OIL PRICE SHOCKS AND EXCHANGE RATE DYNAMICS IN NIGERIA

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ABSTRACT

Nigeria's persistent exchange rate crises are fundamentally linked to oil price shocks. The most recent oil bust of mid-2014 which ignited internal macroeconomic dislocations, including an economic recession, coupled with rising inflation, saw the country recording a double-digit decline in the value of the naira. This paper examines exchange rate management in Nigeria in the periods of oil boom and bust. Findings indicate that the oil price collapse of 2014 triggered a currency crisis in the country. The devaluation of the naira exacerbated the very problem it was meant to solve, which is the scarcity of foreign exchange and a widening gap between the official rate and the parallel market rate. While a currency float remains the most efficient policy option, the country must avoid ad-hoc interventions and manage its exchange rate transparently to curtail the dominance of speculation and arbitrage in the exchange market. Complementary measures are also needed to tackle structural challenges affecting currency inflows, including the high dependence on the petrodollar and the prevalent black market.

JEL Classification: E3, 024, P42

1. Introduction

THE recent plunge in global oil prices is perhaps the most important global macroeconomic development since the global economic crisis of 2008. Following four years of stability at around $105 per barrel, oil prices fell from $115 per barrel in June 2014 to US$30 in the first quarter of 2016 and under $50 per barrel by October 2016. The speed and magnitude of the price drop which is broadly similar to the decline in 1985-1986, when the Organisation of Petroleum Exporting Countries (OPEC) reversed earlier production cuts, and in 2008-2009 at the outset of the global financial crisis (Rogoff, 2016), has been devastating for all oil exporting countries, especially those that did not save enough during the boom era. In fact, none of the world's largest oil exporters have been spared, including

Canada, Norway, Saudi Arabia and Russia. Nigeria has been ranked among the 'fragile five' states that are on the precipice of a major crisis amid the current low oil price environment (Hussain, 2016)—Note that amidst a mix of social, political and security upheavals, Nigeria has been grouped alongside Algeria, Iraq, Libya and Venezuela as members of the Organisation of Petroleum Exporting Countries (OPEC) 'fragile five', which are on the verge of collapse if oil prices do not stabilize soon.

The price of crude oil has fallen to levels not seen in over 14 years and the third largest over the last three decades, when oil began trading in the futures exchange. Supply factors have played a somewhat larger role than demand factors in the oil price slump. The current crash is driven by a 'perfect storm' of conditions (both long and short term drivers) that exerted strong downward pressures on prices. These include headwinds generated by slow growth in the advanced economies, several years of large upward swings in oil supply (including OPEC's refusal to cut production), the return of Iran to the world oil market following its nuclear agreement with the world's major powers; the rise in shale oil production in the United States; China's slowing demand; unwinding of geopolitical risks that had threatened production; structural changes in the global economy and the appreciation of the US dollar (Baffes et al., 2015; Jerome, 2016). As a result of the shale energy revolution in the United States, the Atlantic Basin ran an oil surplus for the first time in half a century, causing Algeria, Angola and Nigeria, three OPEC members that export light sweet crude comparable to shale oil, to lose significant market share in the US.

Beyond oil, commodity prices including food, industrial inputs, and metals also faced declining trends since June 2014 by over 20 percent leading to September 2016. The metal price index[3] fell from over 170 percent in early 2014 to 119 percent in September 2016 owing to slowing demand growth from China and substantial increases in the supply of most metals. Industrial metals, including copper and zinc experienced a significant decline and have now been joined by aluminium, a key input in many products. The price of aluminium hit a six-year low in July 2015 on the news that China was going to export an excess supply of aluminium, rather than close old or inefficient producers.

The new oil era which is likely to be the new normal has stirred macroeconomic turbulence and restructuring across the globe. An important knock-on effect from the economic downturn has been the deterioration of national

[3] Metals Price Index, 2005 = 100, includes copper, aluminium, iron ore, tin, nickel, zinc, lead, and uranium price indices.

currencies under the pressures of falling oil prices, as well as the rise in inflation, decline in living standards and stalled economic growth especially in countries that were already in difficult economic straits. Five countries (Angola, Azerbaijan, Nigeria, Russia and Venezuela) have been identified by Global Risk Insights as most affected by the falling currency value, and the phenomenon has broadly been the same. Over the last decade, these countries used accumulated receipts from oil windfalls to expand public service and unveil populist policies in order to buy legitimacy (Global Risk Insight, 2016). Once oil prices started to fall, their budgets did not shrink accordingly. The consequence has been high inflation, declining living standards and stalled growth. Governments in the affected countries were forced to devalue their currencies to stem the collapse of their foreign reserves. With the low prospect of a rebound in oil prices anytime soon, currency from commodity exporters will likely record further stress in the near term through the depletion of foreign reserves, currency depreciation, and fluctuation in interest rates – all of which create a level of uncertainty (Cunningham, 2015).

Petro-economies with flexile exchange regimes have already seen a double-digit decline in their currency value in percentage terms since July 2014. Between 30 June 2014 and the end of October 2016, Russia's exchange rate depreciated by 87 percent, followed by Kazakhstan at 83 percent. In Russia, this was worsened by sanctions imposed by the United States and European Union in response to Russia's annexation of Crimea and its intervention in Eastern Ukraine (Dabrowski, 2015). Pressure is also mounting on a range of currency pegs despite that nations with fixed exchange rates are not expected to experience sharp depreciation. Saudi Arabia, OPEC's most important oil producer maintains a fixed peg of 3.75 riyals to the dollar, a level that has remained constant; but this has brought about a depletion in its foreign reserves from a peak of US$737 billion a year earlier to US$654 billion in September 2015 as a result of its stay-the-course- strategy.

While Saudi Arabia has a massive war chest of cash reserves, countries such as Iraq and Nigeria who are in a similar predicament, but without the colossal foreign exchange reserve, have fared worse. Iraq has succeeded in boosting oil production above 4 million barrels per day (mb/d), with significant month-on-month increases over the course of much of 2015, but the country is facing financial crisis and the currency is getting squeezed. Iraq's dollar reserves have declined by 20 percent to just US$59 billion in July 2015. And in order to maintain the dinar's pegged currency rate –at 1,166 dinars per dollar – the Iraqi Central Bank burned through US$4.6 billion in foreign exchange by August 2015. Venezuela is arguably in the worst situation, with depleting cash reserves, an economy in free

fall, and shortages of basic consumer goods. Venezuela ostensibly maintains a fixed exchange rate, but in reality, the parallel market rate for the bolivar is vastly weaker. The currency has already depreciated significantly, and the government has few short-term options. This situation could lead to a continuing deterioration of the economy, perhaps ending in a debt default (Cunningham, 2015).

Nigeria is not new to oil-related shocks. At least, two previous episodes of declining prices have resulted in a free-falling Naira, slowing economic growth. In 1986, average oil prices fell by 48 percent between 1985 and 1986 as a result of an oil glut. This led to an economic contraction over the next two years, with the Naira further depreciating by 70 percent. Nigeria's performance in the wake of the 2008 global financial crisis was more encouraging. As volatility spread from the US-subprime crisis, Brent crude fell from US$145/bbl to below US$40 in a spate of six months. However, a robust external reserve combined with stronger domestic growth fundamentals and a weak US$ prevented the Naira from falling further than 20 percent against the dollar. Economic growth resumed at pre-crisis levels only two years later.

The current crisis has seen the value of the Naira plummet in a free fall. Nigeria initially responded by allowing its foreign exchange rate to depreciate versus the dollar, but eventually caved in to devalue the currency under pressure from the Bretton Wood institutions. The devaluation of the naira has exacerbated the very problem it was meant to solve. It has resulted in the scarcity of foreign exchange and a widening gap between the official rate and the runaway black market. Inflation continued to rise from 8 percent in 2014 to 10 percent in 2015 and 18.72 percent by January 2017. Persistently low oil prices have affected the management of monetary policy, risking further inroads by unanchored inflation expectations. The current era is already igniting a variety of macroeconomic dislocations including corporate and sovereign defaults, and dislocations that can feed back into an already jittery financial market. This paper evaluates exchange rate performance in the face oil price volatility in Nigeria. In the light of the findings, it proffers solutions for charting a realistic naira exchange rate that will bring about macroeconomic stability and catalyse productivity and inclusive economic growth. Our approach is essentially qualitative drawing insight globally, being a policy-oriented paper. The paper makes substantial contribution to the literature; and builds on earlier narratives by Obadan (2006) and Ali et al. (2015) on exchange rate management and developments in global oil prices.

2. Exchange Rate Management Policies

Theories of exchange rate began to flourish in the beginning of 1960s. In what follows, we highlight some salient developments over time in both theory and practice of exchange rate determination.

2.1 Exchange rate regime

The choice and management of an exchange rate regime is a critical aspect of economic management– to safeguard competitiveness, macroeconomic stability and growth. There is however no consensus on how to select an appropriate or ideal exchange rate regime. Exchange-rate regimes can broadly be classified into three: fixed (hard peg) regimes at one end, floating (fully flexible) regimes at the other end of the spectrum and intermediate regimes between these two extremes. Under a fixed exchange rate regime, a country fixes its exchange rate to another currency, such as the United States dollar or a basket of currencies. To maintain the fix, monetary authorities buy or sell foreign exchange in order to balance demand and supply in the currency market. As most countries engage in international trade, foreign exchange reserves would be important to ensure that trade would not be interrupted in the event of an interruption in the inflow of foreign exchange to the country, which could happen during a financial crisis for example. A rule of thumb usually followed by central banks is to at least hold an amount of foreign currency equivalent to three months of imports.

Under a freely floating exchange-rate regime, the central bank simply allows the exchange rate to fluctuate according to market forces, i.e. the demand and supply of foreign and domestic currency as determined by foreign trade and international capital flows (Harrigan, 2006). Other intermediate regimes include adjustable pegs (a fix adjusted under exceptional circumstances); a crawling peg (a fix which is gradually and periodically adjusted according to a set of indicators e.g. to accommodate differences between the country's inflation rate and world inflation); a crawling band (where exchange rate is forced to fluctuate within a centrally fixed narrow band that is adjusted periodically to keep it in line with fundamentals such as inflation differentials); a managed float (no commitment to a particular rate or pre-announced path but characterized by discretionary periodic interventions by the central bank); and a wide-band system (an exchange rate allowed to float freely within a predetermined broad band). The closer the intermediate system is to a free float, the less the need for the monetary authority to intervene and hence, hold international reserves for this purpose (Alesina et al., 2006; Frankiel, 2003; Harrigan, 2006).

As shown in Jerome (2016), each type of regime comes with major benefits and disadvantages. Floating regimes are more appropriate for developed countries, while intermediate regimes are better options for developing countries with open economies and sufficiently developed financial sectors. Soft peg regimes appear to be preferable for economies that are less integrated with the world economy and with poor monetary discipline. Hard peg regimes are generally an option for countries with high inflation and low credibility.

A prevailing exchange rate can differ from the underlying 'fundamental' or 'equilibrium' value of the currency. When an exchange rate differs from its fundamental or equilibrium value, the currency is said to be misaligned. More specifically, when the rate is too high, the currency is said to be overvalued; when the rate is too low, the currency is said to be undervalued. A 'black market' (which is more reflective of market supply and demand) may develop when a currency is not traded at its true value, especially under the pegged system. Parallel or black markets for foreign currencies have become common phenomena in developing countries, accompanying the imposition of foreign exchange controls where the central bank does not have sufficient reserves to satisfy the demand for foreign currency. There is a lot of debate among economists as to what causes exchange rates instability (Yagci, 2001; Frankiel, 2003). Factors that influence a country's exchange rate include:

a. Inflation rates: generally, countries with lower inflation rates have higher-valued currencies.
b. Interest rates: higher interest rates often mean that investors get a better return in one country than another, and this sometimes pushes the value of the country's currency up compared to low-interest countries.
c. Current account deficits: when a country spends more on foreign trade (via imports) than it earns (via exports), it may need to borrow from other countries to finance its deficit –this generally means the value of its currency will decline.
d. Level of public debt: a combination of large budget deficits and government borrowing often results in high inflation and lower currency valuation.
e. Terms of trade: the relative price of a country's exports to the price of its imports reflects export revenues and demand for the country's currency (and value). The stronger the terms of trade, the stronger the currency.
f. Stability and economic growth: finally, stable countries with strong economic performances attract investment flows which can influence the appreciation of the local exchange rate through the increased demand for home currency.

Political instability on the other hand, may cause loss of confidence and lead to capital flight.

2.2. The evolution of exchange rate regimes

Between 1870 and 1914, the world maintained the gold standard. Currencies were linked to gold, and the value of a local currency was fixed at a set exchange rate to gold ounces. This allowed for unrestricted capital mobility as well as global stability in currencies and trade. However, with the start of World War I, the gold standard was suspended or abandoned by many countries. In financing the war and abandoning gold, many countries suffered drastic inflations and unprecedented levels of balance of payments deficits and surpluses. A run on the sterling caused Britain to impose exchange controls that fatally weakened the standard – convertibility was not legally suspended, but gold prices no longer played the role that they did. Even after the Treaty of Versailles, economic and political tensions had continued, leading to World War II. Note that The Treaty of Versailles was the most important of the peace treaties that brought World War I to an end.

In an effort to develop a financial order for the post-war world, in July 1944, the Bretton Woods conference was convened; with agreements made on a new monetary order and open system of trade. Formally known as the United Nations Monetary and Financial Conference, the conference established the basic rules and regulations governing international exchange. An international monetary system embodied in the International Monetary Fund (IMF) was established to promote foreign trade and maintain the monetary stability of independent nation-states. It was agreed that currencies would once again be fixed, or pegged, but this time to the US dollar which was pegged to gold at US$35 per ounce. Managed by the IMF, the peg was maintained until 1971, when the US dollar could no longer hold the value of the pegged rate of US$35 per ounce of gold. From then on, major governments adopted a floating system, and all attempts to move back to a global peg were eventually abandoned in 1985.

Since the breakdown of the Bretton Woods system, a variety of exchange rate regimes, ranging from completely flexible to completely fixed (with a range of intermediate systems) have been adopted by different countries. Most developed countries favoured a currency peg to a single currency or a basket of currencies; while developing countries favoured more flexible regimes (IMF 1997). Developing country's preference for flexible regimes continued as a result of a number of factors, including the large exchange rate fluctuations among the major currencies that followed the breakdown of the Bretton Woods system, acceleration

of inflation following oil shocks of the 1970s and 1980s, increase in capital mobility, and a series of external shocks including a steep rise in international interest rates, a slowdown of growth in industrial countries, and the debt crisis.

The emerging markets crises of the late 1990s generated a renewed consensus that intermediate regimes (conventional pegs, horizontal bands, crawling arrangements, and managed floats) left countries more susceptible to crises. The new orthodoxy or 'two-corner solution' has been challenged by a number of authors (Frankel 1999, and Williamson 2000). They argued that: 'corner solutions' are not free from problems. Though they may be appropriate under specific circumstances for a limited number of developing countries, moving away from soft pegs towards more flexibility does not mean free floating; and intermediate regimes are more likely to be appropriate for more countries than the corner solutions.

The twenty first century brought with it a seamless transition between a broad spectrum of exchange rate arrangements both orderly and disorderly. Table 1 and Figure 1 present the exchange rate arrangements for the 188 IMF Member Countries, based on members' actual de facto arrangements, which may differ from their officially announced, de jure arrangements. The system distinguishes between four major categories: hard pegs (such as exchange arrangements with no separate legal tender and currency board arrangements); soft pegs (including conventional pegged arrangements, pegged exchange rates within horizontal bands, crawling pegs, stabilized arrangements, and crawl-like arrangements); floating regimes (such as floating and free floating); and a residual category, other managed arrangements.

Table 1: Exchange rate arrangement for 188 IMF member countries 2008 to 2014

Exchange Rate Arrangement	*2008*	*2009*	*2010*	*2011*	*2012*	*2013*	*2014*
Hard peg	12.2	12.2	13.2	13.2	13.2	13.1	13.1
No separate legal tender	5.3	5.3	6.3	6.8	6.8	6.8	6.8
Currency board	6.9	6.9	6.9	6.3	6.3	6.3	6.3
Soft peg	39.9	34.6	39.7	43.2	39.5	42.9	43.5
Conventional peg	22.3	22.3	23.3	22.6.	22.6	23.6	23.0
Stabilized arrangement	12.8	6.9	12.7	12.1	8.4	9.9	11.0
Crawling peg	2.7	2.7	1.6	1.6	1.6	1.0	1.0
Crawl-like arrangement	1.1	0.5	1.1	6.3	6.3	7.9	7.9
Pegged exchange rate within horizontal bands	1.1	2.1	1.1	0.5	0.5	0.5	0.5
Floating	39.9	42.0	36.0	34.7	34.7	34.0	34.0
Floating	20.2	24.5	20.1	18.9	18.4	18.3	18.8
Free floating	19.7	17.6	15.9	15.8	16.3	15.7	15.2
Residual (other managed arrangement)	8.0	11.2	11.1	8.9	12.6	9.9	9.4

Source: IMF 2014

Table 1 shows that more countries have continued to veer into soft peg regimes which grew to the single largest exchange rate arrangement category – equal to the combined number of floating and other managed arrangements, and accounting for 43.5 percent of all members in 2014. Crawl-like arrangements particularly grew from 1.1 percent in 2008 to 7.9 percent in 2014. These arrangements have provided better stability amid the slow recovery of both global growth and global financial conditions. On the other hand, the number of countries with floating currencies declined from 75 to 63, including several major currencies, such as the US dollar, the euro, the Japanese yen, and the British pound, whose economies together account for half of global GDP. About 24 countries used a 'hard' peg, which anchors the currency's value more strictly, including the formal adoption of a foreign currency as a domestic currency (both Ecuador and El Salvador adopted the US dollar in 2000 as their national currency). Dollarization in these countries has in some way increased strict fiscal discipline and has transferred monetary policy controls over to the US Federal Reserves Board. This is unlike in Zimbabwe, where the government abandoned its currency in 2009 for eight official legal tenders – the US dollar, South African rand, Botswana pula, British pound sterling, Australian dollar, Chinese yuan, Indian rupee and Japanese yen.

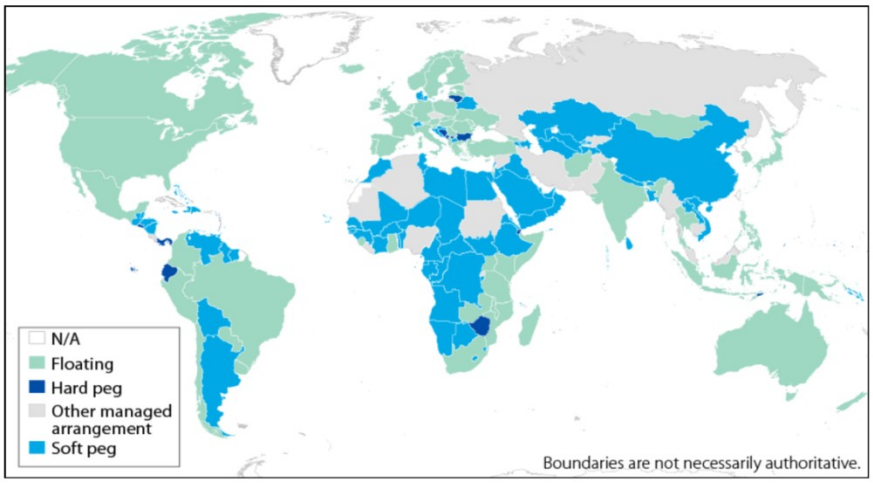

Figure 1: Map of exchange rate arrangements by countries in 2014
Source: IMF (2014).

2.3. **The impossible trinity**

A generally accepted principle of international finance is the impossible trinity, also known as the monetary policy trilemma (Frankel 1999). According to the

principle, a central bank can only choose two of three desirable features of a policy regime: (a) monetary policy independence; (b) exchange rate policy independence; and (c) free capital movement (absence of capital controls). For instance, if a country adopts a fixed exchange rate and free capital movement, it would lose monetary policy independence because setting an interest rate that is different from the world interest rate would undermine exchange rate stability due to appreciation or depreciation pressure on the domestic currency. The growing consensus seems to be emerging on the following stylized facts (Yagci, 2001):

a. There is no ideal exchange rate regime for a country. The selection of an exchange rate regime that would suit a country's economic interest depends on several factors including the size of the economy, trade openness and capital movement, structure and composition of production and exports, financial development, inflationary history, export diversification and concentration), preferences for the trade-offs among the main policy objectives; political stability; and the credibility of its policies and institutions.
b. There has been the phenomenon of a 'disappearing middle' in the two spectrums of exchange rate regimes. A number of developing countries are moving away from soft peg regimes to independent floating exchange rates as more viable environments for attracting international capital flows, having experienced the economic and currency crises of the 1990s. For less developed economies with limited involvement in the international capital market, the soft peg is widely maintained as the more viable regime.
c. A supportive policy environment, which includes prudent macroeconomic policies, consistent monetary policies and credible institutions are necessary to maintain a stable and competitive real exchange rate. Failure to establish fiscal discipline would lead a country to crisis under any exchange rate regime. A better managed and supervised financial system, generally accepted accounting standards and disclosure requirements, efficient legal and judicial systems, and prudent foreign exchange exposure of the banking sector and domestic businesses are also important requirements for an exchange rate regime to successfully maintain competitiveness and avoid a currency crisis.
d. Currency overvaluation is strongly correlated with unsustainable balance of payments deficit, currency crisis and slow economic growth; hence, exchange rate management should primarily maintain a rate that is consistent with these fundamentals.
e. Lastly, evidence does not support the twin pessimism of nominal devaluation (nominal depreciation will not achieve a depreciation of real exchange rate

because of high pass-through from devaluation to domestic prices) and elasticity pessimism (depreciation of real exchange rate would not improve trade flows because price elasticity of import demand, export demand, and export supply is very low)

3. Brief Review of Empirical Literature

Impact of fluctuations in oil prices on exchange rate have been widely investigated, both from theoretical and empirical perspectives. From what we know from theory, the transmission channels through which oil prices pass through exchange rate can be direct or indirect, factoring the impact of other macroeconomic or financial factors. The six major transmission channels established by theory are the supply-side shock effect, wealth transfer effect, inflation effect, real balance effect, sector adjustment effect and the unexpected effect (Brown and Yucel, 2002; and Tang et al., 2010).

Most of the findings from the empirical studies reviewed showed that exchange rates and oil prices move together over the long-run. The direction of impact has shown consistent results amongst the studies reviewed with most studies showing bi-directional relationships. Several empirical studies have been conducted on Nigeria. Englama et al. (2010) using monthly data spanning 1999 and 2009 examined the effects of oil price volatility, demand for foreign exchange and external reserves on exchange rate volatility in Nigeria. Utilizing cointegration technique and vector error correction model to estimate long and short run relationships, the study found that a permanent increase in oil price increases exchange rate volatility by 0.54 and 0.02 percentage points in the long and short run respectively. The study affirms the direct link of oil price volatility and exchange rate movements on the basis of Nigeria's dependency on oil. Similar results were found by Adeniyi et al. (2012) analysing daily data series between January 2009 and September 2010. The study modelled oil price and nominal exchange rate volatilities by using the generalized autoregressive conditional heteroscedasticity (GARCH) and exponential GARCH (EGARCH) approaches. Exchange rate appreciation was explained by permanent increases in oil prices. With regards magnitude, the study found that positive and negative oil price shocks produce asymmetric exchange rate volatility responses. Oil price returns were statistically significant in explaining variations in exchange rate returns.

Corroborating the findings of Englama et al. (2010), Ogundipe et al. (2014) in their study utilized the vector correction mechanism to examine the speed of adjustment from short-run dynamics to long-run equilibrium. They found that

changes in oil prices explain changes in exchange rate volatility in both short and long run. In terms a magnitude, the results showed that a proportionate change in oil price leads to a more than proportionate change in exchange rate volatility.

Analysing oil price-macroeconomic volatility in Nigeria, Abdulkareem and Abdulhakeem (2016) employed GARCH model and its variants (GARCH-M, EGARCH and TGARCH) with daily, monthly and quarterly data. Their findings revealed that all the selected macroeconomic variables – including exchange rate – are highly volatile, especially with regards to changes in oil prices. The study concluded that oil price is a major source of macroeconomic volatility in Nigeria. Salisu and Mobolaji (2013) modelled returns and volatility transmission between oil price and exchange rate in Nigeria and found bidirectional returns and spillover transmission between oil and foreign exchange markets. In capturing the spillover effects in the returns and volatility of oil price and exchange rate, the study employed the VAR-GARCH model – modifying it to also account for structural breaks. Adopting the VAR method alone, Olomola and Adejumo (2006) analysed the effect of oil price shock on real exchange rate in Nigeria between 1970 and 2013. Results from their analysis showed that oil price shocks significantly influence real exchange rate, such that an increase in real oil prices results in exchange rate appreciation. As was discovered in Adeniyi et al. (2012), Iwayemi and Fowowe (2011) also found the existence of asymmetric effects in the relationship between oil price shocks and real exchange rate. While Adeniyi et al. (2012) found a bidirectional significant relationship, results from Iwayemi and Fowowe (2011) were statistically insignificant for all positive shocks and only significant in the case of negative shocks. Granger causality tests, impulse response functions and variance decomposition analyses all showed that different measures of linear and positive oil shocks have not caused real exchange rate. The work of Ani et al. (2014) also establishes the insignificant relationship between oil prices and exchange rate in Nigeria. Using granger causality and the ordinary least squares techniques on time series data from 1980 to 2010, their results suggest that in the short run, changes in exchange rate and other macroeconomic variables are not influenced by oil price volatility. This goes against the conventional theoretical assumptions for a mono-product import dependent developing country like Nigeria.

Using quarterly data from Nigeria and employing the VAR methodology, Oriakhi and Osaze (2013) examined the consequences of oil price volatility on key macroeconomic variables within the period 1970 to 2010. They found that oil price volatility had a direct impact real exchange rate. Using monthly time series data for the period January 2008 to December 2014, Osuji (2015) applied OLS and VAR

models to estimate the impact of oil price movements on exchange rate and the nature of causal link between them. His results showed that oil prices significantly affect exchange rate. Evidence of unidirectional granger causality from oil prices to exchange rate and from oil prices to foreign reserves was also established. They further stress the need for external policy changes in order to strengthen trade outcomes and properly manage exchange rate and foreign reserves.

In conclusion, most of the findings were consistent with conventional literature. Review of empirical evidence largely suggests that oil price shocks have lasting impact on most macroeconomic variables, including exchange rate, in Nigeria. It also follows from the evidence presented that for a resource-based oil exporting country like Nigeria, increase in oil prices produce Dutch disease effects via exchange rate appreciation. Lessons from the empirical studies have shown that reduced dependence on oil rents by diversifying its sources of revenue, while raising buffers will help insulate Nigeria's economy from the adverse impacts of negative and persistent oil price shocks.

4. Oil and the Nigerian Economy

Nigeria is Africa's largest oil exporter and the 12th world's largest oil producing country. It has realized over US$600 billion in oil revenues since 1960 – most of which have been mismanaged. The 1970s ushered the country into an era of prosperity, enjoying a bountiful oil windfall due to the increase in global oil prices precipitated by the Arab-Israeli crisis. The effects of this oil windfall were reflected in exchange rate appreciation, import subsidies, and a decline in vital sectors such as agriculture and manufacturing through the Dutch disease effect. However, the profligacy and waste that accompanied Nigeria's elevation to the status of an oil-rich petro state was fast outlived following the start of the next decade. The 1980s oil glut forced a sharp drop in oil receipts, and consequently, economic growth. Confronted with corruption, capital flight and mounting foreign debt, Nigeria, was left with no option but to adopt the IMF-supported Structural Adjustment Programmes (SAP) to address the distortions caused by oil dependence.

Following the country's return to democracy in 1999, important economic reforms were introduced, helping the country to combat economic stagnation. Among the most important measures taken was the introduction of the oil-price-based fiscal rule in 2004, through which the national budget was based on a conservative (i.e. lower) estimate for oil prices, with savings being transferred to a special account to be used in more difficult times. Another measure taken was

the signing of the Extractive Industries Transparency Initiative. Nigeria was also able to secure a debt buy back deal from the Paris club in 2006 which reduced the external debt. A period of sustained growth ensued, hovering around 6 – 8 percent per year, until 2015 when growth slowed as oil prices fell.

Oil and gas are Nigeria's main sources of wealth, but the relative importance of the sector has declined in recent years, from 13 percent of Nigeria's GDP in 2013 to slightly above 6 percent in 2015; in part because of the oil price collapse. Nigeria holds 2.2 percent of the world's proven oil reserves and 2.7 percent of its gas reserves. The sector remains hugely important as a source of foreign reserves and government revenue: it accounted for 94 percent of the country's total merchandise exports in 2014, remaining significant in 2015 at 87 percent and more than half of government's revenues (European Union, 2015). This dominant role, coupled with the poor management of oil revenue during periods of windfall, has through the Dutch disease, effectively depressed other productive sectors including agriculture and manufacturing; thus, exposing the country to the volatility of the oil market, alongside gradual de-industrialization.

Over-reliance on oil has proven to be an obstacle to the diversification of the economy and has exposed the country to 'boom and bust' cycles which the economy is particularly vulnerable to. As demonstrated by Jerome and Nabena (2016), Nigeria is yet to learn from past oil price booms and busts, to disentangle its heavy dependence on oil earnings (figure 2). The scale of the current fiscal crisis demonstrates the country's poor resilience to external shocks. While countries such as Norway and Saudi Arabia strengthened their sovereign wealth fund (SWF) assets to US$847.6 billion and US$758.4 billion respectively, Nigeria's Sovereign Investment Authority was only US$1.4 billion as at April 2016 according to the Sovereign Wealth Fund Institute, growing only marginally from its US$1 billion seed funding. Although the rapidly changing dynamics and volatility of the oil market has underscored the need to build fiscal savings, the country's performance has remained poor and at odds with the global growth in oil and gas-related SWFs, which grew (as % of total) from 55.2 percent in 2010 to 56.6 percent by April 2016.

The economy is diversifying, but not in ways that were expected. It is largely bypassing industrialization as a major driver of growth and jobs; and the extent of reallocation of labour to high-productivity, non-traditional activities has been limited. Like several countries in Latin America and Sub-Saharan Africa, Nigeria is witnessing what Rodrik (2015) described as premature deindustrialization and the

atypical transformation from agriculture to low productivity services, the so-called 'tertiarization' that has failed to deliver quality jobs. The country's unbalanced economic history underscores the need to diversify the economy away from a primary-based oil economy into an industrial one. Growth in the manufacturing industry has been particularly poor. Manufacturing value added (% of GDP) grew from 5.5 percent in 1990 to 9.5 percent in 2015 compared with the services sector which grew strongly from 31.5 percent to 59.4 percent within the same period. In fact, the services sector has been the major driver of Nigeria's GDP in the last decade and a half, especially since the rebasing of its GDP which revealed previously undocumented activities such as the mobile telephone market, music and the popular local film industry, Nollywood, which was worth US$5.1 billion, or 1.2 percent of GDP in 2014.

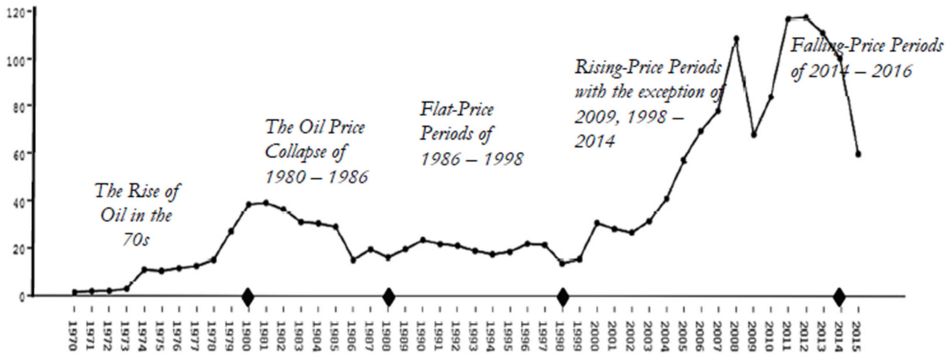

Figure 2: Booms and busts in Nigeria's oil
Source: Jerome and Nabena (2016)

Table 2: Sector Composition of Nigeria's Gross Domestic Product (Percentage of GDP)

Item	*2011*	*2012*	*2013*	*2014*	*2015*	*2016*
Agriculture	22.3	22.1	21	20.2	20.9	21.2
Industry	27.8	26.8	25.4	24.2	19.7	17.8
Oil and gas	17.5	15.8	12.9	10.8	6.4	5.4
Solid minerals	0.1	0.1	0.1	0.1	0.1	0.1
Manufacturing	7.2	7.8	9	9.8	9.5	8.8
Construction	3	3.1	3.3	3.6	3.7	3.6
Services	49.9	51.1	53.7	55.6	59.4	60.91
Total	100	100	100	100	100	100

Source: National Bureau of Statistics (2016)

In sum, Nigeria has not yet been able to transform into an innovation-based high-skilled 'knowledge' economy, and its trade composition and pattern has

remained predominantly on primary commodities, with very little role played in the global value chain.

5. Exchange Rate Policies in Nigeria since 1960

Several exchange rate policies have been adopted by the Central Bank of Nigeria (CBN) since its establishment in 1958 – fixed/pegged; managed float; flexible - (See Table 3) all targeted at achieving a realistic Naira exchange rate by avoiding significant misalignments. In what follows, we appraise the major epochs beginning with the immediate post-independence period. The evolution of Nigeria's foreign exchange market has been influenced by factors such as the structure and composition of international trade, structural shifts in production and institutional changes.

Table 3: Exchange rate regimes/policy in Nigeria (1960 – 2016)

Exchange Rate Regime/Method of Exchange Rate Determination	*Date*
Fixed (Pegged to British Pound/USD	1960 – 1972
Managed float	1973 – 1978
Basket of currencies approach	1978
Dual exchange rate system (Introduction of Second Tier FEM)	September 1986
Dutch Auction System (DAS) of bidding	April 1987
Single enlarged Foreign Exchange Market with various pricing methods	July 1987
Creation of Interbank Foreign Exchange Market (IFEM)	January 1989
Pegged exchange rate system	1994
Autonomous Foreign Exchange Market (AFEM)	1995
Reintroduction of IFEM	October 1999
Retail Dutch Auction System (rDAS) of foreign exchange management	July 2002
Wholesale Dutch Auction System (wDAS)	February 2006 - October 2013
Retail Dutch Auction System (rDAS) of foreign exchange management	October 2 - 31, 2013
Interbank Foreign Exchange Market (closure of official window)	February 2015
Floating of the Naira	20 June 2016

Data Source: Adapted from Ali, et al. (2015:112) and updated by author

5.1. First two and a half decades of independence (1960-1984)

The creation of Nigeria's financial order coincided with the period of oil discovery. Prior to this time, agricultural exports contributed the bulk of foreign exchange receipts, and they were held in balances abroad by commercial banks which acted as agents for local exporters. Nigeria operated a fixed exchange rate regime between 1958 when the CBN was founded and 1972, in line with the CBN exchange control act of 1962. Exchange rate was relatively stable, but overvalued due to the imposition of interest rate ceilings, and sectorial credit allocations (Okonjo-Iweala and Osafo-Kwaako, 2007). The impact of the overvalued naira was the unfavourable terms of trade caused by high imports fuelled by rising government spending. The euphoria of the 1970s oil boom had led to soaring

government spending which took over half the entire windfall of the 70s, creating distortions in domestic production, balance of payment and foreign reserves. The era marked the emergence and rapid development of the black market and activities of bureau de change (Sanusi, 2004; Okonjo-Iweala and Osafo-Kwaako, 2007).

In 1973 the naira was replaced by the Nigerian pound and pegged to either the US dollar or the British Pound, depending on which of the two currencies was stronger. However, this did not create an efficient system of exchange, as the currency was at risk of being overvalued. Nigeria later embarked on various devaluation and revaluation exercises including an unsystematic devaluation of its currency in 1978 by pegging the Naira to a basket of 12 currencies comprising the country's major trading partners. At this point it became clear that the shift to a pegged system (between 1970s and mid-1980s) from an outright fixed system operated in the 1960s had failed to dampen the deteriorating fundamentals of the economy. The 1978 policy was abandoned in 1985 in favour of quoting the naira against the dollar. Nigeria's first oil bust of 1980 – 1986 which saw the price of oil slide by nearly 50 percent from US$41 in 1980 to US$27 in 1986, negatively affected balance of payments, public debts and economic growth, in the face of declining foreign exchange earnings.

5.2. The SAP/ post SAP era, 1986-2014

Following the cumulative effects of the first oil shock, the late 1980s and 1990s eras were characterized by huge domestic and external debt burden reaching the highest levels in the nation's history. By 1990, Nigeria's external debt (as percentage of GDP) had skyrocketed to 106 percent, up from 4.5 percent in 1981, owing to massive external borrowings from the international capital market to maintain an unsustainable capital spending. Nigeria adopted the International Monetary Fund/ World Bank Structural Adjustment Programme (SAP) in 1986, which required the government to implement policy reforms including deregulation of interest rates, trade liberalization, privatization of state–owned enterprises, withdrawal of government subsidies, and currency devaluation to reduce the role of the state and assign greater role to market forces in the allocation of resources.

With the adoption of the SAP, Nigeria initiated a devaluation policy which allowed the Naira to be determined by market forces. This came with the introduction of the Second-Tier Foreign Exchange Market (SFEM) and its various pricing methods – marginal, weighted average and the Dutch Auction System (DAS). The result was the rapid depreciation of the exchange rate from N1.75 per USD in 1986 to N4.02 per USD in 1987 and N22.07 per USD by 1993 (Table 4).

Table 4: Crude Oil, Exchange Rate, Reserves and GDP Growth, 1978 - 2015

Year	Nigerian Bonny Light Crude Oil (Dollars per Barrel)	Official exchange rate (LCU per US$, period average)	Total reserves minus gold (current US$)	GDP growth (annual %)
1978	15.04	0.64	1,886,652,093	-5.76
1979	27.11	0.60	5,547,897,163	6.76
1980	38.58	0.55	10,234,799,066	4.20
1981	39.25	0.62	3,895,370,797	-13.13
1982	36.45	0.67	1,612,543,582	-1.05
1983	31.06	0.72	989,896,145	-5.05
1984	30.46	0.77	1,462,311,809	-2.02
1985	28.98	0.89	1,667,219,246	8.32
1986	15	1.75	1,081,354,725	-8.75
1987	19.26	4.02	1,165,255,359	-10.75
1988	16.02	4.54	651,148,027	7.54
1989	19.38	7.36	1,765,591,372	6.47
1990	23.21	8.04	3,864,294,621	12.77
1991	21.57	9.91	4,435,100,130	-0.62
1992	20.85	17.30	967,110,000	0.43
1993	18.75	22.07	1,372,067,196	2.09
1994	17.23	22.00	1,385,879,649	0.91
1995	18.35	21.90	1,443,416,274	-0.31
1996	21.69	21.88	4,075,717,080	4.99
1997	21.21	21.89	7,581,882,901	2.80
1998	13.62	21.89	7,100,827,104	2.72
1999	15.39	92.34	5,450,323,690	0.47
2000	30.67	101.70	9,910,901,048	5.32
2001	28.16	111.23	10,456,642,866	4.41
2002	26.64	120.58	7,331,336,988	3.78
2003	31.49	129.22	7,128,436,636	10.35
2004	41.16	132.89	16,955,637,970	33.74
2005	57.12	131.27	28,279,620,719	3.44
2006	69.29	128.65	42,298,743,133	8.21
2007	77.9	125.81	51,334,248,337	6.83
2008	108.46	118.55	53,001,765,307	6.27
2009	68.3	148.90	44,762,710,240	6.93
2010	84.1	150.30	34,919,347,169	7.84
2011	116.95	153.86	35,211,861,533	4.89
2012	117.7	157.50	46,405,236,717	4.28
2013	111.0	157.31	45,427,273,531	5.39
2014	100.4	158.55	36,668,719,208	6.31
2015	59.92	192.44	30,606,281,876	2.65

Data Source: World Development Indicators and Energy Information Administration (2016)

In 1994, Nigeria returned to the pegged system which led to the appreciation of the Naira to N22.00 per USD. This policy however did not last, as another era of liberalization began in 1995 with the introduction of the Autonomous Foreign Exchange Market (AFEM) that operated two rates of exchange – a fixed rate of N22.00 per USD for debt service payments and national priority projects and a market determined AFEM rate for other transactions. It distorted the market for foreign exchange and attracted rent-seeking and other sharp practices due to the disparity in official and market rates. This made the CBN in 1999, renege on its official fixed exchange rate option, while retaining the AFEM rate as the only recognized exchange rate.

The AFEM-only rate policy did not also last as the Inter-Bank Foreign Exchange Rate (IFEM) which was geared towards stimulating the funding of interbank operations from privately earned foreign exchange was introduced in 1999 to deepen/diversify the supply of foreign exchange in the economy and restore the naira which by the time was valued at N92.7 per USD. Barely three years later, IFEM was truncated with the reintroduction of the Dutch Auction System – retail Dutch Auction System (rDAS) in July 2002, as it was grossly limited by supply-side rigidities, the recurrent expansionary fiscal operations at the time and a persistent excess liquidity in the financial system (Sanusi, 2004; Aghionyeodiwe and Osinubi, 2005). This saw the Naira depreciate further to N120.58 and N131.27 per USD in 2002 and 2005 respectively. To further liberalize the foreign exchange market, reduce dependence of authorized dealers on CBN for foreign exchange and achieve convergence in exchange rates, the CBN introduced the wholesale Dutch Auction System (wDAS) in 2006 (Okonjo-Iweala and Osafo-Kwaako 2007; Ali, et al., 2015). The Naira converged at N128.65 per USD and 118.55 per USD in 2006 and 2008 respectively (Table 4), as the black-market premium that hitherto existed was eliminated by the DAS

For the first time, it appeared that the policy was successful, perhaps due to the reduced dependence of dealers and the action by CBN to be a fair player in the market, setting the price according to the price buyers in the market were willing to buy, thus eliminating artificial scarcity and ensuring a realistic exchange rate for the Naira, while increasing foreign reserves. No doubt, there were other structural factors that contributed to the success, including increased investment in domestic infrastructure; improved global oil prices; reduced capital flight and improved terms of trade. However, depreciation pressures soon mounted in the wake of the 2008 global financial crisis and the Central Bank was forced to increase its monetary policy rate to protect the Naira from the full-fledged financial crisis. With

the naira depreciating to N148.90 and N157.50 per USD in 2009 and 2012, respectively the CBN reopened its official window of foreign exchange with the reintroduction of the rDAS in 2013.

5.3. The 2014 – 2017 oil collapse

The mid-2014 oil bust from US$115 in June 2014 to around US$30 in January 2016 brought to an end Nigeria's longest recorded oil boom, which started in the early 2000s. Oil was responsible for changes in Nigeria's monetary policies and fiscal management, in addition to far-reaching labour market adjustments. The country suffered from deteriorating terms of trade, external reserves and savings, as a result of its high concentration on oil exports. Nigeria' initially responded to the bust by allowing its foreign exchange rate to depreciate against the dollar, protecting the country's foreign reserves but risking inflation. However, the downward pressure mounted and by November 2014, the CBN devalued and widened the naira/US$ band from 150-160 to 160-176 (an effective devaluation of 8 percent). In February 2015, the Central Bank cancelled its dollar auctions and targeted a new fixed exchange rate during a period when the parallel market had widened to 230 naira/US$. By March 2015, the bank decided that the risk of inflation from allowing the naira to fall was too great, and it pegged the naira to the US dollar at around 198.

A new regime assumed office in May 2015 following a historic election where an incumbent president lost to an opposition candidate in a general election. The decision to delay currency adjustment was followed by dollar rationing rather than a naira float. The government took steps to ration foreign exchange and declared 41 imported items, including toothpicks and private jets, not valid for foreign exchange in the Nigerian foreign exchange markets, to 'conserve foreign exchange reserves, as well as facilitate the resuscitation of domestic industries and improve employment generation'. Pegging the naira to the US dollar did not prevent inflation and the oncoming slowdown in manufacturing growth, as the central bank had hoped. Price inflation – already high at around 8 percent in mid-2014, rose to 18.7 percent by January 2017. The unofficial rate soared significantly, pushing up prices in Nigeria's import-dependent economy. By June 2016, the unofficial exchange rate was well over 300 NGN to the US dollar and Nigeria's reserves had fallen to $26.5bn from $39.1 billion in July 2014. The spectre of a foreign exchange crisis loomed.

A single market-driven exchange rate followed. The move was as a result of the persistent decline in foreign exchange reserves and a reduction in foreign

exchange inflows to the central bank from about US$3 billion on a monthly basis to less than US$1 billion. This coincided with the government's removal of fuel subsidies in May 2016 – a palliative which was depleting the country's already weak reserves. The operation of the single market structure through the inter-bank/autonomous window allowed the CBN to mildly intervene in the market, buying and selling only when necessary (CBN, 2016). This it accompanied with the futures option, to reduce the volatility of exchange rate and dissipate the already high demand in the spot market by agreeing with foreign exchange primary dealers (FXPD), a price at which foreign exchange will be sold in the future.

The immediate effect was a depreciation of the Naira by almost 21 percent from 162.8 naira per US$ to 197 naira per US$, while parallel rates rose up to 360 per US$. In October 2016, the official interbank market closed at N304 to the USD, while it reached N450 to the USD in the black market, thus increasing the incentive for round-tripping. The ripple effect saw consumer prices surge to a six-year high of 18.3 percent in October 2016, reaching the highest level since October 2005.

This policy has been faulted on some grounds including the very unclear method of implementation coupled with the active role of the CBN in the market, selling foreign exchange directly to BDCs as well as running an official rate. This resulted in an increased spate of round-tripping/arbitrage and heightened inflation rate, reaching a high of 18.72 percent in January 2017 (NBS, 2017). At this point, it became clear that the Central Bank had lost control of the market as the disparity between the official exchange rate and the parallel market rate had widened markedly (reaching a 70 percent margin). The margin was caused by the round-tripping effect by some primary dealers of foreign exchange and the 'so-called' importers of manufactures who were allocated 60 percent of available foreign exchange from the CBN at official rates. Another known consequence of this is the exacerbation of inflation caused by the availability of more money chasing fewer goods, resulting ultimately from the reduced imports.

With the non-favourable response of the foreign exchange market to the policy of the Central Bank – especially due to its inefficient implementation strategy – the CBN in February 2017 made amendments to its single market structure by allowing the naira to weaken around a trading band in the interbank market (not exceeding 20 percent), while still allocating dollars at a fixed rate to industries. The fundamental idea behind this policy expansion was the need to free up the pressure in the parallel market and sustain the liquidity of foreign exchange for retail transactions. In recent months, Nigeria has seen a modest increase in its foreign reserve occasioned by an increase in oil price and production. However,

with the continuation of administrative allocation of foreign exchange, multiple exchange rates have continued to persist.

The Naira has remained unstable despite the short-term gains. Over the years, exchange rate policies have failed to meet their intended objectives, owing to inherent economic imbalances including the overdependence on oil for revenues and foreign exchange, and the existence of a prevalent parallel market. Having recorded a recession in 2016 (See NBS, 2016), freely floating the Naira with little or no intervention by the CBN may be considered a good way of freeing up pressure on external reserves and catalyzing investment (Papadavid, 2016; Tyson, 2016). However, a complete float of the Naira will come at a cost, as the Naira will lose its value in the foreign exchange market markedly in the short and medium term due to the existing period of low oil prices. The leading consequence from an action to free up the market will completely be a runaway inflation which will wipe out the purchasing power of private and public savings; cause real assets hoarding and discourage the same investment that stood as an incentive for operating a free float (Caselli and Roitman, 2016). The monetary authority still retained capital controls in 2017, while simultaneously 'floating' and 'defending' the Naira at the same time.

There appears to be no easy option for policy makers to deal with the economic challenges and headwinds. The Bank still faces the monetary policy trilemma, in a period of declining economic growth and higher inflation. Policy credibility will be required, to achieve an orderly adjustment as the CBN works to smoothen the transition from a fixed exchange regime to a floating exchange rate regime with competing pressures from the parallel market. To accomplish this, the CBN needs to reduce uncertainty about the functioning of the currency market by rescinding some of its latest actions including the 41 items declared as 'Not Valid for Foreign Exchange,' which has contributed to a multi-rate system.

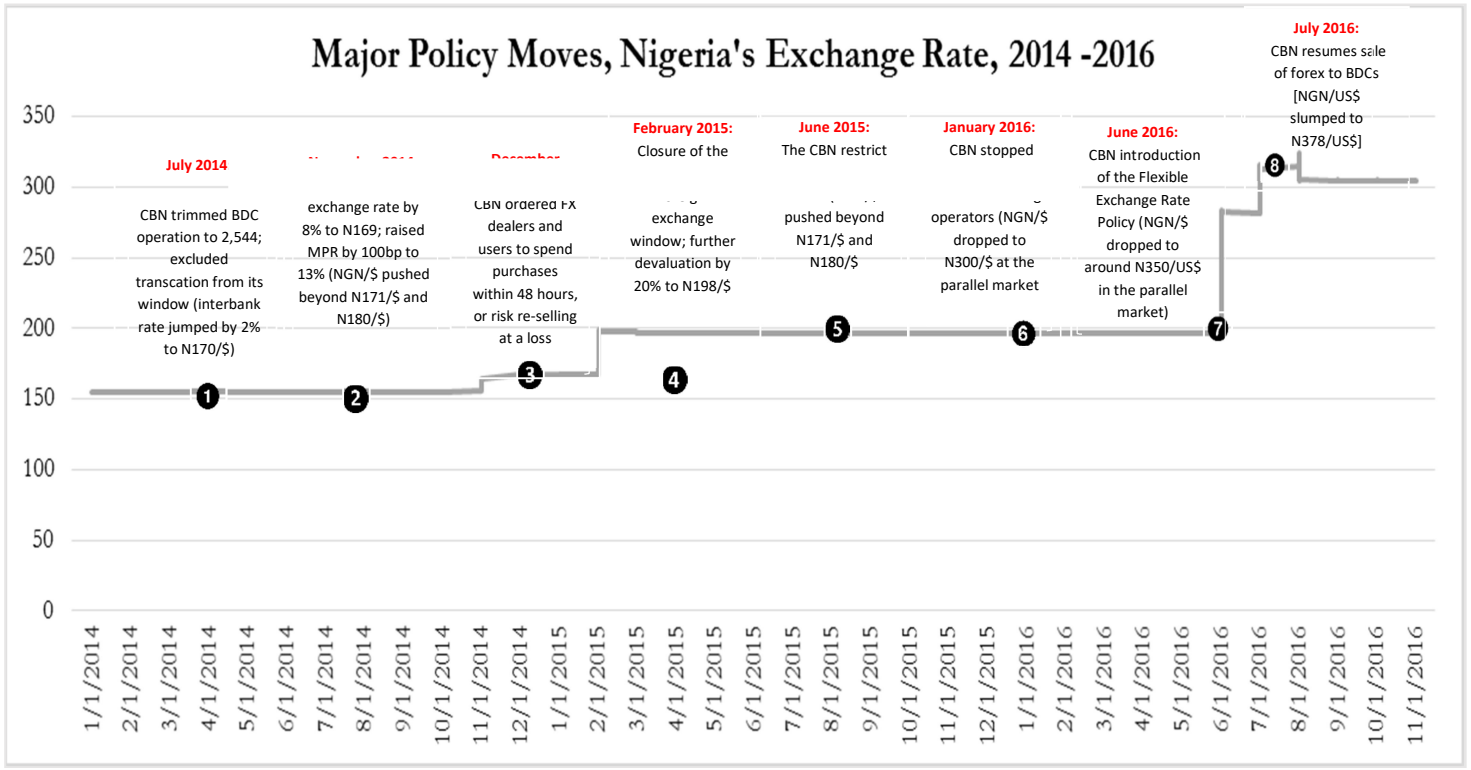

Figure 4: Major Policy Moves, Nigeria's Exchange Rate, 2014 – 2016
Source: Compiled by authors based on underlying data from CBN (2016)

6. Conclusion

Nigeria, like many developing countries, has traditionally used capital controls to preserve foreign exchange reserves, manage currency, control money supply and inflation, and direct resources to 'priority sectors' for supporting economic growth and stability. Our findings suggest that Nigeria's faces a mix of structural problems and a policy choice problem. Attempts at policy change in the country's chequered exchange rate policy history have either been unsuccessful or marked by short-lived successes. The combination of a monetary targeting regime with a tightly managed exchange rate and an open capital account in the resource-driven economy has given to a complex monetary policy environment. In other words, movements in oil prices, oil revenues and foreign reserves lead to the 'fear of naira depreciation', which defines the exchange rate policy and overall monetary policy direction. Ultimately, monetary policy operations become compromised by the desire to meet conflicting objectives.

In the past, full floats have led to short-term volatility and full-blown currency crises – reducing purchasing power drastically while also exacerbating short run economic recession. Gradual floats on the other hand, have slowed economic recovery, discouraged foreign investment and the accumulation of reserves. Evidence has also shown that activities in the black market has reached a size and maturity that threatens the effectiveness of capital controls, because operators in the market spend large amounts of resources to support rent seeking behaviour, while the government wastes resources to police a system that is not enforceable and loses its credibility in the process. While some stability has been maintained in recent times, albeit at a huge cost, the country needs to dismantle the parallel market, work towards a unified rate in the official market and ensure transparency and fair play for all dealers in the foreign exchange market, with very limited room for ad-hoc interventions. While the attention on exchange rate is warranted given its impact on inflation and expectations formation, managing the exchange rate without a policy framework with a clear hierarchy of objectives, has posed serious challenges. Nigeria needs a clear communications strategy which emphasizes the primacy of price stability, using a unified framework for both monetary and exchange rate policy.

Nigeria must continue to tackle its structural problems. Most of the pressure on the currency stems from importation of petroleum products. The country currently expends about $10 billion (about 19% of annual official import spending of $54 billion) on the importation of 300,000 barrels per day of refined petroleum products. The nation produces about 2.2 million barrels of oil a day and sells it an

average price of $45 barrel, only to expend about 10% of its exports at the effective cost of about $100 per barrel. Nigeria's oil refining capacity must be upgraded to improve its terms of trade and provide better market resilience for foreign exchange.

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