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External Reserve Management and Economic Growth in Nigeria

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Abstract

The study examined External Reserve Management and Economic Growth in Nigeria. Time series data for 34 years was used. Ordinary Least Square of the econometric research method was used to analyze and estimate the model. The dependent variable in the model is Real Gross Domestic Product, while the independent variables are: External Reserve and Exchange Rate. It was revealed from the study that: There is a negative relationship between External Reserve (EXR) and Real Gross Domestic Product (RGDP) in the short run, External reserve is statistically significant in the long run, and that Nigeria's external reserve has not been channeled to support economic growth in the past years. The study recommends that: Nigeria should move from the practice of stocking external reserve just to support foreign exchange and set a platform where the reserve can be used for infrastructural development in order to support economic growth and that in order to reduce the opportunity cost of holding Nigeria's foreign reserves, part of the reserves should be invested for economic development in the areas of health, education, and the provision of infrastructures (such as electricity, good water, road, railroad etc).

1. Introduction

In recent times, the talk of mismanagement and depleting foreign reserve or external reserve has made headlines. The past Minister of Finance, Dr Ngozi Okonjo-Iweala had to come several times to clarify the populace on the state of the country's external reserve and to assure them that its management is in good hands. The dominant thesis from the media and public opinion was that the last administration mismanaged the nation's external reserve. A prominent Nigeria and a former president, Chief Olusegun Obasanjo once accused the Jonathan led administration of squandering the nation's external reserve, his accusation was supported by a former Central Bank of Nigeria (CBN) governor Prof Charles Soludo. Obasanjo's claim was that the administration inherited about $67 billion, and has squandered around $ 40 billion. The coordinating minister of the economy then, rendered their accusation baseless and irrelevant, she said that her administration inherited only $43.13 billion, and that part of the foreign reserves was set out by the Central Bank of Nigeria (CBN), to stabilize the falling value of the Naira at a time crude oil prices at the international oil market crashed in September 2011 to $31.7 billion (premium times ng, 2015).

Some individuals—scholars and non-scholars alike—are of the opinion that keeping scarce resources in reserve when there are series of issues to be attended to domestically, such as education and health among others, may not be a very wise decision (Osabuohien and Egwakhe, 2008; Raza et al., 2011; Raza et al., 2012). Nonetheless, some others have argued that the foreign reserve holdings determine the country's rating in the international market. That is to say, these writers hold the view that a robust level of external reserves will make the nation appear financially responsible and creditworthy in the eyes of other nations, creditors and donors (Ford and Huang, 1994). In making the case for a robust level of external reserve in Nigeria, the Central Bank of Nigeria (CBN) argued that China has over one billion dollars in her external reserves even though her population is very large (Soludo, 2006). For example, China's external reserves position was estimated at US$822 billion in 2004, while the value for Nigeria in the same year was about US$17 billion, which increased to about US$51.33 billion in 2007 (CBN, 2007; Russell and Torgerson, 2007). One of the

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major reasons for external reserves accumulation put forward by the CBN is the need to make Nigeria more creditworthy; this is believed to be essential for attracting external capital. However, it has been noted that other issues such as a country's institutional structure play key roles in attracting external capital (Hassan *et al*., 2009).

This paper is focused on providing empirical findings on the issue of external reserves management or mismanagement and how it has affected the economy as a whole and the causality between external reserve, exchange rate and economic growth. It is structured into introduction, review of literature, theoretical framework, research methodology, data presentation and analysis and conclusion in that order.

2. Literature Review

Related Literature on external reserve and economic growth abound. In this study the term external reserve will be used interchangeably as external reserve or simply reserve.

International Monetary Fund in 2003 presented the possible factors that determine external reserve holdings in 122 developing economies (1980‐1996). The factors are: Real Per Capita Gross Domestic Product (RGDPPC), countries population, imports to GDP ratio, and how volatile the country's exchange rate is. Among the four mentioned factors, Gross Domestic Product per capita, population of the country, import to GDP ratio, and exchange rate volatility were statistically significant. The study concluded that external reserves in developing Asia economies have reached a point where a slowdown in the rate of formation was required as its external reserve holding seems to be in excess, such excess could be channeled to develop capital infrastructure.

Mendoza (2004) opines that external reserve management in many countries was inspired by the need to guard against future financial crisis. However, Dooley *and others* (2004) argued that external reserve buildup agenda in Asian apex banks was to guard their currencies from falling against the U.S. dollar in order to promote their export substitution led growth strategy.

External reserves are generally kept in the form of high quality marketable securities issue. However, such holdings are not without cost; the costs usually include, among others, financing, personnel, systems, and overhead expenses, which fluctuate periodically. Marc André and Nicolas (2005) classified the costs as loss of monetary control, exchange rate misalignment, and sterilization costs.

The evidence from Asian financial crisis indicates that published data on official external exchange reserves may be misleading and inadequate to cushion the self-insured role of external reserves (Stiglitz, 2002). The cost of misleading information and the vehement International Monetary Fund‐IMF support programs for South Korea, Singapore, Thailand, and Indonesia in 1997 exposed the weakness of confidentiality argument purported for reserves accumulation. In reaction to this, Stiglitz (2002) blamed IMF for one‐size‐fit‐all strategy that has not helped Indonesia despite the nation's reserves accumulation. Also, from evidence, the rejection of IMF's strategy by Malaysia made the country better-off compared to other affected Asian countries (Kaplan and Rodrik, 2001). However, the cushion strategy as ideologically promoted could not sustain Russia and Brazil (Stiglitz, 2002), as billions of dollars were used by IMF as intervention strategy.

Nevertheless, Edwards (1985) empirically identifies the insignificance of the holding cost which might have resulted from poor measurement procedure. From IMF's (2003) prescription, it means that reserve holding comes at a risk that complicates the portfolios and the task of managing the reserve. The CBN is not in doubt of the credit risks that are inherent in the nation's reserves management activities and complicating this is the consolidation of the banking industry.

Another commonly forwarded argument in literature is the exchange rate, which most market fundamentalists know to be a derivative of market forces. According to this argument, the exchange rate is consciously undervalued in order to stimulate export. Mercantilism appears doubtful, since it prevents the traditional market dynamics (Aizenman and Lee, 2006).

Also, the attempt by government institutions to manipulate currency exchange rate does complicate the market price of items. In this regards, bodies of theoretical arguments are evident that exchange rate devaluation may have contractionary effect (Edwards, 1989; Kamin and Rogers, 2000). However, the inflationary possibility could be cushioned if new money issued against the external reserve increment is used for investment, so that output increases and inflation does not rise.

Aluko (2007) observed that External reserves have, in recent times, played significant role in the Nigeria economy. It has increased the level of money supply and therefore impact positively on the level of economic activities as more funds became available for investment in productive activities. Employment was in turn generated, output increased and consumption boosted. With their multiplier effects on the economy coupled with the efficient management of the financial resources, standard of living of the people improved considerably. Also, the contribution of the manufacturing sector to Gross Domestic Product (GDP), which has continued to dip, witnessed a boost. In a related study (Obaseki, 2007) noted that the uses of external reserves cannot be over emphasized. Essentially, external obligations have to be settled in external exchange. Therefore, the stocks of reserves become important as a source of financing external imbalances. Other uses to which external reserves can be put are to intervene in the external exchange market, guide against unforeseen volatility and maintain natural wealth for future generations.

Typically, the purpose of holding reserves is to allow the central bank an additional means to stabilize the issued currencies from shocks. In addition to meeting the transaction needs of countries, reserves are used as a precautionary purpose to provide a cushion to absorb unexpected shocks or a sharp deterioration in their terms of trade or to meet unexpected capital outflows, like the negotiated exit payment of the Paris Club Debt by Nigeria. Reserves are also used to manage the exchange rate through intervention in the external exchange market. Thus, the motives for holding adequate level of external reserves can therefore be summarized as the reasons why individuals hold money (CBN, 2007).

Sound external reserves management practices are important because they can increase a country's overall resilience to shocks as the central bank will have the ability to respond effectively to financial crisis. Sound external reserves management can equally support but not substitute for sound macroeconomic management. Similarly, inappropriate economic policies can pose serious risks to the ability to manage external reserves. However, the process of external reserves management has spanned over the areas of risk management, securitization and the use of derivatives (Anifowose, 1997).

External reserves have impacted significantly on the development of Nigeria economy over the years. According to (Ojukwu, 2007), Foreign Direct Investment (FDI) into the country increased from $42.4 million in 1997 to $540.17 million in 2002 at an exchange of ₦118 to a dollar, while the level of investment increased in 1999 from ₦4.24 billion to ₦63.74 billion in 2002. He added that employment increased from 4,093 in 1999 to 10,885 in 2002, while revenue allocation to States and Local Government Areas grew from ₦156.06 billion in 1999 to ₦44.074 billion at August 2004. The Federal Government has also made significant progress in the war against corruption. All these are indicative of progress economically. It has been observed almost to the point of being a puzzle that the world accumulation of foreign exchange reserves has been on an astronomical increase in the past three decades. Worst hit in the frenzy for this accumulation are developing countries. Shameen and Moon (2005) stated that Singapore maintains large foreign reserves to sustain its long term economic growth and instituted two major reserve funds or institutions; Temasek Holdings and Government of Singapore Investment Corporation (GIC), which invests a portion of the country's reserves in diverse instruments, such as corporate sovereign bonds, equities, real estate holding and private equity holdings in different parts of the world and also through their asset allocation approaches attempt to nurture domestic industries identified as strategically important.

Further empirical research works on foreign reserves (e.g. Landell-Mills, 1989; Lane and Burke, 2001) established a relatively stable long-run demand for reserves based on a limited set of explanatory variables such as gross domestic products (GDP). Gosselin and Nicolas (2005) grouped the determinants of reserve holdings in five categories: economic size, current account vulnerability, capital account vulnerability, exchange rate flexibility, and opportunity cost. In theory, the volume of international financial transactions

and foreign reserve holdings are expected to increase with economic size. Also, GDP and GDP per capita have been used as indicators of economic size in the literature. The vulnerability of the current account can be captured by some measures as trade openness and export volatility. In the long run, central banks will increase their reserves in response to a greater exposure to external shocks. Thus, the level of foreign reserves could be positively correlated with an increase in both exports and imports. Capital account vulnerability increases with financial openness and potential for resident-based capital flight from the domestic currency.

Consequently, reserves could be positively correlated with some variables like the ratio of capital flows to GDP. Exchange rate flexibility is usually important: it reduces the demand for reserves, since central banks no longer need a large stockpile of reserves to manage a pegged exchange rate. There could be an opportunity cost of holding reserves, because the monetary authority swaps high-yield domestic assets for low-yield foreign ones. Iyoha (1976) had observed the factors that determined the demand for foreign reserves in 29 LDCs—Nigeria included—and established that a rise in the opportunity cost of holding reserves would result in a decrease in the level of foreign reserves holding. Furthermore, Osabuohien and Egwakhe (2008) noted that holding of foreign reserves promotes exchange rate stability and the existence of positive relationship between reserves and exports; however, the relationship was not significant for Nigeria between 1994 and 2005, hence suggesting that export was not induced significantly by the nation's foreign reserves.

Some countries have acquired such high levels of reserves that the conventional benchmarks for reserves adequacy have been met with the largest absolute holdings of total gross reserves minus gold, as measured by the International Monetary Fund (IMF). At the end of 2005 major oil exporters held eight of the largest reserves. Japan tops the list, but by 2006, China had become the largest reserve holder. Both hold levels of reserves far greater than the rest (Russell and Torgerson, 2007). Foreign reserves normally kept in the form of high quality marketable securities issued, usually have attendant cost, especially the opportunity cost (Gosselin and Nicolas, 2005). This implies that holding foreign reserve may or may not rub off on the economy directly but depending on whether the benefits (attracting investment, providing buffer against shocks and volatility etc.) are over and above the costs that are associated with it.

From the various views above, the general need to hold reserves simply arises from the fact that investors (especially foreign) believe that a country should have reserves to make such a country a viable place to invest with regards to credit rating, without much regard to whether or not such reserves would contribute meaningfully to economic growth of the country. Credit rating agencies do place considerable weight on the volume of a country's official foreign currency reserves, but the existence (or otherwise) of it may not be a key determinant of a nation's ability to meet up with its financial obligations and developmental efforts. Other factors such as the country's productivity, domestic efficiency, political will, among many others, could play a significant role in this respect.

The reason why this study is drawing inferences from the Asian economies is that the CBN governor (Soludo, 2006) has most times used them to canvass supports from the Nigerian populace for external reserve accumulation. In addition, among the top ten holders of external reserve in the world as at 2005, all of them with the exception of Mexico were in Asia (Russell and Torgerson, 2007).

Theoretical Framework

The theoretical framework is an attempt to build a foundation for the research. It provides the economic thinking that guide the study. The theoretical frame work for this study is the Macroeconomic Stabilization Model. Macroeconomic stabilization remains at the fore of national economic policy making in order to aid conditionality in developing countries especially in Africa. This has induced African countries to hold reserves to allow monetary authorities to intervene in markets to influence the exchange rate and inflation (Lapavitsas, 2007; Elhiraika and Ndikumana, 2007). Many African countries including Nigeria argued that adequate foreign reserves may allow them to borrow abroad, attract foreign capital and promote domestic private investment as a result of strengthened external position and reduced vulnerability to external shocks.

Thus, it is believed that maintaining adequate reserves can boost investors' confidence and enhance investment and growth (Elhiraika and Ndikumana, 2007). From the theory we can conclude that Nigeria's foreign holding is kept to attract loans and to stabilize exchange rate.

3. Analytical Technique and Research Methodology

The research work made use of econometric approach in estimating the relationship between external reserve, exchange rate, and Nigerian economic growth. The dependent variable is Real Gross Domestic Product while the independent variables are external reserve and exchange rate.

The ordinary least square (OLS) technique was used in obtaining the numerical estimates of the variables (independent) coefficients in the model by running a multiple regression via E-views. The OLS method was chosen because it is believed to be the best linear unbiased estimator. Secondly, its computation is fairly simple and also, many research works in social sciences has adopted it over time and obtained proven results. The estimation period cover 1981 to 2014. The data for this study was obtained mainly from secondary sources, particularly from Central Bank of Nigeria (CBN) Statistical Bulletin.

This paper adopts four stage methodologies, first the stationary status of the data series was examined using Philip Peron unit root test. This is followed by Johansen co-integration test. The third stage is the parsimonious error correction method and the fourth stage is Granger causality test.

Model Estimation

A model is an abstraction of reality drawn in such a way as to reveal the relevant aspects of the objective under study. In order to ascertain the relationship between external reserve management and economic growth in Nigeria, the study adopt the following model after a careful deduction from the theoretical framework

Mathematically,

RGDP= f (EXTR, ER)…….. (1)

Econometrically,

RGDP = $\alpha_0+\beta_1 EXTR+\beta_2 ER+\varepsilon_i$

Where:

RGDP	=	Real Gross Domestic Product
EXTR	=	External Reserve
ER	=	Exchange Rate
α_0	=	intercept
β_1	=	co-efficient of external reserve
β_2	=	co-efficient of exchange rate
ε_i	=	stochastic or error term

A Priori Expectation

The expected signs of the co-efficient to the explanatory variables are: $\beta_1 > 0$; $\beta_2 > 0$

The coefficients of the parameters shall be validated on theoretical criteria. That is the signs and size of magnitude of the estimated parameters will be judged based on what economic theory holds.

4. Analysis

To avoid spurious and nonsensical regression result on the time series data, the Philip Peron (PP) test for unit root was carried out to ascertain the stationary status of the data series. This is shown in table 1

Table1: Philip Peron Unit Root Test

Variable	Level	1st Difference	2nd Difference	Model	Order of integration
Log(RGDP)	-1.324555	-4.502867	-7.605754	Trend and intercept	I(1)
EXR	-2.173302	-3.883011	-6.233983	Trend and intercept	l(1)
EXCHR	-2.190526	-5.316551	-9.670427	Trend and intercept	l(1)
ECM(-1)	-5.999276	-8.432364	-10.80741	Trend and intercept	l(0)
Critical Value @ 5%	-3.5514	**-3.5670**	**-3.5731**		

Source: Author's Computation using E-views

The variables in the model were integrated variables; all the variables attained stationarity after first difference. The null hypothesis of non-stationarity of the variables in the model is rejected after differencing at 5 percent level of significance.

Table 2: Johansen Co-integration Test

Sample(adjusted): 1983 2014
Included observations: 32 after adjusting endpoints
Trend assumption: No deterministic trend
Series: EXCHR EXR RGDP
Lags interval (in first differences): 1 to 1

Unrestricted Co-integration Rank Test

Hypothesized No. of CE(s)	Eigenvalue	Trace Statistic	5 Percent Critical Value	1 Percent Critical Value
None *	0.346553	25.42498	24.31	29.75
At most 1	0.270117	11.80918	12.53	16.31
At most 2	0.052725	1.733306	3.84	6.51

*(**) denotes rejection of the hypothesis at the 5%(1%) level
Trace test indicates 1 co-integrating equation(s) at the 5% level
Source: Author's Computation using E-views

The results reveal that there is one co-integration equation at 5 percent significance level. This means that there is the probability of a long run equilibrium relationship among the variables in the model and is therefore regarded as policy variables. Thus, the error correction model can be run, to ascertain the long run relationship.

Table 3: Pair wise Granger Causality Tests

Sample: 1981 2014
Lags: 2

Null Hypothesis:	Obs	F-Statistic	Probability
EXR does not Granger Cause EXCHR	32	0.27604	0.76090
EXCHR does not Granger Cause EXR		3.87774	0.03308
RGDP does not Granger Cause EXCHR	32	0.25410	0.77745
EXCHR does not Granger Cause RGDP		0.12637	0.88181
RGDP does not Granger Cause EXR	32	2.21676	0.12841
EXR does not Granger Cause RGDP		0.02091	0.97932

Source: Author's Computation Using E-views $F_{0.05} = 2.30$

The result reveals that exchange rate granger causes external reserve, since the calculated value of 3.88 is greater than the table value of 2.30. This means that causality runs from exchange rate to external reserve. The nature of exchange rate determines external reserve holding in Nigeria

Table 4: Parsimonious Error Correction Model

Dependent Variable: LOG(RGDP)
Method: Least Squares
Sample(adjusted): 1985 2014
Included observations: 30 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.637479	0.335103	1.902337	0.0697
LOG(RGDP(-2))	0.898675	0.059895	15.00418	0.0000
EXR	-0.380006	0.380006	-1.000000	0.3262
EXR(-1)	0.610006	0.280006	2.178546	0.0120
EXCHR	-0.300627	0.500342	-0.600843	0.2703
EXCHR(-1)	0.501439	0.200602	2.499671	0.0253
ECM(-1)	-0.512842	0.215020	-2.385090	0.0038
R-squared	0.793457	Mean dependent var		6.119866
Adjusted R-squared	0.771750	S.D. dependent var		0.418038
S.E. of regression	0.037970	Akaike info criterion		-3.503069
Sum squared resid	0.033160	Schwarz criterion		-3.176123
Log likelihood	59.54603	F-statistic		8.0261
Durbin-Watson stat	2.216639	Prob(F-statistic)		0.000000

Source: Author's Computation Using E-views

Table 4; report the long run Parsimonious Error Correction Results. The Error Correction Term (ECM) tells the speed with which a model returns to equilibrium following an exogenous shock. It should be negatively signed, indicating a move back towards equilibrium. A positive sign indicates movement away from equilibrium. The coefficient should lie between 0 and 1, 0 suggesting no adjustment one time period later, 1 indicates full adjustment. The error correction term shows the speed of adjustment to restore equilibrium in the dynamic model. In particular, the ECM coefficients show how quickly or slowly the variables converge to equilibrium. The result of the error correction model indicates that the error correction term ECM (-1) is well specified and the diagnostic statistics are good. The ECM (-1) variable has the correct a priori sign and is statistically significant. The speed of adjustment of -0.512842 shows a high level of convergence. In particular, about 51 percent of disequilibrium or deviation from long run of RGDP in the previous period is corrected in the current year.

The results reveal that, there is a negative relationship between External Reserve (EXR) and Real Gross Domestic Product (RGDP) in the short run, for every 1 unit increase in External Reserve, Real Gross Domestic Product will fall by 0.38 units and for every 1 unit increase in External Reserve lagged once, Real Gross Domestic product will increase by 0.61006 units. External reserve is statistically significant in the long run and insignificant to growth in the short run. This means that, Nigeria's external reserve has not been channeled to support economic growth in the past years; the long run result suggested that proper management and channeling of the external reserve can bring about the needed growth in the country. The findings of this study are in line with Aluko (2007) and Ojukwu (2007). Aluko holds that external reserve impact positively on the level of economic activities as more funds became available for investment in productive activities and for Ojukwu (2007), external reserve have a significant impact on economic growth. Some scholars argued that high holdings of external reserve can be detrimental to growth; as such holdings could be invested on social and economic infrastructure that will better support economic growth. Osabuohien and Egwakhe, 2008 are of the opinion that keeping scarce resources in reserve when there is a series of issues to be attended to domestically, such as education and health among others, may not be a very wise decision. Developing countries have been moved by the craze for high reserve as it is strong collateral for international loan and rating of the country, this practice however, have affected the pace of economic growth.

The results further revealed that a negative relationship exist between exchange rate and real gross domestic product in the short run and a positive relationship in the long run. For every one unit increase in exchange rate , Real Gross Domestic Product (RGDP) will fall by 0.380006 units in the short run and in the long run, 1 unit change in exchange rate will result in 0.501439 units rise in Real Gross Domestic Product. This implies that, fluctuations in exchange rate has a negative relationship with the growth rate of real gross domestic product, increasing exchange rate will lead to fall in real gross domestic product (RGDP). This conforms to economic realities, as Nigeria economy is majorly dependent on importations of goods and services; the slightest increase in foreign exchange affects the prices of goods and services. Recently, exchange rate fluctuations have left greater uncertainty in international trade, leaving investors skeptical about investing, as the risk becomes higher. Nigerian economy as described by Aluko (2007) as a casino economy, his description is based on the fact that about every business in Nigeria is into buying and selling, core manufacturing does not take place here. Exchange rate stability is thus, a core macroeconomic objective.

The result suggested that exchange rate can support the growth of the economy, other things being equal, in the long run, and with proper management of the economy. Exchange rate can become stable and lower, thereby, bringing about increase economic growth.

5. Conclusion

External reserve management in Nigeria is a topical issue. Management of the external reserve has been of great difficulty to the nation. The government should be willing to use the countries reserve to fine tune economic growth rate. Nigeria should move from the practice of stocking external reserve just to support foreign exchange and set a platform where the reserve can be used for infrastructural development in order to support economic growth. Channeling Nigeria's external reserves to other investment outlets will help drive the economy rapidly. The country's reserves are adequate but might not be in surplus compared to best practices if one considers all the reserves adequacy measures. The study suggests that to reduce the opportunity cost of holding Nigeria's foreign reserves, part of the reserves should be invested for economic development in the areas of health, education, and the provision of infrastructures (such as electricity, good water, road, railroad etc) that will further minimize poverty and support the growth of the economy.

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Appendix

Overparamatised error correction model

Dependent Variable: LOG(RGDP)
Method: Least Squares
Sample(adjusted): 1985 2012
Included observations: 28 after adjusting endpoints

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	0.411545	0.312078	1.318726	0.2029
LOG(RGDP(-1))	0.933098	0.055736	16.74130	0.0000
EXR	9.575607	1.316706	0.729311	0.4747
EXR(1)	-9.786707	1.903406	-0.515575	0.6121
EXR(2)	1.148306	1.286506	0.889042	0.3851
EXCHR	0.000465	0.000511	0.910439	0.3740
EXCHR(1)	-0.000232	0.000681	-0.340568	0.7372
EXCHR(2)	6.540205	0.000476	0.137444	0.8921
ECM(-1)	-0.540905	0.000348	0.270002	0.8002

R-squared	0.794947	Mean dependent var	6.063521
Adjusted R-squared	0.792819	S.D. dependent var	0.371637
S.E. of regression	0.031492	Akaike info criterion	-3.823047
Sum squared resid	0.018844	Schwarz criterion	-3.394838
Log likelihood	62.52266	F-statistic	467.6254
Durbin-Watson stat	1.796137	Prob(F-statistic)	0.000000

Source: Author's Computation using E-views