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Responsiveness of Flexible Foreign Exchange Regime (FFER) to Economic Growth in Nigeria

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Abstract: This study focused on responsiveness of flexible foreign exchange regime to economic growth in Nigeria. Specifically the study sought to; (1) investigate the relationship between flexible exchange regime and interest rate. (2) Determine whether flexible exchange regime responds positively to inflation rate (3) ascertain the level of association between flexible exchange regime and real exchange rate in Nigeria. The researchers adopted time series data from 1989 -2015 which were drawn from Central Bank of Nigeria (CBN) statistical bulletin. The analysis of data was done using descriptive statistical and ordinary least square (OLS) regression technique. The result shows that there is significant and positive relationship between flexible exchange rate regime and interest rate. The study further reveals that there is a negative and significant relationship between flexible foreign exchange regime, Inflation rate and real exchange rate. The study therefore recommended that CBN and Government should ensure significant improvement in the allocation efficiency of foreign exchange market and enhance public confidence in the Nigerian Economy.

Keywords: Flexible Foreign Exchange Regime, Inflation Rate, Interest Rate, Real Exchange Rate and OLS

Introduction

Trade among countries involves exchange of different currencies. The need for exchange of currencies arises as a result of international trade and financial globalization. If a Nigerian businessman wants to import goods from America, he must first of all change the Nigerian Naira to US Dollar. This defines foreign exchange market as any where the price of one country's currency is determined in terms of another country's currency (Agu, 2010)

The foreign exchange market could be described as a special type of money market. In ordinary market, various securities are exchanged for money, while in the foreign exchange market, it is currencies or financial claims in one country's currency that exchange for the other and is known as exchange rate. The currencies bought and sold in the foreign exchange market may be delivered in physical cash or by the use of financial claims which banks and other residents of one country has in another country.

The foreign exchange market that we see today started evolving during 1970's when world over countries gradually switched to floating exchange rate from their erstwhile exchange rate regime which remained fixed as per the Bretton Woods System till 1971 (Obadan, 2006)

Prior to 20th June, 2016 pronouncements by the CBN governor, Nigeria has been operating dual exchange regime i.e. autonomous foreign exchange regime and the interbank foreign exchange regime. The autonomous foreign exchange regime is the regime in which authorized dealers (that is, Nigerian banks that have been licensed by the CBN to deal in foreign exchange) and authorized buyers (being corporate bodies approved by the CBN to buy foreign exchange), together with foreign exchange end-users and the CBN itself are participants. The inter-bank foreign exchange regime is the regime in which end-users, authorized dealers and authorized buyers participate, residents and non-residents alike may only access the official foreign exchange market to purchase foreign exchange for qualifying eligible transactions (Oyetunji, 2017)

A flexible foreign exchange regime is a monetary system that allows the exchange rate to be determined by forces of supply and demand.

Flexible exchange regimes were rare before the late twentieth century. Prior to World War II, governments used to purchase and sell foreign and domestic currency in order to maintain a desirable exchange rate, especially in accordance with each country's *trade policy*. After a few experiences with flexible exchange rates during the 1920s, most

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countries went back to the gold standard (Al-Khazali, Ledue and Pyun (2011)

The flexible foreign exchange regime was re-introduced in Nigeria by CBN in June, 2016. The new guideline was introduced to achieve a liberalized, efficient, liquid and transparent foreign exchange market (Emefiele, 2016). From the provisions of the foreign exchange guidelines, the CBN established a Single Market Structure for the Autonomous inter-bank market, with CBN participating in the Foreign exchange inter-bank market either through direct interventions or through indirect secondary interventions. The participants in the Foreign exchange inter-bank market according to Oserogho (2016) include licensed Authorized Dealers, licensed buyers, oil and oil service-companies, exporters and other end-users.

Statement of the Problem

Nigeria has been dealing with the effects of three significant and simultaneous global shocks which began around the third quarter of 2014. According to Emefiele (2016) the issues are; that Nigerian crude oil price has dropped at about 70% which contributed the largest share of our foreign exchange reserve, the interplay between reduced foreign exchange supply and rising foreign exchange demand accounted for a substantial reduction in our foreign exchange reserve.

The CBN governor informed the Nation that by the new exchange rate regime, CBN would allow the Naira to float against the US dollar at the inter-bank market, rather than holding on to a fixed peg. What this means, however, he said, is that buyers of foreign exchange for importation of goods, holiday, school fees, medical tourism, online payments etc, will have to source for foreign exchange from the inter-bank market determined rates and will no longer be able to buy FOREX at N199 or whatever official rate the CBN decides to adopt.

Oyetunji (2017) observes that Nigeria's economy is highly dependent on crude oil, which constitutes a major source of the country's foreign exchange earnings and government revenue. As a result, the sharp decline in crude oil prices has adversely affected Nigeria's foreign earnings and reserves; the value of the Naira against major world currencies, the availability of foreign exchange in Nigeria has contributed to widening of the disparity between the exchange rates in the official and the parallel foreign exchange markets.

In a bid to control the decline in the country's foreign reserves, the Central Bank of Nigeria (CBN) has adopted a number of measures to manage access to the official foreign exchange market that has, traditionally, been subsidized by the federal government of Nigeria.

In the light of the foregoing, researcher's concern is therefore to evaluate the responsiveness of flexible foreign exchange regime to economic growth in Nigeria.

Objectives of the study

The broad objective is to determine the responsiveness of flexible foreign exchange regime to economic growth in Nigeria. Specifically the study sought to;

- Investigate the relationship between flexible exchange regime and interest rate in Nigeria.
- Determine whether flexible exchange regime impacted on Inflation rate in Nigeria
- Ascertain the level of association between flexible exchange regime and real exchange rate in Nigeria.

Research Questions

- To what extent does flexible exchange regime impact on interest rate?
- To what degree does flexible exchange regime respond to inflation rate in Nigeria?
- What is the level of association between flexible exchange regime and real exchange rate in Nigeria?

2.0 Review of Related Literature

2.1 Conceptual framework

2.1.1 Flexible Foreign Exchange Regime:

Perchstone and Gracys (2016) describes in simple terms, a flexible foreign exchange regime as one that allows the exchange rate to float freely and to find its equilibrium without any form of intervention from government. Indeed, globally, according to them, governments rarely operate a clearly defined exchange rate regime. What you would have is a situation where the market operates a model that hovers between the polar opposites (fixed or floating) depending on the level of government intervention. Thus, a regime that witnesses a lot of government intervention is considered relatively fixed while one which witnesses minimal interventions would be defined as flexible. Also, the extent of such intervention is limited by the size of the government's foreign reserves.

Sullivan (2003) describes a flexible exchange-rate system as a monetary system that allows the exchange rate to be determined by supply and demand forces. Here, every currency area must decide what type of exchange rate arrangement to maintain. Between permanently fixed and completely flexible, that however, is heterogeneous in approaches. He observes that the approaches have different implications for the extent to which national

authorities participate in foreign exchange markets. The degree of flexibility in foreign exchange of, post-Bretton Woods-exchange rate regimes are arranged into three categories: currency unions, dollarized regimes, currency boards and conventional currency pegs are described as "fixed-rate regimes"; Horizontal bands, crawling pegs and crawling bands are grouped into "intermediate regimes"; Managed and independent floats are described as flexible regimes. All monetary regimes except for the permanently fixed regime experience the time inconsistency problem and exchange rate volatility, albeit to different degrees.

Flexible exchange rate is an exchange rate which fluctuates depending on the supply and demand of a currency in relation to other currencies. If there is a high demand for a particular currency, its exchange rate relative to other currencies increases, on the other hand, if there is less demand, its value decreases.

Real Exchange Rate (RER)

Real exchange rate can be defined from both external and internal perspective. External real exchange is the nominal exchange rate adjusted for price level difference countries. It is the ratio of the aggregate foreign price level or cost level to the home country's aggregate price level or cost measured in a common currency. Internal real exchange rate measures the relative prices of two broad categories of goods tradable and non-tradable goods: ratio of the domestic price of tradable to non-tradable goods is to capture the internal relative price incentive in a particular economy for producing or consuming tradable as opposed to non tradable goods. In general, the real exchange rate (RER) as the name implies, is a real concept that measure the relative price of two goods (goods and services produced and consumed locally) (Drabek and Brabek, 1998)

2.1.2 The structure of Nigeria's foreign exchange market

Nigeria's foreign exchange market is made up of three major segments, the official market, autonomous market (made up of inter-bank and bureau de exchange) and the parallel markets. The various segments of the markets evolved overtime owing to developments in the economy (Adekanyc, 2010 in Alabi, 2015). The operations of the official foreign exchange market have metamorphosed over the years, particularly since the introduction of the exchange and trade liberalization policy in 1986, the official market was unified in 1987 when the exchange rate for public sector transactions was aligned with the commercial exchange rate.

The inter-bank market for free funds or privately sourced foreign exchange was at the early stage dominant as foreign exchange was centralized in the CBN under the 1962 Exchange Control Act. According to Ojo (1976), this is a market where banks extend credit facilities among themselves to meet very short-term liquidity obligations ranging from overnight borrowing up to one year. The market is characterized with rapid transmission of information on rates to all the participants, though dominated by few market leaders who influenced the borrowing rate.

However, the market became vibrant with the introduction of Second - tier Foreign Exchange Market (SFEM) and the permission granted banks by the CBN to affect foreign exchange dealings among themselves (Alabi, 2015)

The sharp practices which emanated from the system in form of round tripping of funds led to persistent instability in the exchange rate. Consequently, the official foreign exchange market and the inter-bank market were merged in 1989 into an enlarged inter-bank foreign exchange market (IFEM). The bureau de change was established with the abolition of the inter-bank market in the same year to accord access to small users of foreign exchange market.

Exchange rates in the bureau de change were market determined. In 1995, the official market evolved from a single to a dual exchange rate system in which a fixed exchange rate was applied for priority public sector transaction, while a market based exchange rate was used for private sector transactions through the Autonomous Foreign Exchange Market (AFEM) segments.

With the introduction of AFEM in 1995, Oloyede (1999) observes that the banks were once more allowed to engage in inter-bank dealings with only privately sourced foreign exchange. However, the operations of the AFEM failed to meet the objectives for which it was set up. For instance, the inter-bank market, which was supposed to source its funds privately, relied on the CBN. In effect, the CBN continued to fund the various foreign exchange market transactions.

As demand pressure continued to rise from this arrangement which has led to the depreciation of the naira at the foreign exchange market, some reforms were introduced. By January 1999, the fixed official rate for priority sector transactions were conducted at the AFEM market based rate (CBN, 2004). Later in the same year the AFEM was replaced by the inter-bank foreign exchange market through the active participation of other players, such as, banks, oil companies, non-bank financial institutions

parastatals, bureau de change and private companies. The CBN was therefore, not expected to act as the major supplier of foreign exchange but as a participant who would only intervene in the buying and selling of foreign exchange as and when necessary.

The parallel market for foreign exchange has been in existence from the exchange control era (Oloyede, 1999). Since the market based reforms, the widening disparity in exchange rates has further strengthened the existence of the parallel market, owing largely to the windfall gains arising there from. The parallel market is a residual market as it accommodates spill over demands from other sources (Nnanna, 2005). It has been established that scarcity in the official source and bureaucratic procedures necessitated the growth and development of the parallel market. In any foreign exchange management framework, whether in developed or developing economies, speculations, arbitrage, hedging and portfolio switching are important elements in gauging the health and development of the foreign exchange market and by extension, the financial system.

2.1.3 Inflation Rate

Inflation is the rate at which the general level of prices for goods and services is rising and, consequently, the purchasing power of currency is falling. Central banks attempt to limit inflation, and avoid deflation, in order to keep the economy running smoothly.

As a result of inflation, the purchasing power of a unit of currency falls. For example, if the inflation rate is 2%, then a pack of gum that costs \$1 in a given year will cost \$1.02 the next year. As goods and services require more money to purchase, the implicit value of that money falls.

2.2 Theoretical framework

This study is anchored on some advances in exchange rate theories such as:

i. The Portfolio Balance Theory: This theory developed by Branson (1975), assumes that residents distribute their wealth among three forms of assets – monetary base, domestic bonds, and foreign bonds. Exchange rate is in equilibrium when the holding of these assets are in their desired proportion. In portfolio analysis, the current account balance becomes the reflection of the government budgetary imbalance when the private sector is satisfied with the holding of financial assets. The inability of government to sell bonds to foreigners without an excessive fall in their prices reflected in the overall balance of payment deficit.

ii. The Purchasing Power Parity (PPP) Theory: According to Jhingan (2011), this theory states that equilibrium exchange rate between two inconvertible papers currencies is determined by the equality of the relative change in the price levels in the two countries. International competitiveness is measured by comparing the relative prices of the good from different countries when these are measured in a common currency. The Purchasing Power Parity Path for the nominal exchange rate is the path that would keep competitiveness constant overtime. According to this theory, countries with higher domestic inflation than their competitors would face a depreciating nominal exchange rate, while countries with lower domestic inflation than their competitors would face appreciating exchange rates.

iii. The Balance of Payments Theory: As demonstrated by Jhingan (2011), under a free exchange rate regime, a country's exchange rate depends upon its Balance of Payments. A favorable Balance of Payments raises the exchange rates, while an unfavorable balance of payments reduces the exchange rate. By implication, exchange rate is determined by the demand and supply of foreign exchange. According to this theory, adjustments in the balance of payments can be made through devaluations and revaluations of some currencies in the case of deficits and surpluses, respectively, in the balance of payments. McKinnon and Schnabl (2003) have argued that for small Open East Asian economies, fluctuations of the Japanese Yen against the U.S. dollar strongly affected the growth performance of the whole region. They identified trade with Japan as a crucial transmission channel.

Before 1965, the appreciation of the Japanese Yen against the U.S dollar enhanced the competitiveness of the smaller East Asian economies who kept the exchange rate in the region accelerated. The strong depreciation of the Yen against the dollar from 1965 into 1967 slowed growth, contributing to the 1997/98 Asian crisis (Eze and Okpala, 2014)

3.0 Methodology

3.1 Research Design

This research used *ex-post facto* research design. The *ex-post facto* research design also known as causal comparative research involves the ascertaining of past factors on the present happening of an event. It means finding out if an event that occurred in the past has any influence in bringing about the present event. A combination of descriptive statistics, covariance test, correlation and regression were employed in carrying out the necessary preliminary and diagnostic test. Augmented Dickey Fuller (ADF) test was used for unit root test. The design adopted is used to evaluate the relationship between flexible exchange rate regime and economic growth in Nigeria. The

researcher also made use of correlation coefficient analysis to measure the magnitude of relationship that exists between flexible exchange rate regime and interest rate in Nigeria. The impact of flexible exchange regime on inflation rate was measured using the regression analysis

3.2 Nature and sources of Data

The main type of data used in this study is secondary; sourced from Central Bank of Nigeria Statistical Bulletin and Nigerian Economic Indicators various issues for the period of 1989 -2015. Year 1989 was regarded as the year the monetary authority shifted from fixed exchange rate regime to flexible exchange regime in Nigeria (Sinha, 2013). The research variables are structured into dependent and independent variables. The dependent variable of the research is flexible exchange regime while the independent variables are Interest rate, Inflation rate and Real Exchange rate.

3.3 Model Specification

Model is a simplified view of reality designed to enable a researcher describe the essence and inter relationship within the system or phenomenon it depicts. The objectives of the study were analyzed using the Ordinary Least Square (OLS) Regression Model.

The model used in this study was adopted from the work of Ajekwe, Korna and Idyu (2013) with little modifications to suit this study.

The model specification used in this study is stated as follows;

$$FXR = f(REXR, INTR, INFR) \text{-----} 3.3.1$$

We can also specify the above equation in an econometric form;

$$\text{LogFXR} = \beta_0 + \beta_1 \text{LogREXR} + \beta_2 \text{LogINTR} + \beta_3 \text{LogINFR} + \mu_t \text{-----} 3.3.2$$

While the log-linear function of the model is specified thus;

$$\text{LogFXR} = \text{Log}\beta_0 + \beta_1 \text{LogREXR} + \beta_2 \text{LogINTR} + \beta_3 \text{LogINFR} + \mu_t \text{-----} 3.3.3$$

Where;

LogFXR = Flexible Exchange Regime -----
Dependent Variable

LogREXR = Real Exchange Rate -----independent
Variable

LogINFR = Inflation Rate -----independent Variable

LogINTR = Interest Rate-----independent variable

β_0 = intercept (Constant term)

$\beta_1 - \beta_3$ = Coefficient of the parameter estimates or the slope

μ_t = Error term.

t = time period.

Apriori Expectation = $\beta_1, \beta_2 > 0$

Hypotheses testing

The research hypotheses are stated as follows

- Ho; there is no positive and significant relationship between Flexible Exchange Regime and interest rate.
- Ho; Flexible Exchange Regime does not impact on Inflation Rate.
- Ho; there is no significant level of association between flexible exchange regime and real exchange rate.

4.1 Presentation of data, Analysis, findings and Recommendations

Table 4.1: shows the Flexible Exchange Rate, Real Exchange Rate, Interest Rate and Inflation Rate in Nigeria (1989-2015)

Year	FXR	INTR	REXR	INFR
1989	236729.6	26.80	7.36	40.90
1990	267550	25.50	8.04	7.50
1991	265379.1	20.01	9.9095	13.00
1992	271365.5	29.80	17.298	44.50
1993	274833.3	18.32	22.065	57.20
1994	275450.6	21.00	21.996	57.00
1995	271407.4	20.18	21.895	72.73
1996	293745.4	19.74	21.884	29.29
1997	302022.5	13.54	21.886	8.50
1998	310890.1	18.29	21.886	10.00
1999	312183.5	21.32	92.34	6.62
2000	329178.7	17.98	101.697	6.94
2001	356994.3	18.29	111.231	18.87
2002	433203.5	24.85	120.578	12.90
2003	477533	20.71	129.22	14.03
2004	527576	19.18	132.89	15.00
2005	561931.4	17.95	131.27	11.60
2006	595821.1	17.26	128.65	8.22

2007	634251.1	16.94	125.81	6.60
2008	672202.6	15.14	118.55	15.10
2009	718977.3	18.99	148.9	12.54
2010	775525.7	17.59	150.2	11.80
2011	834161.8	16.02	153.9	10.40
2012	888892.9	16.79	157.49	12.20
2013	950114	16.72	157.31	7.90
2014	1009239	12.00	158.5526	8.05
2015	1037361	14.00	195.5158	9.60

Source: CBN Bulletin and Nigeria Economic Indicators (Various Issues) 2015

DATA ANALYSIS AND INTERPRETATION OF RESULT

Table 4.2 Basic Descriptive Statistics of Variables of

	LFXR	LINFR	LREXR	LINTR
Mean	4.921710	8.767403	135.2985	8.336250
Median	4.889010	9.000604	132.1470	8.440386
Std.Dev	0.160687	0.755696	18.10088	0.833017
Skewness	0.173445	-0.741944	-0.147922	-0.257046
Kurtosis	2.703023	2.144820	1.865599	1.664381
Jarque-Bera	0.139019	1.955504	0.858994	1.365445
Probability*	0.932851	0.376156	0.650836	0.505239
Observations	15	15	15	15

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

Table 4.2 shows the basic descriptive statistics of the variables under study. It measures the central tendency like the mean and median which measures how closely knit the variables are. It also contains measures of spread and variations such as the

standard deviation. The test for normality is shown by Skewness and Kurtosis with Jacque -Berra which is asymptotic combined test for an S (O), K (3) was also shown in the table. These measure the degree of symmetry of the observation respectively.

Table 4.3: Correlation Results

	FXR	LINFR	LREXR	LINTR
FXR	1.000000	0.637960	0.851406	0.823332
LINFR	0.637966	1.000000	0.824366	0.905042
LREXR	0.823332	0.905042	1.000000	0.881075
LINTR	0.851406	0.823466	0.881075	1.000000

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

Table 4.3 contains the correlation analysis of the variables under study. The result indicates that all the variables positively and significantly correlate with

one another with varied percentages. However, the strength of the linear association between LINFR and LINTR is about 91% and the strongest. This implies

that LINTR is stronger in association with LINFR than the other variables under study. REXR shows a stronger association with INTR than with LINFR considering their percentage degree of relationship of 82% and 63% respectively.

Unit Root Test

Unit Root Test which shows the stationarity properties of the series is shown in this section. This is necessary to avoid spurious regression. The Augmented Dickey Fuller (ADF) procedure following the form formation by Dickey and Fuller was adopted in testing for existence of unit root in the time series data, as well as the order of integration of the variables.

Table 4.4 Augment Dickey Fuller (ADF) Unit Root Test Result

VARIABLE	ADF STATISTIC	CRITICAL VALUE @5%	P VALUE	ORDER OF INTEGRATION	RMKS
LFXR	-5.18	-3.83	0.0065	1(1)	Stationary at 1 st differencing
LINTR	-2.13	-1.97	0.0364	1(1)	Stationary at 1 st differencing
LINFR	-4.97	-1.97	0.0001	1(1)	Stationary at 1 st differencing
LGREXR	-3.41	-1.97	0.0025	1(1)	Stationary at 1 st differencing

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

Table 4.3 shows the test for stationary properties of the series following the Augmented Dickey Fuller statistics. It indicates that all the variables have unit root but attained stationarity at first difference with the ADF statistics for the respective variables being more negative than the critical value at 5% level of significance. The reported p-values are less than 0.05. Hence, the null hypothesis of the presence of unit root in all the variables is convincingly rejected.

More so the variables are all integrated of the same order significantly co integration among the variables

under study as opined by Engle and Granger (1985). They argue that when time series data are integrated of the same order 1(1), the data series tend to co integrate. This implies that their short run relationship is sustainable in the long run.

Table 4.4 Regression Analysis

Dependent Variable: FXR
 Method of Least Squares
 Date: 07/13/17 Time: 17.07
 Sample (adjusted): 1989-2015
 Included observations: 15 after adjustments

Variable	Coefficient	Std. Error	t-Statistic	Prob
LINTR	0.176777	0.062988	2.806535	0.0171
LINFR	-0.155125	0.060160	-2.578548	0.0257
LREXR (-1)	0.696195	0.274786	2.533594	0.0278
C	1.412705	0.984168	1.435431	0.1790
R-square ²	0.836685	Mean dependent VAR		4.9414922
Adjusted R-square	0.792144	S.D.dependent VAR		0.144922
S.E. of regression	0.066071	Akaike info criterion		-2.372981
Sum squared resid	0.048020	Schwarz criterion		-22.184167
Log likelihood	21.79735	Hannan-Quinn criter		-2.374992
t-statistic	18.78481	Durbin- Watson stat		2.477386
Prob(F-statistic)	0.000123			

In table 4.4, LogREXR (1) was used as control variable; LINT shows positive and significant relationship on LINTR while LINFR indicate a negative and significant impact on LFXR. The R² reveals that about 83% of the variation in LREXR could be explained by LINFR and LINTR while about 17% (unexplained variation) is blamed on other factors capable of influencing exchange rate (REXR)

that are outside the model. The t-statistics of (18.78481, Prob value =0.0000123 at a critical value of 0.05 shows that the overall regression is significant and can be used for meaningful analysis. There is no evidence of a first order autocorrelation AR (1) considering the Durbin Watson statistics (DW) value of 2.47. By rule of thumb, if the DW statistics is

approximately equal to 2, it is evidence against the existence of a first order serial correlation.

Summary of findings

The study focused on the responsiveness of flexible exchange rate regime to Gross Domestic Product (GDP) in Nigeria for the period of 1989- 2015. The study made the following findings;

1. Flexible exchange regimes have a positive and significant relationship with Interest Rate in Nigeria.
2. Flexible exchange regimes have significant and positive impact on Inflation rate in Nigeria.
3. Flexible exchange regimes have positive level of association with real exchange rate in Nigeria.

Conclusion

This study focused on responsiveness of flexible foreign exchange regime in Nigeria from 1989 to 2015. From the findings above, flexible exchange regimes is a major factor affecting economic growth and development in Nigeria as it impacts significantly on real gross domestic product. Nigeria is a developing country which is in dire need of foreign investment to stimulate domestic economy, seek new technology, modern managerial skill and employment generation for ever increasing population.

Recommendations

Based on the findings, the study recommended;

1. That in order to minimize the exchange rate volatility and keep exchange rates in a compatible mode, any policy on exchange rates that leads to the loss of competitiveness should be avoided by planning well regulated foreign exchange market.
2. Central Bank of Nigeria CBN and government should ensure significant improvement in the allocation efficiency of foreign exchange market and enhance public confidence in the Nigerian Economy.

3. Flexible exchange regime should serve a major incentive to exporters by enabling them to have unfettered access to their export proceeds.

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