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The Nexus amid Government Spending and Foreign Exchange Reserves in Nigeria

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Abstract: Nigeria and many other primary product-based export economies struggle from having enough foreign exchange reserves because it helps them meet their international financial obligations, which include paying for goods and services overseas and maintaining the value of their currency. Sequel to this, this study evaluates the nexus amid government spending and foreign exchange reserves in Nigeria. The study employed VECM to analysis the data obtained from Central Bank of Nigeria and World Development Indicators, 2021 covering 1986-2021. The findings of the study revealed there is cointegration between foreign exchange reserves and other employed independent variables. The coefficient of government spending has a detrimental impact on FORES, as was indicated. Accordingly, a 0.26% decrease in FORES will result from a percentage increase in government spending. The study recommends that efforts should be made to expand revenue-generating strategies while also reducing spending. The current administration should be urged to prioritize and carry out measures that will broaden the tax base, particularly to include economic agents in the informal sector who may be eligible and contribute to increasing tax revenue, in light of the issues raised by the ongoing negative budget balance. encouragement of growth and development driven by the private sector.

Keywords:

1. Introduction

The financing difficulties faced by the least developed countries are nothing new to scholars, researchers, and decision-makers. In essence, the primary goal of holding foreign reserves (FORES) is to support monetary and international exchange rate

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policies. Having sufficient FORES is advantageous for Nigeria and many other primary product-based export economies because it helps them satisfy their international financial commitments, which include paying for goods and services abroad and keeping the value of their currency stable. Furthermore, during times of crisis, FORES serve as a source of funding for excessive government spending (Akpan, 2016). Osigwe et al. (2015) claim that having a sufficient amount of FORES enhances a nation's credit worthiness and acts as a buffer when access to the global capital market is challenging or impossible. Furthermore, it enhances the nation's standing by permitting consistent repayment of the foreign debt and circumventing penalties and levies for nonpayment. In order to uphold the country's foreign payment requirements as well as the exchange rate policy, the central bank must thus maintain a strong and sufficient holding of FORES. Previous study on bank financial performance has revealed a number of research gaps. For instance, time series data from a single country was combined with economic growth in the research conducted by (Alfaro et al.; 2005; Benito et al.; 2018; Manuel et al.; 2023; Victoria et al.; 2016; Senibi et al.; 2016; Shariful et al.; 2018; Peter et al.; 2020) to examine the variables under consideration.

They only looked at the direction of causation with the relevant factors and took into account the total amount of foreign debt; they even produced inconsistent conclusions. (Higgins et al.; 2004; Garton, 2005; Shin-Ichi et al.; 2007; Jochen, 2019) and other empirical studies exclusively examined the benefits and implications of FORES accumulation. Others (Layal, 2013; Khomo et al.; 2018) thought about the role that FORES will play in emerging nations' economies growing. Moreover, a small body of research has empirically connected external debt and FORES without taking into account the significance of government spending and the real exchange rate in the relationship between the two variables (Fukuda et al.; 2010; Quilent, 2015). This highlights a number of study gaps that should be investigated in later investigations.

Because of these limitations, the goal of this study is to fill past research gaps by developing a thorough research model on how government expenditure affects foreign exchange reserves. It is anticipated that this method would produce the most thorough and accurate results. In addition, the study sample is used across the country to appropriately represent Nigeria's economic environment. This study examines the relationship between government spending and FORES in Nigeria (1986–2022) using quantitative research methods. This research approach will provide a comprehensive image of FORES in Nigeria generally. The writers then create suggestions for governments and legislators to enhance government expenditure and FORES.

Fiscal policy's macroeconomic impact on FORES often materializes as a result of ongoing budget deficits brought on by rising public spending. The fiscal deficit is

"an economic phenomenon where the government's total expenditure surpasses the revenue generated (Gupta et al.; 2016), It calculates the amount of debt held by the government and the degree to which it spends more than it takes in. According to Abayomi et al. (2014), there is a belief that a budget deficit is not always a negative economic phenomenon because it can be a highly useful instrument for accelerating economic growth in many developing nations.

A fiscal deficit is typically advantageous to the economy if it is the result of spending on investments, especially capital projects that are intended to boost the nation's social welfare, create jobs, and stimulate economic growth. But over time, high and continuous fiscal deficits can lead to unsustainable macroeconomic imbalances, such as the depletion of FORES, which makes it harder for decision-makers in the economy to recognize current problems and economic trends and calls for more research.

The results of this study can be used by scholars and the government to develop theoretical frameworks for foreign reserve behaviors and to further explore the intricacies of foreign reserves. This study is significant because it has the potential to improve policy decisions, promote scholarly understanding of Nigeria's foreign reserves, improve foreign reserves practices, and accelerate economic growth. In the end, this will help build a robust and long-lasting foreign reserve that helps people, local economies, and the national economy.

2. Literature Review

Although there is little empirical research on government spending and foreign exchange reserves in Nigeria, the subject is hotly discussed both internationally and locally. The empirical research covered below has shown that FORES in developed, emerging, and developing economies is influenced by a number of macroeconomic factors.

The literature's rationale for classifying foreign exchange reserves appears to be more significant now that there is a noticeable resurgence of interest in the subject (see, for example, Bošnjak et al.; 2020; Chaudhary et al.; 2005; Athanasenas et al.; 2014; Asimiyu et al.; 2013; Francis et al.; 2016; Irefin et al.; 2012; Kinwunmi et al.; 2016; Samuel et al.; 2016).

In 2020, Andriyani et al. conducted an analysis of the factors influencing FORES in Indonesia. The ARDL cointegration approach was utilized by the study to analyze variables that served as explanatory factors, including exports, inflation, exchange rate, and foreign debt. The research's conclusions showed that exports, inflation, foreign debt, and exchange rates all had a big impact on Indonesia's simultaneous FORES variation. Foreign debt significantly and favorably impacted FORES, at least

in part. FORES was severely impacted negatively by the currency rate, while FORES reserves in Indonesia were not significantly impacted by inflation. FORES was significantly and favorably impacted by exports.

Baksay et al. (2012) state that the ideal level of FORES in Hungary was influenced by the amount and composition of the country's foreign exchange-denominated public debt. The study examined how Hungary's public debt strategy and FORES management interacted in emerging markets. The Guidotti-Greenspan rule, which stipulates that reserves should equal a nation's short-term foreign debt, was implemented in the study. The analysis included the years 1990 to 2011. The analysis discovered that issuing foreign currency debt had a major role in FORES's expansion. Nevertheless, the beneficial effect was only transitory and might provide significant challenges to the evaluation of FORES sufficiency, particularly in times of crisis when it is challenging to refinance maturing debt at a time when the reserve requirement may still be increasing for a variety of reasons. Additionally, it can have an impact on the central bank's earnings as well as the national debt and deficit.

Furthermore, Chowdhury et al. (2014) deduced that FORES in Bangladesh is significantly impacted over the long term by the exchange rate, remittances, home interest rate, broad money, import and export, and per capita GDP. Using yearly data from 1972 to 2011, the study carried out an Engle Granger residual-based co-integration analysis of the factors influencing FORES. These variables included remittances as a percentage of GDP, the exchange rate, the difference in inflation rates, the unit price index of imports and exports, foreign aid as a percentage of GDP, and per capita GDP. The empirical findings verified that foreign exchange reserves, exchange rate, remittances, home interest rate, wide money, unit price index of import and export, and per capita GDP are all strongly correlated.

The study came to the conclusion that Bangladesh can sustain a healthy level of FORES with the help of the exchange rate, a robust remittance-related policy, high-quality exports, and a sustainable GDP. However, the study did not include any financial aspects. Similarly, in North Macedonia and Serbia, Bosnjak et al. (2020) discovered that the money supply (M2) and exchange rate were important predictors of FORES. Using quarterly data for the years 2005q1–2019q1, their study used a quantile regression approach to investigate the factors that influence and the characteristics of FORES in Serbia and North Macedonia. The findings allowed for a comparison between the two nations and demonstrated co-movements between monetary policy and economic fluctuations. They also identified quantile-dependent determinants of foreign exchange reserves.

The study came to the conclusion that the real effective exchange rate, the GDP level, and the monetary aggregates M2/GDP strongly influenced the FORES for North Macedonia. The real exchange rate and the monetary aggregate M2/GDP are important factors that influence FORES in Serbia. In eleven Southern African

nations, Sanusi et al. (2019) discovered that capital inflows, import, export, exchange rates, and inflation were the factors influencing FORES. Using annual data sets covering the years 1990–2015, they used the ARDL technique within a panel econometric framework. Variables including capital inflows, exports, inflation, exchange rates, and imports were included in the FORES model. They discovered a long-term correlation between the variables, and the major predictors of foreign reserve holdings were imports, exports, inflation rate, and currency rate. All factors, excluding import demand, have a long-term beneficial impact on reserve. Conversely, over the long term, reserve holdings were found to be unaffected by capital inflows. The short-term results demonstrated that reserve holdings were not significantly influenced by any of the independent variables, with the exception of exchange rate. The study came to the conclusion that a major factor influencing FORES in Southern African nations is "fear of floating," as opposed to "fear of capital." This analysis does not include any fiscal factors, such as government spending, external debt, or the fiscal deficit. Consequently, under the present situation, investigating the relationship between the factors in use is crucial.

3. Material and Method

The first step in doing this research was gathering pertinent data from reputable sources on government spending, external debt, real exchange rate, foreign exchange reserves, and other factors. An analysis of the annual data from 1986 to 2022 was conducted in order to test the study's hypothesis. Additionally, the WDI, 2022 provided the data on foreign reserves, while the Central Bank of Nigeria Statistical Bulletin (CBN, 2022) provided the data on the other variables used in the study.

Table 1 lists the variables along with their definitions and corresponding symbols. Because the data utilized in this study was sourced from multiple reliable sources, a full and reliable empirical inquiry could be carried out.

Table 1.

Var. Name	Symbol	Description	Source
Foreign exchange reserves	FORES	External reserves measured in US$	CBN
Real Exchange rate	REXR	Real effective exchange rate indices for Nig	CBN
Gross domestic product	GroDP	GDP per capita (current US $)	WDI
External debt	EDT		
Government spending	GSP		
Aggregate money demand	M-2		

Source: Author's Compilation, 2024

Specification of the Model

Following the formulation of the research model, the theoretical framework and research objectives were taken into consideration. Based on Manuel et al. (2023). The equation that was utilized in the investigation was described as follows:

$$RES = f(ED, CA, GX, REER, M2) \quad (1)$$

The current study adopts the model and uses Nigerian data to evaluates the model in Nigeria context

The econometric specification of the model is specified below:

$$FORES = EDT + REXR + GroDP + GSP + M\text{-}2 \quad (2)$$

$$FORES = \beta_0 + \beta_1 EDT + \beta_2 REXR + \beta_3 GroDP + \beta_4 GSP + \beta_5 M\text{-}2 \quad (3)$$

$$FORES = \beta_0 + \beta_1 EDT + \beta_2 REXR + \beta_3 EGroDP + \beta_4 GSP + \beta_5 M\text{-}2 + \varkappa \quad (4)$$

$$FORES = \beta_0 + \beta_1 EDT + \beta_2 REXR + \beta_3 GroDP + \beta_4 GSP + \beta_5 M\text{-}2 + \hat{e} \quad (5)$$

Utilizing sophisticated methods (VECM, Johansen Cointegration test, and Exogeneity test), the relationship between the rise in government spending and other explanatory variables was examined. These variables consist of M-2, GroDP, REXR, EDT, and GSP. It is preferable to employ robust techniques to increase the empirical results' trustworthiness. Even in cases where the economic data contains outliers, which happen frequently, this approach can produce reliable parameter estimates. The ability of the VECM approach to lessen the influence of outliers keeps these extreme observations from having an unbalanced impact on the regression results, which is a significant advantage (Adekunle, et al.; 2023). Furthermore, when there is a violation of the homoscedasticity assumption or when the error terms do not follow a normal distribution, the VECM technique provides estimates that are more accurate than ordinary least squares. It is particularly useful for examining datasets that might have different variances or non-normality, which improves the validity and dependability of the statistical conclusions drawn from the research.

This study aims to resolve potential econometric challenges while determining the relationship between government spending and foreign reserves in relation to other explanatory variables through the use of the VECM analysis technique. By employing this methodology, the validity and reliability of the empirical results are guaranteed, which advances our understanding of the factors influencing the dynamics of FORES in Nigeria.

4. Results and Discussion

Testing the order of cointegration of the data used in the model is required by the methodological requirements because data that is cointegrated of order 2 contradicts or deviates from the VECM procedures. Therefore, it is imperative to conduct these tests at the outset of any study, as the inclusion of variables integrated of order I (2) and higher in the regression may lead to erroneous and misleading conclusions. Table 1 present the unit root and Table 2 shows the lag selection criteria (@2).

Table 2. Unit root

		ADF (H_0)				DF (H_0)			
		DF_α				ERS_α			
	$z_{.t}$	$\tau_{.\mu}$	1%	5%	Prob.	τ_τ	1%	5%	Prob.
Intercept without Time Trend	$GrDPPC$	1.21	3.63	-2.94	0.53	0.61	2.63	1.95	0.67
	$FORES$	0.84	3.64	2.95	0.79	0.42	2.63	1.95	0.77
	$M2$	3.57	3.63	2.94	0.01	3.07	2.63	1.95	0.00
	$EXTD$	1.37	3.63	2.95	0.99	1.40	2.63	1.95	0.17
	RER	1.00	3.63	2.94	0.74	0.93	2.63	1.95	0.35
	GSP	3.09	3.63	2.95	0.03	1.93	3.67	2.96	0.31
	$\Delta GrDPPC$	4.63	4.32	3.58	0.00	2.70	3.77	3.19	0.01
	$\Delta FORES$	5.55	3.64	2.95	0.00	5.63	2.63	1.95	0.00
	$\Delta M2$	6.37	3.63	2.95	0.00	5.53	2.63	1.95	0.00
	$\Delta EXTD$	4.38	3.63	2.95	0.00	0.42	3.77	3.19	0.67
	ΔRER	3.19	4.25	3.54	0.10	3.01	3.77	3.19	0.00
	ΔGSP	8.82	3.63	2.95	0.00	6.09	3.67	2.96	0.00
Intercept with Time Trend	$GrDPPC$	5.64	3.64	2.95	0.00	3.78	2.63	1.95	0.00
	$FORES$	1.78	4.26	3.55	0.68	4.94	2.63	1.95	0.00
	$M2$	4.04	4.24	3.54	0.01	3.64	3.77	3.19	0.00
	$EXTD$	0.29	4.24	3.54	0.99	4.02	2.63	1.95	0.00
	RER	5.64	3.64	2.95	0.00	3.80	2.63	1.95	0.00
	GSP	3.44	4.24	3.54	0.06	0.62	4.29	3.56	0.05
	$\Delta GrDPPC$	4.47	4.28	3.55	0.00	4.56	3.77	3.19	0.00
	$\Delta FORES$	5.46	4.26	3.55	0.00	5.07	3.77	3.19	0.00
	$\Delta M2$	6.27	4.25	3.55	0.00	6.24	3.77	3.19	0.00
	$\Delta EXTD$	4.94	4.25	3.54	0.00	4.74	3.77	3.19	0.00
	ΔRER	5.49	4.25	3.55	0.00	5.03	3.77	3.19	0.00
	ΔGSP	8.63	4.25	3.54	0.00	2.07	2.63	1.95	0.00

Source: Author's compilation, 2024

Table 3. Selection of Lags

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-2210.980	NA	1.74e+49	130.4106	130.6799	130.5024
1	-2102.272	172.6526	2.51e+47	126.1337	128.0192*	126.7767
2	-2053.115	60.72329*	1.43e+47*	125.3597*	128.8614	126.5539*

Source: Author's compilation, 2024

5. Johansen Cointegration Test (JCT)

The null hypothesis of no co-integration is rejected since at all levels of significance, which implies that there is a long-run relationship among these variables. This is because the Trace and Eigenvalue statistic indicate cointegration at most 2*. A confirmation of cointegration in this study proves that there is a long-run relationship between FORES and other independent variables employed in the study. Furthermore, the existence of cointegration relationships in the model means Vector Error Correction Model (VECM) of FORES can be further investigated.

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	0.05 Critical Value	Prob.**
None *	0.780287	146.2751	103.8473	0.0000
At most 1 *	0.710646	96.26579	76.97277	0.0008
At most 2 *	0.662327	55.34235	54.07904	0.0384
At most 3	0.285663	19.51503	35.19275	0.7565
At most 4	0.168391	8.413818	20.26184	0.7894
At most 5	0.068138	2.328844	9.164546	0.7118

Source: Author's compilation, 2024

Table 4 Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None *	0.780287	50.00929	40.95680	0.0037
At most 1 *	0.710646	40.92344	34.80587	0.0082
At most 2 *	0.662327	35.82732	28.58808	0.0050
At most 3	0.285663	11.10121	22.29962	0.7407
At most 4	0.168391	6.084974	15.89210	0.7784
At most 5	0.068138	2.328844	9.164546	0.7118

Source: Author's compilation, 2024

5. Vector Error Correction Model (VECM)

This model is evaluated in the emphasis with the aim that causality estimates can be carried out. The VECM connects the cointegrating situations to their long-run static demeanors. In essence, it is used to portray the disparity, and the result is presented below (Table 5).

Table 5. VECM Model

Cointegrating Eq:	CointEq1
RES(-1)	1.000000
GSP(-1)	-2.67E+09
	(4.5E+08)
	[-5.95776]
M2(-1)	-1.32E+09
	(2.9E+08)
	[-4.51631]
REXR(-1)	-6.37E+08
	(8.5E+07)
	[-7.48212]
EXTD(-1)	-0.144313
	(0.35747)
	[-0.40371]
CGDP(-1)	-4.79E+09

	(1.6E+09)					
	[-2.94021]					
C	1.67E+11					

Error Correction:	D(RES)	D(GSP)	D(M2)	D(REXR)	D(EXTD)	D(CGDP)
CointEq1	-0.007748	8.41E-11	1.75E-10	1.18E-09	0.078550	3.10E-11
	(0.04632)	(5.6E-11)	(2.1E-10)	(4.7E-10)	(0.07154)	(3.9E-11)
	[-0.16727]	[1.50042]	[0.84038]	[2.51895]	[1.09797]	[0.78929]
D(FORES(-1))	0.744661	-1.70E-11	1.39E-09	1.88E-09	-0.398801	1.05E-10
	(0.16455)	(2.0E-10)	(7.4E-10)	(1.7E-09)	(0.25414)	(1.4E-10)
	[4.52552]	[-0.08536]	[1.88629]	[1.13124]	[-1.56920]	[0.75337]
D(FORES(-2))	-0.361190	-2.36E-13	-9.39E-10	-6.47E-10	0.034789	1.26E-10
	(0.03262)	(2.0E-10)	(7.3E-10)	(1.6E-09)	(0.25116)	(1.4E-10)
	[-3.79540]	[-0.00120]	[-1.28683]	[-0.39427]	[0.13851]	[0.91150]
D(GSP(-1))	1.07E+08	0.051523	0.557349	3.946692	1.79E+08	-0.073495
	(1.9E+08)	(0.22644)	(0.83998)	(1.88907)	(2.9E+08)	(0.15850)
	[0.57197]	[0.22754]	[0.66353]	[2.08922]	[0.61745]	[-0.46368]
D(GSP(-2))	-0.267190	0.196956	0.356758	1.495618	-77240647	-0.008008
	(0.04572)	(0.20263)	(0.75166)	(1.69044)	(2.6E+08)	(0.14184)
	[-1.35551]	[0.97202]	[0.47463]	[0.88475]	[-0.29857]	[-0.05646]
D(M2(-1))	0.350679	0.070675	-0.214483	0.297784	1.49E+08	-0.042320
	(5.5E+07)	(0.06711)	(0.24896)	(0.55990)	(8.6E+07)	(0.04698)
	[1.32496]	[1.05307]	[-0.86151]	[0.53185]	[1.74335]	[-0.90084]
D(M2(-2))	-0.6400989	0.041358	-0.327191	-0.035166	57822239	0.010838
	(5.5E+07)	(0.06682)	(0.24787)	(0.55744)	(8.5E+07)	(0.04677)
	[-0.84007]	[0.61897]	[-1.32004]	[-0.06308]	[0.67779]	[0.23172]
D(REXR(-1))	-0.1881407	-0.038734	-0.070996	0.280990	18461147	-0.007382
	(0.03072)	(0.02757)	(0.10228)	(0.23003)	(3.5E+07)	(0.01930)
	[-0.78452]	[-1.40480]	[-0.69411]	[1.22153]	[0.52441]	[-0.38245]

D(REXR(						
-2))	0.1805017	0.081768	0.082506	0.170251	13551010	-0.004106
	(2.2E+07)	(0.02650)	(0.09832)	(0.22111)	(3.4E+07)	(0.01855)
	[0.99526]	[3.08517]	[0.83919]	[0.76999]	[0.40046]	[-0.22135]
D(EXTD(						
-1))	0.279675	-1.23E-10	-1.25E-09	-2.42E-09	0.171844	2.07E-11
	(0.05121)	(1.9E-10)	(7.1E-10)	(1.6E-09)	(0.24436)	(1.3E-10)
	[-1.76771]	[-0.64103]	[-1.75837]	[-1.51613]	[0.70323]	[0.15477]
D(EXTD(						
-2))	0.019873	-6.06E-11	-3.28E-10	-1.38E-09	-0.026700	-4.64E-11
	(0.17103)	(2.1E-10)	(7.7E-10)	(1.7E-09)	(0.26416)	(1.4E-10)
	[-0.11619]	[-0.29311]	[-0.42795]	[-0.80171]	[-0.10107]	[-0.32044]
D(CGDP(						
-1))	-0.489768	1.137590	-0.096772	4.528129	2.31E+08	-0.517365
	(3.2E+08)	(0.39075)	(1.44952)	(3.25991)	(5.0E+08)	(0.27352)
	[-0.26283]	[2.91128]	[-0.06676]	[1.38903]	[0.46396]	[-1.89149]
D(CGDP(						
-2))	-0.172308	0.639827	0.588521	1.830785	1.02E+08	0.027748
	(2.6E+08)	(0.31397)	(1.16470)	(2.61935)	(4.0E+08)	(0.21978)
	[-0.04517]	[2.03785]	[0.50530]	[0.69894]	[0.25542]	[0.12626]
C	1.56E+09	0.739048	1.703118	5.582353	2.15E+09	-0.365194
	(8.4E+08)	(1.01780)	(3.77558)	(8.49113)	(1.3E+09)	(0.71245)
	[1.85670]	[0.72612]	[0.45109]	[0.65743]	[1.65509]	[-0.51259]

Source: Author's Compilation, 2024

The coefficient of GSP has a detrimental impact on FORES, as was previously anticipated. Accordingly, a 0.26% decrease in FORES will result from a percentage increase in GSP. This result is in line with those of Khomo et al. (2018) and Manuel et al. (2023), who discovered that GSP had a detrimental impact on FORES in Namibia and Eswatini, respectively. Furthermore, a positive coefficient that is statistically significant indicates a favorable relationship between growth in EXTD and FORES. If everything else stays the same, a percentage increase in EXTD will result in a 0.27% rise in FORES. Theoretically, this is correct and consistent with earlier predictions that a rise in EXTD will immediately raise FORES. The primary cause of this is the impact of EXTD reserve shocks, which frequently result in a rise in FORES levels due to EXTD transfer through to the top bank. High EXTD, however, generally has a detrimental long-term impact on FORES since it strains the GSP with higher repayments and EXTD servicing. These findings are in line with the theory of capital flows, which states that taking out loans from other nations will

temporarily raise foreign capital flow and raise FORES (Andriyani et al.; 2020). The fact that the coefficient of exchange rate on FORES was negative and statistically significant further demonstrates the inverse association between an appreciation of the exchange rate and the level of FORES. Additionally, when expressed in Naira, a depreciation of the local exchange rate (EXR) relative to foreign currency leads to higher levels of FORES. According to the outcome, FORES is reduced by 0.18% for every index point increase in REXR (appreciation), and vice versa. This is also connected to the theoretical prediction of the trade-REXR relationship. Exports will decrease and imports will rise as the REXR advances, which will ultimately result in lower foreign exchange earnings; on the other hand, when the exchange rate declines, export revenues will rise and FORES will grow.

Table 6. Granger Causality Output

Null Hypothesis:	Obs	F-Stat	Prob.
GSP – G - RES	33	5.37021	0.0052
FORES -D -GSP		0.44342	0.7240
REXR -D- RES	33	0.61899	0.6090
RES -D- REXR		0.20665	0.8909
M2 -G- RES	33	3.14825	0.0420
RES -D- M2		1.01117	0.4036
CGDP-D- RES	33	1.55326	0.2245
RES-D- CGDP		0.96008	0.4263
EXTD -G- RES	33	4.60655	0.0103
RES -D- EXTD		1.60477	0.2123
REXR- G- GSP	33	3.97599	0.0186
GSP-D-REXR		1.13866	0.3519
M2-D-GSP	33	0.26577	0.8494
GSP-D- M2		0.71074	0.5544
CGDP-D-GSP	33	1.10676	0.3642
GSP-D-CGDP		0.46534	0.7089
EXTD-D- GSP	33	0.31989	0.8109
GSP- D-EXTD		0.57070	0.6393
M2 -D-REXR	33	0.27857	0.8403
REXR-D-M2		1.18399	0.3351

CGDP-D-REXR	33	1.54594	0.2263
REXR-D-CGDP		0.68258	0.5707
EXTD-D-REXR	33	0.06366	0.9786
REXR-D- EXTD		0.38881	0.7620
CGDP-D-M2	33	1.35957	0.2770
M2-D-CGDP		1.61324	0.2104
EXTD-G- M2	33	4.46841	0.0117
M2-D- EXTD		0.28584	0.8352
EXTD-D-CGDP	33	0.16700	0.9177
CGDP-D-EXTD		0.75907	0.5272

Source: Author's compilation, 2024

D = Does not granger cause

G = Granger cause

The direction of causation between two variables is not specified by cointegration. According to Fisher and Order (1993), there is a minimum of one direction of causation between variables in economic theory. Table 6 displays the Granger Casuality estimation findings between the variables. According to the estimated results, FORES and GSP are connected by a unidirectional casualty. At the 5% significance level, GSP "Granger Cause" FORES is discovered. Therefore, FORES will fluctuate in response to any changes in GSP. Moreover, M2 and FORES have a unidirectional casuality.

These findings suggest that previous M2 values can be used to predict current FORES values; a change in M2 will result in a change in FORES. The findings imply that there are options for transitioning between FORES and M2. All things considered, the findings indicate that CGDP growth and FORES are not related. These results concur with those of Manuel et al. (2023), who discover no relationship between FORES and Namibia's economic expansion.

6. Conclusion

By conducting an empirical evaluation of the long-term association between FORES and other explanatory factors used in the study, the research assesses the relationship between government spending and FORES in Nigeria. The VECM was used to test the long-term connection during the years 1986–2021. There is a long-term association between FORES and other used variables, according to empirical test results. According to the study, FORES is decreased by a rise in GSP, whereas

FORES is increased by EXTD. The study also demonstrated that while a broad money supply was found to have a positive connection with FORES, an appreciation of REXR was found to diminish FORES in Nigeria.

Furthermore, this study's result aligns with the research conducted by Khomo et al. (2018) and Aboyomi et al. (2014), who also discovered evidence linking changes in GSP to FORES in Nigeria. Likewise, the results concerning the impact of government EXTD on FORES align with those of Baksay et al (2012). According to the findings of Fasoranti et al. (2013), the amount and composition of public debt denominated in foreign currencies affect the level of FORES; hence, these findings necessitate policy adjustments that will lower the GSP and, consequently, the fiscal deficit.

The actual findings from the study and the literature review both supported the idea that GSP, which causes ongoing budget deficits, typically resulted in high EXTD, which impacts Hence, it is possible to observe how persistent budget deficits eventually weaken the central bank's ability to protect FORES, preserve the one-to-one exchange rate between the Naira and the Dollar, and ultimately jeopardize its credibility. Reiterating this worry, Annicchiarico et al. (2007) claim that a decline in FORES brought on by a continuous budget deficit could impede the effectiveness of monetary policy and could lead to a currency crisis.

According to the report, efforts should be made to expand revenue-generating strategies while also reducing spending. The current administration should be urged to prioritize and carry out measures that will broaden the tax base, particularly to include economic agents in the informal sector who may be eligible and contribute to increasing tax revenue, in light of the issues raised by the ongoing negative budget balance. encouragement of growth and development driven by the private sector. The government needs to reaffirm its commitment to creating an environment that is favorable for growth and investment led by the private sector in order to guarantee that EXTD is placed on a sustainable trajectory over a fair period of time and, eventually, lessen the strain on FORES.

References

Abayomi, A.; Ezie, O. & Jonathan, O.O. (2014), Fiscal deficits and foreign reserves evidence from Nigeria. *International Journal of Economics, Commerce and Management*, 2(10), pp. 1-16.

Adekunle, A. O.; Bekun, F. V.; Gbadebo, A. D. & Akande, J. O. (2023). Empirical analysis of South African's urbanization growth and export demands: implications for environmental sustainability. *Environmental Science and Pollution Research*, 41(1).

Akpan, U. (2016), Foreign reserves accumulation and macroeconomic environment: The Nigerian experience (2004-2014). *International Journal of Economics and Finance Studies*, 8(1), pp. 1309-8055.

Alfaro, L. & Kanczuk, F. (2005). Sovereign debt as a contingent claim: A quantitative approach. *Journal of International Economics*, *65*(2), pp. 297–314.

Andriyani, K.; Marwa, T.; Adnan, N.; Muizzuddin, M. (2020), The determinants of foreign exchange reserves: Evidence from Indonesia. *Journal of Asian Finance, Economics and Business*, 7(11), pp. 629-636.

Annicchiarico, B.; Marini, G. & Piersanti, G. (2007), Budget deficits and exchange rate crises. *International Economic Journal,* 25(2), pp. 285-303

Asimiyu, G. B.; Francis, O. A. (2013). Channelling the Nigeria's foreign exchange reserves into alternative investment outlets: A critical analysis. *International Journal of Economics and Financial Issues, 3*(4), pp. 813-826.

Athanasenas, A. & Katrakidilis, C. (2014): Government spending and revenues in the Greek economy: evidence from nonlinear cointegration. *Empirica* (2014) 41, pp. 365–376.

Baksay, G.; Karvalits, F.; Kuti, Z. (2012), The Impact of Public Debt on Foreign Exchange Reserves and Central Bank Profitability: The Case of Hungary. *BIS Papers No 67.*

Bošnjak, M.; Bilas, V.; Kordić, G. (2020), Determinants of foreign exchange reserves in Serbia and North Macedonia. *Economic Annals*, 65(226), pp. 103-120.

Chaudhary, M. A.; Shabbir, G. (2005), Macroeconomic impacts of budget deficit on Pakistan's foreign sector. *Pakistan Economic and Social Review*, 43(2), pp. 185-198.

Chowdhury, N. M.; Uddin, M. J. & Islam, M. S. (2014), An econometric analysis of the determinants of foreign exchange reserves in Bangladesh. *Journal of World Economic Research*, 3(6), pp. 72-82.

Fisher, L. & Order, D. (1993). Financial deregulation and dynamics of money, prices and output in New Zealand and Australia. *Journal of Money, Credit and Banking*, 25(2), pp. 273-292.

Francis, A. E. & Thank-God, O. A. (2016). External reserve management and economic growth in Nigeria. *International Journal of Finance Management, 3*(1), pp. 21-30.

Fukuda, S.; Kon, Y. (2010). Macroeconomic impacts of foreign exchange reserve accumulation: Theory and international evidence. *ADBI Working Paper 197*. Asian Development Bank Institute.

Garton, P. (2005). Foreign reserve accumulation in Asia: Can it be sustained? *mimeo*, (3), pp. 1–21. https://treas ury.gov.au/sites/default/files/2019-03/01_Foreign_ Reserve.pdf.

Gupta, S. & Singh, K. (2016). Fiscal deficit and its trends in India. *International Journal of Business and Management Invention*, 5(11), pp. 63-75

Higgins, M. & Klitgaard, T. (2004). Reserve accumulation: implications for global capital flows and financial markets. In *Current Issues in Economics and Finance* (Vol. 10). Federal Reserve Bank of New York. https:// www.newyorkfed.org/medialibrary/media/research/ current_issues/ci10-10.html.

Irefin, D. & Yaaba, B. N. (2012). Determinants of foreign reserves in Nigeria: An Autoregressive Distributed Lag Approach. *CBN Journal of Applied Statistics*, 2(2), pp. 63-82.

Jochen, S. (2019). Foreign exchange reserves in Africa: Benefits, costs and political economy considerations. *BIS Papers No 105*, Bank for International Settlements Monetary and Economic Department.

Khomo, M.; Mamba, N. & Matsebula, L. (2018), Determinants of foreign exchange reserves in Eswatini. *African Review of Economics and Finance*, 10(2), pp. 134-150

Kinwunmi, 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(1), pp. 36-46.

Layal, M. (2013). *International reserves versus external debts: can international reserves avoid future financial crisis in indebted countries?*

Moral Benito, E.; Allison, P. & Williams, R. (2018). Dynamic panel data modelling using maximum likelihood: An alternative to arellano-bond. *Applied Economics*, *51* (20), pp. 2221–2232.

Osigwe, A.C.; Okechukwu, A.I.; Onoja, T.C. (2015), Modeling the determinant of foreign reserves in Nigeria. *International Knowledge Sharing Platform*, 5(19), pp. 72-77.

Peter, E. & Dumani, M. (2020). Impact of external debt on Nigeria's foreign reserve portfolios. *Asian Journal of Economics and Empirical Research*, *7*(1), pp. 1–7.

Quilent, A. (2015). An analysis on the effect of external public debt on exchange rate volatility in kenyaresearch project submitted in partial fulfillment of the requirement for the award of the degree masters of arts in economic policy and. *Management of the University of Nairobi*.

Samouel, B. & Aram, B. (2016). The determinants of industrialization: Empirical evidence for Africa. *European Scientific Journal, Special Edition*, *12*(10), pp. 219–239.

Sanusi, K.A.; Meyer, D.F. & Hassan, A.S. (2019). An investigation of the determinants of foreign exchange reserves in Southern African countries. *Journal of International Studies*, 12(2), pp. 201-212.

Senibi, V.; Oduntan, E.; Uzoma, O.; Senibi, E. & Oluwaseun, A. (2016). *Public debt and external reserve: The Nigerian experience (1981–2013)* Volume 2016, Article ID 1957017. Hindawi Publishing Corporation, Economics Research International

Shariful, I.; Anowara, K. & Yeaseen, C. (2018). *Causal relationship among external debt, foreign exchange reserves and economic growth in Bangladesh.* https://www.researchgate.net/publication/326989282_Causal_Relationship_among_External_Debt_Foreign_Exchange_Reserves_and_Economic_ Growth_in_Bangladesh0.

Shin-Ichi, F. & Yoshifumi, K. (2007). Macroeconomic impact of foreign exchange reserve accumulation: A theory and some international evidence. *ACE international Conference Pape*r, University of Tokyo.

Victoria, S.; Emmanuel, O.; Obinna, U.; Esther, S. & Akinde, O. (2016). *Public debt and external reserve: The Nigerian experience (1981–2013)* Volume 2016, Article ID 1957017. Hindawi Publishing Corporation, Economics Research International.