are done in the macroeconomic space, it is possible for such an activity to share interconnectedness with such macroeconomic variables like inflation, exchange rate, growth of public expenditure, economic growth, trade outwardness etc. Conceptually, any relative variable to a country with national outlook and impact is defined as a macroeconomic variable (Agade 2014, Dornbuch, Fisher & Startz, 2008). Two theories underpinning the study have been identified, namely the Mercantilist and the Precautionary/Self Insurance theory.

Mercantilist Theory

The Mercantilist Theory, often referred to as mercantilism, was an economic theory and policy framework that dominated economic thought and practice in Europe during the 16th, 17th, and 18th centuries. The central idea of mercantilism was to maximize a nation's wealth. Mercantilists believed that a country should export more than it imports, thus generating a surplus in the balance of trade. This surplus was seen as essential for the accumulation of gold and silver, which were considered as wealth. A positive balance of trade was believed to be a source of national power.

Precautionary Theory/ Self Insurance Theory

This theory is also known as the Precautionary Demand for Reserves and is a modern economic concept that pertains to the practice of maintaining a sufficient level of foreign exchange reserves to mitigate risks and ensure financial stability. The above theories reflect the interconnectedness of external reserves management and the macroeconomic variables of interest.

METHODOLOGY

The data sets for empirical estimation in this study have two distinct features. The data is secondary and time series in nature. The data were drawn from the Statistical Bulletins of the Central Bank of Nigeria on various issues. This study covers external reserves and the Nigerian Economic environment with a particular focus on some key selected macroeconomic aggregates notably external reserves, macroeconomic variables such as oil revenue, international oil price, non-oil revenue, broad money supply, and inflation rates.

Rigorous research procedures for selecting samples and populations were not followed here given that the study will use preexisting or historical data. The coverage period was 1981 to 2022 representing 42 years. It can arguably be said that the population covers the entire years of Nigeria's existence. Choosing 1981 is necessary to make the research very robust while 2022 is to ensure that the data set is as current as possible.

It is necessary to have this operational model is thus:

$$\text{EXR} = f(\text{ICOPM}, \text{ECHR}, \text{INFR}, \text{MPR}, \text{PEXGR}, \text{GRNEC}, \text{EDSP}, \text{TRDOP}) \dots\dots\dots (1)$$

$$\text{EXR} = b_0 + b_1 \text{ICOPM} + b_2 \text{ECHR} + b_3 \text{INFR} + b_4 \text{MPR} + b_5 \text{PEXGR} + b_6 \text{GRNEC} + b_7 \text{EDSP} + b_8 \text{TRDOP} + U \dots\dots\dots (2)$$

Equation 2 is further re-specified in their log-linear form thus:

$$\text{EXR} = b_0 + b_1 \text{ICOPM} + b_2 \text{ECHR} + b_3 \text{INFR} + b_4 \text{MPR} + b_5 \text{PEXGR} + b_6 \text{GRNEC} + b_7 \text{EDSP} + b_8 \text{TRDOP} + U \dots\dots\dots (2)$$

will result in

$$\log(\text{EXR}) = b_0 + b_1 \log(\text{ICOPM}) + b_2 \log(\text{ECHR}) + b_3 \log(\text{INFR}) + b_4 \log(\text{MPR}) + b_5 \log(\text{PEXGR}) + b_6 \log(\text{GRNEC}) + b_7 \log(\text{EDSP}) + b_8 \log(\text{TRDOP}) + U \dots\dots\dots (3)$$

Where:

b_0 = Constant or intercept of the equation

$b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8$ = Slopes of the equation 2

The apriori expectation is $b_1, b_2, b_3, b_4, b_5, b_6, b_7, b_8 > 0$

ICOPM= International Crude Oil Price, ECHR= Exchange Rate Volatility, INFR= Inflation Rate, MPR= Monetary Policy Rate, PEXGR= Public Expenditures Growth Rate, GRNEC= Growth Rate of the Nigerian Economy, EDSP= External Debts Servicing Payments, TRDOP= Trade Openness, U= Error term

The key variables identified relating to the observed trend pattern of external reserves in Nigeria are International Crude Oil Price Movement, Exchange Rate Volatility, Inflation Rates, Monetary Policy Rates, Public Expenditure Growth Rate, Growth Rate of the Nigerian Economy, External Debt Servicing Payments, and Trade Openness.

International Crude Oil Price Movement

Oil revenue accounts for 40 percent of Nigeria's gross domestic product (GDP), 70 percent of

government revenue, and 90 percent of foreign exchange earnings, Invariably, Changes in international oil prices will affect oil revenue in Nigeria, which will then affect external reserves in Nigeria. Hence, International Crude Oil Price variability affects foreign exchange reserves. We expect a negative relationship between International Oil Price Volatility and foreign exchange reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 - b_1 ICOPM + U \dots \dots \dots$ (4) **Where** $b_1 > 0$.

Exchange Rate Volatility

Changes in the Exchange Rate should affect External reserves in Nigeria. Hence, Exchange Rate variability affects external reserves negatively. We expect a negative relationship between Exchange Rate Volatility and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 - b_1 ECHRV + U \dots \dots \dots$ (5). where $b_1 > 0$.

Inflation Rate

Changes in the Inflation Rate should affect External reserves in Nigeria. Hence, the Inflation Rate affects external reserves negatively. We expect a negative relationship between Inflation Rate and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 - b_1 INFR + U \dots \dots \dots$ (6). where $b_1 > 0$.

Monetary Policy Rate

Changes in Monetary Policy Rates should affect External reserves in Nigeria. Hence, Monetary Policy Rate variability affects external reserves negatively. We expect a negative relationship between the Monetary Policy Rate and foreign exchange reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 - b_1 MPR + U \dots \dots \dots$ (7) where $b_1 > 0$.

Public Expenditure Growth Rate

Changes in Public Expenditure Growth Rate should affect External reserves in Nigeria. Hence, the Public Expenditure Growth Rate should affect external reserves positively. We expect a positive relationship between Public Expenditure Growth Rate and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 + b_1 PEXGR + U \dots \dots \dots$ (8) where $b_1 > 0$.

Growth Rate of the Economy

The relationship between External reserve and Growth Rates of the Nigerian Economy proxy by GRNEC is expected to be positive. The growth in size of the economy can occur as a result of an increased transaction of a country with the rest of the world (trade). This will result in massive inflows and acquisitions of foreign assets including foreign exchange reserve. Changes in Growth Rate of the Economy should affect External reserves in Nigeria positively. Hence, Growth Rate of the Economy affects external reserve positively. We expect a positive relationship between Growth Rate of the Economy and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 + b_1 GRNEC + U \dots \dots \dots$ (9). where $b_1 > 0$.

External Debt Servicing Payment

Changes in External Debt Servicing Payment should affect External reserves in Nigeria. Hence, External Debt Servicing Payment should affect external reserve negatively. We expect a negative relationship between External Debt Servicing Payment and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 + b_1 EDSP + U \dots \dots \dots$ (9) where $b_1 > 0$.

Trade Openness

Changes in Trade Openness should affect External reserves in Nigeria. Hence, Trade Openness affect external reserve positively. We expect a positive relationship between Trade Openness and external reserves. Therefore, the apriori expectation of this relationship is $EXR = b_0 + b_1 TRDOP + U \dots \dots \dots$ (10) Where: $b_1 > 0$.

DATA ANALYSIS AND DISCUSSION

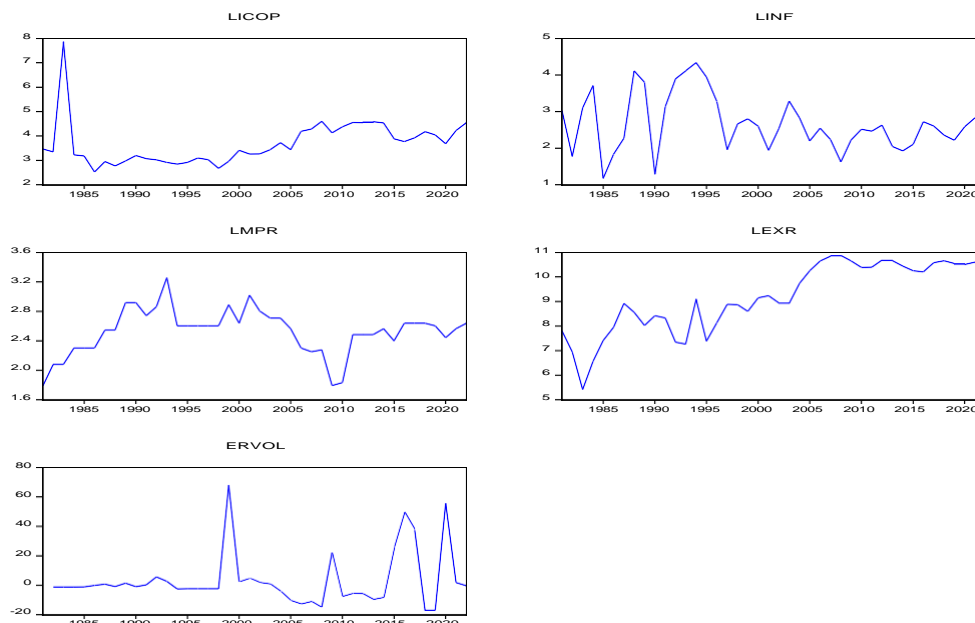


Figure 1: Line and symbol multiple graphs of the series

From Fig.1 above, the data sets were presented using line and symbol graphs. The international crude oil price (LICOP) was at its peak around the year 1983 to 1985. This can effectively be explained by some factors such as the production cut, which was implemented by the OPEC countries in the early 1980s, which led to an increase in the price of oil. Again, the global economy was experiencing a recession, which led to a general increase in the demand for oil and as such, added pressure to oil prices. LINF had a fluctuating trend over the years, which can be attributed to a variety of factors such as frequent changes in government policies, economic instability, and global economic conditions. It was at its peak in the year 1995 because of economic crises caused by the collapse of the country’s banking system. MPR is a monetary instrument that is used by the CBN to achieve monetary objectives by increasing or reducing the MPR for price stability. The MPR fluctuated depending on the changes in the economy, which made it unstable over the years. The LEXR was a steady increment, which can be attributed to the fact that there was a general weakening of the naira relative to other currencies due to a decline in oil revenue and inflationary pressures. Another factor that contributed to this continuous increase is the CBN policy that aimed at devaluing the currency to increase or improve exports and reduce reliance on imports. The ERVOL had a fluctuating trend over the years but peaked in the year 1995 as there was a serious decline in the country’s foreign exchange reserves due to a decrease in oil prices and an increase in government borrowings.

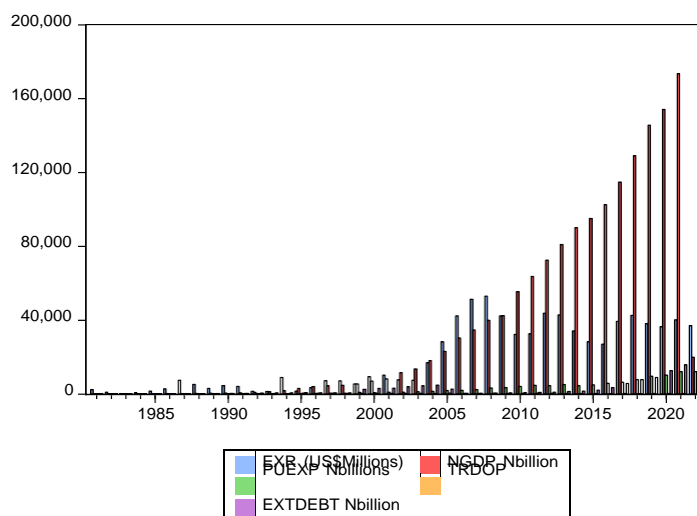


Figure 2: Single bar graph of the independent variable

From Fig. 2 above, the gross domestic product was notably higher than other variables of investigation but had at a time very low about other variables. This is because GDP considers all the economic activity within a country, which includes both the private and public sectors. On the other hand, public expenditure only has

to do with government spending, while external debt servicing deals with the government debt obligations. The exchange from the graph fluctuated over time but was very significant relative to other variables. Trade openness as seen in Fig 2 was almost insignificant as this could be attributed to the fact that the country's economy relied mostly on oil and agriculture, which are relatively closed sectors. Another notable factor for low trade openness is the underdeveloped infrastructure, which makes it difficult to transport goods and services and also the high import tariff, which discourages the importation of goods and services

Table 3: Summary of Basic Descriptive Statistics

Variable	Mean	Median	Std. Dev.	Skewness	Kurtosis	Jarque-Bera	Prob	CV	Obs
LEXR	9.18	9.12	1.41	-0.59	2.48	2.94	0.22	0.15	42
LICOP	3.68	3.43	0.9	2.34	11.68	170.31	0	0.24	42
ERVOL	3.39	-1.1	18.63	2.07	6.8	54.15	0	5.49	41
LINF	2.67	2.59	0.76	0.39	2.66	1.3	0.52	0.28	42
LMPR	2.52	2.58	0.31	-0.49	3.61	2.36	0.3	0.12	42
LPEXGR	6.34	6.92	2.36	-0.44	1.79	3.92	0.14	0.37	42
GDPGR	37048.0	9868	49715.	1.3	3.51	12.45	0	1.34	42
LEDSP	6.45	6.47	2.08	-0.85	3.3	5.2	0.07	0.32	41
LTRDOP	5.63	5.74	0.57	0.47	6.04	17.79	0	0.10	42

Source: Computed by the author using Eviews

In Table 3 above, the metrics of central tendency (test for aggregative tendencies), dispersion, symmetrical features of the series, and degree of peakness of the distribution are all included. From table 3 above, GDPGR has the highest mean and LMPR has the lowest mean and median value. That shows that GDPGR is less closely knitted and LMPR is more closely knitted. Standard deviation is a measure of dispersion, that is, how far apart is the distribution. In the above table 3, GDPGR is more far apart. Skewness measures the degree of symmetry or departure from symmetry of the distribution whereas kurtosis measures the degree of peakness of the distribution. The distribution is normal if skewness is zero (0) and kurtosis is three (3). Also, the distribution is leptokurtic (statistical distribution with kurtosis greater than three) if kurtosis is > 3 , platykurtic (statistical distribution with kurtosis less than three) if kurtosis is < 3 , mesokurtic if it is $= 3$. This leads to the conclusion that LICOP, ERVOL, LMPR, GDPGR, LEDSP and LTRDOP are all Leptokurtic, while LEXR, LINF and LPEXGR are Platykurtic. The Jarque-Bera test is a general measure of skewness and kurtosis. CV stands for coefficient of variation, also known as relative standard deviation (RSD). It compares the degree of variation from one data series to another. The CV of the variables ERVOL and GDPGR are greater than 1 which indicates that the distribution is highly dispersed unlike other variables, which are not highly dispersed.

The table below displays correlation factors between different variables. The table's cells each display the correlation between two variables. Data are summarized using correlation matrices, which are also utilized as inputs for more sophisticated studies and as diagnostics for such analyses.

Table 4: Summary of correlational matrix

Variables	LEXR	LICOP	ERVOL	LINF	LMPR	LPEXGR	GDPGR	LEDSP	LTRDOP
LICOP	0.1711	1.0000							
	1.0706	-----							
	0.2911	-----							
ERVOL	0.0303	-0.1335	1.0000						
	0.1871	-0.8304	-----						
	0.8525	0.4115	-----						
LINF	-0.3680	-0.1906	0.0680	1.0000					
	-2.4400	-1.1973	0.4206	-----					
	0.0195	0.2386	0.6764	-----					
LMPR	-0.1450	-0.4612	0.1260	0.3147	1.0000				
	-0.9039	-3.2045	0.7835	2.0444	-----				
	0.3717	0.0027	0.4381	0.0479	-----				

LPEXGR	0.8925	0.2773	0.1614	-0.2334	-0.0298	1.0000			
	12.1977	1.7793	1.0084	-1.4799	-0.1840	-----			
	0.0000	0.0832	0.3196	0.1471	0.8550	-----			
GDPGR	0.6917	0.3590	0.2084	-0.2229	-0.1227	0.7691	1.0000		
	5.9042	2.3718	1.3140	-1.4099	-0.7623	7.4184	-----		
	0.0000	0.0229	0.1967	0.1667	0.4506	0.0000	-----		
LEDSP	0.6981	-0.0258	0.2558	0.0044	0.3930	0.8545	0.6339	1.0000	
	6.0115	-0.1591	1.6317	0.0271	2.6346	10.1441	5.0529	-----	
	0.0000	0.8744	0.1110	0.9785	0.0121	0.0000	0.0000	-----	
LTRDOP	0.4014	-0.0970	-0.1113	0.0659	0.3142	0.5194	-0.0025	0.57805	1.0000
	2.7022	-0.6009	-0.6904	0.4046	2.0408	3.7475	-0.0156	4.3669	-----
	0.0102	0.5514	0.4941	0.6880	0.0483	0.0006	0.9876	0.0001	-----

R=correlational coefficient; {} = t-stat; [] = probability of t-statistics.

Decision rule: Reject H_0 if $p\text{-value} < 0.05$, otherwise do not reject H_0

The t-statistic must be > 2.5 and the probability must be < 0.05 for two variables to have a linear relationship with one another. Based on this criterion, there is a linear correlation between GDPGR, LEDSP, LTRDOP, and the dependent variable (LEXR)

To prevent running a spurious regression, the stationarity test was employed to look at the stationarity characteristics of the variables under examination. The Augmented Dickey-Fuller (ADF), a test that adheres to the conventional unit root test and breakpoint consistent technique, was utilized. The decision was based on a 5% level of significance.

The table below shows the results of the innovation and additive unit root test which were primarily used to test the stationarity of the variables. This is an enhancement on the traditional Unit root test which does not account for structural breaks caused by the presence of outliers in the distribution.

Table 5: Unit Root Test Results

VARIABLES	INNOVATION OUTLIER				ADDITIVE OUTLIER			
	ADF STAT	TCV@ 5%	ORDER OF INT	BREAK DATE	ADF STAT	TCV @5 %	ORDER OF INT	BREAK DATE
LEXR	-5.98	-5.17	0	2005	-8.96	-5.17	1	1986
LICOP	-6.60	-5.17	0	1998	-10.69	-5.17	0	1983
ERVOL	-6.53	-5.17	0	1999	-6.61	-5.17	0	2014
LINF	-6.53	-5.17	0	1996	-6.41	-5.17	0	1996
LMPR	-9.73	-5.17	1	2011	-10.06	-5.17	1	2011
LPEXGR	-10.24	-5.17	1	1987	-10.57	-5.17	1	1988
GDPGR	-9.50	-5.17	1	2020	-6.44	-5.17	0	2002
LEDSP	-7.60	-5.17	1	2006	-7.39	-5.17	1	2006
LTRDOP	-6.94	-5.17	1	2019	-8.92	-5.17	1	2020

Source: Extracted from E-views 10

From Table 5 above, LEXR, LICOP, ERVOL, and LINF were all stationary at levels but had different break dates while the other variables were stationary at order 1. of integration and consisted of different break dates. In the Additive outlier, all the variables were found to be stationary at order 1 of integration except LICOP, ERVOL, LINF and GDPGR, which were found to be stationary at levels.

PANEL A MODEL (1, 2, 1, 0, 0, 0, 1, 1, 1)						
Variables	Short run estimates			Long run estimates		
	Coefficient	T-stat	P-value	Coefficient	T-stat	P-value
LICOP	0.94	4.77	0.0001	0.74	4.63	0.0001
ERVOL	-0.00	-2.57	0.0171	-0.00	2.90	0.0080
LINF	-0.33	-4.73	0.0001	-0.26	-4.17	0.0004
LMPR	-0.53	-2.81	0.0098	-0.41	-2.83	0.0094
LPEXGR	0.13	3.89	0.0007	0.17	6.28	0.0000
GDPGR	-6.82	-3.77	0.0010	6.38	2.90	0.0079
LEDSP	0.00	2.67	0.0137	7.28	-0.66	0.5109
LTRDOP	-0.63	-5.19	0.0000	-0.91	-6.72	0.0000
PANEL B: JOINT STATISTICS						
STAT						
R²	0.99					

F-STAT	76(0.00)				
D-W STAT	1.80				
PANEL C: DIAGNOSTICS					
BG-LM	2.25 (0.16)				
BPG	0.66 (0.80)				
RESET	14.11(0.80)				
CUSUM	Stable				
PANEL D: SUMMARY OF BOUNDS TEST RESULT					
MODEL	Dependent variable	F-Stat	Critical value @5%		Inference
			I(0)Bound	I(1)Bound	
(1, 2, 1, 0, 0, 0, 1, 1, 1)	LEXR	8	2.11	3.15	Co-integration exists

The joint statistics are displayed in Table 7 panel B. The R^2 of the model indicates a test of goodness of fit. In the model, there is a 99% (0.99) variation in LEXR, which can be jointly explained by the explanatory variables. The 1% (0.01) unexplained variation is caused by factors not captured in the Model. In the Model, the F-stat is greater than 2.5 and the probability value is less than 0.05, which means that the model is statistically significant. The Durbin-Watson (D-W Stat) which is a test for first-order autocorrelation is approximately 2; which implies that there is no first-order autocorrelation.

There is a long-run relationship between the exchange rate and the explanatory variables, as shown by the dependent and independent variables' long-run elasticity. This implies that there is a co-integration between the variables. (See appendix for the ARDL long run forms and bound test).

The BG-LM is the test for higher autocorrelation for the diagnostics tests in Panel C of Table 4.7, and the insignificant p-value of the BG-LM test demonstrates that there is no higher autocorrelation for the models. The BPG is a test for heteroscedasticity. The BPG test's insignificant p-value implies that there are no heteroscedastic residuals in the model. The Ramsey RESET (Regression Error Specification Test) is insignificant (>0.05), which suggests that there is no specification error or misspecification in the model.

The CUSUM (cumulative sums of squares) graph from the result provides evidence in favor of parameter stability. The CUSUM line which is helmed in between two dotted red lines at a 5% level of significance indicates model stability. (See Appendix for CUSUM graph).

In Summary, the model is best, linear, and unbiased. This is due to the R^2 good test of fit. The F-statistics conclusion demonstrates the statistical significance of the whole regression. There is no higher autocorrelation, according to the diagnostic test, specifically the BG-LM test. The lack of heteroscedastic residuals in the outcome is demonstrated by the BPG's insignificance. The RESET test, which is supported by the CUSUM graph, demonstrates that the model is stable and without any specification error.

The bounds test is a test to ascertain the long-run relationship or co-integration between the variables. From the bounds test result in Panel D of Table 4.7, a long-run relationship can be found among all the explanatory variables to the external reserves. This implies the existence of a co-integrating relationship in the model with LEXR as the dependent variable, as the F-statistics is greater than the upper bound (3.15) as stated in the table above.

Having confirmed that the model is best, linear, and unbiased, we used them to test the hypothesis outlined in Chapter 1 of this study.

The table below presents the summary of the ARDL regression results, which is a robust method for exploring the long-term relationships among variables. The table outlines the key ARDL results including the coefficients, statistical significance, and implications of the variables in the model. These results form the foundation for subsequent in-depth discussion, offering insights into variable relationships and their significance for the research objectives.

The summary of results is shown in Table 6 and is the subject of discussion by the research objectives and in response to the research questions.

TABLE 6: Summary of findings.

Long run estimates			
Variables	Coefficient	P-value	Conclusion
LICOP	0.74	0.0001	Positive and significant
ERVOL	-0.00	0.0080	Negative and significant
LINF	-0.26	0.0004	Negative and significant
LMPR	-0.41	0.0094	Negative and significant
LPEXGR	0.17	0.0000	Positive and significant
GDPGR	6.38	0.0079	Positive and significant

LEDSP	7.28	0.5109	Positive and insignificant
LTRDOP	-0.91	0.0000	Negative and significant
BOUNDS TEST	8	3.15	Cointegration exists

Source: *Computed by the authors using E-views*

There is a long-run relationship between external reserves and the explanatory variables, as shown by the dependent and independent variables' long-run elasticity. This implies that there is a co-integration between the variables. (See appendix for the ARDL long run forms and bound test).

In line with this objective and using the ARDL model to test the hypothesis, the finding reveals that international crude oil price movement has a positive and significant effect on the external reserves in Nigeria both in the short run and in the long run. This means that a unit change in the crude oil price would lead to a 94% increase in the short run with a 74% increase in the long run. This could be attributed to the fact that as the international crude oil price rises, there would be an associated increase in the revenue from oil exports, which in turn boosts the external reserves. Furthermore, a policy implemented to diversify the economy would attract more foreign direct investments (FDI) which enhances the external reserves of the country.

In line with this objective and using the ARDL model to test the hypothesis, the result shows that exchange rate volatility has a negative and insignificant effect on the external reserves in the short run whereas, it has a negative but significant effect on the external reserves in the long run. These negative effects are evidenced by several factors prevalent in the country such as economic and political instability, which could lead to a decline in investments and foreign exchange inflows, which can impact negatively on the external reserves of the country. Additionally, the exchange rate volatility would be negative due to the high debt levels of the country as is the case of Nigeria and this unavoidably puts undue influence or pressure on the external reserves.

In line with this objective and using the ARDL model to test the hypothesis, the finding reveals that the inflation rate has a negative and significant effect on the short run and also has a negative but significant effect on the external reserves in Nigeria. In the short run, inflation can induce a decrease in the value of the currency, which can lead to a decrease in the country's external reserves. In the long run, inflation can erode the purchasing power of the currency which makes discourages holding foreign reserves in that currency. Furthermore, inflation can lead to a higher interest rate which discourages foreign direct investments. Based on these findings, when a country experiences a high inflation rate, it would lead to a decline in its external reserves.

In line with this objective and using the ARDL model to test the hypothesis, the result shows that the monetary policy rate has a negative and significant effect on external reserves in Nigeria both in the short run and in the long run. This implies that with a unit change in the monetary policy rate, there would be a 53% and 41% decrease in the short run and the long run respectively. This may be attributed to the fact an increase in the MPR discourages banks from borrowing from the central bank, which leads to a decrease in external reserves. Additionally, the MPR is used as a tool for inflation control, and when the country experiences high inflation, it leads to loss of confidence by the public in the currency and leads to a decrease in the demand for the currency, which in turn leads to a decrease in the external reserves.

In line with this objective and using the ARDL model to test the hypothesis, the finding reveals that the public expenditure growth rate has a positive and significant effect on the external reserves in Nigeria both in the short run and in the long run. This means that a unit change in the public expenditure growth rate would lead to a 13% increase in the short run with a 17% increase in the long run. This increase especially in the long run would lead to increased investment, which can in turn lead to increased exports, thereby leading to an increase in external reserves.

In line with this objective and using the ARDL model to test the hypothesis, the result shows that the GDP growth rate has a negative but significant effect in the short run while it has a positive and significant effect on the external reserves in the long run. The positive and significant effect in the long run can lead to an increase in the export demand, as more goods and services are produced and marketed internationally. This results in to increase in foreign exchange earnings thereby leading to an increase in the external reserve of the country. Additionally, a positive and significant GDP growth rate is an indicator of economic viability, and this leads to an increase in foreign direct investments (FDI) which leads to an increase in the external reserves of the country.

In line with this objective and using the ARDL model to test the hypothesis, the finding reveals that external debt servicing payment has a negative but significant effect in the short run, while it has a positive but insignificant effect in the long run on the external reserves in Nigeria. These external debt service payments serve as an indicator of commitment to repay debts owed, which in turn attracts foreign investments and boosts investor's confidence. Again, these payments increase the country's credit rating thereby making it easier for them to borrow money. However, a factor such as fiscal deficit can limit the ability of the country to use the funds from the debt service payments to boost its external reserves.

In line with this objective and using the ARDL model to test the hypothesis, the result shows that trade openness has a negative and significant effect on the external reserves in Nigeria both in the short run and in the long run. This suggests that a unit change in the value of trade openness leads to a 63% and 91% decrease in the short run and the long run respectively. Based on this, the results suggest that trade openness can lead to a decline in the country's terms of trade as imported commodities become cheaper and exported goods become much more expensive. This would lead to a decline in the country's currency and subsequently lead to a decrease in its external reserves. Furthermore, trade openness leads to a net outflow of capital as investors take their investments to other viable places in search of higher returns. This reduces the external reserves of the country

CONCLUSION

This study examined the Effect of selected macroeconomic variables on External Reserves Management in Nigeria (1981-2022). Good literature exists on both macroeconomic variables and external reserves management. As part of this study, relevant literature was reviewed. However, there are just a few empirical studies available to address this phenomenon. That points us to the research gaps and the needs for this study. It is on this premise that this study adds to the existing body of knowledge within the study focus areas. Theories reviewed include mercantilist, precautionary (self-insurance), liquidity preference, classical (quantity), Keynesian, monetarist, exogenous growth, endogenous growth theories, etc. The study found that crude price movement, economic growth, public expenditure growth, all had positive and significant impact on external reserves management. Exchange rate volatility, monetary policy rate and trade openness were found to have adverse and significant effects on external reserves.

It is recommended that the Central Bank of Nigeria (CBN) should ensure the exchange rate stability of Naira in the major currencies of the world. Different exchange stability measures can be pursued. The exchange rate stability of the Naira will bring a positive effect on the external reserves in Nigeria. The Central Bank of Nigeria (CBN) should ensure price stability in Nigeria. Effective monetary and fiscal policies should be vigorously pursued to ensure price stability. Price stability in Nigeria will bring a positive effect on the external reserves in Nigeria. Debt should be procured for only productive purposes. Effective and efficient debt management strategies should always be implemented by debt management authorities. The Central Bank of Nigeria (CBN) should ensure reduced and stable Monetary Policy Rates. Reduced and stable monetary Policy Rates policy should be encouraged, Reduced Monetary Policy Rates will stimulate the growth of the external reserves in Nigeria. Public expenditures should be encouraged by fiscal authorities especially on productive sectors of the economy, since the public expenditure growth rate has a Positive and significant effect on external reserves in Nigeria.

The focus on the growth rate of the economy should be emphasized. The government should primarily ensure a targeted and successive growth rate of the economy over time. This will have a continuous positive and significant effect on external reserves in Nigeria. There is an urgent need to overhaul Nigerian trading activities. Export promotion and Import substitution measures should be pursued aggressively. The Nigerian unfavorable trading position with the rest of the world is reversed. Besides, an increase in domestic production can help to overturn the negative trading position with the rest of the world so as to engender growth of external reserves. It established empirically that macroeconomic variables influence external reserves management in Nigeria. It was very clear that while some macroeconomic variables influence external reserves positively, other macroeconomic variables influence external reserves management negatively. Conceptually, we created a fresh model to explain how macroeconomic factors and Nigeria's external reserves relate to one another. The Model modification concerning Auto-Regressive Distributive Lag (ARDL) was not used in previous Nigerian works on external reserves management and the same macroeconomic variables.

No empirical work on Macroeconomic variables and external reserve management ever covers the same robust time frame between 1981-2022. The study also reviewed various theories that were not exactly reviewed in other empirical studies. Though various findings emanated from this study, no volume of research can exhaust and cover the problem since research is progressive. Thus, it is necessary to conduct further studies to achieve a more robust and holistic evaluation of the major subjects and related issues. Apart from the studied variables, other perceived macroeconomic variables that may influence the external reserves management in Nigeria can also be considered for further research.

REFERENCES

1. Abdullazeez, A.B. (2011). External reserve management and economic growth in Nigeria, (1980-2008). *Europeans Journal of Business Management*, 3(11), 1-9.
2. Abeng (2007). *Foreign Reserves Accumulation: Implications for the Economy*, Central Bank of Nigeria

- Bullion, 31 (3), 32-50
3. Aizenman, J., & Marion, N.P. (2002). The high demand for international reserves in the far east Asia. What is going on? *Journal of the Japanese and International Economies*, 17(3), 370-400.
 4. Aizenma, J. D., Riera-Crichton, & S., E. (2012). The Role of Exchange Rate and International Reserves Policies. *Review of Economics and Statistics*, 1 - 20.
 5. Aizenman, J., & Lee, J. (2005). International reserves: Precautionary vs. mercantilists Views: Theory and Evidence, NBER Working Paper 11366, National Bureau of Economic Research.
 6. Akims, M.A (2013) Effect of Macroeconomic Factors on External Reserves in Nigeria (1981-2014). A thesis for Master of Science in Kenyetta University.
 7. Akinwunmi, A. A., & Adekoya, R. B. (2016). External reserves management and its effect on economic growth of Nigeria. *International Journal of Business and Finance Management Research*, 4, 36-46.
 8. Andriyani, K., Marwa, T., Adnan, N., & Muizzuddin, M. (2020). The Determinants of Foreign Exchange Reserves: Evidence from Indonesia. 7(11), 629–636.
 9. Ayesha, A., & Cooray, N. S. (2021). The Nexus of Foreign Reserves, Exchange Rate and Inflation: Recent Empirical Evidence from Sri Lanka. *South Asia Economic Journal*, 29 - 72.
 10. Apera, O.T., & Maxwell, I. (2013). Macroeconomic impact of oil price levels and volatility in Nigeria. *International Journal of Academic Research in Economics and Management Sciences*, 2(4), 23-28.
 11. Arunachalam, P. (2010). Foreign exchange reserves in India and China. *African Journal of Marketing Management*, 2 (4), 66 – 29.
 12. Asemota, O.J., & Bala, D.A. (2012). Modelling tourism in Japan using cointegration and error correction model. *International Review of Business Research Papers*, 8 (2), 29-43.
 13. Asogwa, J. O., Onyekwelu, U. L., & Okechukwu, E, (2018). Evaluation of the effect of federal government external debts and reserves on economic growth in Nigeria. *Journal of Economics and Sustainable Development*, 9(6), 34-44.
 14. Asogwa, J. O., Onyekwelu, U. L., & Okechukwu, E, (2018). Evaluation of the effect of federal government external debts and reserves on economic growth in Nigeria. *Journal of Economics and Sustainable Development*, 9(6), 34-44.
 15. Awoderu, B. K., Ochalibe, A. I., & Obekpa, H.O. (2017). Policy implications of long-run relationship between external reserve and economic growth in Nigeria. *International Journal of Academic Research and Reflection*, 5(1), 82 - 95.
 16. Awosusi, C. T. (2022). An Assessment on the Linkage between External Reserves and Economic Performance in Nigeria. *Fuoye Journal of Finance and Contemporary Issue*, 2(1), 12-20.
 17. Awujola, A., Obumneke, E., & Oniore, J.O. (2014). Fiscal deficits and foreign reserves evidence from Nigeria. *International Journal of Economics, Commerce and Management*, 2(10), 1– 16.
 18. Ayukun, P. E., & Markjackson, D. (2020). Impact of external debt on Nigeria's foreign reserve portfolios. *Asian Journal of Economics and Empirical Research*, 7(1), 1-7.
 19. CBN. (2007). Building and Managing External Reserves for Economics Development. *The CBN Bullion*, Vol. 31 No. 2.
 20. CBN (2007). Reserves consumption and the future of savings: what options. *Central Bank of Nigeria Bullion*, 2(1), 1-4.
 21. CBN (2022) *Central Bank of Nigeria Statistical Bulletin*; A publication of the Research Department, Central Bank of Nigeria,
 22. Çetin, H. (2013). Time Series Analysis of China's External Debt Components, Foreign Exchange Reserves and Economic Growth Rates, *The International Journal of Social Sciences*, 13(1), 1-15. 9.
 23. Charles-Anyagou, N. B. (2012). External Reserves: Causality Effect of Macro Economic Variables in Nigeria. *Kuwait Chapter of Arabian Journal of Business and Management Review* 1 (12), 14 - 27.
 24. Chaudhry, I.S., Zakariya, B., Akhtar, M.H., Mahmood, K. & Faridi, M.Z. (2011). Foreign Exchange Reserves and Inflation in Pakistan: Evidence from ARDL Modeling Approach, *International Journal of Economics and Finance*, 3(1), 69-76.
 25. Chen, R. (2013). The Impact of China's Foreign Exchange Reserves on Currency Mismatch, *International Conference on Education and Management Science (ICETMS)*, held at Nanjing, Jiangsu, China, June 8-9, 2013.
 26. Chinaemerem, O. C. (2012). Analysis of Effect of External Reserves Management on Macroeconomic Stability of Nigeria. 3(6), 646–654.
 27. Chinaemerem, O.C., & Ebirinya, O.T (2012). Analysis of the effect of external reserves management on macroeconomic stability in Nigeria, *International Journal of Business Management and Economic Research*, 3(6), 646-654.
 28. Chinweobo, U. (2013). Accumulation of External Reserves and Effects on Exchange Rates and Inflation in Nigeria. 6(2), 105– 114.
 29. Dhakal, G.P. (2007). Foreign reserves: Potential source of finance for development, lesson in good practices from selected countries, *Asia-Pacific and Investment Review*, 3(1), 1-10.
 30. Dominguez, K.M., Fatum, R., & Vacek, P. (2010). Do foreign exchange reserves de-cumulation lead to currency appreciation? *EPRU Working Paper Series*. No 6, 1-36.

31. Dominguez, K.M and Kathryn M. E. (2010). International reserves and underdeveloped capital markets. In NBER International Seminar on Macroeconomics 2009 NBER Chapters (National Bureau of Economic Research, Inc.) 193–221.
32. Dornbusch, R., Fishers, S., & Startz, I. (2008), *Macroeconomics*. 10th ed. New York: McGraw- Hill, Irvin.
33. Doroodian, K. (1994). An examination of traditional aggregate import demand functions for Saudi-Arabia. *Applied Economics Review*, (26), 909-915.
34. Egwakhe, A.J., & Osabuohien, E.S. (2008). External reserve and the Nigerian economy: The dual folded debate. *African Journal of Business and Economic Research*, 3(2&3), 28-41.
35. Evans, S. C. O. and Egwakhe, A. J. (2008). External Reserves and the Nigerian Economy. *African Journal of Business and Economic Research*, 3(2) 28-41
36. Elhiraika, A., & Ndukuma, L. (2007). Reserves accumulation in African countries. Sources, motivation and effects, ADOB & ECA Paper.
37. Eniekezimene, F. A., & Apere, T. O. (2016). External reserve management and economic growth in Nigeria. *International Journal of Empirical Finance*, 5(2), 101-111.
38. Eur. J. Bus. Innov. Res. 2(2):19-31. Ibrahim W. (2011). External reserves holdings in Nigeria: Implications for investment, inflation and exchange rate. *J. Admin. Policy Res.* 3(4):106-112.
39. Fapetu O. & Oloyede J. A. (2014). Foreign exchange management and the Nigerian economic growth.
40. Fapetu, O., Daramola, K., Adewumi, P., Onigah, P. O. (2023). Effect of Exchange Rate on Stock Performance in Nigeria. *Fuoye Journal of Management, Innovation and Entrepreneurship*, ISSN: 2814-2578. Vol. 2. No. 1.
41. Fukuda, S., & Kon, Y. (2010). Macroeconomic impacts of foreign exchange reserve accumulation theory and international evidence. ADBI Working Paper. 197, 9 – 21.
42. Fukuda, S., & Kon, Y. (2007). Macroeconomics impacts of foreign exchange reserve accumulation: a theory and some international evidence. *Journals of Economic Modeling: Vol 2*, 75 - 90.
43. Goseline, & Parent, N. (2003). An empirical analysis of foreign exchange reserves in emerging Asia. *Journal of Financial Services*, 1-2.
44. Gosseline, M., & Parent, N. (2005) In Elhiraika, A., & Ndikumana, L. (2007). Reserve accumulation in African countries: Sources, motivation and effect. Illinois University of Massachuset press.
45. Goudazi, H., & Ramanarayana, C.S. (2011). Empirical analysis of the impact of foreign exchange institutional investment in Indian stock market volatility during World financial crisis, 2008-2009. *International Journal of Economics and Finance*, 3(3), 214.
46. Guha, K. (2009). International Monetary Funds. Washington: Paulson Gokhale, M. S., & Raju, J. V. R. (2013). Reserves in the Indian Context. 13(7).
47. Imarhiagbe, S. (2015). Examining the impact of crude oil price on external reserves: Evidence from Nigeria. *International Journal of Economics and Finance*, 7(5), 13 – 21.
48. International Monetary Fund, IMF (2001). Guidelines for foreign exchange reserves management, International Monetary Fund September.
49. International Monetary Fund, IMF (2003a). Are foreign exchange reserves in Asia too high? *World Economic Outlook*. Pp. 63-77. International Monetary Fund, IMF (2003b). Guidelines for foreign reserves management, approved by the executive board.
50. International Monetary Fund, IMF (2009). International Monetary Fund, Annual Report.
51. International Monetary Fund (2003). Guidelines for Foreign Exchange Reserves Management.
52. International Monetary Fund (2004). Guidelines for foreign Exchange Management, IMF, Washington DC.
53. International Relation Committee Taskforce (2000). The accumulation of foreign reserves. Retrieved Dec, 12, 2000 from <http://www/ecb.int>.
54. Izekor, A. O., & Aigbovo, O. (2018). Exchange Rate Instability and Nigerian Foreign Exchange Reserves (1993 – 2016): Short Run and Long Run Analyses. 3(1), 50–60.
55. Kalu, E. U., Ugwu, O. E., Ndubuaku, V. C., & Ifeanyi, O. P. (2019). Exchange Rate and Foreign Reserves Interface: Empirical Evidence from Nigeria. *The Economics and Finance Letters*, 6(1).
56. Kalu, E. U and Ibe, G.I (2022) Macroeconomic Variables and Bitcoin Volatility: A Direct and Reverse Causation Investigation. *Journal of Banking - ISSN:1597-2569*, Vol. 10, No. 1 P, 53-74.
57. Evidence from India. *International Journal of Engineering and Management Research*, 5(2), 583-589.
58. Kashif, M., Sridharan, P., & Thiyagarajan, S. (2017). Impact of economic growth on international reserve holdings in Brazil. *Brazilian Journal of Political Economy*, 37(3) 605-614.
59. Kelikume, I., & Nwani, S. E. (2019). A Vector Autoregression Analysis of the Efficacy of External Reserves Management on Exchange Rate Stability: Evidence from Nigeria. 24(January 2010).
60. Krušković, B. D., & Maričić, T. (2015). Empirical analysis of the impact of foreign exchange reserves to economic growth in emerging economics. *Applied Economics and Finance*, 2(1), 102-109.
61. Koutsoyiannis, A. (2001). *Theory of econometrics*, New York: Palgrave, 2nd edition. 48-100. Kramer, S. (2010). International reserve accumulation and endogenous growth.
62. Kyereboah, O., & Coleman, A. (2009). Reserves and foreign exchange rates in macroeconomic context. WAIFEM, May 11-15, 2009, Accra Ghana.

63. Lee (2005). The Demand for International Reserves and Exchange Rate Adjustment: the case of LDCS. *Economic*, 50, 269-280.
64. Nwafor, M. C., & Okoye, G. (2017). External Reserves: Panacea for Economic Growth in Nigeria. *European Journal of Business and Management*, No, 33.
65. Nwambecke G. C. and Archibong S. E. (2019) Macroeconomic Implications of External Reserves Management in Nigeria: 1986–2016, *IOSR Journal of Humanities and Social Science (IOSR- JHSS)* Volume 24, Issue 10, Series. 5 e-ISSN: 2279-0837, p-ISSN: 2279-0845.
66. Nwosa, P. I. (2017). External reserves on economic growth in Nigeria. *Journal of Entrepreneurship, Business and Economics*, 5(2), 110–126.
67. Obadan, M. I. (2012). *Foreign Exchange Market and the Balance of Payments: Elements, Policies and the Nigerian Experience*. University of Benin, Benin City.
68. Obaseki, P.J. (2007). Sources currency composition and uses of external reserve. *CBN Bullion*.31 (2), April-June.
69. Obaseki, P. J. (2007). *Foreign Exchange Management in Nigeria. Past, Present and Future*. CBN Economic and Financial Review, 29(1) 125-132.
70. Obstfeld Maurice; Jay C. Shambaugh; and Alan M. Taylor (2010). Financial stability, the trilemma, and international reserves. *American Economic Journal: Macroeconomics* 2(2) 57–94.
71. Ojiako, I. A. (2020). Linkages between external reserves and economic performance in Nigeria, 1981-2018: Bounds test and ARDL approaches. *South Asian Journal of Social Studies and Economics*, 6(1), 44-62
72. Okoyeuzu, R. C, Kalu, E. U. Onah, E, and Ukpere, W.I (2022) Relating stock market performance to macroeconomic variables in developing Economies. *Economics of Development Vol*, 21(3).
73. Olayungbo, D. O., & Akinbobola, T. O. (n.d.). *Foreign Exchange Reserves and Exchange Rates in Nigeria: Structural Breaks, Unit Roots and Cointegration Tests*. 1, 1–9.
74. Onaga, F. I., Arize, A. C., Onwumere, J. U. J, and Kalu, E.U. (2023) Monetary policy transmission channels and the performance of the real sectors in selected sub-Saharan African countries: a system-GMM approach. *Future Business Journal*, October.
75. Onwumere, J. U. J. (2021). *Business, Economics and Social studies Research Methods*, 4th Edition, ISBN: 978-036-551-6, Immaculata Publications Limited, Enugu.
76. Onwumere, J. U. J., Okore, O. A., Ibe, I. G. (2012), *The Impact of Interest Rate Liberalization on Savings and Investment: Evidence from Nigeria*, *Research Journal of Finance and Accounting*, 3(10), 130-136.
77. Oputa, C.N. (2006). Determinant of currency composition of external reserves in Nigeria: An empirical investigation. *Central Bank of Nigeria (CBN) Economic and Financial Review*.v35(1), 23-41.
78. Osabuohien, E.S., Olokoye, F.O., & Salami, A. (2009). Econometric analysis of foreign reserves and some macroeconomic variables in Nigeria: 1970-2007. *African Development Review*, 21(3), 454-475.
79. Osabuohien. A., & Egwakhe, B. (2008). External reserves and the Nigerian economy: the dual folded debate. *African Journal of Business and Economic Research*, 3 (2&8), 28-41.
80. Osabuohien, E.S.C. & Salami, O.A. (2009). *Econometric Analysis of Foreign Reserves and Some Macroeconomic Variables in Nigeria (1970–2007)*, *African Development Review*, 21(3), 454-475.
81. Omolade, A. & Ngalawa, H. (2016). Monetary policy transmission mechanism and growth of the manufacturing sectors in Libya and Nigeria. *Journal of Entrepreneurship, Business and Economics*, 5(1), 67-107.
81. Osuji, C. C., & Ebiringa, O. T. (2012). Analysis of effect of external reserves management on macroeconomic stability of Nigeria. *International Journal of Business Management and Economic Research*, 646 - 654.
82. Osuji C. C. & Ebiringa O. T. (2012). Analysis of effect of external reserves management on macroeconomic stability of Nigeria. *Int. J. Bus. Manage. Econ. Res.* 3(6):646-654.
83. Papadavid, P. (2016). Assessing reserve management during economic crises Lessons from Indonesia and Nigeria. *Shockwatch Bulletin*, 1 – 36.
84. Pesaran M.H., Shin Y. & Smith R.J. (2001). Bounds testing approaches to the analysis of level relationships, *Journal of Applied Econometrics*, 16, 289-326.
85. Prabheesh. (2007). Demand for Foreign Exchange reserves in India: A Cointegration approach, *South Asian Journal of management*, 14: 36-46.
86. Rebelo, Sergio T. (1991): "Long-Run Policy Analysis and Long-Run Growth," *Journal of Political Economy*, 99(3), 500–521.
87. Udo A. B. & Antai A. S. (2014). Opportunity Cost of Nigeria's External Reserves. *Journal of Economics and Finance*. 3(5): 7-16.
88. Ujunwa. A, Onah E., Ujunwa, A.I., Okoyeuzu, C.R and Kalu, E.U (2022). "Financial innovation and the stability of money demand in Nigeria," *African Development Review*, African Development Bank, vol. 34(2), pages 215-231, June.