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The Competitiveness of Nigeria's Exports: Does the Choice of Exchange Rate Regime Matter?

Adamu Waziri Babagana[*]

Graduate School of Global Studies, Doshisha University, Kyoto
[*] Corresponding Author: waziribg@gmail.com

Abstract

This study examines the extent to which the exchange rate regime affect the competitiveness of exports in Nigeria between 1987 to 2019. The study employed the Auto Regressive Distributed Lag (ARDL) model to assess the short-run and long-run changes in competitiveness in response to the exchange rate regimes implemented and other explanatory variables. The findings reveal that a flexible exchange rate regime causes a significant decline in export competitiveness. While there is a positive proportionate change in competitiveness in relation to trade openness and inflation, an increase in international oil prices has a negative short-run impact on competitiveness. The study identified exchange rate regimes and oil price increases as the two channels through which both currency depreciation and appreciation could adversely affect export competitiveness. The implication of this finding is that when there are sudden oil windfalls, policymakers should resist the temptation to absorb all the petrodollars domestically to prevent a sharp appreciation of the naira that will cause 'Dutch disease' and erode competitiveness. The study also suggests that policymakers should emphasize exchange rate stability by adopting de facto intermediate exchange rate regimes which ensures the stability of the exchange rate within a limited band and close the wide gap between official and parallel market exchange rates.

1. Introduction

The need to diversify the Nigerian economy away from hydrocarbons has been a subject of recurring discourse for decades, and it is arguably one of the enduring economic policy pieces of advice received by successive governments in Nigeria. In terms of GDP composition which measures national output, the economy appears to be relatively diversified across different sectors. However, the external trade sector is where diversification remains elusive. For instance, energy products have constituted an average of about 93 percent of Nigeria's total exports in the period between 1991 and 2020 as illustrated in Table 1. [1] There seem to be ongoing efforts to wean the country off from the half-a-century dependence on hydrocarbons and deepen the diversification of the economy to feature more exports of agricultural and manufactured goods.

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1. This should, however, be considered with caution because the large volume of informal trans-border trade between Nigeria and other African countries is largely unaccounted for in official statistics.

In fostering new productive sectors, a conducive macroeconomic environment including a stable and competitive exchange rate is crucially important. The exchange rate is an important policy variable that determines the international competitiveness of agricultural and manufactured products. A deliberate policy of an undervalued exchange rate has been utilized by many Asian countries to boost the competitiveness of their exports and thereby stimulate economic growth.[2] This strategy of export-led growth was originally used by Germany and Japan in the 1950s and 1960s. It was then adopted by other East and Southeast Asian economies between the 1970s to 1990s, and by China in the 2000s (Johnston, 2021; Palley, 2012). However, Palley (2012) recommends a new strategy that deemphasizes export-led growth and focuses rather on strengthening the demand side of the domestic economy. This perspective entails a new approach to development that should focus on stimulating "domestic demand and a balance between imports and exports" (Johnston, 2021, para.14).

Along a similar line of argument, Nevin (2021) observed that there are so many barriers to exporting manufactured goods,[3] and it should not be the priority for Nigeria. According to Nevin (2021), Nigeria should choose a development path that is suitable for the country based on the realities of how the modern world works. Because the development path is not going to be the same as those of Asian countries– South Korea, Vietnam, or Thailand for instance. The focus should be on a strategy he called "exporting Nigerian brands, keeping the brains at home." This means leveraging on Nigeria's comparative advantage in high value-added services (which is already being exported) without Nigerians necessarily leaving the country.[4] These arguments regarding an alternative growth strategy may have some merits, given the apparent impediments faced by 'latecomers' in trying to catch up and develop their economies through international trade.

Table 1. Composition of Nigeria's exports by SITC categories (Total value in US$ millions and percent of export commodity in total exports)

	1991		2000		2010		2020	
Category	Value	(%)	Value	(%)	Value	(%)	Value	(%)
Food, Beverages, and tobacco	182	1	8	0	2,246	3	674	2
Raw materials	78	1	32	0	2,585	3	440	1
Manufactured goods	54	0	28	0	4,646	5	204	1
Energy products	12,396	97	26,981	100	75,429	87	30,957	89
Chemicals	32	0	3	0	528	1	227	1
Machinery & transport equipment	4	0	27	0	1,021	1	2,396	7
Others	81	1	1	0	113	0	2	0

Source: United Nations *Comtrade* database

Much of the discussion about the relationship between exchange rate and export-led growth have focused primarily on manufactured goods. Indeed, manufacturing is the cornerstone of industrialization. However, the exchange rate is still relevant for export of primary commodities which constitutes the bulk of developing countries' exports.[5] It is also important from the perspective of competitiveness within a regional market. For instance, the African Continental Free Trade Area (AfCFTA), if successfully implemented, would provide greater opportunity for Nigeria to export to other African neighbors through the intra–Africa trade facilitated by the AfCFTA. The degree of influence of the exchange rate on domestic macroeconomic environment through multiple channels

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2. There is not yet a consensus on whether this strategy can be effectively adopted in Nigeria and other developing countries.

3. For example; "Where is Nigeria going to export to? Which country will it displace in the market?" (Nevin, 2021).

4. These include; financial services, business outsourcing, coding, and the entertainment industry (movies, skits, and music).

5. But perpetual reliance on commodity exports has its disadvantage, which derive from their low value relative to value–added goods and services. There is also the challenge of exposure to market volatility.

suggest that exchange rate policies have important consequences not only for international trade, but economic growth and development as well (Levy Yeyati, 2019). Therefore, to the extent that the exchange rate is relevant for economic growth through the competitiveness of exports, the choice of exchange rate policy adopted in Nigeria is equally paramount. Hence, there is the need to examine whether the choice of exchange rate regime affect the competitiveness of exports in Nigeria.

The export competitiveness literature is considerably large, with both theoretical and empirical studies on individual countries or a panel of countries using varying measures and determinants of competitiveness. Paul and Dhiman (2021) provided a comprehensive systematic literature review of the three decades-research on export competitiveness. The authors observed that exports contribute to economic development of nations especially in this period of globalization. For a country to sustain momentum in exporting, such exports must remain competitive in global markets. This provides ample scope for more research in the rich and contemporary field of export competitiveness (p.2). The few studies on Nigeria's export competitiveness employed different approaches to the topic and produced mixed findings. For instance, some studies investigated the major drivers of Nigeria's external sector competitiveness (Duke et al., 2017), and the impact of competitiveness on balance of payment (Oriavwote, 2022). Other studies focused on the relative competitiveness of specific products such as; cocoa (Nwachukwu & Nwaru, 2015; Obi-Egbedi et al., 2021; Abdullahi et al., 2022); palm oil (Agboola et al., 2022); or cashew nuts (Alawode & Adeniranye, 2020). None of these previous studies investigated the role exchange rate policy on Nigeria's export competitiveness. To the best of our knowledge, Akintomide (2021) is the only study that attempted to examine the impact of exchange rate reforms in Nigeria on the price competitiveness of exports. However, the paper suffers from fundamental weaknesses of measurement and econometric analysis which inevitably led to incorrect inferences.

The present study differs from Akintomide (2021) in several ways. To highlight a few, first, we utilized the Real Effective Exchange Rate as the dependent variable which is a widely used indicator of export competitiveness. Second, our main explanatory variable is the de facto exchange rate regime classification based on the exchange rate regime being practiced as opposed to the de jure classification announced by the monetary authority. In addition, we provided a more appropriate interpretation of the exchange rate regime dummy. Third, the ARDL model used by Akintomide (2021) may also not be devoid of major drawbacks. The absence of crucial elements of the ARDL results (diagnostic tests) suggest that the model may be faulty and have produced unreliable results.

This study seeks to fill in the literature gaps with deeper analysis and empirical evidence. The objective is to examine the extent to which exchange rate regime affect the competitiveness of Nigeria's exports while controlling for other relevant variables. The study highlights the negative impact of flexible exchange rate regimes and the implication for exchange rate policy. The remainder of the paper is organized as follows. Section two present the literature review. Section three discusses the data and methodology used in the study. The empirical result and discussion of findings are presented in section four, and section five provide conclusion of the study.

2.   Literature Review

2.1   *Competitiveness of Exports and The Real Effective Exchange Rate*

The lack of a uniform definition and consensus on the measurement of competitiveness has led to varying conceptualization of the term. Analysis of competitiveness thus, depends on whether the focus is on price and cost competitiveness of countries' exports, the overall competitiveness of an economy, or other aspects of competitiveness pertaining to a single or group of industries and countries. In other words, the indicator of competitiveness used in a study reflect the phenomenon under investigation and at what level (firm, industry, or country) the competitiveness is being analyzed. According to Maitah et al. (2016), economist used the notion of competitiveness in different ways. It can be employed in a purely macroeconomic sense, in which case the competitiveness is measured in terms

of relative price and cost indices expressed in common currency while holding domestic structural factors constant (p.2), that is, the real effective exchange rate. Another utility of the competitiveness concept is reflected in the Revealed Comparative Advantage (RCA) indices. The RCA is derived from the central proposition of the Ricardian trade theory which state that international trade patterns are determined by the comparative advantage of country in each product.

There are multiple measures of competitiveness depending on what dimension of the concept is invoked.[6] In this study, we are focusing on a narrow aspect of competitiveness which is based on relative export prices. According to Turner and Dack (1993) "the most frequently used indicators of (changes in) international competitiveness are the various measures of relative prices and / or costs, expressed in a common currency, widely known as real effective exchange rates" (p. 13). In the export competitiveness literature, the Real Effective Exchange Rate (REER) has been used in examining the competitiveness of the home currency in relation to the foreign currency of trading partners. An appreciation of the REER indicates less competitiveness while a weak REER means higher competitiveness (Paul & Dhiman 2021). Therefore, the role of exchange rate on export competitiveness stem from the notion that currency depreciation makes exports cheaper while imports become expensive. However, not only that several other factors must be present for this proposition to take place, but in some cases the outcome reveals an opposite relationship. For instance, Abeysinghe and Yeok (1998) shows that the consequence of currency appreciation is not negative, if not even positive in the case of Singapore. This is because the appreciation lowers import prices that helped to reduce cost for exporters. Singapore sustained export over a long period in the face of currency appreciation, though the services exports were adversely affected due to little or absence of imported inputs (p.51). The possible reasons why this happened may be associated with either a considerably large import component in the exports, increased foreign demand or improvement in domestic productivity (p.52).

Some have argued that the strategic use of exchange rate in the context of manufactured export promotion in developing countries may not necessarily be viable in the present state of the global economy. A decade ago, Haddad and Pancaro (2010) noted that, while the strategy was successfully utilized by Asian economies in the past, global economic prospects are not as strong, and may thus, reflect in the lower demand for developing countries' exports. According to Haddad and Pancaro (2010), exchange rate stability and undervaluation can boost the exports of low-income countries only in the short run. In the long run, the policy may result in adverse consequences. One of these negative effects occur because an undervalued exchange rate is as good as a subsidy to tradable goods exporters and a tax on consumers whose purchasing power have reduced. The other consequence of maintaining the undervaluation policy for a long period is that "it may be difficult to exit a policy of sustained undervaluation once it becomes necessary to do so. Governments may be pressured by influential lobbies (that is, tradable goods producers) who derive rents from the status quo" (p.4) as we shall see in section 2.2. Other studies also found no evidence of direct impact of undervaluation in boosting tradable exports, although currency undervaluation has effect on economic growth through the channels of savings, investment and capital accumulation (Levy-Yeyati & Sturzenegger, 2007; Glüzmann et al., 2012).

2.2   The Choice of Exchange Rate Policy

Exchange rate policy is the course of action that set out the rules and framework for the determination of the regime and level (price) of the exchange rate at a particular time (Obaseki, 2001). The objective of the policy is "to stimulate the productive sectors, curtail inflation, ensure internal balance, improve the level of exports, attract direct foreign investment, and other capital flows" (p.2). Given that

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6. For the analysis of these measures and indicators, see, Turner 1993; Zuzana 2020, Paul and Dhiman 2021, Duke 2017). In particular, the determinants and methodologies used in export competitiveness research are well documented in Paul and Dhiman (2021).

international competitiveness should, in part, reflect the exchange rate of a country, and since exchange rate misalignment may be caused by other macroeconomic variables, it is imperative to formulate an appropriate exchange rate policy that correct such misalignment and restore the economy to the path of competitiveness (p. 2).

The policymakers responsible for exchange rate policy are faced with the options of choosing both the level (price) and stability (regime) of the currency (Walter, 2014; Frieden, 2015). The level of the exchange rate indicates the currency's value, that is the rate at which a domestic currency is exchanged for a foreign currency. This is called the nominal exchange rate. It is, however, more meaningful to consider the real exchange rate, which adjusts for inflation by measuring the relative prices of a similar basket of goods in domestic and foreign currencies (Steinberg, 2016; Frieden, 2015).

The exchange rate regime, broadly, implies the choice among the broad spectrum of currency fixity and flexibility. The two extremes involve either fixing [7] the value of the currency at a pre-termined rate against a foreign nation's currency or allowing it to float freely and let the market determine the currency's value (Walter, 2014). However, there are intermediate regimes ranging from managed float to crawling pegs, which allows some degree of fluctuation of the exchange rate (Walter, 2014; Broz et al. 2008; Yagci, 2001). Thus, policymakers implement policies to influence both the level and regime of the currency's exchange rate. For example, the central bank can intervene directly in the foreign exchange market through buying or selling of a foreign currency to influence the value of the domestic currency (Quinn & Weymouth, 2017). It should be noted that the regime and level of the exchange rate are interlinked. Currency depreciation and appreciation are associated only with a flexible currency. The distinction is made mainly for ease of exposition (Frieden, 2015).

In deciding the exchange rate level, Steinberg (2016) highlighted two factors that policymakers may consider. First, most policymakers would like to adopt an exchange rate policy based on superior economic ideas, such as an undervalued currency, which is generally expected to promote economic growth largely through exports. Indeed, this should depend on the economic structure and the extent to which the country is integrated in to the global economy. The second factor concerns the political imperative to maintain a political office. When, for example, the manufacturing sector constitute the most powerful interest group in a country, policymakers are likely to lean towards policies that are supported by such groups in order retain their political power.

There is both economic and political explanation for why countries choose either a fixed or flexible exchange rate regime. The conventional starting point for analyzing the economics of exchange rate policy is the celebrated Mundell–Fleming trilemma, widely known as the 'impossible trinity,' which states that a country cannot simultaneously have a fixed exchange rate, free capital mobility, and monetary policy autonomy - only two are possible at the same time. The large volume of literature on exchange rate policy mostly focused on the economic explanation of the policy. However, there is a growing scholarly interest in understanding the political dimension of the choice of the policy, particularly in newly democratic states and transition economies.

Using a simple model to analyze the choice of countries for a fixed or flexible exchange rate regimes, Edwards (1999) argues that the selection of an exchange rate regime is largely associated with the political structure of the country. Accordingly, politically unstable countries are more likely to opt for a flexible exchange rate. This provides greater discretion to monetary authorities, which, if misused, could affect the credibility of policies, and make the promise of low inflation difficult for instance (Yagci, 2001). Nevertheless, there are some episodes (for instance, in Nigeria, Mexico and Turkey) where commitment to a fixed rate failed to prevent inflation and balance of payment crises because the countries pursued expansionary policies while maintaining fixed exchange rates (Corden, 1993).

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7. The degree of fixity also ranges from target zone to currency board or dollarization (see yagci, 2001, p.4).

In a study that examines the political economy of the exchange rate in 26 developed and 154 developing countries, Berdiev et al. (2012) revealed the importance of government ideology, political institutions, and globalization in determining the choice of exchange rate regime. Their findings show differences between developing and developed countries in the implementation of exchange rate policies. Whereas the probability of choosing a flexible regime is high in developing economies with a left-wing government, it is low in developed countries. However, in some Latin American countries, the same exchange rate policy is used by both political right and left governments (Suggett, 2016). In this case, political ideology does not necessarily matter.

With the increased connectivity of countries to the global economy due to globalization, economic actors (firms, investors, workers) are more sensitive to the effects of exchange rates on capital mobility and trade (Frieden, 2015). Therefore, developed economies tend to prefer a fixed regime while developing countries favor a flexible regime (Berdiev et al., 2012). The preference for the flexible regime is because of the leeway it provides to policymakers in adjusting the exchange rate to achieve some domestic economic goals. Leblang (1999) shows that in addition to the proclivity of developing countries[8] with democratic governments to implement a floating exchange rate regime than those with autocratic structures, the tendency is even greater in countries with proportional representation electoral system than in those with majoritarian system. This suggest that, there is heterogeneity of choices within democracies depending on the electoral system. This is, however, in contrast, with the findings of Bernhard and Leblang (1999), that for a sample of twenty industrialized democracies examined in the study, "proportional systems are the most likely to fix their exchange rate, while majoritarian systems are less inclined to a fixed exchange rate regime" (Bernhard & Leblang, 1999, p.90).

According to Leblang (1999) one possible explanation for the divergence of exchange rate regime choice between proportional representation systems in developed and developing countries may be due to the limit imposed on the authority of policymakers with regards to monetary policy by the existence of independent central banks. But Leblang (1999) noted unequivocally that his analysis "ignored the role of central banks in developing countries" (p.614).

Steinberg (2010) analyzed why most developing countries have an overvalued exchange rate despite its consequences on the competitiveness of domestic goods relative to foreign ones. The findings reveal that overvaluation prevails because different sectors benefit from 'compensatory policy package' in the form of subsidies and other incentives, which accompanies the overvaluation policy, as well as the political gains for politicians in terms of building coalition across both the tradeable and non-tradable industries.[9] The support for overvaluation by the non-tradeable sector is, of course, expected. However, a more notable finding is that exporters and import-substitution industries that are supposed to prefer undervaluation also favor overvaluation due to the reason (compensation package) mentioned above.

Moreover, the extent to which an export-oriented industry support or oppose a currency under/overvaluation typically depends on whether the competitive parameter of its product is based on price or quality (Walter, 2014). Exporters of standardized goods are faced with price competition while those of specialized goods compete based on quality. The former is likely to benefit from, and thus, have a higher preference for depreciated currency than the latter (Frieden, 2015; Walter, 2014). In addition to the export orientation of a sector, other macroeconomic and trade policies influence the sector's preference regarding exchange rate level. As noted above, interest groups have divergent preferences regarding exchange rates, but there is no single line of demarcation for those preferences because they may change over time to reflect changing policy environment and economic circumstances (Steinberg & Walter, 2013; Klein & Shambaugh, 2010). During a relatively stable period in the exchange rate market with little or no speculative tendencies, Walter (2008)

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8. The sample comprises of 76 developing countries including Nigeria.

9. Tradable goods are those that enter freely into world trade, while non-tradable goods and services are those consumed where they are produced" (Frieden, 2015, p.26).

argues that the preferences of some economic actors tend to shift from stability to depreciation of the currency compared to when there is excessive pressure on the exchange rate, which result in tight monetary measures.[10]

Building on the electoral and interest group politics of currency policy, Frieden et al. (2010) investigated the impact of political institutions (depth of democracy) on the exchange rate policy-making in transition economies. Their findings show that democratic countries with considerable openness to the international economy are likely to prefer a fixed exchange rate regime.

The preceding discussion has highlighted both the economic and political characteristics of exchange rate policy decisions. The economic argument for the suitability of a certain exchange rate policy may have merits, but the attention of policymakers is often on the electoral implications of the policy, as reflected, for instance, in the pressure from powerful societal and interest groups (Frieden, 2015). Let us now look briefly at the conduct of exchange rate policies in Nigeria since the adoption of the Structural Adjustment Programme, which set the stage for some degree of market flexibility in foreign exchange transactions.

2.3 *Exchange Rate Policies in Nigeria:1986-2021*

The succession of exchange rate policies by the Central Bank of Nigeria (CBN) in the wake of the Structural Adjustment Programme (SAP) in 1986 have focused on prescribing the methodology for the Bank's intervention in the foreign exchange market, in order to determine a 'realistic exchange rate for the naira'. In practice, the goal of the intervention has been to maintain a high value of the naira. The initial strategy of intervention in 1986 entails splitting the foreign exchange market in to two. A new segment was introduced as a Second-Tier Foreign Exchange Market (SFEM), where the exchange rate is to be determined by the market forces (authorized dealers–banks) through currency auction by the CBN. While the first-tier market uses the official rate with which government transactions were conducted (Research & Statistics Department, CBN, 2006; Amaghionyeodiwe & Osinubi, 2005). However, the two separate exchange rate markets for public and private transactions were later merged to form a single foreign exchange market. Two years later (1988), the bureau de change market was introduced to facilitate supply of the foreign currency to small scale users (Research & Statistics Department, CBN, 2006).

The CBN devised another method of direct sale of foreign currency to end users with the introduction of the Autonomous Foreign Exchange Market (AFEM) in 1995, but it was subsequently replaced by the Inter-bank Foreign Exchange Market (IFEM) in 1999. The latter was meant to broaden the market by encouraging greater participation of banks and non-bank financial institutions, multinational (oil) companies, government parastatals and other private companies (Research & Statistics Department, CBN, 2006). This system also gives way to the Dutch Auction System (DAS) in 2002, which was initially introduced in 1987 and 1990 (Obadan, 2006).The main purpose of reintroducing the DAS was to minimize the widening gap between the official and market exchange rates, especially because the same system was successful in correcting misalignment in foreign exchange market of some Latin American countries (Sanni, 2006). In the words of a former governor of the CBN,[11] "the DAS was designed to achieve a realistic exchange rate of the naira ... and conserve the dwindling external reserves... It was a two-way auction system in which both the CBN and authorized dealers would participate in the foreign exchange market to buy and sell foreign exchange. The CBN is expected to determine the amount of foreign exchange it is willing to sell at the price buyers are willing to buy" (Sanusi, 2004, p.7). The DAS was attested to have assisted in minimizing arbitrage [12] opportunities as well as maintaining relative stability of the naira against the

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10. Monetary tightening is a contractionary policy that involves raising the interest rate. The goal may either be inflation targeting or as in this case, to stem the tide of capital outflows by attracting investors.
11. Chief Joseph Sanusi, CBN governor 1999-2004.
12. "Arbitrage is the simultaneous purchase and sale of the same asset in different markets in order to profit from tiny

US dollar (Research & Statistics Department, CBN, 2007; Sanni, 2006; Sanusi, 2004). Although it is also characterized by some pitfalls, including; capital flights, speculation, and rent seeking behavior (Akanji, 2006).

To further liberalize and improve the framework for determination of exchange rate at the foreign exchange market, the procedures of the DAS (which is essentially in form of retail transaction, that is, RDAS) was modified with the introduction of the Wholesale Dutch Auction System (WDAS) in 2006 (Sanni, 2006; Research & Statistics Department, CBN, 2007; Aliyu, 2012). This system has shifted the status of the CBN from being the main supplier to an active participant in the market that can purchase and sell the foreign exchange (Sanni, 2006). Under the WDAS, the CBN sell the foreign exchange to bureau de change in addition to the authorized dealers (banks), who are also allowed to take part in the transaction on their own accounts rather than on behalf of their customers which was hitherto the practice (Aliyu, 2012; Sanni, 2006).

In 2013 the CBN suspended the WDAS and reverted to the RDAS again, with new guidelines for conducting auctions at the foreign exchange market (Trade & Exchange Department, CBN, 2013). This lasted for about two years before it was also abolished. The CBN announced the closure of RDAS/WDAS window of the foreign exchange supply in 2015, and replaced it with the interbank foreign exchange market. The basis for this action according to the Bank was due to the "widening margin between the exchange rate in the interbank and the RDAS window", which open the gates of malpractices (rent seeking) that put unbearable pressure on the country's foreign reserves coupled with falling oil prices (Mu'azu, 2015, para.2). The Nigerian economy was significantly affected by the declining oil prices which began in 2014. Therefore, a combination of domestic challenges and external shocks plunged the economy in to recession in 2016. As a result of this situation, the exchange rate policy becomes unsustainable and the CBN adopted a new strategy to stabilize the naira exchange rate with the introduction of an interbank system that is based on two segments- interbank and autonomous segments respectively (Tule, 2018). This was followed by further changes to increase availability of foreign currency in the foreign exchange market, such as the introduction of the Investors and Exporters (I&E) foreign exchange window.[13]

The I&E window was established in 2017 as a special medium to boost foreign currency liquidity so as to accommodate foreign exchange obligations for eligible transactions (Gotring, 2017). The benchmarking of the currency in this window is determined by a fixing system known as the Nigerian Autonomous Foreign Exchange Fixing (NAFEX) developed and operated by FMDQ Securities Exchange Limited (FMDQ, 2020; Gotring, 2017).

In May 2021, the CBN abandoned the fixed official exchange rate and adopted the NAFEX rate used in the I & E window. Therefore, the naira exchange rates are now reduced to two, from the three rates operated before this period- CBN rate, NAFEX rate and parallel market rate respectively.[14]

The rationale for most of the exchange rate policies adopted in Nigeria are often justified based on the country's immutable economic structure characterized by large volume of imports and commodities exports, with the crude oil as a staple. The country imports literally everything- from consumer goods to industrial goods, to inputs/raw materials for the agricultural and manufacturing sectors. This results in huge trade deficit that continue to drag Nigeria's economic progress. For example, between 2016-2019, the total value of agricultural exports (₦803 billion) is only about one fourth of total value of agricultural imports (₦3.35 trillion) for that period (Oyaniran, 2020). It becomes imperative to minimize the trade deficit by raising the level of exports. In doing so, it is necessary to resolve the numerous structural and policy constraints impeding the promotion of export products domestically and ensuring the competitiveness of such products in international market.

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differences in the asset's listed price."https://www.investopedia.com/terms/a/arbitrage.asp

13. https://www.reuters.com/article/nigeria-currency-idUSL8N1HW1PB; https://www.premiumtimesng.com/business/business-news/229288-forex-cbn-creates-special-window-investors-exporters.html

14. https://www.premiumtimesng.com/news/headlines/463669-cbn-devalues-naira-adopts-nafex-rate.html

3.   Data and Methodology

3.1   Data

The study utilizes annual data from 1987 to 2019 to examine the influence of exchange rate regime and other control variables on the competitiveness of Nigeria's exports. Our interest is not on the absolute levels of competitiveness but what we attempt to measure is the changes in competitiveness in response to changes in exchange rate regime and other explanatory variables. As mentioned earlier, the most widely used indicator of export competitiveness is the Real Effective Exchange Rate-REER (see, for instance, Csermely, 2016; Hunegnaw, 2017; Duke et al., 2017; Dhiman et al., 2020) Thus, the natural log of the REER is the dependent variable. The main explanatory variable of interest is the exchange rate regime choice measured as a dummy variable with flexible exchange rate denoted as (1) and (0) otherwise. Many studies on exchange rate regimes uses the de facto exchange rate regime classification by the IMF, Reinhart and Rogoff (2004), and Levy–Yeyati and Sturzenegger (2005). Based on the strength of these three classifications, Dąbrowski et al.(2020) recently constructed a new de facto classification adopted by countries between 1995 to 2014.

In this study, the exchange rate regime classification follows that of Levy-Yeyati and Sturzenegger (2005) and Dabrowski et. al (2020). The data for annual exchange rate regime adopted in Nigeria from 1987-1994 was extracted from Levy-Yeyati and Sturzenegger (2005) and from Dabrowski et al., (2020) for 1995-2014. The insufficient data to cover the timeframe of this study poses a potential limitation. However, since there were no changes in exchange rate policy in 2015, that is about a year after Dabrowski et al. (2020)'s data ended, we maintain the same classification as that of 2014. Further, in 2016, CBN adjusted the nominal naira exchange rate and announced a new floating arrangement for the currency. But the CBN often announced a flexible exchange rate policy de jure but, it does not allow sufficient flexibility that enables a truly functioning flexible regime. Given that there is no sufficient flexibility in the forex market, such that the CBN maintain official rates that diverge widely from parallel markets, we classify the regime as a fixed exchange rate regime for the period 2016–2019.[15]

Other explanatory variables affecting export competitiveness as measured by REER were drawn from the available literature (Nabli & Vèganzonès-Varoudakis, 2002; Duke et al., 2017; Akosah et al., 2018; Idris, 2021; Busari et al., 2022). These includes: International price of oil, which is Nigeria's major export product, measured as the annual average USD price of oil per barrel; domestic inflation measured by annual consumer price index (CPI); trade openness (trade as a percentage of GDP); and terms of trade (ratio of average price of exports to price of imports). The data for all variables were obtained from the World Bank's world development indicators, except that of oil price (sourced from OPEC website) and exchange rate regime classification as discussed above. The empirical model for this study is expressed as:

$$LNREER = \alpha + \beta_1 LNOILPRICE_t + \beta_2 INFLATION_t + \beta_3 OPENNESS_t + \beta_4 TOT_t + \beta_5 ERREGIME_t + U_t \quad (1)$$

Where LNREER is the natural log of real effective exchange rate, LNOILPRICE[16] is the indicator for oil exports, INFLATION represents movements in domestic price level, OPENNESS is the proportion of trade in GDP, TOT is the terms of trade, and ERREGIME is the dummy for flexible exchange rate which takes the value of (1) and (0) otherwise.[17]

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15. This justification is supported by Habermeier et al.(2009), that "the most critical decision in the ... de facto classification scheme is thus whether the arrangement is floating. The criterion for a float is that the exchange rate is largely market-determined. The observed behaviour of the exchange rate, complemented by information on the monetary and foreign exchange policy actions taken by country authorities (notably intervention), allow for a judgment to be made in most cases as to whether the exchange rate is determined primarily by market forces or by official policy actions" (p.8).

16. Note that only the OILPRICE variable, measured in USD/barrel, is transformed to natural log because the remaining regressors are already percentages.

17. This binary classification is similar that of Kataria and Gupta (2018).

To estimate the relationship between export competitiveness and the associated variables, the study employed the Autoregressive Distributed Lag Model (ARDL).

3.2   The ARDL Model

The choice of ARDL as the estimation technique for this study is due to its advantages in analyzing time series data with relatively small sample size, and its utility in estimating models that have a mixture of variables which are stationary at level I(0) and at first difference I(1). The initial stage of the analysis involves the establishment of a long run relationship among the variables through the bounds testing procedure using F test. Subsequently, the short run and long run dynamics of the model are estimated. Accordingly, equation (1) is modified as:

$$
\begin{aligned}
SNREER_t = {} & \gamma_0 + \sum_{i=1}^{\rho} \alpha_i LNREER_{t-i} + \sum_{i=0}^{\rho} \beta_i LNOILPRICE_{t-i} + \sum_{i=0}^{\rho} \varphi_i INFLATION_{t-i} \\
& + \sum_{i=0}^{\rho} \emptyset_i OPENNESS_{t-i} + \sum_{i=0}^{\rho} \psi_i ERREGIME_{t-i} + \sum_{i=0}^{\rho} \xi_i TOT_{t-i} + \delta_1 LNREER_{t-1} \\
& + \delta_2 LNOILPRICE_{t-1} + \delta_3 INFLATION_{t-1} + \delta_4 OPENNESS_{t-1} + \delta_5 TOT_{t-1} \\
& + \delta_6 ERREGIME_{t-1} + U_t
\end{aligned}
$$

$$(2)$$

From equation (2), Δ is the first-difference operator while ρ is the optimal lag length. The short-run dynamics of the model are represented by the terms with the summation sign, and the coefficients with δ represent the long-run relationship. When there is evidence of long-run relationship, the long-run model is then estimated using OLS after selecting the appropriate lags based on the AIC or SBC criterion. The short-run dynamics and speed of the model's adjustment to equilibrium is captured by the ECM of the ARDL specified in the following equation:

$$
\begin{aligned}
\triangle LNREER_t = {} & \gamma_0 + \sum_{i=1}^{\rho} \alpha_i \Delta LNREER_{t-i} + \sum_{i=0}^{\rho} \beta_i \Delta LNOILPRICE_{t-i} + \sum_{i=0}^{\rho} \varphi_i INFLATION_{t-i} \\
& + \sum_{i=0}^{\rho} \emptyset_i OPENNESS_{t-i} + \sum_{i=0}^{\rho} \xi_i TOT_{t-i} + \sum_{i=0}^{\rho} \psi_i ERREGIME_{t-i} + \lambda ECM_{t-1} + U_t
\end{aligned}
$$

$$(3)$$

Where the ECM_{t-1} is the error correction term, defined as:

$$
\begin{aligned}
ECM_t = {} & LNREER_t - \alpha_i \sum_{i=1}^{\rho} \alpha_i \Delta LNREER_{t-i} - \sum_{i=0}^{\rho} \beta_i \Delta LNOILPRICE_{t-i} - \\
& \sum_{i=0}^{\rho} \varphi_i INFLATION_{t-i} - \sum_{i=0}^{\rho} \emptyset_i OPENNESS_{t-i} - \sum_{i=0}^{\rho} \xi_i TOT_{t-i} - \\
& \sum_{i=0}^{\rho} \psi_i ERREGIME_{t-i}
\end{aligned}
$$

$$(4)$$

The error correction coefficient *lambda* represents the speed of adjustment and it is expected to be negative.

4. Results and Discussion

4.1   Unit Root Test

The analysis proceeds by first conducting a unit root test to ascertain the stationarity of the variables using the Augmented Dickey-Fuller (ADF) and Philips–Peron (PP) tests with trend and intercept. Th result is presented in table 2. Both the ADF and PP test reveals that there is a mixture of I (0) and I (1) variables suggesting that the ARDL model can be applied to estimate the empirical model.

Table 2. Unit root tests

	ADF Test Statistics		PP Test Statistics		
	With tred and intercept				
Variables	Level	First Difference	Level	First Difference	Oder of integration
REER	-2.4696	-5.2037*	-2.5995	-5.1982*	I (1)
OILPRICE	-1.8499	-4.9471*	-1.8499	-4.9417*	I (1)
INFLATION	-3.5814**	-4.9961*	-3.5425**	-9.4655*	I(0)
OPENNESS	-3.2586***	-6.8736*	-3.1722	-10.6723*	I (1)
TOT	-5.0317*	-9.7178*	-5.0328*	-20.247*	I(0)
ERREGIME	-2.0206	-5.3924*	-2.0207	-5.4575*	I (1)

Note: *, ** and *** denote statistical significance at 1percent, 5percent and 10percent

4.2   Cointegration Test: Bounds Testing Approach

The evidence of long run relationship among the variables is illustrated in table 3 which compares the F static with the associated critical values. The F statistic (5.680) is greater than the upper bound critical value at the 1percent, 5percent, and 10percent levels of significance. This provides a strong ground to reject the null hypothesis of no cointegration and to conclude that a cointegrating relationship exist among the variables.

Table 3. Bounds test for cointegration

Test Statistic		Critical Values	Significance level	
F-statistic	5.680	I(0)	I(1)	
		3.41	4.68	1percent
		2.62	3.79	5percent
		2.26	3.35	10percent

4.3   Interpretation of The Exchange Rate Regime Dummy

Before the interpretation and discussion of results, it is important to highlight an important note about the interpretation of the dummy variable. Accounting for the percentage change in competitiveness resulting from a change in exchange rate regime requires a different interpretation from the other regressors which are measuring marginal effects.[18] Recall that the log–linear model specification of this study (equation 1) can be interpreted as a percentage change in competitiveness associated with a one percent change in the explanatory variables. For the dummy variable ERREGIME, the

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18. Halvorsen and Palmquist (1980) made the first observation that many studies were misinterpreting the dummy variable coefficient in regression models, which leads to incorrect estimates. The authors argue that "since a dummy variable enters the equa- tion in dichotomous form, the derivative of the dependent variable with respect to the dummy variable does not exist. Instead, the coefficient of a dummy variable measures the discontinuous effect on Y of the pres- ence of the factor represented by the dummy variable."

percentage change in competitiveness (LNREER) associated with switching ERREGIME for instance from 0 (fixed regime) to 1 (flexible regime) is 100 x (e^{β_5} 1).[19] To see how this formular is derived, let us transform the right- and left-hand side of equation (1) in to an exponential form as:

$$LNREER = e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+\beta_5+U} \tag{5}$$

Using equation (5), we can measure the change in REER resulting from switching ERREGIME from flexible to fixed exchange rate regime. The right-hand side of the equation indicate the value of REER when β_5 (ERREGIME) is equal to 1. Substituting 0 in to β_5 on the left-hand side, the expression becomes:

$$e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U} \tag{6}$$

The term measuring when ERREGIME switches from fixed to flexible exchange rate regime is expressed as:

$$e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+\beta_5+U} e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U} \tag{7}$$

By applying the rule of exponential function, equation (7) is transformed to:

$$e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+\beta_5+U} e^{\beta_5} e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U} \tag{8}$$

This can be further simplified as:

$$e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U} (e^{\beta_5} 1) \tag{9}$$

Equation (9) thus gives the change in REER when ERREGIME switch from flexible to fixed regime. However, since we want to estimate the percentage change in the REER as specified in our model, we therefore take equation (9) and divide by the initial level of REER when ERREGIME is 0, that is equation (6).

$$\frac{e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U} (e^{\beta_5} 1)}{e^{\alpha+\beta_1+\beta_2+\beta_3+\beta_4+U}} \times 100 \tag{10}$$

Which is equal to

$$e^{\beta_5} 1 \times 100 \tag{11}$$

Given that we are computing a regression model with a logged dependent variable and a dummy variable as a regressor, the dummy coefficient is interpreted as a percentage change in REER from switching ERREGIME between 1 and 0 (flexible and fixed exchange rate regimes). This is obtained by plugging the parameter value in to the formular illustrated in equation (10).[20]

4.4   Explaining the Change in Exports Competitiveness in Nigeria

The long run estimates and Error correction representation of the ARDL model are reported in table 4. The variable of interest-ERREGIME and two other explanatory variables (INFLATION and OPENNESS) are statistically significant.

Using the formular derived above, the long run model indicates that competitiveness of exports in Nigeria decreases by about 50 percent[21] when the exchange rate regime is flexible. To put it differently, switching from a fixed to flexible exchange rate regime is associated with a decline in

---

19. Note that e (2.7182818) is the base of the natural logarithm (ln).
20. The derivation of this formula benefitted from the short tutorial on the interpretation of a dummy regressor in a log-linear regression model by Kuminoff (2020). See, https://www.youtube.com/watch?v=nVEfMQbKdFk
21. 2.71828183–0.712782 1 X 100= –50

Table 4. Long run model and Error correction representation

Panel A: Long run estimates				
Dependent variable : LNREER				
LNOILPRICE	INFLATION	OPENNESS	TOT	ERREGIME
0.019458	0.016409	0.021170	0.002468	-0.712792
(0.020956)	(1.900661)***	(2.257536)**	(0.220844)	(-2.414918)**
Panel B: Error Correction Model				
$ECM_{(t-1)}$ = 0.512 (6.4959)*				
LNOILPRICE	INFLATION	OPENNESS	TOT	ERREGIME
-1.668319	0.001636	0.010852	0.012552	-0.217105
-(4.309401)*	0.747888	2.269157**	3.282468*	-3.801634*

Notes: *, ** and *** denote significance level at 1percent, 5percent and 10percent. The *t*-statistics are in parenthesis.

Nigeria's competitiveness by 50percent. This is a plausible outcome given the volatile nature of flexible exchange rate and the greater tendency to cause currency devaluation. It is pertinent to note that the general notion that currency devaluation stimulate exports and overvaluation does the opposite may not necessarily occur in all countries and under all circumstances as shown by Abeysinghie and Yeok (1998) in the case of Singapore (see section 2.1). There are good reasons to argue that Nigeria's exports too, might benefit more from overvalued and stable currency under a fixed regime, because a large component of the export products contains imported raw materials and intermediate inputs. Our results shows that effect of ERREGIME on competitiveness occur at both the short and long run, though the magnitude is much higher in the long run than in the short run (20 percent). The results seem to corroborate the findings of Frieden et al. (2010) that democratic countries with good degree of openness to the international economy may prefer a fixed exchange rate regime. The volatility associated with flexible regimes has adverse effect on investment decisions in addition to the impact of a devalued currency on domestic prices. Exporters face the greatest dilemma regarding preferences for stability and the level of the exchange rate. The reason for this is because on one hand, their business is internationally oriented in which a stable (fixed) currency is preferable. On the other hand, being exporters of tradeable goods means that a weak currency may enhance their competitiveness, but a depreciated currency seldom occurs under a fixed regime (Frieden, 2015).

Among the control variables employed in this study, it is only trade openness and inflation that are statistically significant in the long run. For every 1percent increase in the degree of openness, competitiveness increases by about 2 percent. The coefficient of inflation revealed the same effect. Trade openness was used as a proxy for trade policy in some studies (see, for instance, Idris, 2021) such that a greater openness to trade characterized by lower trade restrictions cause exchange rate depreciation due to increased imports. Conversely, the depreciated currency may improve the price competitiveness of exports.

LNOILPRICE is significant in the short run, and has a negative sign. The negative coefficient suggests that more petrodollars will cause the naira to appreciate and cause competitiveness to decline because exports become more expensive. However, this effect disappears over the long run as indicated by our result. There may be several reasons for this outcome. For instance, the increased global oil price may not benefit Nigeria due to domestic structural challenges resulting from growing payment for petroleum subsidies because of dysfunctional local refineries. It is also possible that there is dwindling output of the crude oil production which affect the ability of the country to export more and reap the benefit of oil booms. This finding can also be interpreted in terms of the 'Dutch disease' phenomenon. However, such discussion is outside the scope of this study.

Table 5: ARDL Model Diagnostics tests

Test	Coefficient	P-value
R2	0.711	-
DW-statistic	2.139	-
F-statistic	12.828	0.0000
Serial Correlation	0.272376	0.7645
Heteroscedasciticity	1.469225	0.2192
Normality-Jarque-Bera stat.	2.210163	0.331184

The insignificant coefficient of TOT in the long run is not surprising because the terms of trade is influenced by the income and price elasticity of demand for Nigeria's exports. The income and price elasticity of demand for primary commodities which dominate the exports of Nigeria and other developing economies tend to be low (Todaro & Smith, 2011, pp. 572–573). Consequently, demand for imported food and agricultural raw materials rise by less than the increase in developed-country incomes. Our findings come close to this prediction. The result indicates that there is a positive proportionate (1percent) increase in competitiveness relative to increase in TOT. The short run association between competitiveness and TOT improvement may be connected to episodic commodity booms which raises commodity prices.

The error correction term ECM_{t-1} reported in table 4 (panel B) is negative and statistically significant. The term measures the speed at which REER adjusts to changes in the explanatory variables before converging to its equilibrium level. The error correction coefficient of –0.512 suggests that a deviation from the long-run equilibrium level of REER is corrected by a relatively faster rate (51percent). The R^2 indicate that about 71percent of the variation in REER is explained by the model; and the F-statistics for joint significance of the explanatory variables is also statistically significant (see, table 5). Other diagnostic tests of the model have been conducted to ensure the validity of the estimates for inferences. These are also reported in table 5. The tests include: autocorrelation, heteroskedasticity, and normality in the error term. The results reveal no evidence of serial correlation and heteroskedasticity. The Jarque–Bera test also suggest that the errors are normally distributed.

5.   Conclusion

This study contributes to the international competitiveness literature by providing empirical evidence on the extent to which exchange rate regimes affect exports competitiveness in Nigeria. The study shows that Nigeria's exports experience a considerable decline in competitiveness when the country is having a flexible exchange rate regime. This finding confirms the relevance of exchange rate and how the choice of exchange rate policy affect export competitiveness in the short and long run. An important contribution here is the application of the formular for appropriate interpretation of a dummy variable in a log–linear regression model proposed by Halvorsen and Palmquist, (1980). Additional findings revealed a proportionate change in competitiveness in relation to trade openness and inflation, while oil price has a negative effect on competitiveness in the short run.

The study yields insights on the factors that tends to erode the competitiveness of Nigeria's export. This is a noteworthy outcome that hold important implication for the design and implementation of exchange rate policies in Nigeria. Our results suggest that Nigeria's export competitiveness can be adversely affected by both exchange rate depreciation and appreciation through the channels of exchange rate regime and international oil price. Although the latter may occur only in the short run perhaps due to sudden windfall, the former has a lasting impact over the long run. To prevent a sharp appreciation of the naira as a result of sudden large inflow of petrodollars, policymakers should resist the temptation to absorb all the windfall domestically. This will help to protect the

tradable sectors by not allowing a significant appreciation of the naira that causes 'Dutch disease' and erode competitiveness. On the exchange rate regime, policymakers should emphasize exchange rate stability even if that will have implication on monetary policy autonomy. Apparently, there is no easy trade-off when dealing with exchange rate policy, but the effect of persistent naira devaluation seems to outweigh the undesirable loss of monetary policy independence under a fixed exchange rate regime. A middle ground solution may probably be found in intermediate regimes that ensures stability of the exchange rate within a limited band. A de facto adoption of such policy will also mean the widening gap between official and parallel market exchange rate must be eliminated or narrowed to a very low level.

An analysis of the appropriate intermediate regime that is most conducive to export competitiveness is a promising avenue for further research. Future studies may consider examining the differential effects of different exchange rate regimes along the fixity and flexibility continuum on competitiveness. Other studies may also broaden the scope of competitiveness beyond prices in international market to incorporate other salient aspects such as productivity, regulatory bottlenecks, and quality competitiveness of standardized exports.

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