
**EXCHANGE RATE REFORMS AND EXPORT PRICE
COMPETITIVENESS IN NIGERIA (2008 – 2018)**

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Abstract

This study wants to empirically examine the impact of the various exchange rate reforms in Nigeria to know whether the country's exchange rate policy regime has significant influence on the export price competitiveness of the country. The study employs the autoregressive distributed lag (ARDL) bounds testing approach to cointegration. The evidence from this study support the proposition that exchange rate reforms was important in improving the export competitiveness of Nigeria, especially during the era of managed exchange rate regime, spanning 1986-2015. However, the findings show that exchange rate reforms alone is not sufficient for export competitiveness to be attained.

Keywords: Exchange Rate, Price competitiveness, Autoregressive distributed lag, Nigeria.

I. INTRODUCTION

The price of an export good is fundamental to how well it competes on the international markets. This competitiveness is further determined by wide-ranging factors including pricing decisions by firms as well as actions of production units. In a study of individual companies by Hinterhuber and Liozu (2014), they found that firms which adopt innovations to establishing prices for export commodities gain advantage over their competitors. This may be applied to countries in international trade, where such innovations may present a most valuable tool to achieve a competitive advantage. Here, the exchange rate becomes the key factor in the determination of the price of an export serving as a critical and dominant element to boosting competitiveness.

The Nigerian government embarked on the Structural Adjustment Programme (SAP) in September 1986. A major plank of the programme was a change in exchange rate regime. In 1978, the country's currency was tied to a basket of seven currencies (Komolafe, 1996). It is acknowledged in the literature that low income countries (LICs) that operate the fixed exchange rate mechanism are prone to structural imbalances such as repressed inflation, large scale fiscal deficit, overhang of foreign debt, currency inconvertibility and overvalued currency (World Economic Outlook, 1995; Sachs, 1996). The wide speculation that the country's currency was overvalued in the mid 1980s was indeed one of the reasons for SAP (Komolafe, 1996). The country complemented this with the setting up of Export Processing Zones where a lot of incentives are provided to promote exports (Tekere, 2000). Such incentives include duty free import of capital and intermediate goods if all or a significant proportion of the goods produced within the zone is exported.

The present study wants to empirically examine the impact of the various exchange rate reforms in Nigeria to know whether the country's exchange rate policy regime has significant influence on the export price competitiveness of the country.

The rest of the paper is organized as follows: Section II gives a brief survey of literature. Section III gives a brief exposition of exchange rate management in Nigeria. Section IV focuses on the theoretical framework and model specification and estimation. While section V reports and discusses the results, section VI concludes the paper.

II. SURVEY OF LITERATURE

The price of an export good is fundamental to how well it competes on the international markets. This competitiveness is further determined by wide-ranging factors including pricing decisions by firms as well as actions of production units. In a study of individual companies by Hinterhuber and Liozu (2014), they found that firms which adopt innovations to establishing prices for export commodities gain advantage over their competitors. This may be applied to countries in international trade, where such innovations may present a most valuable tool to achieve a competitive advantage. Here, the exchange rate becomes the key factor in the determination of the price of an export serving as a critical and dominant element to boosting competitiveness.

Anthanasoglou and Bardaka (2008) developed a demand function for Greece's manufacturing exports based on the New Trade Theory. They used a sample which covered four decades; exports were aggregated based on industrial rather than trade classification. The study adopted the Johansen maximum likelihood approach to estimate the long run and a dynamic error correction equation to estimate the short run, both following economic theory and showed to be stable. In the main, their results showed that exports are sensitive to domestic and competitors' prices in the long run. It indicated that Greek exporters have some ability to compete based on prices as depicted by cost and price competitiveness elasticities which were close to one. They, however, noted that non-price competitiveness also played a vital role in explaining export performance in the long run as well as in the short run and a misspecification may occur if it is not included in the export equation.

Sato et al (2013) investigated the impact of exchange rate appreciation on the export price competitiveness of Japan, Korea and China. They constructed a data set of the industry-specific real effective exchange rate (REER) for the Japanese yen, Korean won, and Chinese renminbi during 2005 – 2013, based on the producer price indices. This they used to provide a better indicator for the international price competitiveness of the three countries. Their results showed a large difference in the level of REER between the countries and across industries. Further, a factor decomposition analysis of industry-specific REER indicated that a period of appreciation in the Korean currency led to a significant drop in domestic producer prices which enhanced the export competitiveness of Korean firms compared to Japanese firms. This was pronounced in the electrical machinery industry. On the other hand, the relative decline of domestic production costs of Japanese automobile firms do not lead to a loss in export competitiveness compared with their Korean counterparts.

Junz and Rhomberg (1973) did an inquiry to the subject after the German mark was revaluated in 1970, which led to greater flexibility in the exchange rates of other global competitors such as Canada and Japan. It coincided with a time where researchers and policy makers showed keen interest to identify if the currency realignment would precipitate reversals in the current account balances of international trading partners. This had been largely premised on their reckoning that the response of trade flows to changes in the exchange rate would mimic general changes in foreign trade prices. The timing of the effect was, however, highly improbable. The study empirically investigated the time it took for changes in relative prices to produce responses in the flow of manufactured goods among industrial countries. They also tested the significance in differences in such responses, if changes in relative prices were precipitated by either adjustments in exchange rates or changes in export prices measured in domestic currencies. The study averred that it would take between 18 and 24 months for the identified currency realignment to produce trade effects among international competitors, and this may take longer due to what they termed recognition, replacement and production lags. It noted, however, that relative prices was a single item among several other determinants of export market share and sole recourse to it may not be a sufficient indicator of external competitiveness.

Lipsev, Molinari and Kravis (1990) produced a paper to present and explain the construction of a set of price indexes relating to international trade in manufactured goods. The Indexes were for export prices for the U.S., Germany, and Japan, based on their weights, and indexes of competitors' prices for each of those countries based on the same set of weights. Second were Indexes of domestic prices for the three (3) countries based on export weights; and then Indexes for developed country exports of manufactures based on weights of developed country exports of manufactures to developing countries, and of total developed country exports of manufactures. A method for estimating missing prices was used to generate the export index, it took account of both contemporaneous price changes in the same country within the same community groups and price changes for the particular commodity in other countries. Comparisons were made between movements of domestic and export prices and between price indexes based on weights of early and late base years. Further, an attempt was made to correct the price indexes for changes in the quality of some manufactured goods not usually taken account of in measures of export or import prices. The basic premise for construction of the aforementioned indexes was the seeming widespread skepticism about the data for prices of manufactured products, among scholars at the time. They were more confident in the reliability of indexes of primary products. (to be completed)

III. EXCHANGE RATE REFORMS IN NIGERIA

Exchange rates are a key macroeconomic variable in economic policy, because of the role they play in policy making and economic reforms. Exchange rates are conceptualized as a link between the price structures of nations and as a result are important to patterns of international commodity flows and international mobility of capital resource. Exchange rates regimes are broadly categorized into Fixed (controlled by Governments) and Floating (controlled by market forces). Exchange rates have been seen to ensure international competitiveness (competitiveness of exports), as well as maintenance of viable balance of payment position. An appropriate

exchange rate and its attendant policy and or reform is key in the achievement of stability in forex markets, as well as limiting distortions in international economic transactions.

Exchange rate reforms in Nigeria are classified into Four viz- (i) Periods of undefined Exchange rate policies, which discusses the exchange rate management prior to the creation of the Central bank of Nigeria i.e. before 1960, (ii) Fixed exchange rate regime which discusses the era after the creation of the Central bank till the adoption of Structural Adjustment Programme (SAP), (iii) the exchange rate management system post- SAP era is also discussed, and lastly the (iv) floating exchange rate regime, the Global Financial Crisis had its impact on the exchange rates and management strategies to curtail its effects are briefly discussed.

Exchange Rate Regime (Before the Establishment of the CBN)

Before the CBN was established in 1958, agriculture was the main source of foreign exchange in Nigeria, and it was mostly earned by private companies who maintained foreign exchange balances in foreign accounts of commercial banks. These banks acted as agents for the local exporters, thus the foreign exchange management was undeveloped especially since the Nigerian pound was at par with the British pound sterling. However, with the establishment of the CBN and the commencement of its operations in 1959, coupled with the export of crude oil, this saw an increase in Nigeria's trading partners and necessitated the need for a more robust exchange rate policy for managing the foreign exchange rate.

Fixed Exchange rate Regime (Between 1959 and Mid-1986)

Fixed Parity with the British Pound Sterling (1959-1962)

Following the British Colonization of Nigeria, the 1958 Central bank Ordinance pegged the Nigerian pound at par with the British pound sterling. The First exchange rate policy was however enacted with the establishment of the central bank of Nigeria in 1959. The CBN was saddled with the responsibility of ensuring the attainment of stable and sound national currency. At that time exchange rate management in most countries followed the global fixed exchange rate arrangement in which currencies were linked to gold. This exchange rate regime was in consonance with the IMF fixed exchange rate system run by most world economies at the time.

Nigerian Pound Pegged to Gold (1962- 1973)

A slight progress occurred in the 1962 Act which rather than allowing the Nigerian pound to continue being fixed at par to the British Pound sterling, the Nigerian pound was defined in terms of gold, this indicated that Nigeria as an independent nation was free to make her own decisions and implied that she could make whatever adjustments deemed necessary per time in the official rate between her currency and other world currencies. This move indeed sent strong signals to the international community of the economic will to chart her own independent monetary policy. In 1967, however the pound sterling was devalued to stimulate the then British economy via growth in exports. This devaluation of the pound sterling by about 14% had no effect on the Nigerian pound, since it was autonomous and the wisdom behind not pegging the Nigerian pound to the British sterling was lauded.

Naira pegged to Dollar 1973- (Introduction of the Naira)

1973 saw a landmark milestone as the Nigerian pound was decimalized and changed from Nigerian Pound to Nigerian naira. However, this time around it was pegged to the US dollar. Notwithstanding, with the introduction of the naira as the official currency, and the increased exports of crude oil in the early 1970's as well as the attendant sharp rise in crude oil prices, an increase in the foreign exchange receipts was recorded. Accordingly, the Foreign exchange market experienced a boom and management of the market became paramount to combat possibility of shortages. The US dollar was devalued by 10% in 1973 due to the (demonetization of gold) i.e. abandonment of the United States of America's obligation to convert the US dollar to gold, in response to this devaluation the naira was devalued by 10%. Further devaluation of the dollar in 1975 led to another devaluation of the naira. It was on the premise of this unfortunate occurrences the decision to manage the naira without solely pegging it to the dollar

Naira pegged to a Basket of Currencies (1978)

In 1978, the Nigerian government decided to peg the naira to a basket of seven currencies, comprising Nigeria's major trade partners viz: the United Kingdom(Pound Sterling), United States (US dollar), Germany (Deutsche mark), France (French Franc), Japan (Japanese Yen), Switzerland (Swiss Francs), and the Netherlands (Dutch guilder). The seven currencies in the basket were assigned weights based on the relative volume of trade transactions with Nigeria. Although the weights of the pound sterling and the US dollar were relatively higher, reflecting the importance of these currencies in Nigeria's external payments transactions. The choice of a basket was to provide, stability, as well as diversification, thus if one currency was appreciated the depreciation of other currencies in the basket would be compensated for. Furthermore, this arrangement was believed to have the advantage of reducing the impact of fluctuations in exchange rates on Balance of Payments (BOP). Following the oil boom between 1973 and 1977, a sizeable amount of foreign reserves had been accumulated, this funded the fixed exchange rate regime. Over time, however depletion of the reserves was inevitable as private demand for forex had to be met. Furthermore, upward changes in external reserves saw an appreciation of the naira while a swing in the opposite direction did not meet a corresponding depreciation, this was indeed not sustainable in the long run. In 1982 the looming crisis led to the application of exchange controls. In response the CBN began a rationing drive which was implemented through an import licensing system to prevent the depletion of the official reserves. Other exchange control measures adopted were, the anti-sabotage decree of 1977 which established tribunals to prosecute Forex offenders, the Comprehensive Import Supervision Scheme (CISS) which was to ensure preshipment checks on prices, quantity and quality of imported goods with values exceeding US\$33,000. Other Forex malpractices were also to be checked via these schemes. In 1980 -1981 Nigeria had seen a reduction in exchange controls as international oil prices saw positive developments and had led to BOP improvements, however in 1982 Nigeria implemented strict exchange controls owing to the crisis that set in that year, Nigeria was experiencing severe economic difficulties total export receipts were less than imports disbursements, short term external loans were then used to finance these deficits, thus the accumulation of external debts began, this led to the Economic Stabilization Act of 1982 to correct the BOP problems that lingered. The Act provided for Reduction of business travel allowances, reduction of consultancy fees that could be repatriated etc. In spite of all these controls the economic situation did not

improve as global oil prices plummeted and this led to a corresponding reduction in the foreign reserves.

The One Currency Intervention System - (The US Dollar as the Currency of Intervention)

In 1985 a one currency intervention system was introduced to minimize problems of high arbitrage in the Naira exchange quotation, under this system, the naira was quoted against only the dollar and all other currencies were derived from the quoted naira dollar exchange rate. However from 1985 to mid-1986 the exchange control management had two major objectives which were that the exchange rate should respond to movements in other exchange rates in the international forex markets and the exchange rate should reflect the current economic conditions, despite all adhoc policies put in place, these policies had failed in resolving the BOP crisis, The era of the fixed exchange rate regime was fraught with numerous challenges, the period was bedeviled with overvaluation of the naira which led to economic distortions that gave rise to massive importation of finished goods with attendant adverse negative effects on domestic production, balance of payments and external reserves positions, the period also recorded sharp practices by dealers and end-users alike. The inability to combat these challenges were primarily responsible for the adoption of a more flexible exchange rate era. A shift away from the exchange rate control regime to the deregulated or market driven regime was the policy response that was settled for by Nigeria. Thus, the end of the fixed exchange rate regime or era.

Flexible Exchange rate Regime

Dual Exchange Rate System – First tier & Second Tier foreign Exchange Markets-S (FEM) (1986-1990)

In July 1986 the fixed exchange rate system was abandoned and thereafter different variants of the flexible exchange rates were implemented. In response to the economic crisis faced by the country the Structural Adjustment Programme (SAP) was introduced to reduce fiscal imbalances and ease adjustment to a market economy. Under SAP the exchange rate strategy was to allow the market determine the exchange rate as well as establish the appropriate institutional framework for a floating exchange rate regime. The Second Tier Foreign Exchange Market S(FEM) was introduced and was expected to evolve into an effective mechanism for the determination and allocation of foreign exchange in order to guarantee stability of the naira in the short term and balance of payments equilibrium in the long term. The dual exchange rate system comprised of the first tier exchange rate and the S(FEM) or free market exchange rate. The first tier was administratively determined and depreciated on a gradual basis, it was applied to a few official international transactions such as debt servicing, and other international obligations. The S(FEM) rate or second tier market on the other hand was applied to all other transactions and was market determined. The S(FEM) was introduced to prevent a large depreciation of the naira, and it was to provide the platform to achieve the desired managed depreciation while the first tier market rates would be adjusted gradually in accordance with the S(FEM) rates, until both rates converge. It was also expected that the Rates determined through the S(FEM) would eliminate the overvalued currency as well as reduce excessive pressure on the external reserves. Furthermore improvements in domestic output and forex receipts were

expected, as well as reducing forex expenditures and curtailing forex volatility. Convergence of the first tier and the S (FEM) was achieved on 2nd of July 1987.

Foreign Exchange Market (FEM)

The Foreign Exchange Market (FEM) came into being following the unified exchange rate system of July 1987, the first and second tier markets were merged in July 1987 and a unified exchange rate system emerged. The components of FEM were the Autonomous Exchange Rate Market and the Official Exchange Rate Markets. The former was expected to cater for exporters thus it was made attractive, but this was not the case as the market was fraught with unwanted arbitrage premiums and round tripping by authorized dealers. FEM was however abolished in 1992.

The Interbank Foreign Exchange Market (IFEM) 1989

The Interbank foreign exchange market was introduced in 1989 and was a merger of the autonomous and official markets. The IFEM was a daily bidding market where the CBN injected forex to the market based on its availability. Under the IFEM the exchange rate was determined through either: average rate pricing, marginal rate pricing, weighted average pricing, highest and lowest bid, average of successful bids etc. Also during the same period the Bureau de Change (BDC) was created to cater for the needs of small users in a more informal manner as well as to integrate the official and unofficial markets. The Exchange rate in spite of these initiatives remained unstable, this led to another modification i.e. the introduction of the Dutch Auction System in December 1990.

Re-Regulation of the Exchange rate regime - De-facto pegging of the Naira -1994

In 1994 the de-facto pegging of the Nigerian currency was formalized, the Naira was pegged at N21.9960 to \$1 with the parallel market declared illegal, plans were also being made to with plans to promulgate laws to deter offenders. This act further worsened the situation of the naira as the parallel market premium widened with an attendant volatile exchange rate, in the same vein the balance of payments position was put under severe pressure and the demand for forex heightened significantly, thus the policy reversal in 1995 from regulation to guided deregulation of the foreign exchange market.

Guided Deregulation Exchange Rate System 1995-1998

This era of guided deregulation was aimed at reversing the depreciation of the naira, poor non-oil performance as well as foster an efficient allocation and utilization of the nation's external resources. The autonomous Foreign Exchange Market (AFEM) was established through the Exchange (Monitoring & Miscellaneous Provisions) Act of 1995. The AFEM traded privately sourced foreign exchange while the official rate was fixed at N22/US\$1 for all government related transactions. The framework of the AFEM was instrumental in moderating speculative demand for forex, curbing exchange rate volatility, and engendering stability in the market.

Full deregulation -1999-2008

The success of the AFEM was limited as the external sector pressures and imbalances were not addressed by it. Furthermore the issues with low non-oil exports and reduced autonomous sources of foreign exchange lingered on. The need to deepen the market became paramount as

the CBN was the greatest supplier of forex in the AFEM, this gave rise to the reintroduction of the Interbank Foreign Exchange Market (IFEM) in 1999. The participants were the Deposit Money Banks who transacted directly with the CBN, but the CBN intervened where necessary to moderate the market. Under the IFEM foreign exchange were to be supplied by autonomous sources such as the oil companies, and foreign participants in the banking and foreign exchange business in Nigeria. They were permitted to operate domiciliary accounts outside of the CBN. Participation of foreign partners and firms in the market was expected to deepen the market and enhance foreign exchange supply. The Retail Dutch Auction System (RDAS) and the Wholesale Dutch Auction System (wDAS) were utilized in operationalizing the IFEM.

Retail Dutch Auction System (rDAS) (1987, 1990, 2002, 2009 and 2014)

The RDAS was first introduced in April 1987 to address two major challenges faced by the foreign exchange market, the first was the widening gap between the official and market rates of exchange and the continued rising demand for foreign exchange. It allowed authorized dealers to pay for foreign exchange at rates bided for and not at the central rate as determined by the CBN. Furthermore all exchange rate bids were required to have valid and appropriate documentation. A few successes with this system were recorded as there was relative stability of the foreign exchange owing to moderated premium between the official and the parallel exchange rates and it facilitated accretion to the external reserves. It also enhanced professionalism in the foreign exchange markets and prevented outrageously high bids.

The Wholesale Dutch Auction System (wDAS) (2006, 2009, 2010 - 2014)

The wDAS was introduced on the backdrop of the success of the rDAS, and it was introduced at time when the external reserves position was favourable, coupled with the post consolidation induced banking sector soundness as well as the enhanced fiscal discipline observed at the end of 2005. The rDAS transition to wDAS was effected in 2006 and it was the mechanism utilized for exchange rate determination. The aim was to further liberalize the foreign exchange market and to eliminate the excessive controls that lingered from the previous exchange rate policies. The wDAS unlike the rDAS allowed for bulk purchases and sales of foreign exchange from the CBN. It also aimed at achieve a convergence of the interbank and official exchange rates, provide stability in the exchange rate and improve efficiency in operations of the market. In October 2008, owing to the Global financial crisis which recorded massive outflow of foreign exchange from the country, increasing demand pressure, the rDAS was reintroduced to ease the demand pressure. The demand pressure continued and this led to depreciation of the naira in all market segments. In July 2009 the wDAS was reintroduced but owing to its inability to curtail demand pressures, it was replaced with the rDAS in October 2013. By February 17 2015 it was withdrawn entirely owing to the Foreign exchange market reforms. The CBN closed the official window of the foreign exchange market, and moved all demand for foreign exchange to the interbank market. Widened premiums in the foreign exchange markets necessitated the foreign exchange reforms in June 2016.

Liberalized Foreign Exchange Regime –June 2016 till date

On June 20 2016, the foreign exchange guidelines were introduced to combat the continued illiquidity and volatility of the erstwhile foreign exchange market. The foreign exchange

guidelines introduced was unlike the previous carried out in times past as this introduced a fully liberalized foreign exchange market. The introduction of this guideline abolished the the old dual FX market system of a pegged official and an interbank rate that coexisted and it created an interbank autonomous market window for all foreign exchange transactions, i.e one single market. The rates in the new market are fully market driven with a maximum spread between the offer and bid rates which is determined by the FMDQ Over the Counter Securities Exchange. The authorized dealers are to buy and sell foreign exchange amongst themselves on a two way quote basis via approved trading systems. The FMDQ Thomson Reuters FX Trading Systems is the approved trading system for all foreign exchange transactions. Under this new policy the CBN reserves the right to intervene in the market for the primary purpose of ensuring liquidity and curtailing volatility, and the CBN also has the right to buy at no predetermined or maximum spread via the two way quote system. The CBN may intervene via the Interbank Market or the Secondary Market Intervention Sales (SMIS). The Intervention through the interbank market entails the CBN trading directly with the Primary Dealers who are appointed from the authorized dealers based on certain stipulated criteria. While the intervention through the SMIS entails trading on wholesale basis with the primary dealers or indirectly on a retail basis to end users via the primary dealers, but with the appropriate supporting documents backing the transactions. The introduction of a hedging product also provided a deepening of the foreign exchange market, which would encourage investments as exchange rate risks could be successfully hedged. This hedging product would in addition prevent front loading and curtail speculation, since end users can simply key in to the hedging product to hedge exchange rate risks. The new exchange rate guidelines initially had no functions for the BDCs and since the CBN had discontinued sales to BDC operators in January of 2016. However by July 22nd all BDC operators were included in the market as the currency proceeds from International Money Transfers Operators (IMTOs) were sold to the BDCs for onward sales to their customers. Thus all IMTOs were mandated to remit foreign currency to their agent banks for naira disbursements to beneficiaries, the foreign currency components would be sold to the BDCs. The exchange rate policy as contained in the guidelines thus prohibits all foreign exchange trades outside the FMDQ advised FX system. The foreign exchange market has been somewhat stabilized with the introduction of these guidelines, and has attracted foreign investors owing to the transparency and credibility of price determination, with increased accretion to the external reserves recorded and volatility in the market curtailed.

In conclusion, the search for an appropriate exchange rate management policy suitable for the peculiarity of the Nigerian economy, began over fifty years ago, the array of policies introduced and discontinued simply showcased the challenges and dynamism in managing macroeconomic variables in the economy. The various development plans up to the vision 20:20:20, all projected that exchange rate of the local currency, the naira, will stabilize as monetary, fiscal and trade policies are fully aligned. However, when premised against the current realities it shows mixed outcomes. While the exchange rate has been on a stable path in the most recent years, substantial accretion to reserves achieved, importation curtailed and non-oil exports rising; there is yet no substantial improvement in the export competitiveness of Nigeria (See figure 1).

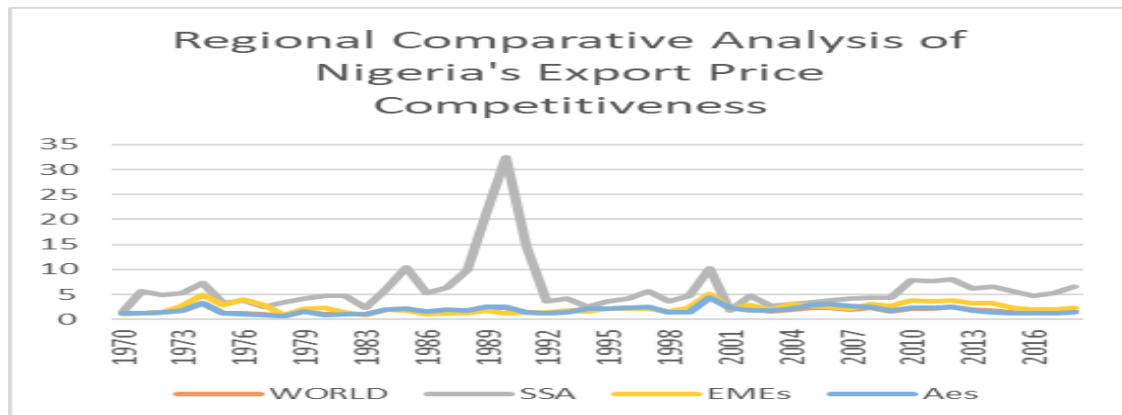


Figure 1: Regional Comparative Analysis of Nigeria’s Competitiveness

In terms of global trade, Nigeria’s export was most competitive during the period of the structural adjustment programme (SAP). After the abolition of some elements of the SAP reforms, export competitiveness dropped significantly from 1993/94. With regards to the sub-Saharan Africa region, the policies failed to achieve any substantial improvement in Nigeria’s export competitiveness, even during the SAP era. Though some analyst would argue that it is a bid early to evaluate the recent exchange rate regime adopted since 2016, figure 1 and 2 clearly show that the new regime has not yet impacted significantly on the competitiveness of Nigeria export commodities. In figure 2, it can be deduced that the new policy regime even reduced the competitiveness of Nigerian exports in the sub-Saharan Africa region relative to the previous existing regime (from SAP era to 2015). The lesson from the figures is that more than exchange rate regime is required to improve the export competitiveness of Nigeria. Exchange rate policy can deal with the price of export but cannot improve efficiency in the production of the export commodities. For improved competitiveness to be achieved both price and production efficiency should be envisaged. Producers of the commodities exported should enjoy conducive production environment and cut their costs of production to be able to compete with foreign producers without any government intervention or protectionist policy.

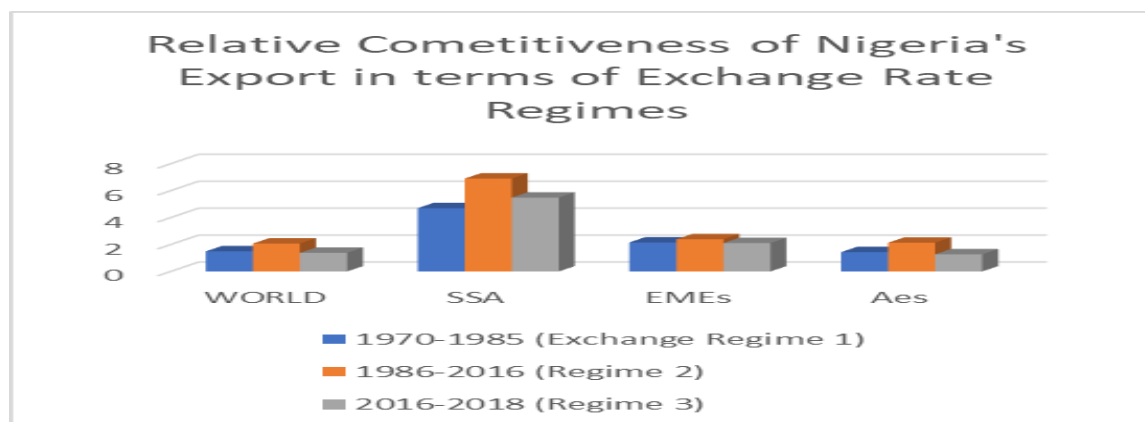


Figure 2: Exchange rate Regimes and Competitiveness of Nigerian exports

IV. MODEL SPECIFICATION AND ESTIMATION

The model for this study has been adopted from the literature and experts' view about the determinants of competitiveness of Nigeria exports. Export price competitiveness is strongly associated with a number of macroeconomic variables, namely nominal exchange rate, production capacity, macroeconomic stability, government policy and technological innovation among others. In pursuit of our investigation, we modelled the determinants of export price competitiveness into two main blocks; exchange rate regime and other factors. Symbolically, the functional relationship is expressed as follows.

$$EPC = f(EXR, \Omega)$$

Where, EPC is export price competitiveness, EXR is exchange rate regime and Ω is a vector of other relevant macroeconomic variables such as interest rate (INT), inflation rate (INF), etc.

To examine the influence of exchange rate regimes in achieving export price competitiveness, the study employs the autoregressive distributed lag (ARDL) bounds testing approach to cointegration. The advantage of this approach, relative to other tests of cointegration, is its ability to estimate level relationships among variables that are integrated of different orders. This, however, is applicable only where all the variables are integrated of order $d < 2$ (Belloumi, 2014). Secondly, the technique is more appropriate for time series analysis with fewer observations as is the case here, as well as allows for the correction of serial correlation and potential endogeneity problems. Finally, the unrestricted nature of the ARDL provides room for flexibility in determining optimal lag lengths to capture the data generating procedure (Nkoro & Uko, 2016).

The ARDL model utilised in this study is, therefore, expressed as follows:

$$EPC = \alpha_0 + \sum_{i=1}^p a_{1i} \Delta EPC_{t-1} + \sum_{i=1}^r a_{2i} \Delta EXR_{t-1} + \delta(EPC_{t-1} - c - b_1 EXR_{t-1}) + \emptyset Dummy_t + e_t \quad (1)$$

Where all variables are as previously defined for a time period t ; Δ is the differenced operator; α_1 to α_4 and b_1 to b_3 are coefficients of the short- and long-run relationships, respectively; and p and r are optimum lags specifications for EPC and LEXR, respectively. Dummy is a structural break dummy for the exchange rate regime implemented. We iterated with two main regimes, fixed and flexible regimes. For the fixed regime, the dummy takes the value one (1) for all observations from 1970 to 1985, and zero (0) for observations from 1985 and above. The flexible regime dummy, on the other hand takes the value of one (1) for all observations from 1986 to 2016. Lastly to capture the most recent development relating to exchange rate reforms in Nigeria since 2016, a third dummy variable for more flexible exchange rate regime since 2016 to date was introduced. This dummy variable takes the value of one (1) for all observations from 2016 to 2018 and zero (0) for observations from 1970 to 2015.

The data for this study was obtained from the World Development Indicators 2019 (WDI 2019). The variable, export competitiveness was computed using Nigeria's total imports and exports. The exchange rate used in this study is the nominal exchange rate of the Nigerian naira to a unit of United State dollar.

V. EMPIRICAL ANALYSIS

5.0.1 Unit Root Tests

As stated earlier, a pre-condition for the conduct of an ARDL bounds test is that all variables included in the test equation must be either stationary, or integrated of order d, where $d < 2$. As such, the unit root properties of the variables were estimated utilising the Augmented Dickey-Fuller (ADF, 1979) and Phillips-Perron (PP, 1988) tests for unit root. Both tests have the null hypotheses of “unit root”.

Table 1: Result of Unit Root Tests

Variables	ADF		PP		Order of Integration
	Level	First Difference	Level	First Difference	
EPC	-5.0083 ^{c***}	-6.3309 ^{c***}	-4.9858 ^{c***}	-20.1427 ^{c***}	I(0)
EXR	3.0554	-3.6138 ^{c***}	2.5596 ^c	3.5659 ^{c**}	I(1)

Source: Authors’ Estimation

Notes: Lag length for ADF tests were informed by the Schwarz Information Criterion

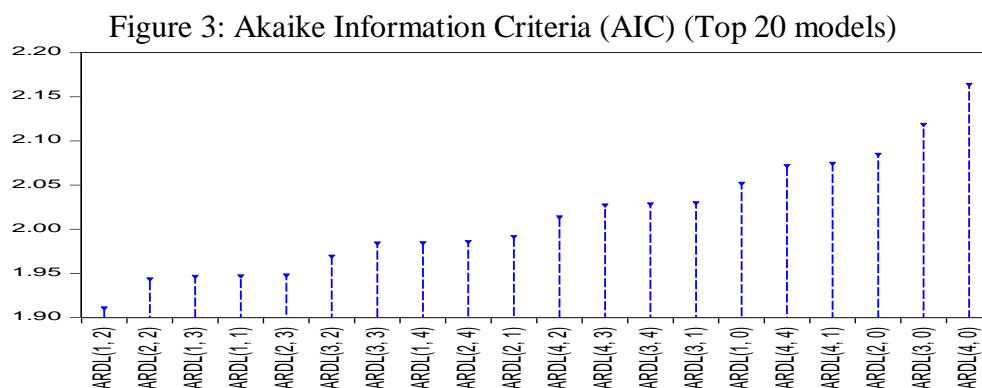
a, b, c denote with intercept and trend, with intercept, and none, respectively;

*, **, *** denotes 10%, 5% and 1% levels of significance, respectively.

5.0.2 The ARDL Model and Lag Length Selection

To decide on the most optimum ARDL model for this study, we estimated series of specifications of the model, applying varying maximum lags and employing the Akaike Information Criteria (AIC) in determining the optimum lags of each variable in the model. Residual based tests of normality, heteroskedasticity, and serial correlation were also conducted, alongside model stability tests. Subsequently, ARDL (1, 2) was selected due to its best-fit suitability in describing the relationship being analysed.

Figure 3 showed that the selected model had the lowest AIC value, of the top twenty (20) models evaluated.



Source: Authors’ Estimation

5.0.3 The ARDL Bounds Test of Cointegration

Table 1 presents results of the ARDL bounds test conducted with reference to the exchange rate regimes implemented in Nigeria over the period 1970 to 2018. This test is conducted under the null hypothesis of “no level relationship”. Results show that the computed F-statistics are greater than the upper critical bounds. As such, the null hypothesis of no cointegration is rejected at 10 per cent, 5 per cent and 1 per cent levels of significance. This, therefore, confirms the presence of a long run cointegrating relationship between variables EPC and EXR in the case of the Nigerian economy for the period 1970 to 2018.

Table 2: Result of the ARDL Bound Test

	Fixed Regime		Managed float Regime		More Flexible Regime	
PARSIMONIOUS	ARDL (1,2)		ARDL (1,2)		ARDL (1,1)	
F-STAT	4.38		6.36		15.08	
CRITICAL VALUES	I(0)	I(1)	I(0)	I(1)	I(0)	I(1)
1%	4.95	5.58	4.94	5.58	4.94	5.58
5%	3.62	4.16	3.62	4.16	3.62	4.16
10%	3.02	3.51	3.02	3.51	3.02	3.51

Source: Authors’ Estimation. Note: *, **, *** denotes 10%, 5% and 1% levels of significance, respectively. Critical bounds are computed by (Pesaran, et al., 2001) following restricted intercept and No trend.

5.0.6 The Estimated ARDL Long Run and Short Run Models

Normalizing the model in the long run, the following results were obtained as shown in Table 3.

Table 3: Estimated Long-Run Coefficients

Dependent Variable= EPC				
Fixed Regime				
Variables	Coefficient	Std. Error	T-Statistic	Prob. Values
Constant	2.0851	0.2729	7.6395	0.0000
EXR	-0.0026	0.0028	-0.9276	0.3592
Managed Float Regime				
Constant	1.4310	0.2133	6.7067	0.0000
EXR	-0.0024	0.0021	-1.1307	0.2649
More Flexible Regime				
Constant	1.6732	0.1261	13.267	0.0000
EXR	0.0015	0.0016	0.9249	0.3603

Source: Authors’ Estimation. Note: *, **, *** denotes 10%, 5% and 1% levels of significance, respectively

Surprisingly, the nominal exchange rate does not have a significant impact on export price competitiveness in the long run model. This is contrary to a priori expectations of a positive and significant effect. It is plausible to state that this lack of impact prompted the various exchange rate reforms aimed at improving the export price competitiveness of the country products.

The short run model incorporates the dynamic effects of the exchange rate reforms in the country during the period under investigation. In table 4, the model captures the contemporaneous and lag effects of the explanatory and dependent variables on the export price competitiveness (EPC). In the first exchange rate regime, the contemporaneous term of the nominal exchange rate (EXR) was both positive and statistically significant. However, the one (1) period lag change in EXR was not significant at 5 percent level. The dummy variable (Regime1) was negative but statistically insignificant. The simple interpretation of this result is that the fixed exchange rate regime does not improve the export competitiveness of the country rather it hurts competitiveness.

In the second model, Regime 2 (or managed floating regime), the contemporaneous change in EXR has a positive and significant impact on export price competitiveness but the one (1) period lag change of EXR has a negative and insignificant influence on export competitiveness. Most importantly, the regime 2 dummy variable has a positive and significant effect on export competitiveness. In other words, the managed floating regime created the greatest positive impact on the promotion of export competitiveness of Nigerian export commodities. The third model showing the short run dynamic effects of the recent exchange rate reforms implement between 2016 to date show some strange outcome. Although the contemporaneous effect of EXR was positive and significant at 1 per cent level, the regime dummy variable has a negative and significant coefficient. In simple terms, the result shows that the recently adopted more flexible exchange rate regime has not positively impacted on the export competitiveness of the Nigerian economy.

Table 4: Estimated Short-Run Coefficients of EPC

Dependent Variable= D(EPC)				
Regime 1(Fixed exchange rate)				
Variables	Coefficient	Std. Error	T-Statistic	Prob. Values
D(EXR)	0.0202***	0.0058	3.4658	0.0013
D(EXR(-1))	-0.0141*	0.0073	-1.9377	0.0597
REGIME1	-0.2791	0.1826	-1.5282	0.1343
CointEq(-1)*	-0.5751***	0.1549	-3.7126	0.0006
Regime 2 (Managed Float)				
Variables	Coefficient	Std. Error	T-Statistic	Prob. Values
D(EXR)	0.0221***	0.0054	4.0909	0.0002
D(EXR(-1))	-0.0103	0.0072	-1.4361	0.1587
DUM2	0.4972***	0.1542	3.2235	0.0025
CointEq(-1)*	-0.6916***	0.1545	-4.4754	0.0001
More Flexible Regime				
Variables	Coefficient	Std. Error	T-Statistic	Prob. Values
D(EXR)	0.0333***	0.0059	5.6378	0.0000
DUM3	-2.0956***	0.4127	-5.0782	0.0000
CointEq(-1)*	-0.7779***	0.1130	-6.8845	0.0000

Source: Authors' Estimation. Note: *, **, *** denotes 10%, 5% and 1% levels of significance, respectively

VI. CONCLUDING REMARKS

This study set out to examine the influence of exchange rate reforms on export price competitiveness of Nigeria. The various reforms aimed at stabilizing the exchange rate of the naira and enhancing the competitiveness of the export commodities of Nigeria were x-rayed in terms of their contents and effectiveness. The evidence from this study support the proposition that exchange rate reforms was important in improving the export competitiveness of Nigeria, especially during the era of managed exchange rate regime, spanning 1986-2015. However, the findings show that exchange rate reforms alone is not sufficient for export competitiveness to be attained. There is need to complement the exchange rate reforms with the provision of a conducive business environment that will enable manufacturers to produce at reduced unit cost of production. Both price and quantity efficiency enhancing reforms that is required for better competitiveness of the exports and general well being of Nigerians.

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