

The Impact of Exchange Rate Fluctuation on the Nigerian Economic Growth: An Empirical Investigation

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DOI Link: <http://dx.doi.org/10.6007/IJARBSS/v4-i8/1091>

Published Date: 17 August 2014

Abstract

This research study examined the impact of exchange rate on economic growth from 1986 to 2013. The main type of data used in this study is secondary; sourced from Central Bank of Nigeria Statistical Bulletin of various issues. From 1986 being the year the monetary authority shifted from fixed exchange rate regime to flexible exchange rate regime to 2013. The correlation and regression analysis of the ordinary least square (OLS) were used to analyze the data. The result revealed that exchange rate has positive impact but not significant with ($\beta = 0.014$, $t = 1.783$, Pns) this affirms previous studies that developing countries are relatively better off in the choice of flexible exchange rate regimes. The result also indicated that interest rate and rate of inflation have negative impact on economic growth but not significant with ($\beta = -0.002$, $t = -0.015$, Pns) and ($\beta = -0.023$, $t = -0.716$, Pns) respectively. Therefore, the paper recommended that government should encourage the export promotion strategies in order to maintain a surplus balance of trade and also conducive environment, adequate security, effective fiscal and monetary, as well as infrastructural facilities should be provided so that foreign investors will be attracted to invest in Nigeria

Key Words: Exchange Rate, Interest Rate, Inflation Rate, Economic Growth, Liberalization and Nigeria.

Introduction

Exchange rate is the price of one country's currency expressed in terms of some other currency. It determines the relative prices of domestic and foreign goods, as well as the strength of external sector participation in the international trade. Exchange rate regime and interest rate remain important issues of discourse in the International finance as well as in

developing nations, with more economies embracing trade liberalization as a requisite for economic growth (Obansa, Okoroafor, Aluko and Millicent, 2013). In Nigeria, exchange rate has changed within the time frame from regulated to deregulated regimes. Ewa, (2011) agreed that the exchange rate of the naira was relatively stable between 1973 and 1979 during the oil boom era and when agricultural products accounted for more than 70% of the nation's gross domestic products (GDP). In 1986 when Federal government adopted Structural Adjustment Policy (SAP) the country moved from a peg regime to a flexible exchange rate regime where exchange rate is left completely to be determined by market forces but rather the prevailing system is the managed float whereby monetary authorities intervene periodically in the foreign exchange market in order to attain some strategic objectives (Mordi, 2006). This inconsistency in policies and lack of continuity in exchange rate policies aggregated unstable nature of the naira rate (Gbosi, 2005).

Benson and Victor, (2012) and Aliyu, (2011) noted that despite various efforts by the government to maintain a stable exchange rate, the naira has depreciated throughout the 80's to date. Against this background, this research study intends to investigate the impact of exchange rate on economic growth in Nigeria over a period of 28 years (1986 – 2013).

Empirical Review Of Exchange Rate And Economic Growth

Exchange rate is the price of one country's currency in relation to another country. It is the required amount of units of a currency that can buy another amount of units of another currency.

Aliyu (2011) asserted that appreciation of exchange rate results in increased imports and reduced export while depreciation would expand export and discourage import. Also, depreciation of exchange rate tends to cause a shift from foreign goods to domestic goods. Hence, it leads to diversion of income from importing countries to countries exporting through a shift in terms of trade, and this tends to have impact on the exporting and importing countries' economic growth.

In the same vein, Hossain (2002) agreed that exchange rate helps to connect the price systems of two different countries by making it possible for international trade and also effects on the volume of imports and exports, as well as country's balance of payments position. Rogoffs and Reinhartl (2004) also opined that developing countries are relatively better off in the choice of flexible exchange rate regimes.

Previous research on the impact of exchange rate on economic growth has reached contrasting results. For instance, Empirical evidence showed that real exchange rate variations can affect growth outcomes. Edwards and Levy Yeyati (2003) found evidence that countries with more flexible exchange rate grow faster. Faster economic growth is significantly associated with real exchange rate depreciation (Hausmann, Pritchett, and Rodrik 2005). Rodrik (2009) argued that real undervaluation promotes economic growth, increases the profitability of the tradable sector, and leads to an expansion of the share of tradable in domestic value added. He claims that the tradable sector in developing countries can be too small because it suffers more than the non-tradable sector from institutional weaknesses and market failures. A real exchange rate undervaluation works as a second-best policy to compensate for the negative effects of these distortions by enhancing the sector's profitability. Higher profitability promotes investment in the tradable sector, which then expands, and promotes economic growth.

Asher (2012) examined the impact of exchange rate fluctuation on the Nigeria economic growth for period of 1980 – 2010. The result showed that real exchange rate has a

positive effect on the economic growth. In a similar study, Akpan (2008) investigated foreign exchange market and economic growth in an emerging petroleum based economy from 1970-2003 in Nigeria. He found that positive relationship exists between exchange rate and economic growth. Obansa, Okoroafor, Aluko and Millicent (2013) also examined the relationship between exchange rate and economic growth in Nigeria between 1970 – 2010. The result indicated that exchange rate has a strong impact on economic growth. They concluded that exchange rate liberalization was good to Nigerian economy as it promote economic growth. Azeez, Kolapo and Ajayi (2012) also investigated the effect of exchange rate volatility on macroeconomic performance in Nigeria from 1986 – 2010. They discovered that exchange rate is positive related to Gross Domestic Product. Adebisi and Dauda (2009) using error correction model argued on the contrary that trade liberalization promoted growth in the Nigerian industrial sector and stabilized the exchange rate market between 1970 and 2006. To them, there was a positive and significant relationship between index of industrial production and real export. A one per cent rise in real export increases the index of industrial production by 12.2 per cent. By implication, it means that the policy of deregulation impacted positively on export through exchange rate depreciation.

However, past studies also showed that exchange rate has no significant effect on economic growth performance. For example, Bosworth, Collins, and Yuchin (1995) provided evidence that in a large sample of industrial and developing countries, real exchange rate volatility hampers economic growth and reduces productivity growth. Ubok-udom (1999) examined the issues surrounding the implementation of SAP in Nigeria, and drew up a conclusion that the peculiar features of Nigerian economy reduced the efficacy of currency depreciation in producing desirable effects. From the study of the relationship between exchange rate variation and growth of the domestic output in Nigeria (1971-1995); he expressed growth of domestic output as a linear function of variations in the average nominal exchange rate. He further used dummy variables to capture the periods of currency depreciation. The empirical result showed that all coefficients of the major explanatory variables have negative signs. David, Umeh and Ameh (2010) also examined the effect of exchange rate fluctuations on Nigerian manufacturing industry. They employed multiple regression econometric tools which revealed a negative relationship between exchange rate volatility and manufacturing sector performance.

Aghion *et al.* (2009) found a similar result, but they also showed that the negative effect of real exchange rate volatility on economic growth shrinks in countries with higher levels of financial development.

Barkoulas *et al* (2002) examined the impact of exchange rate fluctuation on the volume and variability of trade flows. They concluded that, exchange rate volatility discourages expansion of the volume of trade thereby reducing its benefits. Eichengreen and Leblang (2003) carried out their research in 12 countries over a period of 120 years and found strong inverse relationship between exchange rate stability and growth. They concluded that the results of such estimations strongly depend on the time period and the sample. Ogun (2006) studied on the impacts of real exchange rate on growth of non-oil export in Nigeria highlighted the effects of real exchange rate misalignment and volatility on the growth of non-oil exports. He employed the standard trade theory model of determinants of export growth and two different measures of real exchange misalignment, one of which entails deviation of the purchasing power parity (PPP), and the other which is model based estimation of equilibrium real exchange rate (ERER). He observed that irrespective of the alternative

measures of misalignment employed, both real exchange misalignment and volatility adversely affected growth of Nigerian non-oil exports. Arize, Osang, and Slottje (2000) found a significant negative relationship between increases in exchange rate volatility and exports in developing countries. Servén (2003) showed that real exchange rate volatility negatively affects investment in a large panel of developing countries. This negative impact is significantly larger in countries with highly open economies and less developed financial systems. He also found evidence of threshold effects, whereby uncertainty only matters when it is relatively high. A similar study, Eme and Johson (2012) investigated the effect of exchange rate movements on real output growth in Nigeria for the period 1986 – 2010. The result revealed that there is no evidence of a strong direct relationship between changes in exchange rate and output growth. Rather, Nigeria economic growth has been directly affected by monetary variables. Therefore, it hypothesized that:

H₀₁: Exchange Rate has no positive significant impact on economic growth of Nigeria.

Methodology

Data used are sourced from the Central Bank of Nigeria Bulletin various issues. The main type of data used in this study is secondary; sourced from Central Bank of Nigeria Statistical Bulletin of various issues. From 1986 being the year the monetary authority shifted from fixed exchange rate regime to flexible exchange rate regime to 2013. The models used in this study are estimated using annual Nigeria data on some macro-economic indicators, which includes: Gross Domestic Products (GDP); Exchange Rate (EXR); Interest Rate (INR) and Inflation Rate (IFR) for the period 1986 – 2013. The correlation and multiple regression analysis of the ordinary least square (OLS) is the estimation technique that is being employed in this study to determine the impact of the Exchange Rate on economic growth proxy by Gross Domestic Product (GDP).

Table 1: GDP growth rate, exchange rate, interest rate and rate of inflation in Nigeria (1986 – 2013)

Year	GDP Growth Rate	Exchange Rate	Interest Rate	Rate of Inflation
1986	3.7	2.02	9.93	6.25
1987	0.5	4.02	13.96	11.765
1988	9.2	4.54	16.62	34.24
1989	7.3	7.39	20.44	49.02
1990	8.3	8.04	25.30	7.8
1991	4.6	9.91	20.04	12.195
1992	3.0	17.30	24.76	44.565
1993	2.7	22.05	31.65	57.14
1994	1.3	21.89	20.48	57.42
1995	2.2	81.20	20.23	72.73
1996	3.4	81.20	19.84	29.29
1997	3.2	82.00	17.80	10.67
1998	2.4	84.00	18.18	7.86
1999	2.8	93.95	20.29	6.62
2000	3.9	102.10	21.27	6.94

2001	4.6	111.93	23.44	18.87
2002	3.5	121.00	24.77	12.88
2003	10.335	129.30	20.71	14.03
2004	10.5	133.50	19.18	15.00
2005	5.393	131.66	17.95	17.86
2006	6.211	128.65	16.90	8.22
2007	6.972	134.05	16.94	5.42
2008	5.9846	132.37	15.48	11.58
2009	6.96	132.60	18.36	12.54
2010	7.161	148.68	17.59	13.72
2011	7.356	146.20	16.02	10.80
2012	6.322	150.20	12.00	12.20
2013	7.161	156.00	12.00	10.67

Source: CBN Bulletin and Nigeria Economic Indicators (<http://www.economywatch.com/economic-statistics/country/Nigeria/year-2013>)

Model Specification

Model which specifies that economic growth (GDP) is significantly influenced by the Exchange Rate, Interest Rate and Rate of Inflation are formulated as follows;

$$GDP = f(EXR, INR, IFR)$$

$$\ln GDP = \beta_0 + \beta_1 \ln EXR + \beta_2 \ln INR + \beta_3 \ln IFR$$

LnGDP = Gross Domestic Product

LnEXR = Exchange Rate

Ln INR = Interest Rate

LnIFR = Inflation Rate

β = intercept

$\beta_1 - \beta_3$ = Coefficient of the independent variables

Note: All variables are in their natural logarithm form.

Data Analysis and Interpretation of Result

Table 2

Correlations

		GDP Growth Rate	Exchange Rate	Interest Rate	Inflation Rate
GDP Growth Rate	Pearson Correlation	1	.367	-.152	-.289
	Sig. (2-tailed)		.055	.439	.135
	N	28	28	28	28
Exchange Rate	Pearson Correlation	.367	1	-.264	-.429*
	Sig. (2-tailed)	.055		.174	.023
	N	28	28	28	28
Interest Rate	Pearson Correlation	-.152	-.264	1	.440*
	Sig. (2-tailed)	.439	.174		.019

	N	28	28	28	28
Inflation Rate	Pearson Correlation	-.289	-.429*	.440*	1
	Sig. (2-tailed)	.135	.023	.019	
	N	28	28	28	28

*. Correlation is significant at the 0.05 level (2-tailed).

Table 2 shows that exchange rate has positive relationship with economic growth but not significant. This implies that exchange rate volatility contributes 3.67% to Gross Domestic Product. This result is in line with Ashar, (2012), Akpan, (2008) and Azeez et al, (2012) that exchange rate has positive relationship with Nigeria economic growth. But interest rate and rate of inflation have inverse effect on economic growth. This implies that the higher the interest rate and rate of inflation the lower the level of Gross Domestic Product. This result conform to Ashar (2012) that interest has negative relationship with economic growth but inflation rate result is not in line with her finding.

Table 3: Regression Result

Variable	Co-efficient	t- value	P
Constant	4.558	1.783	0.087
Exchange Rate	0.014	1.426	0.167
Interest Rate	-0.002	-0.015	0.988
Inflation Rate	-0.023	-0.716	0.481
R ²	0.156		
Adj. R ²	0.050		
F – Value	1.478		
probability	0.245		

The value of the intercept which is 4.558 shows that the Nigerian economy will experience a 4.558 increase when all other variables are held constant. The estimate coefficients which are 0.014 {Exchange Rate} shows that a unit change in Exchange Rate will cause a 0.1.4% increase in GDP, -0.002 {Interest Rate} shows that a unit change in Interest Rate will cause a 0.2% decrease in GDP, -0.023 {Inflation Rate} shows that a unit change in Inflation Rate will cause a 0.2.3% decrease in GDP. The result shows that exchange rate has positive impact on economic growth and this result is in line with previous studies (Asher, 2012; Azeez et al, 2012 and Obansa *et al*, 2012) that exchange rate has positive impact on Gross Domestic Product.

Conclusion and Recommendation

This research study examined the impact of exchange rate on economic growth from 1986 to 2013. The result revealed that exchange rate has positive impact but not significant with ($\beta = 0.014$, $t = 1.783$, Pns) this affirms previous studies that developing countries are relatively better off in the choice of flexible exchange rate regimes. The result also indicated that interest rate and rate of inflation have negative impact on economic growth but not significant with ($\beta = -0.002$, $t = -0.015$, Pns) and ($\beta = -0.023$, $t = -0.716$, Pns) respectively. From the empirical reviewed work, some authors argued that exchange rate is positively related to economic growth, while some authors argued that it is negatively related. However,

from empirical analysis of the study, it was found that exchange rate is positively related to output growth. Therefore, this paper recommended that government should encourage the export promotion strategies in order to maintain a surplus balance of trade and also conducive environment, adequate security, effective fiscal and monetary, as well as infrastructural facilities should be provided so that foreign investors will be attracted to invest in Nigeria

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