

THE IMPACT OF ACCUMULATING FOREIGN RESERVE ON ECONOMIC GROWTH IN NIGERIA

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ABSTRACT

This paper sought to find out if accumulating foreign reserve has an impact on economic growth in Nigeria and equally investigated causality between the two. Engle Granger causality test and Cointegrating regression (Fully Modified Ordinary Least Squares method) analysis were used. Our findings revealed that indeed accumulating external reserves does affect growth positively and that there is a long run equilibrium relationship between both variables. It also showed that there is a unidirectional causality running from economic growth to external reserves but not vice versa. We recommend that government should further strengthen its drive towards diversifying the monocultural oil based economy to other sectors like Mining, Agriculture and Manufacturing. This would help to boost local production and even lead to export, eventually earning foreign income for the nation and boosting its reserves.

Key words: Economic Growth, Foreign Reserves, Granger Causality

1. Introduction

Nigeria's foreign reserve has been a subject of discussion for so long due to the rise and fall it has experienced over the years. From as low as US\$210.8 million in February, 1984 it rose to an all-time high of US\$62 billion in September, 2008 (CBN, 2015). This is not unconnected to the rise in price of crude oil at that time. In December 2015, the reserves dropped to US\$ 28.28 billion.

Although adequate reserves do contribute to a Nation's confidence by guaranteeing the availability of foreign exchange to domestic borrowers to meet international debt servicing and enhance its credit rating (Humphries, 1990; Archer and Halliday, 1998),

the confidence is often influenced by the soundness of a nation's economic policies and overall investment climate (UNCTAD, 2007). Thus, this becomes very crucial when examining the position of reserve holding in Nigeria especially when accumulated external reserves are usually financed by government oil-fund surplus (Evans and Egwakhe, 2008). Meanwhile, the world's largest reserves-holding countries are equally experiencing rapid economic growth. This brings to mind the following questions, Does Foreign reserve play any role in the economic growth of countries? Does accumulating foreign reserve causes economic growth or does economic

growth causes the accumulation of foreign reserve?

Given this scenario, the aim of this paper is to find out if the accumulation of the external reserve has had any impact on the level of economic growth in Nigeria. Also, we investigate the direction of causality between external reserves and economic growth. This paper proceeds as follows: Section 2 presents relevant literature reviewed, Section three talks about the data and methodology while the empirical findings are discussed in section four. Discussion, Conclusion and Recommendation is presented in section 5.

2. Literature review

The International Monetary Fund (IMF, 1993) defines an economy's international reserves as "those external assets that are readily available to and controlled by monetary authorities for direct financing of payments imbalances through intervention in exchange markets to stabilize the currency exchange, and/or for other purposes. Several studies have tried to establish the determinants of economic growth but only a few have looked at the link between foreign reserves and economic growth. For instance, Polterovich and Popov (2002) showed that countries with growing foreign reserves to Gross Domestic Product (GDP) ratios exhibit higher capital productivity and higher rates of growth. According to them, there is strong empirical evidence that the accumulation of foreign exchange reserves (FER) may lead to lower exchange rates, which in turn stimulate export-led growth. Countries with rapidly growing FER/GDP ratios, other things being equal, exhibit higher investment/GDP ratios, higher trade/GDP ratios, higher capital productivity and higher rates of economic growth.

Mei-yin (2011) investigated the Granger causality between foreign reserves and economic growth in twenty largest reserves-

holding countries ranging from 1980 to 2008. The method of first-differencing each variable is used to estimate the panel data VAR equations for Granger causality test. The results showed that the foreign reserves unilaterally Granger cause economic growth only in the emerging countries. In the advanced countries, there was no Granger causal relation between foreign reserves and economic growth. It was concluded that foreign accumulation may be the result of high current account surplus which is the important engine for economic growth. Besides, foreign reserves holding could be a tool for stabilizing or self-insurance.

According to Benigno and Fornaro (2012), by accumulating foreign reserves, government induces real exchange rate depreciation and a reallocation of production towards the tradable sector that boosts growth. Also, Dooley et al. (2003), believes that the large accumulation of international reserves by the public sector in emerging economies is part of an export-led growth strategy. This explanation has been given especially in the context of China. They interpret reserve accumulation as a by-product of promoting exports, which is needed to create better jobs, thereby absorbing abundant labor in traditional sectors, mostly in agriculture. Under this strategy, reserves accumulation may facilitate export growth. Other similar works include those of Aizenman and Lee (2007) and Korinek and Servén (2010) which emphasize the link between reserve accumulation and growth externalities.

Isaiah et al (2015) conducted a study to investigate the long run relationship between exchange rate and external reserves in Nigeria between 1990 and 2012 using quarterly data. They made use of a two-regime threshold vector error correction model procedure. Their findings revealed that foreign reserves adjust to maintain long run equilibrium while exchange rates do not. Similarly, Ngozi (2016)

modeled the long-run relationship between the Bureau De Change exchange rate and external reserves in Nigeria using a threshold vector error correction model. They made use of daily data from January 1, 2014 to July 31, 2015. Their findings revealed that the adjustment mechanism between the two variables flows from external reserves to Burueau De Change exchange rates.

Meanwhile, Cruz and Walters (2008) discussed whether the accumulation of reserves is good for development and they indicated that the stockpiling of reserves is not optimal for development purposes and that there exist alternative policies that can be applied to achieve financial stability, policy autonomy and a better performance in terms of development. There have been very little papers written to address the impact of

accumulating foreign reserves on Nigeria's economic growth. This paper comes in to fill that gap.

3. Data and Methodology

This study made use of secondary data obtained from the Central Bank of Nigeria Statistical Bulletin (2015). Data on Real Gross Domestic Product and Nigeria's foreign reserves were obtained for a period of 35 years (1981-2015). The data on these variables collected were subjected to econometric analysis to determine the impact of foreign reserves on Nigeria's Real Gross Domestic Product. Also, the direction of causality between the two variables was determined using Granger causality tests

Table 1: Variables used and Units of measurement

Variables	Units of Measurement
Real GDP	Billions of Naira
Foreign Reserves	Millions of US Dollars

Source: Central Bank of Nigeria Bulletin 2016

Traditionally, most economic variables are nonstationary; hence unit root tests were performed on all the variables. All the variables were found to be non-stationary and integrated of I(1).

In our model, the dependent variable will be Economic Growth which is measured using the log of real Gross Domestic Product (LnGDP) while the explanatory variable is the log of foreign reserve (LnFOR). It is stated below:

$$\text{LnGDP}_t = \beta_0 + \beta_1 \text{LnFOR}_t + e_t \dots \dots \dots 1$$

Where:

LnGDP_t represents log of Nigeria's Real Gross Domestic Product at the tth time period

LnFOR_t represents log of Nigeria's Foreign Exchange reserve at the tth time period

E_t represents the error term

4. Empirical Findings

4.1 Unit Root Test

Since most time series data are non – stationary, a unit root test was conducted using the Augmented Dickey Fuller (ADF) Test. The result is presented below:

Table2: Unit Root Test result using Augmented Dickey Fuller

Variables	ADF Test Statistics	At 5% Critical level	Order of Integration
LnGDP	-3.378685	-2.9540	I(1)
LnFOR	-3.576939	-2.9639	I(1)

Source: Author's computation (2017) using Stata 12

The test reveals that both variables were non-stationary at levels; and after taking the first difference, both variables became stationary.

4.2 Engle Granger Causality Test

The table below presents the results of the Engle Granger causality test between the log of Foreign reserves (LnFOR) and the log of Real Gross Domestic Product (LnGDP).

Table 3: Pairwise Granger Causality Test

Pairwise Granger causality test Sample 1981 – 2015 Lags: 2				
Null hypothesis H_0	Obs	F – Statistics	Prob.	Decision
LnGDP does not Granger cause LnFOR	33	6.30475	0.0055	Reject H_0
LnFOR does not Granger cause LnGDP	33	0.92991	0.4064	Accept H_0

Author's computation (2017) using E-views 9

From the table above, we see that there is a unidirectional causality from real GDP (LnGDP) to Foreign reserve (LnFOR). Next, the Engle Granger Cointegration test was conducted to ascertain if there is any long-run equilibrium relationship between the two variables. An Engle Granger Cointegration test was conducted and the results showed that there is a long run equilibrium relationship between Economic growth (LnGDP) and Foreign reserves (LnFOR) and as such, a meaningful result can be obtained from using a cointegrating regression method.

4.3 Cointegrating Regression

Since the variables used in this model are stationary and have long-run relationship, we proceed to use them in regression analysis without any fear of spurious result.

$$\text{LnGDP}_t = \beta_0 + \beta_1 \text{LnFOR}_t + e_t$$

The result of the cointegrating regression is given below:

Table 4: Fully Modified Least Squares Regression result

Cointegrating Regression (FULLY MODIFIED LEAST SQUARES METHOD)		
Variable	Coefficient (β)	Prob.
C	5.693411	0.00000*
LnFOR	0.396125	0.00000*
Dependent variable: LnGDP		Observations: 1981 - 2015
R-squared: 0.810473		Significance level: 5% (0.05)
Adjusted R-squared: 0.804550		

Source: Author's computation (2017) using E-views 9

*denotes significance at 5%

5. Discussion and Conclusion

The interpretation of the result is that there is a positive relationship between the level of external reserves (LnFOR) accumulated and Economic Growth represented by the Real Gross Domestic Product (LnGDP) such that a 1% increase in the level of reserves would lead to a 39% increase of in the real Gross Domestic Product. A closer look at the model reveals that 81% of the variations in the GDP are explained by the accumulation of foreign reserves. Indeed, the variable is statistically significant.

Our findings revealed that there is a unidirectional causality from real GDP to the level of foreign reserves accumulated. What this means is that Economic growth causes an increase in foreign reserves. Also both variables are cointegrated, thus, there is a long run equilibrium relationship between them. Contrary to the findings of Evans and Egwakhe, (2008), that external reserves do not accelerate macroeconomic performance in Nigeria, our findings reveal that indeed, foreign reserves do have an impact on economic growth. The implication of this result is that the more foreign reserves we accumulate, the higher the impact it has on the growth of the economy.

Policy Implication and Recommendations

Taking a look at Nigeria's history, we observe that indeed our growth has not been much of

real growth per se but it has been growth induced by oil revenue. So when the economy produces more barrels of crude oil and sells, it grows the economy and generates more foreign reserves. Meanwhile, when the global meltdown occurred and oil price crashed, this negatively affected our growth and in turn affected our foreign reserves which were heavily depleted. This is in line with our findings that Economic growth granger causes an increase in foreign reserve.

The Federal Government must implement policies to develop all other sectors of the economy. Already, government has begun the diversification process of the economy. When we explore all other sectors of the economy like the Mineral and mining sector, Manufacturing and Agricultural sector, we create a conducive business atmosphere for private sector to participate, this in turn will lead to increased output and revenue for the economy. Also, efforts must be made at boosting our local refining capacity such that we never have to export crude oil but rather, what we export will be refined petrochemical products. This would save the nation billions of naira being spent on importing petrol. Furthermore, building up our foreign reserves has the potential of cushioning the effect of economic downturns witnessed in the country.

References

- Archer, D. and Halliday, J. (1998), "The Rationale for Holding Foreign Currency Reserves", *Reserve Bank of New Zealand Bulletin*, Vol. 61 No. 4, pp.346-354.
- Aizenman, J. and J. Lee (2007) "International Reserves: Precautionary versus Mercantilist Views, Theory and Evidence," *Open Economies Review*, Vol. 18, No. 2, pp. 191– 214
- Benigno, J.,& Fornaro, L. (2012). Reserve accumulation, growth and financial crises. CEPR Discussion Papers, Centre for Economic Performance, LSE.
- Cruz, M., Walters, B. (2008), Is the Accumulation of International Reserves good for development? *Cambridge Journal of Economics* **32**, 665-681.
- Dooley, M.P., D. Folkerts-Landau, and P. Garber (2003) "An Essay on the Revived Bretton Woods System," NBER Working Paper No. 9971.
- Evans S.C. Osabuohien and A. J. Egwakhe (2008) "External Reserve and the Nigerian Economy: The Dual Folded Debate" *African Journal of Business and Economic Research*, AJBER, Vol. 3 Nos. 2 & 3 2008 pp 28-41
- Humphries, N. (1990), "External reserves and Management of Risk" *Reserve Bank of New Zealand Bulletin*, Vol. 53, No.3, pp.277-287.
- International Monetary Fund (1993). "Balance of Payment Manual" International Monetary Fund, Washington.
- Isaiah O. Ajibola, Ubong S. Udoette, Babatunde S. Omotosho and Rabia A. Muhammad (2015) "Nonlinear Adjustments between Exchange Rates and External Reserves in Nigeria: A Threshold Cointegration Analysis," *CBN Journal of Applied Statistics* Vol. 6 No. 1(a)
- Korinek, A. and L. Servén (2010) "Real Exchange Rate Undervaluation: Static Losses, Dynamic Gains," World Bank Policy Research Working Paper No. 5250.
- Mei-yin Lin, (2011) "Foreign Reserves and Economic Growth: Granger Causality Analysis with Panel Data", *Economics Bulletin*, Vol. 31 no.2 pp. 1563-1575. Submitted: Jan 26 2011. Published: June 05, 2011.
- Ngozi E. Nwachukwu, Abdulkadir I. Ali, Ismaila S. Abdullahi, Mohammed A. Shettima, Solomon S. Zirra, Bola S. Falade, and Michael J. Alenyi (2016) "Exchange Rate and External Reserves in Nigeria: A Threshold Cointegration Analysis," *CBN Journal of Applied Statistics*, Vol. 7 No. 1(b)
- Polterocich, V., Popov, V. (2002), *Accumulation of Foreign Exchange Reserves and Long Term Growth*, mimeo, Moscow, New Economic School.
- UNCTAD (2007), *Activities Undertaken By UNCTAD In Favour Of Africa*, Trade and Development Board, 42nd Executive Session, Geneva, June 27.