CENTRAL BANK OF NIGERIA

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Keynote Address

Godwin I. Emefiele (CON) *

Deputy Governors,
Departmental Directors,
Branch Controllers,
Distinguished Executives,
Eminent Resource Persons,
Ladies and Gentlemen,

It is my pleasure to be with you as the Special Guest of Honour at this year's CBN Executive Seminar, jointly organised by the Research and Capacity Development Departments. I am profoundly honoured and privileged to deliver the Keynote Address. Indeed, it is pertinent to emphasise that this Annual Event has proven to be very useful to the Bank, and this underscores the continued support given to it by Management.

I am aware that the purpose of the Seminar is well known to all of you. Nonetheless, permit me to reiterate that its key objective is to continually improve the capacity of Executives of the Bank, with a view to enhancing their skills to cope with the rapidly changing domestic and global environments. Thus, the Seminar serves as a forum for engagement between the Executives of the Bank and distinguished resource persons to brainstorm on selected topical economic issues with a view to suggesting policy options for the consideration of Management and further necessary action.

Ladies and gentlemen, the theme of this year's Seminar, "**Recession and Exchange Rate Crisis: The Role of Monetary Policy",** is apt and timely, considering the fact that the country has been in recession for the past five quarters. Also, the economy was faced with foreign exchange shortages and the attendant volatility in the exchange rate of the naira vis-à-vis major trading currencies.

Distinguished participants, please permit me to say that the role of monetary policy in economic development is well documented in the literature. Globally, the task of monetary policy is performed by central banks, with responsibility to use monetary policy tools at their disposal, to achieve price stability. This is because price stability is seen as an essential condition to achieving rapid economic growth and improved wellbeing of the citizenry. In fact, high inflation expectations could be a trigger for macroeconomic instability, which hinder effective and efficient resource allocation, output growth, sound business

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planning and practices, and attraction of global capital flows into a country. Evidently, recession and exchange rate crisis are the concern of monetary authorities.

Recession and Currency Crisis: Our Recent Experience

Distinguished guests, it is a well-known fact that business cycle is a feature of economic growth process. Generally speaking, business cycles refer to fluctuations in output, which define whether an economy is in boom or bust. Both developed and developing economies have to contend with each phase of the cycle with distinct characteristics. The boom period is characterised by high GDP growth, increased investments and consumption, while negative GDP growth, low savings and investment, with high unemployment are features of a bust-cycle. Recession is a major feature of the bust cycle. Technically speaking, an economy is in a recession when the GDP growth is negative for two consecutive quarters. During a recession, there is a substantial slowdown in consumer spending with a concomitant decline in business activity. As a result, business entities are forced to retrench workers, leading to a reduction in new investment spending. Overall, there is a huge decline in industrial production, real incomes and trade, with a resultant rise in the level of unemployment.

Distinguished participants, you would recall that the Nigerian economy officially slipped into recession in the second quarter of 2016, following two consecutive quarters of domestic output contractions of 0.36 and 2.06 per cent in the first and second quarters, respectively. This did not, however, happen overnight as the tell-tale signs were sufficiently evident. The plunge in crude oil prices in the global market, insufficient fiscal buffers and increased capital outflows, occasioned by U.S. monetary policy normalisation, were among the factors that accounted for the recession. This resulted in declining private and public expenditures, increased unemployment and high misery index.

Ladies and gentlemen, let me briefly touch on exchange rate crisis. An exchange rate crisis occurs when the value of domestic currency declines to a level where one unit of currency can no longer buy as much of foreign currency, resulting in highly unstable exchange rate. There are a number of ramifications to this situation, particularly for a highly import-dependent economy, whose major source of foreign exchange earnings is commodity exports, which are volatile. First, this results to a loss of confidence from investors, causing them to sell their domestic investments and convert them into foreign currency, therefore, triggering capital flight. Second, due to massive divestments and attendant capital outflow, the exchange rate deteriorates further.

Distinguished participants, Nigeria has had a fair share of the challenges of managing the exchange rate due to huge foreign exchange demand, arising from our high import dependence and speculative activities in the foreign exchange market. Unfortunately, because of high arbitrage opportunity in the market, the activities of speculators have continued to thrive, thus widening the gap between the official and parallel segments of the market.

Recall that following the fall in oil prices (which began in the second half of 2014), coupled with dwindling oil exports and the consequent low accretion to external reserves, there was significant pressure in the foreign exchange market. These developments necessitated the introduction of different variants of the managed-float regime and currently a more flexible exchange rate regime. For instance, oil prices fell from an average of US$110.19 per barrel in January 2014 to a low of US$30.66 per barrel in January, 2016. In the same vein, external reserves fell from US$40.67 billion to US$27.61 billion over the same period. At end-August 2017, oil prices had somewhat stabilised around an average of US$46.85 per barrel, while the external reserves was at US$31.63 billion.

In the build-up to the adoption of a more flexible exchange rate regime in June 2016, the Bank had, in November 2014, moved the mid-point exchange rate of the official window of the foreign exchange market from N155/USD to N168/USD. Shortly after, the wholesale Dutch Auction System (wDAS) foreign exchange window was closed in February 2015. This was followed by another round of depreciation of the naira from N168/USD to N197/USD, in order to curb speculative attacks on the Naira and accordingly, curtail the continued use of reserves by the Bank to defend its value.

By May 2016, the parallel market rate had depreciated to N336.93/USD from an average of N196.13/USD in January 2015. Thus, in response to calls for a devaluation of the currency to reflect the true value of the Naira, a more flexible exchange rate regime was introduced in June 2016 with the Naira-settled OTC-FMDQ-OTC (a two-way quote) trading platform at the inter-bank foreign exchange market and primary foreign exchange dealers were appointed. This was aimed at: improving liquidity and ensuring stability in the foreign exchange market; preserving the external reserves from rapid depletion; curbing excessive demand for foreign exchange; and ensuring appropriate pricing of the Naira.

Surprisingly, despite the introduction of the current foreign exchange regime, the crisis heightened and took on an alarming proportion with the exchange rate depreciating from an average of N340/US$ in the first week of its introduction to as high as N525/US$ in September 2016 in the parallel market. I am delighted to note that the sustained intervention by the Bank, the subsisting flexible exchange rate regime, has engendered some stability in the market.

Policy Measures and Outcomes

Ladies and gentlemen, permit me to turn to some key policy measures pursued by the Bank towards bringing the economy back to a sustainable positive growth-path and to address the perennial exchange rate problems that continue to undermine the efficacy of monetary policy.

The Bank has had to take monetary policy decisions under the most challenging economic circumstances (in over two decades) – stagflation and exchange rate crisis. You will agree with me that a contractionary monetary policy stifles output growth, but faced with rising and double-digit inflation coupled with a depreciating currency and an unstable exchange rate, the monetary authority had to make decisions that would keep inflation in check, by maintaining a mostly tight stance without entirely sacrificing output growth. These were done through appropriate and timely use of the monetary policy rate (MPR), cash reserve ratio (CRR) and open market operations (OMO) in order to stabilise prices, influence the supply of credit and provide liquidity to facilitate the financial intermediation role of deposit money banks.

Furthermore, the Bank implemented foreign exchange reforms that have had far-reaching positive impacts on the foreign exchange market. The Bank also made concerted efforts to tackle the challenge of multiple exchange rates, as well as, creating a special window for investors and exporters. Since the introduction of that window, liquidity in the Nigeria's foreign exchange market (commercial banks) has improved significantly. Prior to this, a window was opened for Small and Medium-Scale Enterprises (SMEs), and another Personal/Business Travel Allowance, school fees and medicals.

The CBN, through regular interventions in the market has committed over US$40 billion since February 2017 to ensure adequate market liquidity. I am pleased to note that the relative stability in the market and the movement towards convergence between the official and parallel market rates, are manifestations of the efficacy of our exchange rate policy.

Ladies and gentlemen, in addition to direct monetary policy measures, the Bank has also embarked on a number of non-standard monetary policy interventions - some of which are targeted at specific sectors - to engender growth. While the growth-enhancing and developmental interventions may not be new to us, these became vital, especially to bolstering growth during downturn. Some of the notable interventions for which the Bank has facilitated/funded include: the Commercial Agriculture Credit Scheme (CACS), the Micro, Small and Medium Enterprise Development Fund (MSMED), Real Sector Support Facility (RSSF),

Nigeria Electricity Market Stabilisation Fund, SME Refinancing and Restructuring Facility, Textile Intervention Fund, and the Anchor Borrowers' Programme (ABP). These interventions seek to enhance access to finance at less than market rates to support real sector growth, through value-chain and infrastructural development to boost domestic output growth and promote structural transformation of the economy.

Distinguished guests, these unconventional interventions have become compelling, considering the fact that the traditional approach to central banking for which price stability is the key focus has grossly been undermined by severe financial shocks (as was seen during the 2007/2008 Global financial crisis). Thus, the Bank has measuredly carried out the task of ensuring price stability and economic growth and development in a balanced manner.

It is worth noting that the actions taken by the Bank have begun to yield positive results. Inflation has moderated to 16.05 per cent at end-July, 2017 per cent down from 18.6 per cent at end-December, 2016. Economic growth is showing promise as GDP in Q1, 2017 contracted (-0.52 per cent) by lower than the rate of contraction in Q4, 2016 (-1.3 per cent), suggesting that the economy is gradually on the path of recovery. Confidence is gradually returning to businesses, as the purchasing managers index (PMI), which was below 50 points throughout the first quarter of 2017 rose to 52.9 points in May, 2017, indicating an expansion in manufacturing sector activities. The domestic currency has appreciated significantly from its lowest level of depreciation in September, 2016 to a level where there is much less pressure in the market as I speak, due to the demand management measures and direct intervention in the market by the Bank. In addition, the external reserves increased from US$26.99 billion at end-December, 2016 to US$31.63 billion at end-August, 2017.

My dear participants, we are all aware that the task of economic management is not limited to the monetary authority. The fiscal authorities have also intervened to ameliorate the current economic challenge. The recent launch of the Economic Recovery and Growth Plan (ERGP), which provides the roadmap for implementing and achieving the objective of the 2017 budget, is an indication of the resolute determination of the fiscal authorities to ensure that the economy is put on a sustainable economic growth-path. I gladly wish to commend the increased collaboration between the CBN and the fiscal authorities. I also want to stress that the collaboration should be deepened and strengthened to enable the country come out of its economic woes.

Conclusion

Despite interventions from both the fiscal and monetary authorities, the economy is yet to fully recover. There are still lingering issues of double-digit inflation, unemployment, wide premium between interbank and parallel market exchange rates, high misery index, reduced inflow of foreign capital, and undiversified foreign exchange base, as well as, dilapidated infrastructure and a non-vibrant private sector. As long as these challenges persist, it will be difficult for Nigeria to achieve its objective of being one of the fastest growing economies by year 2030.

Distinguished   participants, I wish to challenge you to brainstorm and proffer answers to the following issues: what should be the role of monetary policy in the current dispensation and post-economic recession? Should it be different from its traditional mandate? Should there be new ways of conducting the business of monetary policy in Nigeria? Are there lessons to be learned from the Nigerian crisis and those from other climes? How can we strengthen fiscal-monetary policy coordination to effectively deal with future bouts of economic downturn?

Ladies and gentlemen, the questions raised above and other ancillary ones should be the fulcrum of engagements in this Executive Seminar. I have no doubt in my mind that the organisers have chosen the best resource persons to make presentations. It is my fervent hope that the discussions would stimulate our thoughts and arouse our creative abilities to come up with innovative strategies of conducting in Nigeria to tackle the current challenge.

On this note, I wish to declare the 2017 Seminar open.

I thank you for your attention and wish you all a very fruitful deliberation.

Special Remarks

Dr. Okwu J. Nnanna*

Protocols
The Governor, Central Bank of Nigeria,
Deputy Governors,
Departmental Directors,
Branch Controllers,
CBN Executives,
Distinguished Resource Persons,
Ladies and Gentlemen

It is my pleasure to make these special remarks at the opening ceremony of the 25th Edition of the CBN 2017 Executive Seminar, jointly organised by the Research and Capacity Development Departments for staff of the Bank.

Distinguished participants, the CBN Executive Seminar provide a platform for staff in the Executive cadre of the Bank and distinguished resource persons to brainstorm on topical economic issues and suggest policy directions for the consideration of Management. The theme of this year's Seminar, "Recession and Exchange Rate Crises: The Role of the Monetary Policy" is quite germane, as we seek to turn the tide over macroeconomic instability which have bedevil the economy in recent years. Notwithstanding the early signs of recovery from recession, albeit delicately, it is time to learn from our past, so that we can decisively take steps toward a sustainable future.

Distinguished participants, you would recall that the Nigerian economy officially slipped into recession in the second quarter of 2016, following two consecutive quarters of domestic output contractions. Accounting for the recession were the protracting structural rigidities, inadequately diversified economy, insufficient buffers, security challenges and external shocks.

Distinguished participants, let me note that the external shocks to the domestic economy arose from the plunge in global oil prices since the mid–2014 and the United States' monetary policy normalization leading to capital reversal. The drop in oil price led to dwindling fiscal space, declining external reserves, sharp depreciation in the naira exchange rate and elevation in headline inflation owing to the pass-through effects of exchange rate depreciation. The rising inflation, coupled with the negative output growth, resulted in a "stagflation" condition.

To address these negative conditions, the CBN used its intervention initiatives and foreign exchange policy reforms. Some of the interventions schemes include the Commercial Agriculture Credit Scheme (CACS); Micro, Small and Medium Enterprise Development Fund (MSMED); and the Anchor Borrower's Programme

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(ABP). Also, the Bank introduced a more flexible exchange rate regime in June 2016 with the Naira-settled OTC-FMDQ-OTC (a two-way quote) trading platform at the inter-bank foreign exchange market and subsequently, the introduction of the investors'- exporters' window. This was to ensure price discovery, improve liquidity and ensure stability in the foreign exchange market.

Distinguished participants, as the impact of these policies begin to manifest, recent macroeconomic indicators, suggest that economic growth has been resilience since the fourth quarter of 2016, helped by recovery in oil production, industrial sectors' increased access to foreign exchange and agricultural growth. At 103.8, the index of industrial production rose by 0.7 per cent in second quarter of 2007, higher than the preceding quarter, while the agricultural sector grew by 3.4 per cent. Capacity utilisation index, on the average, rose by 1.1 per cent in 2017Q2, despite these positive developments, downside risks to the growth outlook remain strong as structural rigidities persist and uncertainty, which becloud the international oil price may weaken resource buffers for real sector financing.

Inflation continues to decelerate due to positive core inflation shocks and moderation in the pass-through effect of exchange rate appreciation on domestic price. Headline inflation narrowed by 0.15 percentage point to 16.1 per cent in June and further decline of 0.05 percentage point to 16.05 per cent in July 2017. While core inflation fell to 12.46 per cent from 13.02 per cent in May, food inflation remains elevated at 19.91 per cent higher than the 19.27 per cent in May due to supply-side disruptions, associated with insecurity, higher energy costs, protracted transport infrastructure bottlenecks and seasonality factors.

It is apparent that the flexible exchange rate policy supported by improved crude oil production and receipt is yielding relative stability in the foreign exchange market. Despite the distortions in the foreign exchange market caused by multiple rates, a near-term convergence in the exchange rates and gradual normalisation being achieved owing to the effectiveness of the investors'- exporters' foreign exchange window. The exchange rate in the NAFEX and the BDC segments appreciated by 18.0 per cent and 0.1 per cent recently to close at N363.76/US$ and N365.77/US$, thereby narrowing the divergence between the two rates. Oil price (Bonny Light) had somewhat stabilised around an average of US$52.39 per barrel at end-August 2017, while the external reserves was at US$31.80 billion as at August 24, 2017.

I am convinced that discussions at this Seminar will be high level and provide answers to the lingering issues such as supply-demand imbalances and the nexus between recession and exchange rate crisis and the macroeconomic impact of envisaged fiscal slippages on monetary policy responses. I urge you to actively participate and come up with implementable and sustainable strategies for monetary policy in tackling negative macroeconomic conditions in order to restore the inclusive growth trajectory.

I wish all of you a rewarding Seminar and fruitful deliberations.

Thank you for listening.

Recession and Exchange Rate Crisis: Theoretical Issues and Perspectives

Sheriffdeen A. Tella[*]

I.   Introduction

Let me introduce this paper by acknowledging, with gratitude, the Chairman and members of the organising committee of the 2017 Central Bank of Nigeria Executive Seminar and particularly, the Governor of the Bank for extending the invitation to me to contribute my opinion to this topical issue of economic recession and the vicissitude of exchange rate movements. The current recession has been rightly attached to a number of economic and non-economic factors. Albeit, with some new policy initiatives and implementation, the cloud of negative growth seems to be giving way to optimism of sustainable movement away from recession.

The topicality of the topic is not just for the present economic quagmire the country is going through but its recurring decimal in every decade of our flag-independence. The 1970s started on a good note with the end of the Nigerian civil war and quadrupling of oil prices in 1973/1974 period by Oil Producing Exporting Countries (OPEC), which resulted in oil boom for the all members, including Nigeria. The decade, however, ended with oil glut in 1977/78 resulting in depression that brought in 'Belt-tightening' Federal Government budget in 1978. The introduction of the Structural Adjustment Programmes (SAP) was put in place to tackle economic recession in the 1980s. The world economic recession of 2007/2008 did not exclude Nigeria, as the country's money and capital market suffered large outflows that rendered the stock market, in particular, prostrate.

Of course, the present recession in Nigeria, representing the one for this decade, resulted largely from sudden fall in oil prices, serious disruption in oil production for exports as a result of activities of the Niger Delta militants, massive reduction in foreign reserves to support exchange rate movements, non-remittance and diversion of oil proceeds, increased illicit capital outflow, and massive corruption in international transactions through over- and under-invoicing of exports and imports respectively. The fact that the current economic recession is linked largely to external sector developments makethe exchange rate a major economic variable of concern. It is noteworthy however, that the causal factors of recession cut across economic, social and political sphere (Tella, 2017). Is the resulting massive depreciation and official devaluation of the naira a solution to the

foreign exchange crisis? The kernel of this paper is to provide theoretical links between recession and the foreign exchange crisis.

The remaining sections are divided into five. Section 2 contains stylised facts on economic recession and exchange rates crises in Nigeria. In Section 3 are the conceptual issues on recession and exchange rate, while Sections 4 and 5 provide the theoretical issues and theoretical perspectives respectively, on the linkage between economic recession and exchange rate crises. Section 6 is the summary and conclusion.

II. Stylised Facts on Economic Recession and Exchange Rate Crises in Nigeria

The Central Bank of Nigeria has over the years, actively intervened in the foreign exchange market through various strategies, which include the Second-Tier Foreign Exchange Market (SFEM), Inter-bank Foreign Exchange Market (IFEM), Wholesale Dutch Auction System (wDAS), and Retail Dutch Auction System (rDAS). The objectives of the interventions have been to smoothen short-term fluctuations in the exchange rate, preserve the external value of the national currency and maintain a healthy Balance of Payment(BoP) position in accordance with its originating Statute (CBN, 2015).The US dollar remains the intervention currency in the market, while the exchange rates of other currencies are based on cross reference to the naira - dollar exchange rate. The trend in official exchange rate in Nigeria from 1960 to 2016 is illustrated in Figure 1. It can be gleaned from the figure that the exchange rate was constant until around 1990. Nigeria operated fixed exchange rate regime till 1986 and changed to floating or managed floating in 1987 when was SAP adopted.

**Figure 1: Official Exchange Rate in Nigeria (1960 - 2016)**
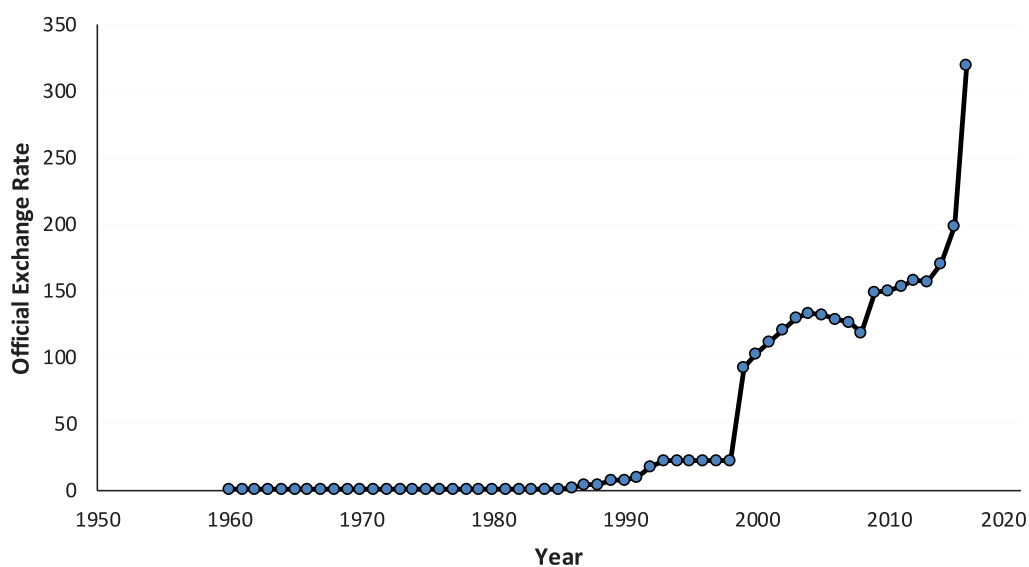
Developments in the foreign exchange market in Nigeria have serious implication for the performance of the economy, particularly because the bulk of foreign exchange earnings isderived from crude oil export receipts. Thus, oil price is a major determinant of government revenue in Nigeria. Increased oil prices represent increased revenue to the government and by implication increased government expenditure. Falling oil prices can therefore, become detrimental to the economy particularly, when reserves were not built up during periods of high oil price to cushion the effect of revenue shortfall.

At the height of oil boom in early 2000s, and before the global economic crisis of 2007/2008, the CBN adopted policies of building foreign reserves that would put the economy in good standing should there be oil crisis. The policy had the commendation of the international financial institutions including the World Bank (World Bank, 2003; Tella, 2007). The reserves, which were in various accounts including a newly created reserve account, the Sovereign Wealth Fund (SWF), rose to about US$60 billion. Even before the global economic crisis, a change in government in 2007 led to change in policy of reserve accumulation. The accumulated reserves started going down from 2008 such that the economy managed to withstand the global crisis for a short time before succumbing to its vicissitude by 2009.

The economy recovered briefly in 2010 because the price of oil started rising gradually to almost $150 per barrel in 2013/2014 and there was little or no disruption in the Niger Delta region to create problem for oil production. However, despite the huge oil receipts at that time, there were no efforts to rebuild the foreign reserves such that the drastic fall in international oil price to below US$50 per barrel, coupled with large scale corruption in the economy resulted in economic recession from late 2014.

Figure 2: Exchange Rate Movements in 2016
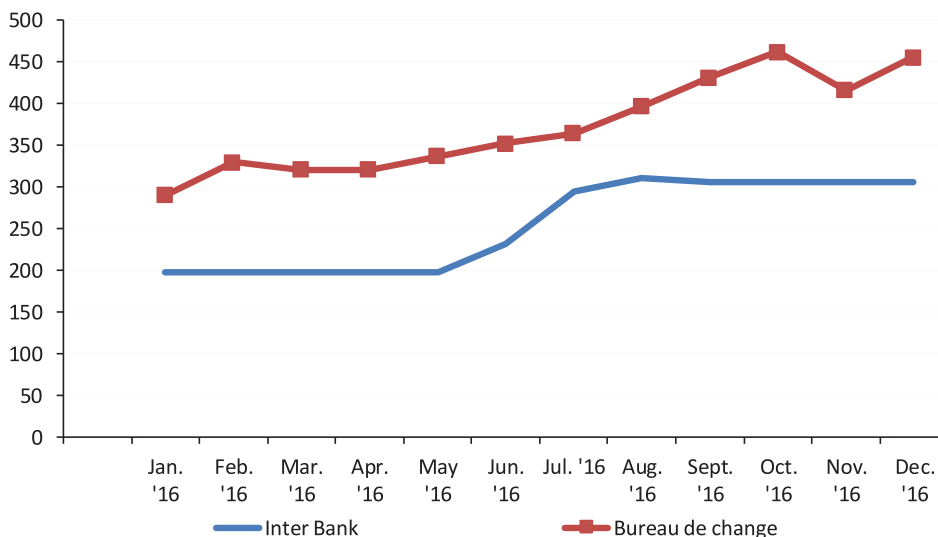
The economic recession which seem to abate currently, created crisis in the foreign exchange market, resulting in devaluation and continued depreciation of the naira. At the bureau-de-change (BDC)segment, the naira depreciated from N160/US$ in 2013, N180/US$ in January 2015 and almost N500/US$ in January 2017 before firming up to N365/US$as at September 2017, due to sustained interventions in the market by the CBN. This represented a depreciation of over 400 per cent between 2013 and 2017 (Figures 2 and 3, and Table 1).

Figure 3: Exchange Rate Movements in 2017
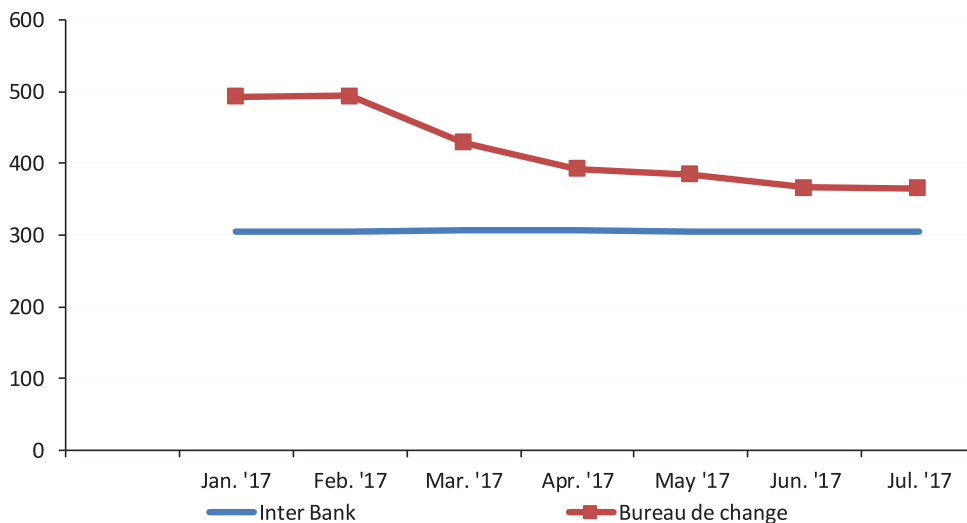
III.   Conceptual Issues in Recession and Exchange Rate

The Oxford Dictionary of Economics defines recession as "a situation when demand is sluggish, real output is not rising and unemployment is increasing". Julius Shiskin used the rule of thumb to define recession as decline or negative gross domestic product (GDP) for two or more consecutive quarters or about two percentage points rise in unemployment within a period of one year. The National Bureau of Economic Research (NBER) defined recession as a significant decline in economic activities that spread across the economy, lasting more than a few months, normally visible in a real gross domestic product (GDP), real income, employment, industrial production and whole sale-retail sales. Britain and some other European countries bought into this rule of thumb definition by accepting a state of recession as two consecutive quarters of negative GDP growth, and depression (an advanced stage of recession) as negative GDP growth forfour or more consecutive quarters. The structural difference between the developed and developing economies may not allow this tight conceptual position to hold for developing countries.

Exchange Rate is the price of some foreign currencies in terms of a home or domestic currency. It measures the worth of a domestic economy in terms of another, especially in relations to trading partner's economies (Adesoye, 2012). Exchange rate makes it possible to express the cost or price of a good or service in a common currency. Variation in exchange rate is one endogenous factor noted to affect the economic performance of a nation. For instance, an appreciated currency means that imports are less expensive and domestically produced goods and exports are more expensive. Thus, a country exporting more with an appreciated currency increases its foreign reserves, a potential stabilising tool for the economy. An appreciated currency also raises the price of exports and makes the currency more valuable, albeit, it makes importers to start looking elsewhere except if the country has monopoly in the production of the tradable commodity. Depreciation on the other hand makes a currency less valuable and makes imports very expensive and exports cheaper. An import dependent country therefore suffers with currency depreciation because it pays very high prices for the goods and services it imports. Also, when a domestic currency depreciates, it makes residents relatively poorer and their products cheaper, further reducing their income.

Rano (2009) asserted that variation in exchange rate leads to income transfer between countries through a shift in the terms of trade, and this affects the economic growth of both importing and exporting nations. According to Hossain (2002), since exchange rate helps to connect the price system of two different countries through international trade, it affects the volume of imports and exports, as well as country's balance of payments (BoP) position. Where the BoP position remains in deficit, a country may have to consistently borrow or go into debt to pay for consumption instead of investing in future economic growth. It is obvious then that exchange rate does matter for economic performance, particularly in developing economies, prone to being import dependent with very weak currencies (Habib, Mileva and Stracca, 2016).

Two concepts of exchange rate can be distinguished in economic literature – the nominal exchange rate and the real exchange rate. The nominal exchange rate is basically a monetary concept defined as the number of units of the domestic currency that can purchase a unit of a given foreign currency, or the relative price of two currencies. By contrast, the real exchange rate is the rate expressed in real terms using real goods and services. It is the nominal exchange rate adjusted by price levels (Obadan, 2006). Real exchange rate tells how much the goods and services in the domestic country can be exchanged for the goods and services in a foreign country. The relationship between nominal and real exchange rate provides important information about the relative cost of living in

two countries. While a high nominal exchange rate may create the false impression that a unit of domestic currency will be able to purchase many foreign goods, in reality, only a high real exchange rate justifies this assumption.

One of the key economic decisions a nation must make is how it will determine the worth of its currency in terms of other national currencies. This decision defines a country's exchange rate regime. An exchange rate regime governs a country's exchange rate and has a big impact on global trade and financial flows. The volume of such transactions and the speed at which they are growing highlights the crucial role of exchange rate in today's world, and its central piece in national economic policy framework (Stone, Anderson, and Veyrune 2008).

Assortments of exchange rate regimes are practiced worldwide. There is the extreme case of fixed or pegged exchange rate system where a currency's value is fixed by a country's monetary authority against either the value of another single currency, to a basket of other currencies or a unit of gold. The other extreme is a free floating regime where the value of a currency is determined solely by the forces of demand and supply in the foreign exchange market. In between these two extremes is the managed floating exchange rate policy where the government intervenes in the foreign exchange market in order to influence the exchange rate without any strong commitment to defending any particular parity. This is otherwise referred to as dirty floating regime. The central bank deliberately manipulates the foreign exchange market to achieve its value-enhancing objective. The not-so-common variant is the crawling peg regime where the foreign exchange rate moves within lower and upper band. The choice of the regime in practise is determined basically by the prevailing macroeconomic conditions, internal and external to the domestic economy. Since most developing economies often experience unstable internal financial conditions and external shocks such as terms of trade shocks, and excessive debt burden, they prefer a flexible real exchange rate policy that can be easily manipulated to ensure macroeconomic stability (Sanusi, 2004).

IV.   Recession and Exchange Rate Crisis: The Theoretical Issues

This paper stated in Section 1 that the prevailing recession engineered the exchange rate crisis that led to massive devaluation of the naira. This opinion is anchored on the fact that the recession began and remained sustained, largely, because of the crisis in the external sector of the economy, and precisely, the twin effects of fall in world oil prices and disruptions to domestic oil production. The negative implications for the current account balance in the country's balance of payments are quite apparent. Thus, the theoretical foundation for discussing

the linkage between economic recession and exchange rate crisis in any economy including Nigeria can only be found within the context of theories of balance of payments (BoP). The theories or approaches to discussing BoP in this connection are:

I. The Purchasing Power Parity (PPP) Theory which is based on the law of one price for the same product in various countries after transportation costs adjustments has been taken care of.

ii. The Elasticity Approach which introduced demand price elasticity of import and export as an instrument to measure exchange rate variation, and it is an extension of standard trade theory; and

iii. The Keynesian Absorption Approach, which runs through income effect of devaluation instead of price effect of the elasticity approach.

The relevant theories or approaches to this paper are the Elasticity approach and the Keynesian Absorption approach, which are presented hereunder:

The Elasticity Approach is an extension of standard trade theory and focuses on balance of trade as one of the main subcategories of the current account balance in the BoP. It assumes that relative international prices of imports and exports are the main explanatory variables determining current account balance. This approach analyses the impact of a potential devaluation on balance of trade (Erkılıç, 2006). According to the Elasticity Approach, when a country devalues its currency, offsetting of balance of payments deficits depends on demand elasticity of exported and imported goods (Marshall, 1923; Lerner, 1944).

Lerner (1944) extended the elasticity approach by imposing a condition that the sum of the absolute values of the elasticity of imports and exports must be greater than one. Otherwise, when depreciation occurs, trade balance worsens. Also, the condition is based on two assumptions, that prices are fixed in exporter's currency and by that supply elasticity is infinite and that the trade was initially balanced before depreciation takes place. In other words, depreciation or devaluation of currency is effective when these conditions hold.

$$\varepsilon_x + \varepsilon_m = 1$$

Where ε_x is elasticity of exports; ε_m is elasticity of imports

Devaluation would normally affect BoP equations in three ways: first, there should be decrease in the amount of imported goods because there will be relative increase in the prices of these goods; second, demand for exports will increase because of the decrease in the prices of exported goods; and, third lower revenue would occur from exports because of devaluation. Net results of these three impacts depend on export and import elasticity. If the sum of the export

and import elasticity aregreater than 1 (one) the impact will be positive. That is, if the decline in the value of domestic export is less than the decline in the value of domestic import, the trade balance will improve, otherwise it worsens. This condition is known as Marshall-Lerner condition (Yıldırım and Özer, 2006: 332).

However, the Marshall-Lerner condition can be used to explain immediate or short run effects of devaluation when response to increased demand for a country's export may not be fully realized due to production lag. On the other hand, pulling a brake on imports due to devaluation-induced price increases may take some time, resulting in the wrong perception that imports is price inelastic. Actually, a massive depreciation of the domestic currency or official devaluation may initially worsen the balance of payments situation.

In the medium to long-run, there could probably be a change in direction on either side of the trade response. Such situation is captured in the J-curve model which explains the delayed effects of devaluation on balance of trade. The J-Curve model is seen as the dynamic view of Marshall–Lerner condition because it describes the effect of devaluation of exchange rate over time. In the short-run, the trade balance goes dip and is represented by the downward part of the letter J while discovery emerges thereafter or in the medium to long-run as represented by the upward part of J. The ability to recover from the initial downturn will, however, depend on a number of actions taken by the monetary and fiscal authorities. Empirical evidence abound that in most developed economies, the Marshall-Lerner condition holds and achieving the J-curve in the long-run is plausible (Jhingan, 2004)

The argument against the elasticity approach has been that it is based on partial rather than general equilibrium. The alternative is the Keynesian absorption approach, which runs through income effect of devaluation instead of price effect elasticity approach.

Keynesian aggregate income (Y) and expenditure (AE) approach relates trade balance with economic activities of the various components of the national income namely private consumption (C), Investments (I) by the business sector, Government (G) income through tax and other factors, and, exports (X).

$$Y = C + I + G + X \qquad\qquad (1)$$

While the expenditure approach, called absorption, relates to expenditure on consumption (C), Investments (I), Government (G) and imports (M). This is presented thus:

$$AE = C + I + G + M \qquad\qquad (2)$$

The current account balance is the difference between National income and aggregate expenditure and is specified as:

$$Y - AE = (C + I + G + X) - (C + I + G + M) \qquad (3)$$

Solving Equation (3) we have;

$$Y - AE = X - M \qquad (4)$$

From Equation (4), change in current account is equal to the difference between change in income and change in other components (absorption), viz:

$$\Delta(X - M) = \Delta(Y) - \Delta(C + I + G) \qquad (5)$$

This implies that exchange rate devaluation improves the trade balance if the substitution of domestic goods relative to prices increases output more than absorption. This shows that exchange rate fluctuation affects economic activities. If exchange rate appreciates, economic activities will increase and from Equation (5), if the substitution boosts output more than other variables, exchange rate will appreciate. From the theory, exchange rate affects economic activities indirectly through trade.

V.   Recession and Exchange Rate Crisis: The Theoretical Perspective

The theoretical issues reviewed above have been tested to determine their relevance and contextualise their validity with respect to countries in different income categories. The results are reviewed here to explain the theoretical perspectives of the theoretical issues. A recent empirical research documents a strong association between the level and volatility of the real exchange rate and economic growth (Rapetti, 2013). This position is corroborated by Rodrik (2008) whose findings emphasised that a high real exchange rate stimulates economic growth, particularly for developing countries.

To some economists, the exchange rate is regarded as an endogenous variable, whose contribution to growth may be difficult to disentangle (Habib *et al*, 2016). Its influence on several macroeconomic variables has been documented by several scholars. Exchange rate directly affects domestic price level, profitability of traded goods and services, allocation of resources and investment decision in every economy (Owoeye and Ogunmakin, 2013). Economists have long known that poorly managed exchange rates can be disastrous for economic growth (Rodrik, 2008). In their study of 83 countries, Aghion, Bacchetta, and Ranciere (2008) concluded that real exchange rate volatility could have a significant impact on a nation's long-term rate of productivity growth, though the effect was noted as critically dependent on the nation's level of financial development.

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[1] This Section benefits greatly from Alabi (2017)

Yildirim and Ivrendi (2016) showed that exchange rate depreciation typically generates a deep recession and high inflation, while improving the trade balance in four emerging economies sampled. They concluded that depreciation has strong "stagflationary" effects, which are transmitted to the macroeconomy primarily via supply-side channels, especially through the cost of import.

Pandey (2013) empirically verified the Marshall-Lerner condition in relation to India's external trade and found that a devaluation of the exchange rate caused an improvement in the trade balance. Birgul and Sevcan (2016) used ARDL method to investigate a long-term co-integration relationship among the variables relating to exchange rate devaluation in the case of Turkey and established support for the applicability of the Marshal-Lerner condition indicating that the sum of export and import price elasticities is higher than unity. The depreciation of domestic currency improved the trade balance of Turkey in the long-run.

Their results support the prevailing situation in Nigeria. In 2015, the naira was devalued by 15.0 per cent, causing further currency depreciation under the dirty floating exchange rate regime in place. This led to decline in production activities particularly in the manufacturing sector, while inflation was on the rise as the economic remains import-dependent (see Figure 4). Let us now look at the results from other theoretical issues.

Figure 4: Exchange Rate, Import, Inflation Rate and GDP Growth Rate
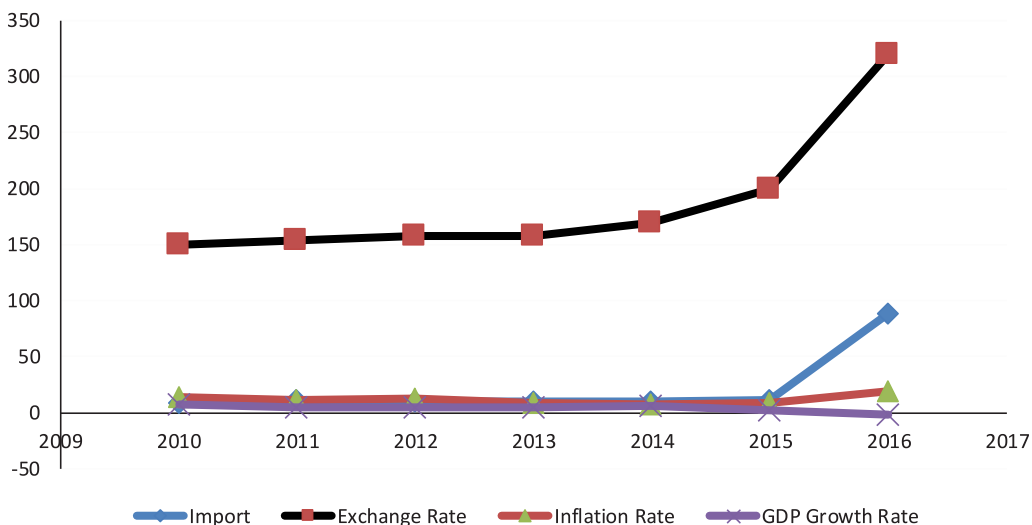
Some studies have also shown how exchange rate impact economic fundamentals in Nigeria.

Loto (2011) investigated the effect of devaluation/depreciation of the Nigerian naira on the country's trade balance for the period 1986 to 2008. She adopted the elasticity approach to the balance of payments adjustment theory and ordinary least square (OLS) method to estimate the import and export demand functions and found that devaluation does not improve the trade balance, since the sum of demand elasticities for imports and exports was found to be less than unity. This implies that the Marshall-Lerner condition for devaluation did not hold in Nigeria.

Umoru and Ose (2013)explored the J-curve effect based on Nigerian data by adopting the Vector Error Correction Methodology (VECM). Their findings revealed a cyclical feedback between the trade balance and the real exchange rate of the naira. The analysis found no empirical evidence in favour of the short-run deterioration of the trade balance as implied by the J-curve model. Rather, the cyclical trade effect of exchange rate shocks was supported. They concluded that a real exchange rate shock will initially improve, worsen and,thereafter, improve the country's aggregate trade balance. The instant improvement in the trade balance, which is correlated with real depreciation, provides no support for the J-curve hypothesis for Nigeria. Hence, the short-run predictions of the J-curve are not observable.

Ogundipe, Ojeaga and Ogundipe (2013) investigated the impact of currency devaluation on Nigeria trade balance using the Johansen's Co-integration and variance decomposition analysis from 1970-2010. The results indicated that there exist a long-run stationary relationship between trade balance and its determinants, which includes nominal exchange rate. Also, there exists an inelastic but significant relationship between trade balance and its determinants. The major findings include the fact that exchange rate induces an inelastic but significant influence on trade balance in the long-run, no short-run causality from exchange rate to trade balance and money supply volatility contributes more to variance in trade balance than exchange rate volatility.

Osundina and Osundina (2014) analysed the effectiveness of currency devaluation in the Nigerian economy. Exchange rate, import, export and interest rates were used as proxies for variables been estimated, while real GDP was used to measure growth. The result of the analysis, which is in line with the a priori expectation shows that devaluation reduces importation, encourages exportation and increases interest rate. Akindiyo and Olawole (2015) found that devaluation of naira does more harm than good as far as Nigeria is concerned.

They concluded that devaluation should not be seen as an option each time there are global financial crises.

Ezeh and Obi (2016) examined currency devaluation and its effect on government expenditure, revenue and fiscal adjustment in Nigeria using VECM, OLS and granger causality methods. The data used spannedfrom 1981 to 2014 and were sourced from the CBN Statistical Bulletin. The study showed a positive and causal relationship exists between currency devaluation and some selected fiscal variables.

Gordon (2017) investigated the causal relationship between currency exchange rate (EXR) and export growth (EXP) in Nigeria, using econometric tools for the analysis based on statutory annual data over the period 1970-2014 and found that exchange rate and export growth are not co-integrated. Hence, a long-run equilibrium relationship does not exist between them. The Granger causality test showed significant absence of short-run nexus between exchange and export growth, but there is a uni-directional causality running from exchange rate to export growth with no feedback. It can be inferred that while the exchange rate may have significant impact on exports, exports in a single commodity (crude oil)-dependent economy like Nigeria, may have very little impact on exchange rate. Thus, the long-held thesis that if you devalue the currency, you will export more is not empirically supported in the Nigerian case.

VI.   Summary and Conclusion

The paper reveiwed theoretical issues and perspectives in recession and exchange rate crisis in Nigeria. While noting that the economic recession was caused by a combination of economic, political and social factors, it was observed that the most important factors have to do with economic crisis in the external sector with respect to oil prices, exports and management of its proceeds. Thus, the crisis culminated in the economic recession that seriously affected the balance of trade and the exchange rate, with devaluation of the naira and eventual massive depreciation.

Since the crisis has to do mainly with problems of the balance of trade and consequently, balance of payment, the paper found theoretical support in the Elasticity Approach to evaluating currency devaluation using price elasticity in the context of the Marshall-Lerner criterion. The second theoretical issue is the use of the Keynesian Absorption Approach which was evaluated is through the income effects. The paper, thereafter, reviewed empirical literature to evaluate the validity of the devaluation exercise that were carried out to solve the balance of trade problem and arrest the exchange rate crisis.

Most of the empirical evidence, which used the elasticity approach, did not provide support or see the short and long run benefits for the devaluation of the naira, given the dominance of oil revenue in the income equation of the country. The implication that can be deduced is that, while the recession was caused by multiplicity of economic, political and social factors, the influence of the external sector variables had very significant effects.

I wish to thank the organisers again for the opportunities provided to present this paper, which lays the foundation for further discussion in this Seminar.

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Signals and Episodes of Recession and Exchange Rate Crisis

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Abstract

This paper sets out to identify the episodes of recession and currency crisis in Nigeria and to single out a collection of leading indicators for both crises. The early warning literature was used to identify a set of relevant indicators which were subjected to the Kaminsky (1998) signaling methodology to develop an early warning system for the Nigerian economy. Adopting a sample period of 2000Q1-2017Q1, we identified a recession episode and two currency crises from our constructed Exchange Market Pressure Index (EMPI). Our results highlighted a number of leading indicators which significantly predicted all three crises eight quarters ahead of their occurrence. The credible indicators from our analysis were aggregated using a signal-to-noise ratio rule to develop Composite Leading Indicators (CLIs) for recession and currency crisis, and the evaluation of the CLIs suggests that both were effective in predicting crises two and three years ahead with the three-year ahead window producing more robust results.

I.   Introduction

Volatility in the foreign exchange market is most often, the overriding cause of a currency crisis; nonetheless the brass tracks behind the volatility are distinct for various economies. Economic theory further emphasizes the costly implications of such crisis for economies, outlines the possibility of causal relationships existing between various types of crisis and delineates the risks of contagion for foreign economies (Kaminsky and Reinhart, 1999; Reinhart and Rogoff, 2011). Thus, monitoring an appropriate set of early warning indicators is essential for implementing measures to reduce the risk and offer mitigations of recession and currency crisis and their impact on the economy. This paper sets out to identify a set of suitable indicators to be monitored to achieve this purpose.

Databases published by the IMF, the OECD, the World Bank and the Bank for International Settlements serve as sources of macroeconomic and financial indicators. However, as regards Nigeria in terms of the signaling of crises, the exchange rate channel adequately illustrates the relationship between exchange rate movements and output growth, depicting how a depreciation of the exchange rate precipitated by a fall in crude oil prices can lead to decelerating economic activity. Contrary to the experience of export driven economies where currency depreciation promotes economic growth, it tends to

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cause economic contraction in Nigeria, due to the nation's dependence on crude oil exports and revenue.

In order to assess the signals and episodes of crises in Nigeria, this paper combines two complementary crisis measures which identify the occurrence of and duration of the predicted crisis in the economy. The ability to offer this distinction however depends on the definition of a crisis occurrence. Exchange rate crises are commonly defined across different studies as episodes of exchange rate depreciation to the tune of 15 to 30 percent[2] The definition of a recession, consistent with economic theory, is two consecutive quarters of negative growth. Extant literature, defines crisis based on authors' calculations, as in Kaminsky and Reinhart, 1999, and Kaminsky, 2006; who set a critical value or threshold which a particular indicator exceeds to signal a crisis. While others, including Caprio and Klingebiel, 2003; Laeven and Valencia, 2008, base crises on their own expert judgments.

Figure 1: Exchange Rate and Economic Growth Transmission Mechanism
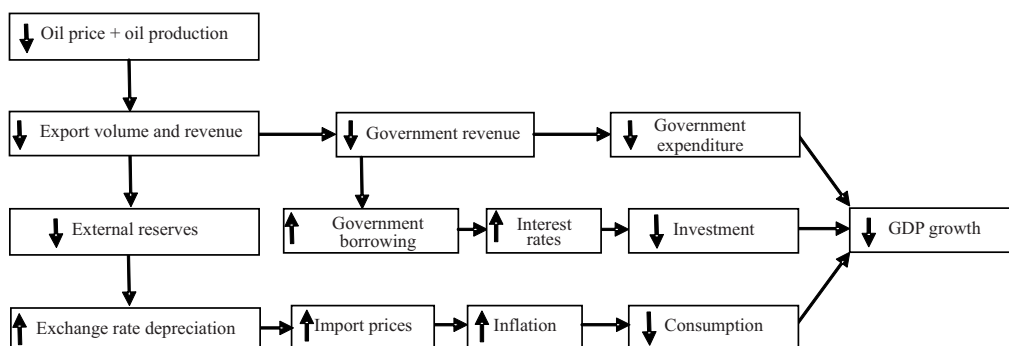
Source: Author

Most early warning literature with the aim of identifying crisis triggers and recession episodes focus on early warning models with two major approaches. Kaminsky and Reinhart (1999); Borio and Lowe (2002); Borio and Drehmann (2009) present the univariate signaling approach which involves studying the behaviour of individual variables around previous crisis episodes and establish signals by creating specific thresholds. The multivariate approach which includes the Bayesian Model Averaging (BMA) employed by Babecký et al., (2012a,b); Crespo Cuaresma and Slacik, (2009); the Classification and Regression Tree methodology (CART) advanced by Breiman et al. (1984), and the logit model (Demirgüç-Kunt and Detragiache, 1998; 2005; Bussiere and Fratzscher, 2006). In a study by Babecky et al (2012) they employ the use of a discrete model which entails identifying early warning indicators through the crisis occurrence index and continuous model of signaling crises, while the continuous model predicts the impact of the crises on the real economy.

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[2]See Caprio and Klingebiel (2003), Reinhart and Rogoff (2008), Laeven and Valencia (2008, 2010), Kaminsky and Reinhart (1999) and Kaminsky (2006)

In constructing an exchange rate and recession composite leading index, it is important to consider several implications such as which indicators capture the structure of the economy; how to make these indicators comparable and finally, the weights assigned to each indicator in the aggregation process. In addition to the set of indicators suggested by the early warning literature, we include oil price and government revenue as indicators to be analysed due to their relevance to the Nigerian economy. We also conducted our analysis using a twelve-quarter early warning window period in addition to the eight quarters suggested by the literature to ensure robustness of results.

The next section of this paper presents the conceptualization and literature review followed by the comparative analysis of previous crisis episodes globally. The subsequent sections provide the data and methodology which outlines the early warning signal (EWS) model followed by the results derived and the conclusion.

II.   Conceptualisation and Literature Review
II.1   Conceptualisation

A foreign exchange crisis relates to a substantial exchange rate depreciation in relation to a pegged currency beyond a threshold within a relatively short period of time. This refers to episodes that may end up in a devaluation, where the decrease in the value of the domestic currency is greater than or equal to a band of 15 per cent - 30 per cent. They usually include but are not limited to the occurrence of speculative attacks on the currency, and attempts by the authorities to avert them through some combination of monetary policy tightening and sale of reserves (Frankel and Rose, 1996).

A recession on the other hand refers to the general slowdown in economic activity for a period of time. Conventionally, when an economy experiences two consecutive quarters of negative growth, it is said to be in a recession.

Figure 2: Phases of an Economic Cycle
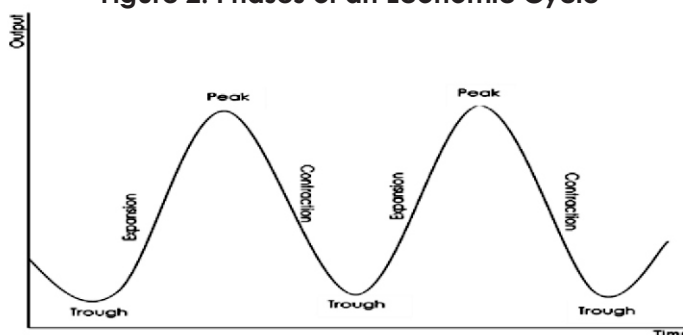
Source: Uwatt (2016)

A recession which correlates with the period contraction in the business cycle is characterized by decelerating economic activity as a result of reductions in the level of consumer spending and production by businesses (Uwatt (2016)).

Types of Crises

Claessens and Kose (2013) in their review of financial crisis identified five types of financial crises some of which are interrelated. The first two are measurable and lend themselves to quantitative methodologies while debt and banking crises are not easily measureable and are associated with qualitative methodologies. From further review of the literature, we also include recessions as a sixth type of crises.

(a) Currency Crises: this "involves a speculative attack on the currency resulting in a devaluation (or sharp depreciation), or forcing the authorities to defend the currency by expending large amount of international reserves, or sharply raising interest rates, or imposing capital controls.

(b) Sudden Stops (capital account or balance of payments crises): refers to a "large(and often unexpected) fall in international capital inflows or a sharp reversal in aggregate capital flows to a country, likely taking place in conjunction with a sharp rise in its credit spreads.

(c) Foreign Debt Crises: this occurs "when a country cannot(or does not want to) service its foreign debt. It can take place as a sovereign or private (or both) debt crisis".

(d) Domestic Public Debt Crises: takes place "when a country does not honour its domestic financial obligations in real terms, either by defaulting explicitly, or otherwise debasing its currency, or by employing some (other) forms of financial repression".

(e) Banking Crises: "actual or potential bank runs and failures can induce banks to suspend the convertibility of their liabilities or compel the government to intervene to prevent this by extending liquidity and capital assistance on a large scale".

(f) Recessions: refers to the general slowdown in economic activity for a period of time. Technically, when an economy experiences two consecutive quarters of negative growth, it is said to be in a recession.

II.2 Theoretical Literature Review

Several theories have been advanced to explain financial crises which in turn inform the choice of indicators included in crisis prediction models as seen in Kaminsky, Lizondo and Reinhart (1998).

Krugman's seminal 1979 paper formed the basis for the theoretical discourse on the causes and indicators of currency crises. According to Krugman (1979), the collapse of fixed/pegged exchange rate regimes can be attributed to weak economic fundamentals. An example includes excessively expansionary monetary and fiscal policies or persistent balance of payments deficits which lead to continuous loss of foreign reserves, forcing monetary authorities to abandon the currency parity. Krugman's (1979) model also termed the traditional approach posits that excessive domestic credit expansion beyond the growth in money demand under a pegged exchange rate regime will result in a gradual but persistent depletion in foreign reserves, culminating in a speculative attack on the domestic currency. It is this attack which forces the monetary authorities to abandon the peg. The process usually ends with an attack on the currency because the economic agents are cognizant of the fact that the fixed exchange rate will ultimately collapse. From the foregoing, credit to the public sector and fiscal imbalances could serve as indicators of a crisis depending on the extent to which the government expenditure is financed by excessive money creation.

The earliest extensions of Krugman's (1979) model termed the first generation model highlight the function of fiscal and monetary imbalances in speculative attacks against different exchange rate regimes, while the second generation models emphasize the possibility of multiple equilibria and self-fulfilling attacks on a currency following the deterioration of fundamentals.

Some theorists have also stated that there could be other reasons why the parity is abandoned other than the depletion of reserves. For example, the monetary authorities may be concerned about the adverse effects of parity maintaining policies (such as raising interest rates) on other important macroeconomic variables such as employment and output. This suggests another group of macroeconomic variables that may be relevant in signaling crises. In the Ozkan and Sutherland (1995) model, the objective function of the monetary authorities is positively dependent on the advantages of maintaining a fixed exchange rate regime and negatively dependent on the shift in output from trend. This is because higher foreign interest rate under a pegged regime results in increases in domestic interest rates and lowers output levels, consequently increasing the cost of retaining the parity. GDP levels and domestic and foreign interest rate can thus be useful indicators of crisis.

The second generation models present the possibility of crises without the occurrence of observable changes in economic fundamentals. Here, the nature of economic policies may result in multiple equilibria and trigger self-fulfilling crises. The basic assumption is that economic agents know that economic policies are not fixed but reactionary to economic developments and they use this knowledge in forming expectations. The actions of economic agents in turn affect certain variables which policies respond to. This cycle thus creates the existence of multiple equilibria moving the economy from one equilibrium to another.

There is also the contagion theory which holds that a crisis in a neighboring country can be an indicator of impending crises for the domestic economy. According to Gerlach and Smets' (1994) model, currency devaluation in a crisis ridden economy may also lead to devaluation in its trading partners in order to maintain competitiveness.

II.3   Empirical Literature Review

The empirical literature on early warning systems presents four predominant methodologies which are associated with the aforementioned theories. They include; linear regression or limited dependent variable probit/logit techniques; the non-parametric indicators or the signals approach; qualitative and quantitative panel studies; and the use of innovative techniques such as the use of binary recursive trees to determine leading indicators crisis thresholds, artificial neural networks and genetic algorithms to select the most appropriate indicators and Markov switching models.

The literature also reveals the use of over hundred different variables as potential indicators. In order to highlight the variables identified as indicators in the literature, Frankel and Saravelos (2012), surveyed three studies (KLR, 1998; Hawkins and Klau (2000) and Abiad (2003) which surveyed over eighty papers in addition to evaluating seven further papers. Their review provided the following results;

Table 1: Summary of Pre-2008 Early Warning Indicators

Leading indicator	KLR (1998)	Hawkins and Klau (2000)	Abiad (2003)	Others	Total
Reserves	14	18	13	5	50
Real exchange rate	12	22	11	3	48
GDP	6	15	1	3	25
Credit	5	8	6	3	22
Current account	4	10	6	2	22
Money supply	2	16	1	0	19
Exports or imports	2	9	4	2	17
Inflation	5	7	1	2	15
Equity returns	1	8	3	1	13
Real interest rate	2	8	2	1	13
Debt composition	4	4	2	0	10
Budget balance	3	5	1	0	9
Terms of trade	2	6	1	0	9
Contagion	1	5	0	0	6
Political/legal	3	2	1	0	6
Capital flows	3	0	0	0	3
External debt	0	1	1	1	3
Number of studies	28	28	20	7	83

Source: Frankel and Saravelos (2012)

The review revealed that reserve measures, real exchange rate, credit growth and current account were the most statistically significant indicators.

Kaminsky, G., Lizondo, S., & Reinhart, C. M. (1998), proposed an early warning system for currency crises using a sample size of five developed and fifteen developing countries. The methodology developed was tested using fifteen different indicators suggested by the literature. Their signaling methodology involves first identifying the episodes of currency using an exchange market pressure index after which the optimal thresholds are estimated for the potential indicators beyond which the occurrence of a crises is signaled. A signaling matrix is then constructed and the results from it are used to estimate signal to noise ratios and conditional probabilties which identify the credible indicators. According to their methodology, indicators with noise/signal ratios below one (1) are considered as good indicators. The results of the KLR methodology suggested

that deviations of real exchange rate from trend, exports, ratio of M2 to international reserves, output and stock prices were the variables that best predicted the currency crises within a twenty four month early warning window period.

Berg and Patillo (1999) evaluated the KLR (1998) methodology using the same crisis definition and nearly replicated data in addition to developing an alternative crisis identification system. Their alternative methodology involved the same crisis definition and data as used in KLR being applied to a probit regression technique. The multivariate probit framework had three major advantages over the KLR framework; relevance of the thresholds can be assessed; predictive variables can be more satisfactorily aggregated into a composite index, took cognizance of variable correlations; and the statistical significance of the results can be tested. Their results suggested that the KLR (1998) methodology significantly predicted crises in and out of sample alongside forecasting cross-country ranking of severity of crises. Aside replicating most of the results of the KLR (1998) methodology, the alternative framework slightly outperformed the former in terms of significance of results as regards the in-sample forecasts while the out-sample forecasts provided mixed results. They also concluded that the threshold concept was not fully supported by the data.

Frankel and Saravelos (2012) conducted an in-depth review of the early warning indicator literature in addition to numerous tests to ascertain whether indicators relevant in predicting one episode of crisis were useful in predicting the next. In order to find out whether leading indicators could explain the cross-country incidence of the 2008-2009 crises, they used fifty annual macroeconomic and financial variables for a sample of about 122 countries. Their methodology involves first conducting a descriptive analysis before running exploratory bivariate regression and multivariate regressions. They used five different variables (industrial production, equity market performance, GDP growth, currency depreciation and recourse to IMF financing) as crises measures for the bivariate analysis while the multivariate regression was conducted using the exchange market pressure index as the crises measure. In consonance with the literature, their results suggested that international reserves and real exchange rate overvaluation were the most useful indicators across crises dimensions.

Babecky, Havranek, Mateju, Rusnak, Smidkova and Vasicek (2013) set out to investigate which indicators are most suitable for explaining the cost of economic crises in EU and OECD countries for the 1970 to 2010 study period. They employed quarterly data in an unbalanced panel constituted of 36 countries and 30 potential indicators. To compute their crises measure which combines a discrete and continuous measure of crises, they computed an index of real costs (IRC)

using output and employment loss and the fiscal deficit. The IRC was then combined with a binary index of crisis occurrence (COI) to form the resulting dependent variable named the IRCCOI. In order to determine the relevant time horizon for each variable, they estimated a panel vector autoregression (PVAR) framework while the Bayesian model averaging (BMA) was then used to systematically select the most relevant leading indicators. Their results indicated that domestic housing prices, credit growth, share prices and private credit are important risk factors.

Christofides, Eicher and Papageorgiou (2016) also applied the BMA methodology of Babecky et al (2013) in a balanced dataset encompassing the candidate regressors suggested by Frankel and Saravelos (2012) to investigate how well the global financial crisis of 2008-2009 could have been predicted using early warning signals. Christofides et al (2016) adjudged the global financial crisis to have four crises dimensions (banking crises, balance of payments crises, recessions and exchange rate crises) and four different crisis measures were developed. The balance of payments crises were proxied by access to IMF programs and the BMA indicated three early warning signals; high inflation, low reserves and trade deficits. As regards recessions, GDP contraction was the crisis measure and the results identified current account deficit, domestic credit and net balance of payments income as the indicators which predicted the magnitude of recessions. The exchange market pressure index was used to represent currency crisis and the BMA revealed the real effective exchange rate, lower remittances, large trade deficits, lower bank liquidity-to-asset ratios and domestic credit as having significant influence on FX pressure. Banking crisis was proxied by the liquidity ratio and the BMA revealed nine effective regressors. Their results therefore suggest that a single set of early warning indicators could not have predicted all the dimensions of the global financial crisis.

Nicole (2016) examined indicators that are helpful in signaling banking crises in advanced economies using classification tree models. Their dataset was constituted of twenty six potential indicators from twenty advanced economies. While the dependent variable was represented by a binary of 0 and 1 indicating no crisis and crisis occurrence respectively, the classification trees were created using cross validation to avoid over-fitting. The estimated confusion matrix measures indicated that the classification trees created per country to identify significant indicators were highly accurate. The most common predictors identified include; domestic credit to private sector, GDP, bank deposits to GDP ratio, bank credit to deposits ratio, liquid liabilities and central bank assets to GDP ratio.

III.   Episodes of Recession and Exchange Rate Crisis – The Global Experience

A comparative analysis on different episodes of major crises will reflect the nature and origin of these crises, the policy responses and their immediate effects with emphasis on the choice of these policies.

The Latin American debt crisis[3] the Asian financial crisis of 1997 – 1998 and the global financial crisis of 2007 – 2009 were accompanied by substantial movements in exchange rates:. These crises periods were coupled with significant negative movements in the exchange rates, reflecting increased risk aversion and the spillover effects of weakened economic activity.

Table 2: Recession and Currency Crises by Country 1975 – 2016

1.	Algeria	1987, 1988, 1993-94
2.	Angola	1990-93, 2002
3.	Argentina	1975-76, *1981-82*, 1995, 1999-2002, 2009, 2014, *2016*
4.	Australia	1983, 1990-91
5.	South-East Asia	*1997-98*
6.	Belgium	1975, 1981-83, 1985-86, 1993
7.	Brazil	*1981, 1983,* 1988, 1990-92, 2009, *2015-16*
8.	Canada	1982, 1991, *2009*
9.	Germany	1981-82, 1993, *2009*
10.	Ghana	1975-76, *1979,* 1981-83
11.	Indonesia	*1998*
12.	Italy	1982, 1993
13.	Japan	*1998-99; 2008-09,* 2011
14.	Latin America	*1980's*
15.	Nigeria	1975, *1978,* 1981-84, *1986-87,* 1991, 1995, *2016*
17.	Singapore	1985, *1998,* 2001, *2009*
19.	Turkey	*1979-80,* 1989, 1994, 1999, 1999, 2002-03, *2009-10*
20.	United Kingdom	1974-75, 1980-81, *1991, 2008-09*
21.	United States	1974-75, 1980, 1982, *1991, 2008-09*
22.	Venezuela	*1980-83, 1989,* 1994, 1996, 1999, 2002-03, *2009-10*

Source: World Bank

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[3]The italicised and bold episodes (a recession accompanied by a currency crisis)

Latin American Crisis (1980's): This crisis was preceded by large amounts of foreign indebtedness across Latin American countries in a bid to fund industrialization activities; this was particularly the case in Brazil, Argentina and Venezuela. These countries turned to the IMF who in turn imposed fiscal austerity measures and market reforms which aggravated further inequality and poverty. The IMF played a major role in managing the international conflicts caused by the Latin American debt.

Asian Contagion: Taken from the extant literature on the Asian Crisis, are two rivaling causes of currency crises. The first is the self-fulfilling panic theory which views a currency crisis as the unforeseeable financial panic which reflects underlying instabilities in international capital markets. The alternative view is the vulnerability theory which reflects unsustainable depletion in macroeconomic circumstances. In the Asian crisis of the 1990's, emerging countries such as Japan, Indonesia and received substantial amounts of external capital and investment prior to the crisis. Similar to the causes of the Latin American crisis is the Argentinean economic crisis (1999-2002) which led the local currency to depreciate heavily because the Argentinean government lost the confidence of investors and more capital flew away from the country, the government was unable to pay the value of bonds. This was accompanied by a downfall of the financial sector and an unprecedented inflation rate.

Financial crisis 2008 causes: The global financial crisis (GFC), triggered by the bursting of a speculative bubble in the US housing market in 2008, percolated to the rest of the world through capital flows, trade flows, and commodity prices. Different countries were affected differently, depending on the nature of their financial/trade linkages with the rest of the world, the quality of financial institutions and polices. As we will see below, for Malaysia (and other countries in the region), the 'trade shock' was by far the most important.

III.1   Stylised Facts

III.1.1   Exchange Rate and Real GDP Growth Rate

Figure 3 reveals that the exchange rate maintained a relatively gentle upward slope between 2000 and 2006 while the real GDP growth was very volatile during this period, rising to a peak of 14.75 per cent in 2002Q1 before sloping downwards to a trough of 6.12 per cent in 2006Q3. The exchange rate further appreciated during the 2006Q1 – 2008Q2 period from a high of ₦146.06/US$ to ₦118.81/US$, which coincided with a period of economic expansion. However the onset of the global financial crisis and the attendant decline in oil prices led to a significant

depreciation of the exchange rate between 2008 and 2009 which briefly retarded the pace of economic growth in 2008. 2009-2014 witnessed another period of gentle upward movement in the exchange rate, after which the exchange rate depreciated significantly with a steep upward slope from about ₦168.91/US$ in 2014Q3 to ₦472.49/US$ in 2017Q1 due to the oil glut. This period of excessive depreciation of the exchange rate corresponded with a period of significant economic contraction with the growth rate falling from 6.54 per cent in 2014Q2 to -0.52 per cent in 2017Q2. During this period, the economy slumped into an episode of recession, lasting from 2016Q2 to date.

Figure 3: Exchange Rate and Real GDP Growth Rate
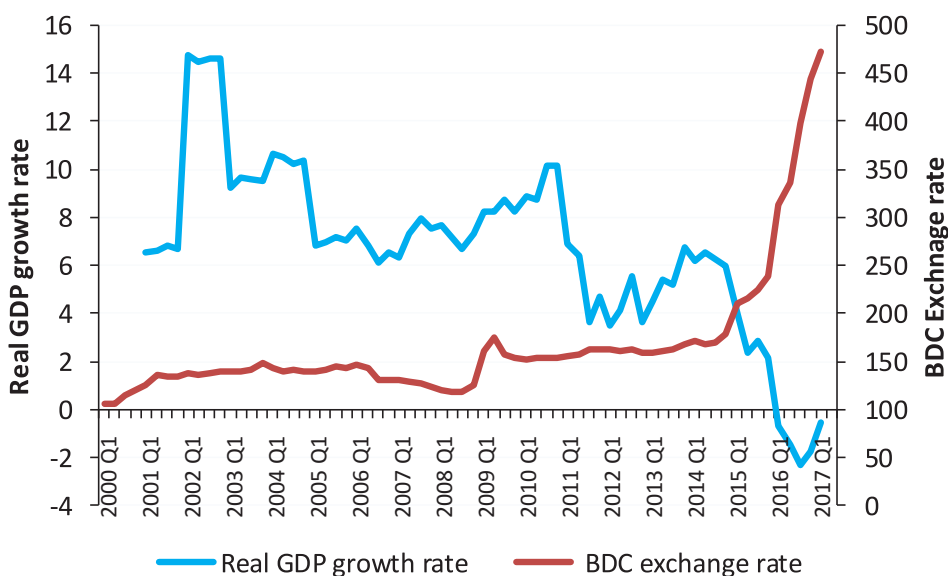
Source: Author

Figure 3 reveals a relatively strong negative correlation between the exchange rate movements and economic growth. Periods of exchange rate depreciation are traced by corresponding periods of declining economic activity, while currency appreciation is followed by economic expansion; indicative of the direct impact exchange rate movements have on output in Nigeria

III.1.2   Exchange Rate and External Reserves

The value of Nigeria's external reserves are dependent on the price of crude oil and the level of production, therefore in periods of high crude oil prices, the value of external reserves rise and the exchange rate appreciates. The value of Nigeria's external reserves grew to $10.7billion in 2001Q1 before declining to a

trough of \$7.1billion in 2003Q3 as a result of pressure in the external sector while the exchange rate experienced a mild depreciation from 2000 until 2003. The rise in oil price coincided with a significant increase in the reserves from \$7.1billion in 2003Q3 to \$62.01billion in 2008Q3, after which it declined substantially due to the impact of the global financial crisis on oil price. The crisis and the resultant capital outflows sustained the decline in the reserves until it reached a trough of \$31.7 billion in 2011Q3. While the reserves increased, the exchange rate appreciated and the period of depletion of the reserves also coincided with the period of exchange depreciation from 2009 to 2011. The rebound in oil price led to another series of increase in the value of reserves after which the combined effect of a negative oil price shock, reduced capital inflows and increased foreign exchange market pressure led to a downward movement in the gross external reserves from \$48billion in 2013Q1 to \$34billion in 2014Q4 and \$23.8billion in 2016Q3. However the value of reserves resumed an upward trend in 2016Q4 and 2017Q1 due to modest increase in the oil price, increased local oil production

### Figure 4: Exchange Rate and External Reserves
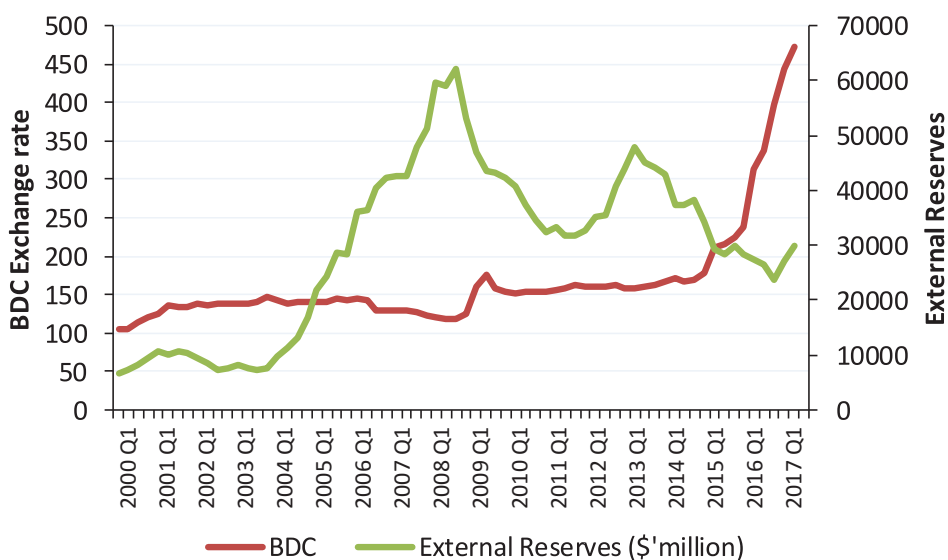
Source: Author

and foreign exchange management measures by the monetary authorities. The movement of the naira exchange rate from 2011 to 2017 reflected the trajectory of the external reserves, with appreciation in periods of increase in reserves and depreciation in periods of reserve depletion.

III.1.3   Exchange Rate and Inflation

The pass through of movements in the exchange rate to domestic prices leads to corresponding movements in the inflation rate for import dependent countries like Nigeria. The movement of the inflation rate in the Figure below can be divided into three periods; a period of wild/high fluctuation (2000-2007), mild fluctuations (2008-2014) and a period of steep increase (2014-2017). During the period of high fluctuation, the exchange rate maintained a gentle upward slope at an average rate of □134.05/US$while inflation averaged 12.5 per cent; which was relatively lower than the average inflation rate of the previous military regime (39.13 per cent for 1993-1998) due to the debt reducing policies of the Obasanjo regime. The period of mild fluctuations (2008-2014), witnessed an average exchange rate of □151.12/US$ while the inflation rate fell to an average of 11.08 per cent due to monetary policy tightening by the monetary authorities. During the period of steep depreciation of the exchange rate, the rate increased from □169.43/US$ in October 2014 to □494.7/US$ in February 2017 before declining marginally. The movement in the exchange rate was traced by a corresponding increase in the inflation rate from 7.9 per cent in November 2014 to 18.72 per cent in January 2017 before a subsequent decline. The oil price shock led to significant depreciation of the exchange rate which in turn raised import prices, leading to higher inflation rates as result of the pass through to domestic prices. The foreign exchange market restructuring of the monetary authorities led to the appreciation of the exchange rate which prompted the subsequent reduction in the inflation rate.

Figure 5: Exchange Rate and Inflation
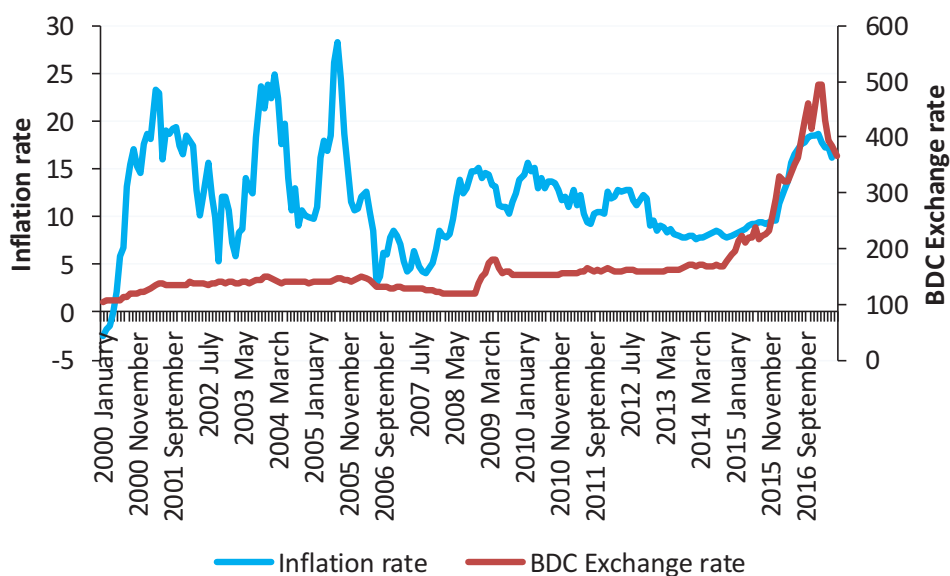
Source: Author

Figure 5 illustrates the significant impact of exchange rate movements on domestic prices for an import dependent economy like Nigeria.

III.1.4   Real GDP Growth Rate and Crude Oil Price

For oil exporting economies like Nigeria, the movement of the crude oil price in the global market is a good indicator of the level of economic activity. From the figure below the real GDP growth averaged 8.73 per cent between 2001 and 2008Q3 due to rising oil prices and improved macroeconomic management. After the fall in oil price in 2001, the price continuously increased until 2008, when there was a sharp decline due to the global financial crisis. The oil price dropped from the 2008Q3 high of $127.35 to a low of $47.06 in 2009Q1. Disruptions in crude oil supply alongside monetary tightening, partial removal of PMS subsidy and heightened insecurity led to fall in the average real GDP growth rate during the 2011-2014 period. The trajectory of the crude oil price when it crashed from $112.3 in 2014Q2 to $33.37 in 2016Q1 and rose to $51.17 in 2017Q3 was mirrored by the fall in real GDP from 6.54 per cent in 2014Q2 to -2.34 per cent in 2016Q3 and the subsequent rise to -0.52 per cent in 2017Q1.

Figure 6: Real GDP Growth Rate and Crude Oil Price
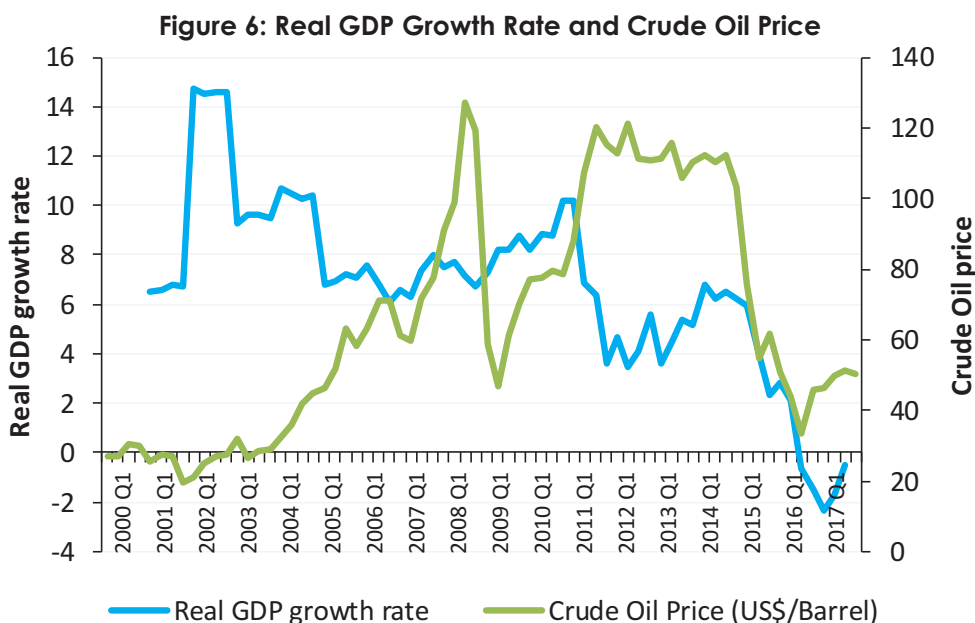
Source: Author

The figure reveals how changes in real GDP growth reflect movements in the price of crude oil.

III.1.5   Exchange Rate and Crude Oil Price

The Figure below depicts how the exchange rate in Nigeria tracks the movement of the oil price. In periods of increase in crude oil price, the exchange rate appreciates and when the crude oil price falls, the exchange rate depreciates. Despite the price volatility and occasional dips in price due to the terror attack on the World Trade Centre and other geo-political shocks, the crude oil price maintained an upward trend between 2000 and 2008. When the crude oil price crashed from $138.74 in June 2008 to $44.95 in January 2009, the exchange rate depreciated from ₦118.7/US$ in June 2008 to ₦180.63/US$ in May 2009. The next crash in crude oil price from $114.6 in June 2014 to $30.66 in January 2016 before its moderation around $45 led to a significant depreciation of the naira exchange rate from ₦166.87/US$ to a record high of ₦494.7/US$ in February 2017. The restructuring of the foreign exchange market by the monetary authorities and higher crude oil earnings resulted in appreciation of the exchange rate to ₦366.25/US$ in June 2017.

Figure 7: Exchange Rate and Crude Oil Price
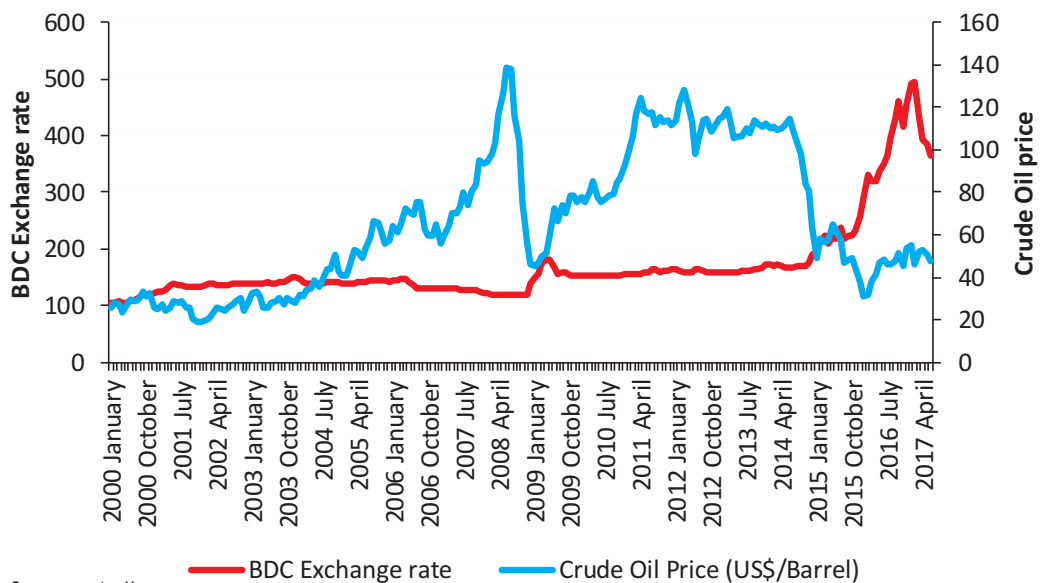

Source: Author

Figure 7 further reveals that significant falls in crude oil price are associated with significant depreciation of the naira; however, significant increases in the crude oil price have not occasioned excessive appreciation of the naira.

III.1.6   Real GDP Growth and Purchasing Managers Index (PMI)

The PMI which is an early indicator that tracks the level of economic activity in a country is subdivided into the composite PMI manufacturing and the composite PMI non-manufacturing. The Nigerian data reveals that the movement of the real GDP growth rate correlates with the movement of the PMI; when the average PMI falls, the real GDP growth rate falls while the rise in the growth rate is associated with the increase in the PMI. In 2014Q4, when the composite PMI manufacturing and non-manufacturing both fell from 51.3 and 56.9 to 50.7 and 51.06 respectively in 2015Q1, the real GDP growth rate fell from 5.94 per cent to 3.96 per cent. The fall in real GDP growth rate from 2.84 per cent in 2015Q3 to the lowest value of -2.34 per cent during the recession episode in 2016Q3 is also associated with the fall in average composite PMI from 50.27 to 42.63; the lowest value on record.

Figure 8: Real GDP Growth and Purchasing Managers Index
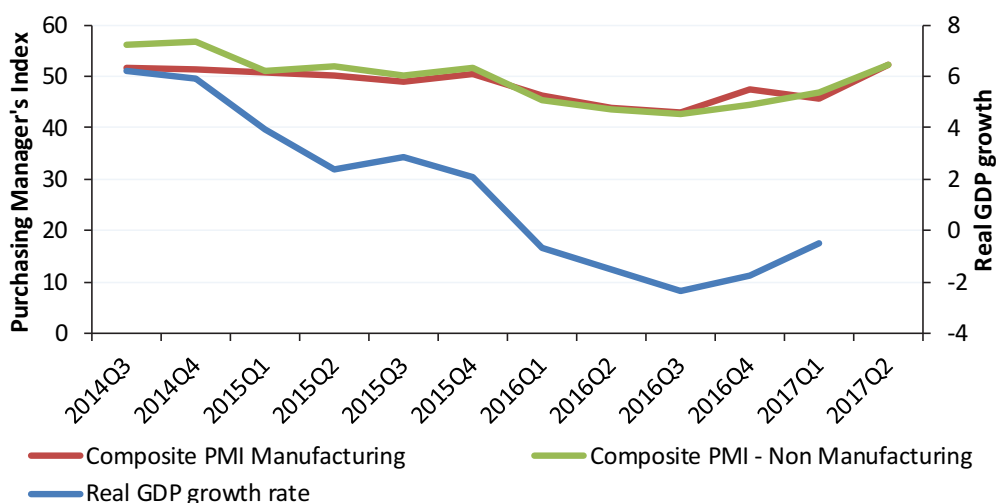
Source: Author

III.1.7   Real GDP Growth, Exchange Rate and Non-Performing Loans

The movement of the ratio of non-performing loans (NPL) to total industry credit in Nigeria has in recent times traced the movement of the exchange rate and output growth in Nigeria. The fall in crude oil prices led to the depreciation of the naira and contraction in economic activity in Nigeria which also led to higher NPLs in Nigeria. During the crash in crude oil prices and the reduction in output growth, the NPLs rose from 3.47 per cent in 2014Q3 to 14.65 per cent in 2017Q1. This is as a result of lower output rising from the higher input costs and the high level of exposure of deposit money banks in Nigeria to the oil and gas sector.

Figure 9: Real GDP Growth, Exchange Rate and Non-Performing Loans
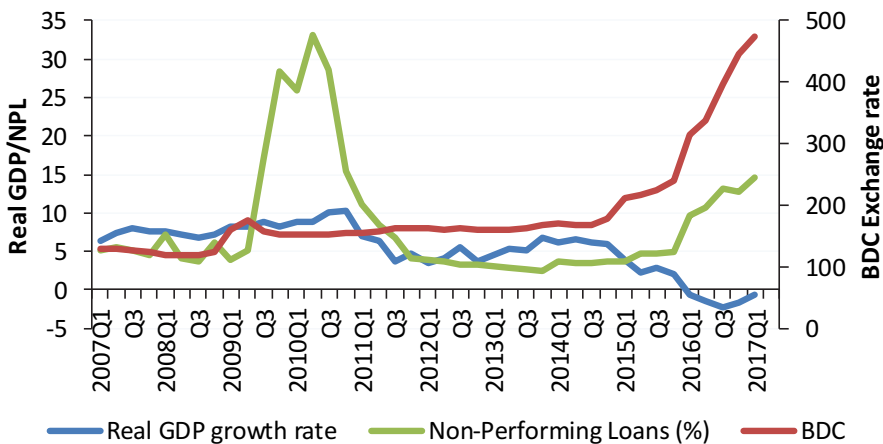
Source: Author

III.1.8   Real GDP Growth Rate and Market Capitalization

Following the occurrence of the global financial crisis, the movements of the Nigerian stock market indices have been in tandem with the changes in output growth. While the level of output growth started rising from 6.7 per cent in 2008Q3 to 10.18 per cent in 2010Q4 before a subsequent fall to 3.46 per cent in 2012Q1, the market capitalization rose from ₦4864.83 billion in 2009Q1 to ₦8308.83billion in 2011Q1 before a decline to ₦6484.77 in 2011Q4. In the wake of the crash in crude oil prices when economic activity contracted from 6.54 per cent in 2014Q2 to -2.34 per cent in 2016Q3, the market capitalization also fell from ₦13740.57billion in 2014Q3 to ₦8855.96billion in 2017Q1. This linking of output growth and market capitalization suggests that in recent times, the stock market indices are good indicators of the level of economic activity.

Figure 10: Real GDP Growth Rate and Market Capitalization
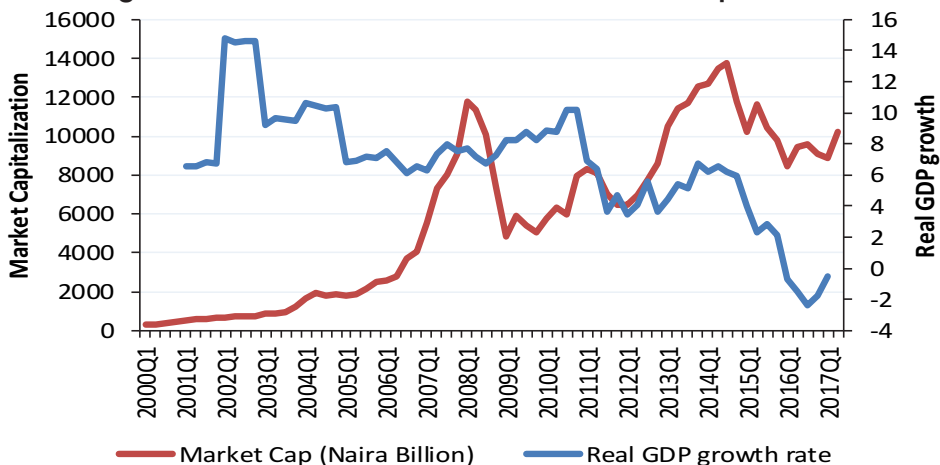
Source: Author

IV.   Leading Indicators of Recession and Exchange Rate Crisis for Nigeria

IV.1   Data and Methodology

The purpose of this paper is to identify economic and structural conditions preceding the onset of a crisis in Nigeria and the data sample runs from 2000 to 2016. The early warning literature and knowledge of the Nigerian economy were used to select a set of indicators which reflect the developments in the exchange rate market and economy for analysis (Table 3).

Kaminsky et al. (1998) suggested the use of a signals approach (non-parametric method) to foresee banking and currency crisis. In their study, a crisis indicator is constructed to identify the various episodes of currency crisis, after which the behaviour of various macroeconomic indicators is examined to determine 'unusual' behaviour prior to a currency crisis. These selected indicators are categorized using an agreed threshold, calculated as percentiles out of the distribution of indicators. The indicators with significant signal-to-noise ratios[4] are then used to develop a composite leading indicator. The methodology described above is used in this paper to develop composite leading indicators for recession and foreign exchange crisis for Nigeria.

Table 3: Recession and Currency Crisis Indicators

Recession Indicators	Currency Crisis Indicators
Current Account Balance (CAB)	Real Effective Exchange Rate
FDI/GDP	Current Account Balance
Oil Price	Terms of Trade
Gov. Revenue	External Debt Stock
CAB/GDP	Depletion of Reserves
Real GDP growth	Trade Balance
Market Capitalization	Oil Price
Private sector credit (CPS)	Private Sector Credit
External Debt Service	Exchange Rate Premium (BDC - interbank)
Net Foreign Assets	
Domestic Debt Service	
M2	
External Debt Stock	
FPI	
FDI	
Output gap	
CPS/GAP	
BOP/GAP	
Domestic Debt Stock	
FPI/GDP	

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[4]The signal-to-noise ratio rule is explained See Edison (2003) an expansion of Kaminsky et al. (1998) for further notes.

A threshold is estimated for each indicator in order to produce binary signals from the individual indicators, with 1 indicating warning signal for a crisis when the value of the indicator goes exceeds the threshold, and 0 indicating no warning. The indicators which rise prior to the crisis will have an upper threshold while those which fall prior to the start of a crisis will have a lower threshold. The signals are estimated as follows;

$$S_t^j = 0 \ or \ 1, \begin{cases} 0, & |x| < |\ddot{x}| \\ 1, & |x| > |\ddot{x}| \end{cases} \tag{1}$$

Where S_t^j = Signals from indicator j at time t

$|x|$ = indicator at time t

$|\ddot{x}|$ = mean of the series

The next step in developing the index is the selection of an appropriate lead, which given the chosen indicators, deliver suitable warning of an impending crisis. In most early warning models[5] a lead between 12 to 24 months is chosen to incorporate the development of relevant macroeconomic indicators. However, the lead is typically chosen based on the author's expert judgment, accordingly a lead of eight quarters is chosen in this study which is sufficient to analyse the sensitivity of the results derived.

Finally, to evaluate the performance of the early warning indicators, signaling analysis is used in analyzing the trade-off between Type I (missed crises) and Type II (false alarms) errors (Kaminsky and Reinhart, 1999; Alessi and Detken, 2011, among others). An equal preference weight is employed between missed crises and false alarms.

The number of times an indicator issues a warning during the eight-quarter lead period is entered into north-west cell labelled 'A. False crisis' in Table 4, while the number of times it didn't issue a signal is registered in cell C. The number of times the indicator issues a false signal (noise) outside the lead period and no crisis occurred is entered into cell B while the number of times no signal was emitted is entered in cell D. A perfect indicator would therefore record eight in cell A and forty nine in cell D implying that eight signals were issued during the lead period and no false alarm was issued outside that period.

Table 4: Indicator Matrix

	Crisis within 8 quarters	No Crisis within 8 quarters	Row Totals
Signal	A. True-crisis	B. False-no crisis	A+B
No Signal	C. False-crisis	D. True-no crisis	C+D
Column Totals	A+ C = 8	B+D = 49	57

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[5](Kaminsky et al., 1998; Grammatikos and Vermeulen, 2010)

The column totals are further used to compute the signal to noise ratios and conditional probabilities used in analysing the indicators.

IV.2   Results and Analysis

Despite the variances in crises definition, it was possible to identify which potential indicators are the most useful. The constructed indices facilitate examining causal links between the types of crisis and incidence of crisis occurrence and economic activity. By following the early warning literature and performance evaluation of the EMPI and EGI the results with the help of the constructed matrix of crisis occurrence and the respective warning signal are presented below.

The first section of the result highlights the episodes of crises using the crisis indicator. The exchange rate market pressure indicator (EMPI) is therefore derived as follows;

$$EMPI_t = \frac{1}{\sigma_E^2}\Delta\, per\, centE_t - \frac{1}{\sigma_R^2}\Delta\, per\, centR_t + \frac{1}{\sigma_i^2}\Delta\, per\, centi_t \qquad (2)$$

Where; $EMPI_t$ = Exchange Rate Market Pressure Index
$\Delta\, per\, centE_t$ = Depreciation in the exchange rate at time t
$\Delta\, per\, centR_t$ = Percentage change in foreign reserves at time t
i_t = interest rate on 90-day treasury bills
σ^2 = variance of the respective series.

From the computed index, extreme values which are one standard deviation above the mean EMPI are identified as episodes of crisis. Figure 11 reveals four periods of currency crisis, however, only two are selected for this paper; 2009Q1 and 20015Q1-2017Q1. This is because the extreme values from the two other periods do not correspond with our conceptualization of a currency crisis but are results of significantly high TB rates in tranquil periods.

Figure 11: Exchange Market Pressure Index
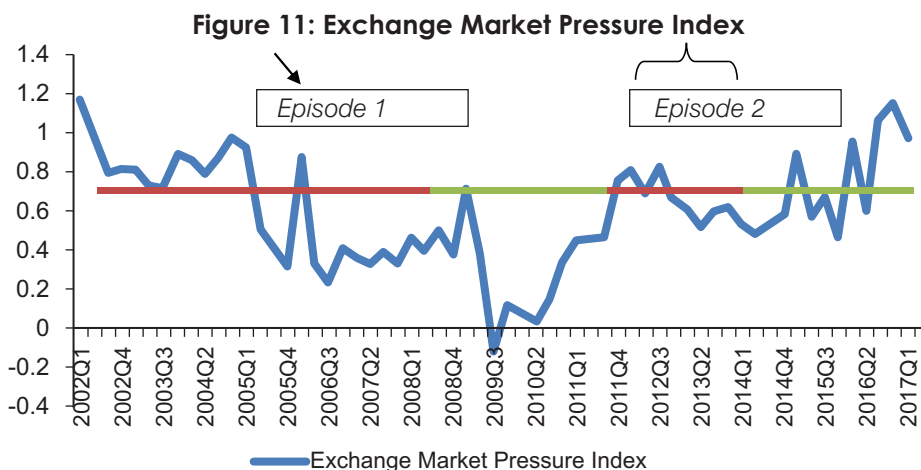
Episode one lasted for one quarter (2009Q1) while episode two lasted for nine quarters, beginning in 2015Q1 up until 2017Q1. Although the index dipped below the threshold three times, the entire episode was treated as a single crisis. The Kaminsky et al (1998) signaling approach provided the following results for each of the episodes.

The signal/noise ratios suggest that six of the selected variables are credible indicators while three are poor indicators. The real effective exchange rate, current account balance, terms of trade, external debt stock, reserves depletion and trade balance all have signal/noise ratios above one while oil price, private sector credit and exchange rate premium have ratios below zero. For the 2009Q1 episode, the real effective exchange rate and the current account balance were the best indicators while the exchange rate premium was the worst indicator. The results suggest that given a signal from the REER, there is a 60 per cent chance that a crisis will occur within the next eight quarters while there's a 50 per cent chance that a crisis will occur given a signal from the current account balance.

Table 5a: Performance Measure of Indicators for Episode 1

	2009 Episode				
	Indicators	Probability of signal given crisis	Probability of no signal given crisis	Signal/noise ratio	P(crisis/signal)	P (crisis/signal) - p(crisis)
		A/(A+C)	B/(B+D)	A/(A+C)/ B/(B+D)	A/(A+B)	(A/(A+B))/(A+C)/(A+B+C+D)
1	Real Effective Exchange Rate	75	21.05263	3.5625	60	30.37037
2	Current Account Balance	87.5	35	2.5	50	21.42857
3	Terms of Trade	75	50	1.5	37.5	8.928571
4	External Debt Stock	87.5	60	1.458333	36.84211	8.270677
5	Depletion of Reserves	62.5	50	1.25	33.33333	4.761905
6	Trade Balance	62.5	60	1.041667	29.41176	0.840336
7	Oil Price	25	35	0.714286	22.22222	-6.34921
8	Private Sector Credit	12.5	75	0.166667	6.25	-22.3214
9	Exchange Rate Premium	0	65	0	0	-28.5714

Source: Authors Estimates

In relation to the 2015 episode, Table 5b presents the performance of the indicators.

Table 5b: Performance Measure of Indicators for Episode 2

S/No	Indicators	Probability of signal given crisis	Probability of no signal given crisis	Signal/voice ratio	P(crisis/signal)	P (crisis/signal) - p(crisis)
		A/(A+C)	B/(B+D)	A/(A+C)/B/(B+D)	A/(A+B)	(A/(A+B))/(A+C)/(A+B+C+D)
1	Exchange Rate Premium	62.5	13.33333	4.6875	71.42857	36.64596
2	Depletion of Reserves	75	46.66667	1.607143	46.15385	11.37124
3	Trade Balance	75	46.66667	1.607143	46.15385	11.37124
4	Oil Price	75	53.33333	1.40625	42.85714	8.074534
5	Private Sector Credit	75	53.33333	1.40625	42.85714	8.074534
6	Current Account Balance	50	40	1.25	40	5.217391
7	Real Effective Exchange Rate	62.5	53.33333	1.171875	38.46154	3.67893
8	Terms of Trade	50	53.33333	0.9375	33.33333	-1.44928
9	Debt	37.5	40	0.9375	33.33333	-1.44928

Source: Authors Estimates

The results suggest that for the 2015 currency crisis, the exchange rate premium was the best indicator with a signal/noise ratio of the 4.69. The crisis given a signal probability further suggests that there is a 71.43 per cent chance that a currency crisis will occur within eight quarters given a signal from the exchange rate premium. The oil price was the fourth best indicator with the probability of a crisis occurring 42.86 per cent of the time within 8 quarters given a signal from the oil price. For the 2015 episode, seven indicators performed well with a signal/noise ratio greater than one while the terms of trade and external debt stock performed poorly with ratios below 1. The results reveal different variables as the best indicators for each of the episodes, which is suggestive of a change in the nature and cause of the crises.

IV.2.1 Recession Episodes

The real GDP growth rate was plotted against time to identify the recession episodes during the study period and one episode was identified as seen in Figure 12.

Figure 12: Real GDP Growth-Time Graph
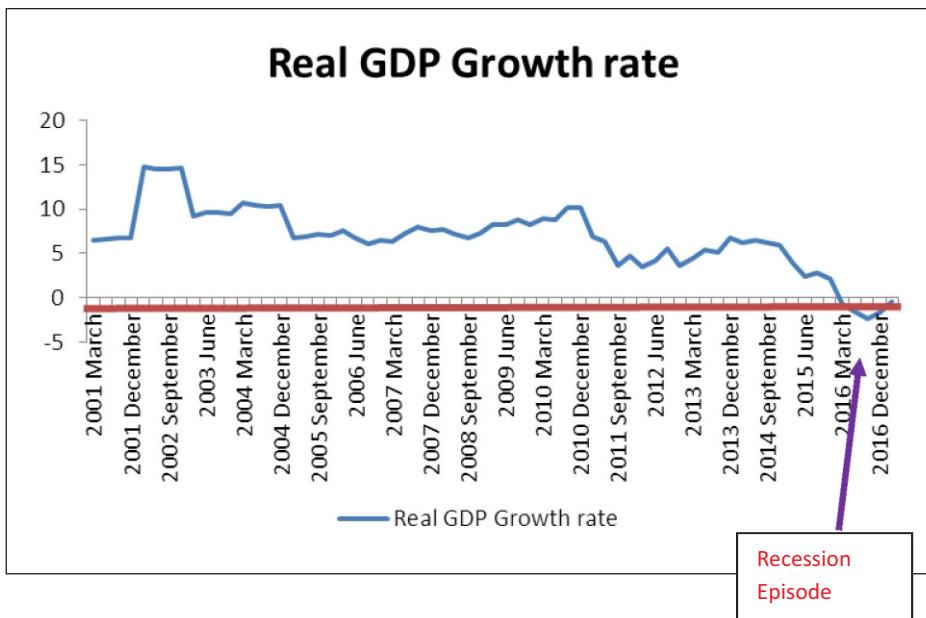
Source: Author

The recession episode identified lasted for four quarters from 2016Q2 to 2017Q1. Adopting the Kaminsky et al, (1998) signaling approach, the following results were obtained.

The results suggest that fifteen of the nineteen indicators are credible with signal/noise ratios greater than one. Output gap, CPS/Output gap, BOP/output gap, domestic debt stock and FPI/GDP performed poorly as indicators with ratios less than one. Current account balance was the best indicator with a ratio of 2.625 and probability of 30 per cent as the chance of a crisis occurring during the lead period given a signal. FDI/GDP was the second best indicator with a signal/noise ratio of 2.33 while the oil price was the third best indicator with a ratio of 2.14.

Table 6: Performance Measure of Indicators for Recession Episode

		2016 Crisis				
	Indicators	Probability of signal given crisis	Probability of no signal given crisis	Signal/noise ratio	P(crisis/signal)	P (crisis/ signal) - p(crisis)
		A/(A+C)	B/(B+D)	A/(A+C)/B/(B+D)	A/(A+B)	(A+C)/(A+B+C+D)
1	Current Account Balance (CAB)	75	28.57143	2.625	30	15.96491
2	FDI/GDP	100	42.85714	2.333333	27.58621	13.55112
3	Oil Price	87.5	40.81633	2.14375	25.92593	11.89084
4	Gov. Revenue	75	36.7347	2.041667	25	10.96491
4	CAB/GDP	100	48.97959	2.041667	25	10.96491
6	Real GDP growth	100	51.02041	1.96	24.24242	10.20734
7	Market Capitalization	75	40.81633	1.8375	23.07692	9.041835
8	Private sector credit (CPS)	100	57.14286	1.75	22.22222	8.187135
9	External Debt Service	50	31.91489	1.566667	21.05263	6.507177
10	Net Foreign Assets	75	48.97959	1.53125	20	5.964912
10	Domestic Debt Service	37.5	24.4898	1.53125	20	5.964912
12	M2	75	51.02041	1.47	19.35484	5.319751
13	External Debt Stock	100	71.42857	1.4	18.60465	4.569563
14	FPI	87.5	75.5102	1.158784	15.90909	1.874003
15	FDI	62.5	57.14286	1.09375	15.15152	1.116427
16	Output gap	50	51.02041	0.98	13.7931	-0.24198
17	CPS/GAP	50	51.02041	0.98	13.7931	-0.24198
18	BOP/GAP	50	55.10204	0.907407	12.90323	-1.13186
19	Domestic Debt Stock	25	38.77551	0.644737	9.52381	-4.51128
20	FPI/GDP	25	77.55102	0.322368	5	-9.03509

Source: Authors Estimates

In computing the composite leading indicator (CLI) for the different crises, the indicators which were significant from our analysis were aggregated as follows;

$$CLI_t = \sum_{j=i}^{n}(F_j)S_t^j \qquad (3)$$

Where, CLI_t = Composite leading indicator at time t

F_t = signal/noise ratio of the indicator

S_t^j = Signals from indicator j at time t

In relation to the currency crisis, we developed two composite leading indicators from the variables with signal/noise ratios greater than one; composite leading indicator one (CLI1) and composite leading indicator two (CLI2). CLI1 was composed of six variables while CLI2 had nine variables. Using a two-year ahead early warning window our composite leading indicators were effective in predicting both currency crises (2009 and 2015) with significant signal/noise ratios greater than one. Table 5 further reveals CLI2 as a better composite leading indicator with a 50 per cent probability of a crisis occurring within 2 years given a signal.

Table 7: Currency Crisis CLI Using a Two-Year Window Period

	Probability of signal given crisis	Probability of no signal given crisis	Signal/voice ratio	P(crisis/signal)	P (crisis/signal) - p(crisis)
	A/(A+C)	B/(B+D)	A/(A+C)/B/(B+D)	A/(A+B)	(A+C)/(A+B+C+D)
CLI1- 2009	0.5	0.368421	1.357143	0.363636	0.06734
CLI1- 2016	0.75	0.466667	1.607143	0.461538	0.113712
CLI2-2009	0.75	0.315789	2.375	0.5	0.203704
CLI2-2016	0.75	0.4	1.875	0.5	0.152174

Source: Authors Estimates

Adopting a three-year ahead signaling period significantly improves results with the CLI2 outperforming the CLI1 in predicting both crises. By using the three-year window, both indicators provide probabilities of over 60 per cent of a crisis occurring given a signal, further suggesting that a three-year ahead prediction window is better than a two-year ahead window.

Figure 13: Currency Crises Using a Two-year Ahead Window

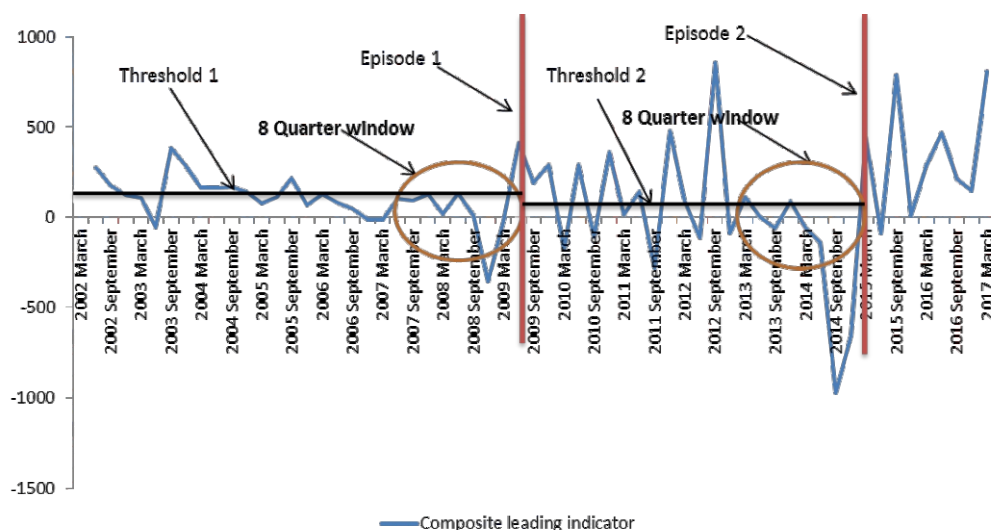Thresholds: Episode 1=101.74, Episode 2=28.39

Table 8: Currency Crisis CLI Using a Three-Year Window Period

	Probability of signal given crisis	Probability of no signal given crisis	Signal/voice ratio	P(crisis/signal)	P (crisis/signal) - p(crisis)
	A/(A+C)	B/(B+D)	A/(A+C)/B/(B+D)	A/(A+B)	(A+C)/(A+B+C+D)
CLI1- 2009	0.666667	0.2	3.333333	0.727273	0.282828
CLI1- 2016	0.666667	0.454545	1.466667	0.615385	0.093645
CLI2-2009	0.75	0.2	3.75	0.75	0.305556
CLI2-2016	0.666667	0.363636	1.833333	0.666667	0.144928

Source: Authors Estimates

Figure 14: Currency Crisis CLI Using a Three-Year Window Period
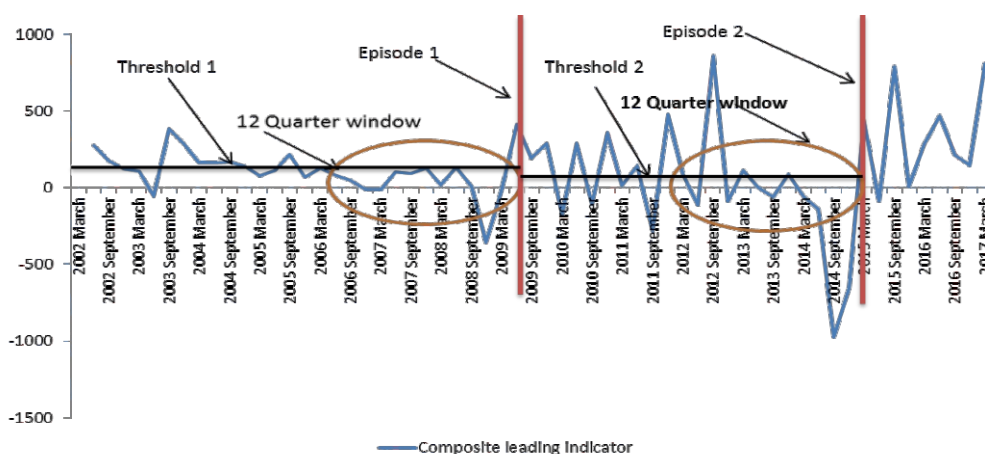
Thresholds: Episode 1=101.74, Episode 2=28.39

As regards the early warning indicator for recession, a Recession Composite Leading Indicator (RCLI) was developed using the fifteen variables with signal/noise ratios greater than one. Two window periods were also used; two-year and three-year ahead. The results of both window periods were significant with signal/noise ratios greater than one. The three-year ahead window period, however, had a higher warning probability of 36.8 per cent.

Table 9: Recession Composite Leading Indicator

	Probability of signal given crisis	Probability of no signal given crisis	Signal/voice ratio	P(crisis/signal)	P (crisis/signal) - p(crisis)
Indicator	A/(A+C)	B/(B+D)	A/(A+C)/B/(B+D)	A/(A+B)	(A+C)/(A+B+C+D)
RCLI-Two year Ahead	0.75	0.276596	2.711538	0.315789	0.170335
RCLI- Three-year ahead	0.5833333	0.2790698	2.0902778	0.3684211	0.1502392

Source: Authors Estimates

Figure 15: Recession Composite Leading Indicator Using Two year Window
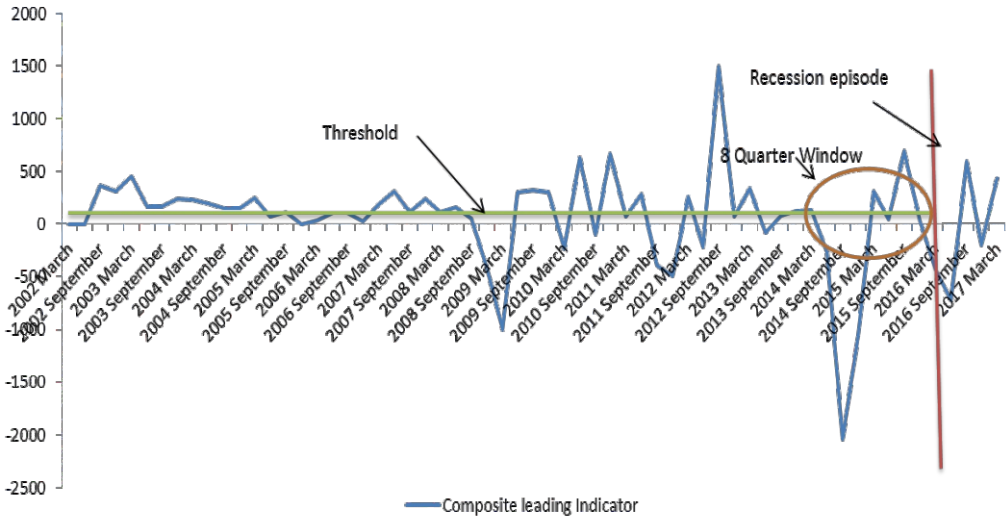
Threshold of recession episode=68.50

Figure 16: Recession Composite Leading Indicator Using Three year Window
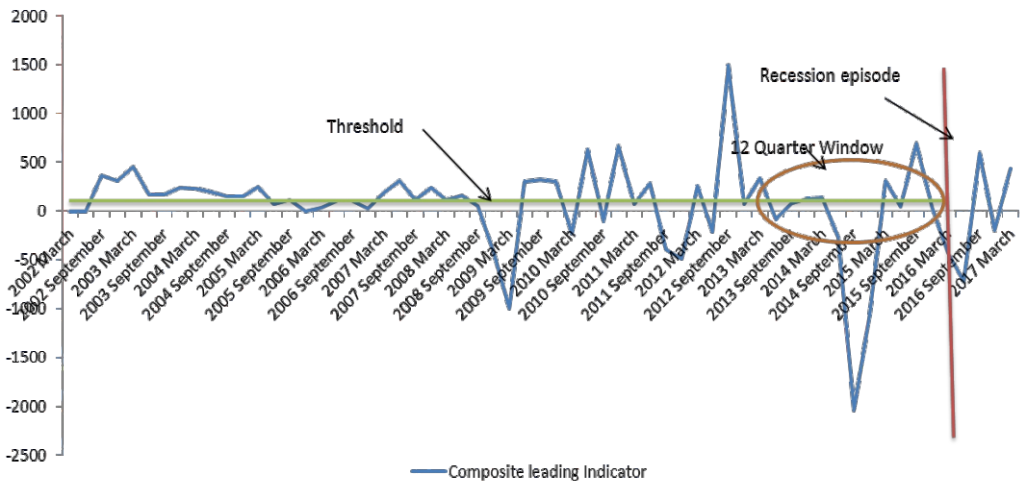
Threshold of recession episode=68.50

V.   Conclusion

In our paper, we identified two currency crises in Nigeria (2009Q1 and 2015Q1-2017Q1) using a constructed exchange market pressure index, while a GDP growth-time graph was used to identify a recession episode (2016Q2-2017Q1) for the 2000-2017 sample period. The Kamisky (1998) signaling methodology was adopted to analyse the indicators suggested by the early warning literature and the results revealed that some of the leading indicators significantly predicted both recession and exchange rate crises eight quarters before they occurred. The composite leading indicators developed from the credible indicators also succeeded in predicting both recession and currency crises during an eight and twelve quarter early warning window, although the results of the latter was more robust.

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Recession and Exchange Rate Crisis: Jurisdictional Experiences

*Abiodun Adedipe**

I.   Background

One of the most contentious issues in modern economies is exchange rate management in a world of increasingly mobile and volatile international capital, especially among emerging market economies (EMEs). There are bipolar prescriptions of hard pegs and pure floats, as well as several intermediate prescriptions that have been substantially researched in light of the banking, currency and economic crises of the 1990s and 2000s in most EMEs. The more advanced and industrial economies have tended to be more successful in exchange rate management and experienced fewer currency crisis than the EMEs, as most of them adopt the pure float and close variants of it. The occasional market intervention in pure floats is, however, not to be interpreted as intermediate prescription of managed floats.

There is continuing search for proper understanding of the nature of the relationship between exchange rate regimes on the one hand, and currency and economic crisis on the other hand. First, is to establish whether economic recession causes currency crisis, and the corollary that currency crisis can trigger economic recession. Second, is to establish the role that the exchange rate regime can play in any of these, looking from the bipolar prescriptions to the intermediate prescriptions that have been argued as more risky and make countries more susceptible to crisis when massive outward flow of international capital occurs.

The jurisdictional experiences show that there is no particular approach to resolving economic and currency crisis, as each has its peculiarities (economic, political, social and even historical) that have shaped the cocktail of policies adopted. No one size fits all. The burgeoning literature on these subjects and evidence-based research provide sufficient ground to draw from and compare jurisdictional experiences.

For the Nigerian economy that technically went into recession in the second quarter of 2016, and had battled currency crisis since early 2015, the major challenge has been how to reconcile the seeming contradictory policy

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prescriptions – an expansionary fiscal policy to restart economic growth vis-à-vis a contractionary monetary policy that seeks to keep inflation under check and within productive range.

This paper is structured into four parts, starting with a brief note on recession and the peculiarities of the Nigerian experience in 2016-2017, followed with conceptual issues and narratives on the research topic, jurisdictional experiences and inferences, and then conclude with suggested recommendations.

II.   Nigeria Economic Recession 2016-2017

Economic recession is a period of persistently dipping economic activities that results in two consecutive negative quarterly growth of GDP. This often results from a process that sets off, but is either not recognised early or not addressed. Peculiar to recessions is the shrinking expenditure space, as corporate entities begin to retrench staff, shut business lines and reduce significantly or suspend all together new investments, thus making those still in employment refrain from spending. This in turn, weakens the external sector, as most foreign investors hold back, until they see signs of recovery.

As such, three of the four key stakeholders to the economy (corporates, individuals and external sector) spend less, delay payment of matured obligations or altogether stop spending, leaving government spending as the only feasible avenue to restart spending. If the government fails or it is unable to fiscally intervene on time, the economy will slip into technical recession. This could be due to any or combination of the lack of technical capacity to identify the impending trouble, paucity of required resources, lack of the political will to do what is necessary, or the sheer complexity of the problem in the context of other more serious matters contending for attention and resources.

The 2016 recession in Nigeria that commenced during the third quarter of 2014 (see Figure 1) was completely different from that of 1993-1995, when the national economy was much smaller in size, less complex and with societal values not has deeply eroded by corruption leakages. Also, the global economy was less competitive and the international oil market did not experience the kind of turmoil of most of 2015 through the first half of 2016. These and other recession-related issues are summarised in Box 1.

Figure 1: Nigeria: Real GDP Growth Rate (Per cent), Q1 2013 – Q2 2017
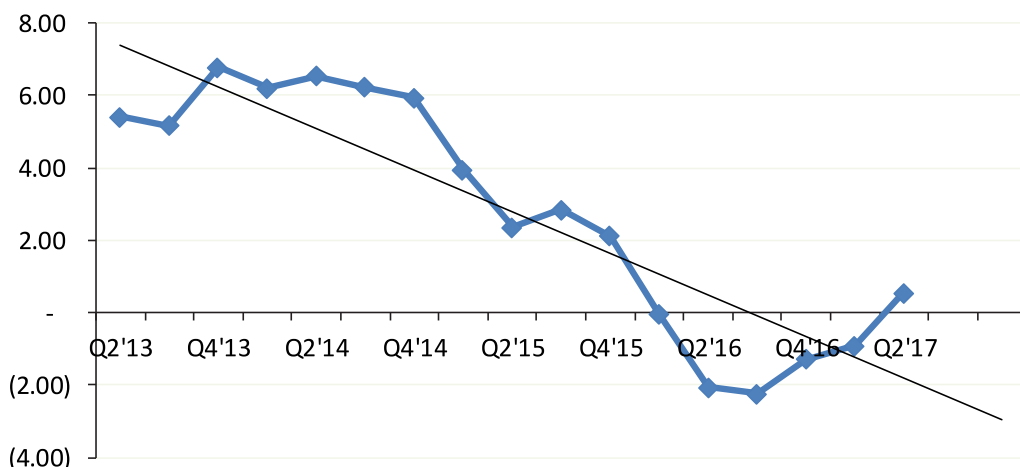
Source: National Bureau of Statistics, Nigeria; BAA Consult

Typically, a recession creates worry about deflation in the face of weakening aggregate demand and efforts are, therefore, usually geared towards introducing incentives for economic agents to spend. Often, it will be a combination of expansionary fiscal and monetary policies. The situation, however, takes a complex turn when a massive fall in aggregate expenditure is accompanied by high inflation as witnessed in Nigeria during 2015 up until first quarter of 2017, as inflation peaked at 18.72 percent in January 2017. Poorly structured and misdirected expansionary fiscal operations and/or quantitative easing (QE) will only spark further inflationary pressures.

Box 1: Nigeria: 2016 Recession Triggers and Implications

Recession Trigger	Implication	Primary Responsibility
Over dependence on hydrocarbons	High risk, mono-culture economy	Government
Government policy inconsistency and misalignment	Rigidities and investment reversals	Government
Preponderant corruption and rent seeking	Leakages and resource diversion	Government, Corporates, Individuals
Over dependence on imports	Conspicuous consumption	Government, Corporates, Individuals
Low national productivity	Inefficiency	Government, Corporates, Individuals

An exchange rate crisis occurs when a country has insufficient external reserves, resulting in speculative attack on its currency and persistent erosion of the currency exchange value. As well, there is a pervasive perception that the country lacks the capacity to meet its maturing international obligations and there is no indication of when the scarcity will abate, often resulting in foreign investments trouping out of the country. Nigeria experienced both in the run up to the recently exited recession (See Figures 2 and 3).

Figure 2: Nigeria: External Reserves, 2000 – August 2017
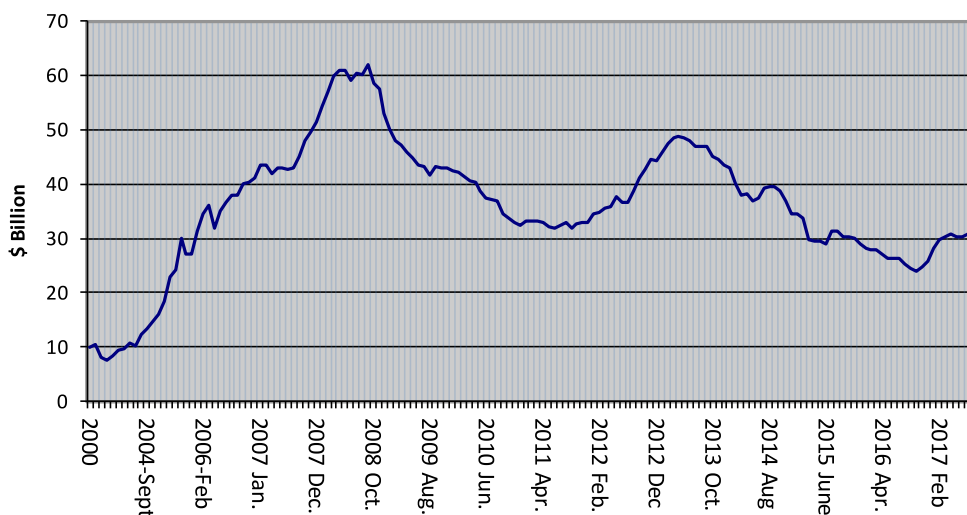
Source: Central Bank of Nigeria; BAA Consult

The major considerations, therefore, include the level of the reserves vis-à-vis the national monthly import bill (indicated at about 16.52 months, based on monthly average of N588.1billion during January to May 2017 and exchange rate of N305.5/US$). In addition, the net capital flow (in either accretion to or diminution of reserves)and stakeholder confidence (or lack thereof) shaped by the state of the national economy and expectations.

A recession occurring without exchange rate crisis is easier to handle, as the typical tool is aggressive expansionary fiscal operations or dateless engagement in QE. Either or both of these will reflate the economy. The dilemma Nigeria has faced is to find a balance to many seemingly conflicting policy prescriptions – expansionary fiscal operations to get the economy out of recession, contractionary monetary policy to keep inflation under check (encourage foreign investment inflows) and the huge threat to foreign earnings from export of crude oil. All these are against the background of a largely import dependent production system and consumption culture.

Figure 3: Nigeria: Capital Importation, Q1.2013 – Q2.2017
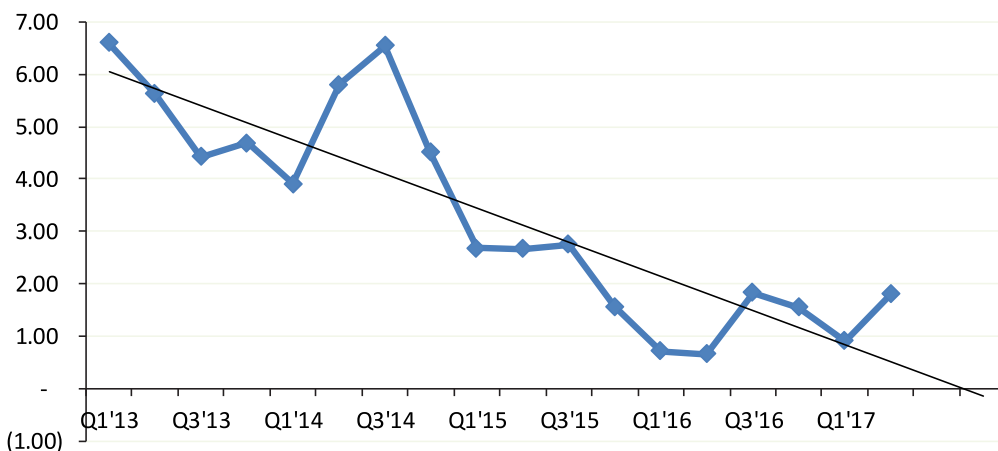
Source: National Bureau of Statistics, Nigeria; BAA Consult

Before an attempt is made to summarize jurisdictional experiences and the lessons that Nigeria can draw from them, it is useful to review important conceptual issues and findings of evidence-based research on the twin occurrence of recession and currency crisis.

III.   Conceptual Issues and Stylised Facts

The empirical findings of Fontaine (2005) provided support for the view that, in general, deterioration in economic fundamentals and the pursuit of lax monetary policy can contribute to currency crises. The experiences of several EMEs suggest that the sustainability of exchange rate policy depends on both adequate policy responses to the shocks, and the fragility of the economic, financial, and political system.

Glick and Hutchison (2011), however, argued that there are gaps still in the theoretical understanding of the complex interactions between macroeconomic fundamentals, investor expectations and government policy, and this continues to be subject of research into how to strengthen the weak predictive ability of the postulations. As such, analysis of panel and multi-jurisdiction data seek to unravel the complexities and provide a guide to central banks to either predict imminent currency crisis or resolve effectively a crisis on hand.

The conventional wisdom articulated by Fischer (2001) posited that hard pegs may be more prone to growth declines and painful current account reversals, in

which case the hard end of the bipolar prescription may be largely illusory. The increasingly popular prescription is for countries to adopt floats or hard pegs (monetary union, dollarisation, currency board) and avoid intermediate regimes, as they tend to be more susceptible to crisis. Ghoshet. al. (2014) added that the arguments in favour of free floats are well known, but it is less clear why hard pegs (the least flexible regime) should be equally resilient to crisis.

Weber and Wyplosz (2009) observed that about 45.0 percent of countries surveyed officially pegged their exchange rates, suggesting that exchange rate movements were largely market-driven (in 55.0 percent of countries) rather than administratively fixed. At the outset of the 2007/2009 global financial crisis (GFC), traditional instruments became ineffective – bank rates were dropped to zero or near zero with little or no effect. Both quantitative and credit easing were adopted. Even countries that were not directly impacted by the crisis still suffered massive currency devaluation, though they recovered not long after – much as Nigeria at present is being helped out of the crisis by the relative stability of the oil market. Inter alia, they stated:

> "Exchange rates have moved a lot since the onset of the crisis, but these movements have been mostly interpreted as byproducts of expansionary policies. Sharp depreciations in countries like the UK or South Korea have not been welcome by the authorities, at least officially. Intentions, of course, are hard to detect and no one suggests that monetary policies should not be expansionary". (pp. 2)

In a revisit of the bipolar prescription for exchange rate regime, Ghosh et. al. (2014) attempted answers to the two questions of whether the poles of hard pegs and pure floats are still safer than the middle, and secondly, where to draw the line between safe floats and risky intermediate regimes. Using a sample of 50 EMEs over 1980-2011, their findings showed that macroeconomic and financial vulnerabilities were significantly greater under less flexible intermediate regimes (including hard pegs) as compared to floats.

There is the continuing argument in literature (Roubini and Stetser, 2004; Obstfeld and Rogoff, 2005; Blanchard et al., 2005) that global imbalances (i.e. the combination of a large US current account deficit with Asian surpluses) were unsustainable and would result, sooner or later, into large exchange rate realignments, with potentially dramatic effects. The suggestion is that the US Dollar should depreciate to reduce the deficit, while Asian currencies (especially the Chinese Renmimbi) should appreciate to reduce their surpluses. This conventional wisdom is, however, not fashionable because of the peculiarities of each country's situation – a clear case of "not one size fits all"!

The GFC has also proven that a regime of pure float is not insulation against market turbulence or failure, making central bank intervention in the foreign exchange markets inevitable. Most EMEs gravitated towards greater exchange rate management, with different patterns pre- and post-crisis. Prior to a crisis, however, the EME central banks worried about growing capital inflows making their exports uncompetitive and they thus tried to prevent rapid appreciation of their currencies. Figure 4 shows the trend up to the GFC in 2008.

Figure 4: Southeast Asia Exchange Rates vs US Dollar, 2008

(Data source: Datastream)
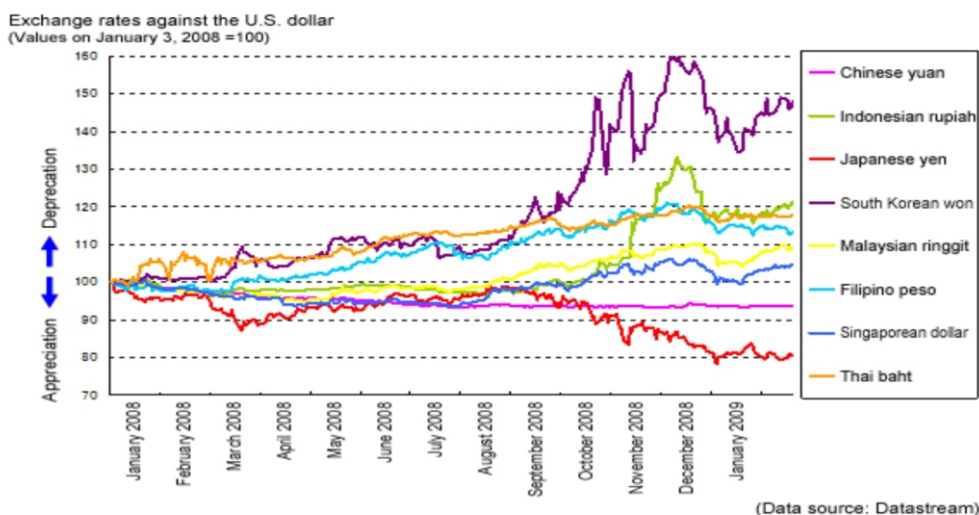
Ghosh et. al., (2014) further argued that a rush to devalue the currency or shore up its value should not be the first priority during a crisis. Rather, alternative policy instruments should be explored before a last ditch tinkering with the exchange rate. More specifically they stated this as:

> "Whichever literature holds true, there is a case for a desirable evolution of exchange rates, from a world welfare viewpoint, which facilitates the international adjustment to shocks and disequilibria. But given that the sources of the disequilibria are not generally agreed upon, pinpointing the solution for the required path is far too complex a task making a coordinated response close to impossible. Under this uncertainty, using explicitly the exchange rate should be a last-resort option, since it can be helpful only if few countries adopt it and is at the cost of other nations' competitiveness. It follows that other options must be implemented first."(pp. 3)

The research findings of Ghosh et. al. (2014) point to interest rates of one percent or below for about 25 of the EMEs surveyed, while only six of them had inflation rates in excess of one percent. Most of them, therefore, had positive real interest rates that investors find attractive. Also, most of them had high debt/GDP ratio, with the sample average at 46 percent. Japan and Singapore had excess of 100.0 percent, while most European countries also had high debt/GDP ratios, which were set to rise further with the massive fiscal stimulus introduced to counter the crisis.

Some of the countries had benefited from weak currency that made their exports competitive, while some others that had piled huge external debts resisted currency devaluation because of the implication for their external obligations. The latter were mostly the Central and Eastern European countries.

Another category of countries were countries that had high export to GDP ratio (including Singapore, Hong Kong, Luxemburg, Malaysia and Belgium) and maintained average current account surpluses well above 10.0 percent. Most oil producers were also in this class. As such, those that should ordinarily benefit from currency devaluation had no real need for it.

Global imbalances thus, continued at the onset of the GFC, as nations that had capacity to correct it had no incentive to switch from surplus to deficit. Apart from China (and largely an already weakened South Korean currency), Ghosh et. al. (2014) named other countries having a high incentive to devalue to include Japan, Thailand, Israel, Malaysia Saudi Arabia, the United States and Germany – the last of which was constrained by the common monetary policy of the euro area. Of course, Brazil, Mexico, Argentina and Chile had been depreciating heavily. Like most of the countries in the sample between 2008 and 2009, Nigeria was listed to have prevented foreign exchange dealing between banks in February 2009.

They concluded thatcountries with a flexible exchange rate regime should refrain from non-conventional monetary easing via the foreign exchange market, while those with fixed exchange rates should not undertake any depreciation without in-depth consultations with the International Monetary Fund (IMF). Also, when market pressure threatens a currency, whether the exchange rate floats or is fixed, IMF support should be sought and provided. Then finally, capital controls (helpful as a temporary measure) need to me monitored to avoid measures which interfere with trade and may backfire.

Kholer (2010) inferred that the currencies of a large number of countries that were not at the centre of the GFC depreciated against three major currencies: the US

dollar, the Japanese yen and the Swiss franc. For a number of the currencies, the depreciations reversed within a year or so after the crisis. He adduced this to two factors -- safe haven flows and interest rate differentials.

All the above underscores the fact that exchange rate management and its implications is ultimately a function of national interests playing against each other. Since it is strictly a phenomenon that arises from a comparison of two currencies, the gain of one is the loss of the other, and what turns out positive for Nigeria cannot (and will not) be necessarily positive for her trade partners.

The question then should be "whose interest should the central bank protect? The answer to this question is what has been found in the jurisdictional experiences summary in this paper.

IV.   Jurisdictional Experiences

The cases selected for review have certain attributes in common with the recent Nigerian experience, especially in the run-up decade to the recession that began in Q3:2014 and technically confirmed in Q2:2016. This is to ensure that useful lessons can be drawn from them.

IV.1   Mexican Crises of 1982 and 1994

An earlier debt crisis of 1982 occurred when Mexico defaulted in servicing sovereign debts amounting to US$80 billion, which was largely owed to US commercial banks. A depreciation of almost 50.0 percent by the freely floating peso during the first half of 1982 and interest rate hike by the Banco de Mexico were not sufficient to revalue the currency to levels that sustain investor confidence, causing capital flight to intensify – estimated at 3.4 and 4.2 percent of GDP in 1981 and 1982, respectively.

At the same time, government's fiscal operations were poorly managed, as budget deficit rose to 14.7 percent, public debt to GDP was 42.0 percent and external debt to GDP was 33.0 percent in 1981. Devaluation of the peso further raised the cost of dollar-denominated external debts, as external debt to GDP ratio rose to 49.0 percent and debt service was 142.0 percent of total current account income in 1982. On the other hand, peso devaluation (about 50.0 percent between August and December 1982) still did not prevent external reserves from being reduced to only three weeks of import cover.

The bail out by the US government with immediate cash of US$2 billion in prepayments for oil and agricultural imports, a US-arranged syndicated loan of

US$1.5 billion, and another US$3.8 billion from the IMF with reform requirements (1983-1985), stabilised the financial system and economy.

Subsequent home-grown reforms (1986-1988 and 1989-1993) eventually got the economy out of currency crisis and economic recession, but did not last. For example, budget deficit halved from the peak of 14.7 percent in 1981 to 8.9 percent in 1983. However, capital outflows went up rather than down, inflation skyrocketed, new investments fell dramatically, external debt rose to 78.0 percent of GDP (1987) and the economy stagnated during 1982-1988.

The 1994 peso crisis (the Tequila crisis or 'December mistake' crisis) was the first major currency crisis among South American countries. It was sparked by the Mexican government's sudden devaluation of the peso against the U.S. dollar in December 1994, and became one of the first international financial crises ignited by capital flight. The crisis was precipitated by:

- Weakening economic reforms that started from 1983, especially to deal with the hyperinflation of the late 1980s (Mexico at above 100.0 percent inflation rate was not alone in this – several South American countries suffered the same inflationary fate).
- Assassination of a leading Mexican presidential candidate (Luis Donaldo Colosio-Murrieta) on March 23, 1994 sparked fears of a currency crisis.
- The central bank began converting short-term debt, denominated in pesos, into dollar-denominated bonds. This currency mismatch meant restructuring into US-dollar obligations against peso revenues.
- Pegging of the peso to the US dollar in an environment of runaway inflation.
- Mounting current account deficit because an overvalued peso made imports cheap and exports expensive.
- Narrowed interest rate differential as US interest rates rose.
- External reserves of US$28 billion that was exhausted in less than one year.

What mistake then did the Mexican government make? It did not devalue the peso deep enough, it did not abandon the exchange rate peg and increased domestic interest rates to nearly 80.0 per cent. The speculative attack on the currency continued unabated and the economy slowed down considerably, until the US government stepped in with a US$51 billion rescue package and accompanying stringent conditions (crude oil collateral and creditor-imposed) until debts were fully repaid. The US had two important reasons to intervene – large amounts of US exports end up in Mexico and an extensive border-share makes the US vulnerable to the spillover burden of political turmoil in Mexico.

Even today, Mexico remains highly vulnerable to developments in the US as occurred recently with the advent of Donald Trump in the White House. Annual trade between US and Mexico is estimated at over US$500 billion, which represents daily trading of some US$1.6 billion. Mexican exports to the US have increased almost six-fold to US$320 billion in 2016, since the North American Free Trade Agreement (NAFTA) took effect in 1994 (post-Tequila). Indeed, the US and Canada are destination to almost 80.0 percent of Mexican exports. The Mexican central bank, therefore, runs a non-independent monetary policy, as it raises interest rates in response to whatever happens fiscally and monetarily in the US. In 2017 alone, the bank has raised interest rates three times.

IV.2   Argentine Crisis of 2001 and 2014

Argentina has been through currency crisis and recession several times in the last 50 years that were not necessarily due to contagion (only the East Asian and Russian crisis impacted). In many instances, the crisis had political turmoil as a key factor (five Presidents successively resigned in two weeks in 2001), there were several macroeconomic factors out of sync – inflation rate completely illogical at over 5,000 percent, high unemployment rate (above 20.0 percent in 2001), poor government revenue (30,000 out 30 million Argentines paying tax in 1989), strikes proliferated (especially in 1989), among others.

Reforms that included privatisation of loss making public enterprises and reduction in import tariffs with deliberate courting of foreign investors and currency peg resulted in single digit inflation. Public debt increased as the government reached its limit of 'printing money' and the IMF reform model that Argentina represented unraveled.

In 2014, another currency crisis hit Argentina, whereby roadside transactions in ordinary day purchases tended more towards buyers that would pay with US dollars rather than the local currency peso which plunged after the government devalued it (8pesos/US$ against roadside rate of 11pesos/US$). The crisis came largely on the back of high inflation rate (38.0 percent in 2014, with all-time high of 20,262.8 percent in March 1990), softened Chinese demand for soy and other commodities that boosted the current account, dwindling external reserves (see Figure 5), history of default on foreign debt obligations, and low investor confidence.

Figure 5: Argentina: External Reserves, 2013-2017

ARGENTINA FOREIGN EXCHANGE RESERVES

Source: Trading Economics; IMF

IV.3   *Asian Crisis of 1997 and 2008*

Branded as the "Asian tigers", the Southeast Asian countries had grown strongly and rapidly their economies and exports on the back of massive foreign investments. Among these countries, Thailand was the first to run into crisis, as the exchange rate of its currency (the baht, which was pegged to the US Dollar) became unsustainable with evaporation of foreign reserves and mounting external (public and private) debt obligations. In particular, private companies racked up huge current account deficits, while lots of investments in real estate were inefficiently managed and there was a general feeling of asset price bubbles.

In a way then, Thailand's case was similar to the Mexican crisis of 1982 and 1994. The exchange rate risk fully crystallized when the United States increased domestic interest rates, causing foreign investment inflows into Southeast Asian economies to reduce sharply and the resulting contagion spread quickly throughout the region, especially for Indonesia and South Korea that were also along with Thailand the most severely affected.

Indonesia was similar to Thailand only to the extent of dependence on foreign investments and dollar-denominated foreign debts. It, however, as at June 1997 had low inflation, trade surplus of about US$900 million and external reserves of more than US$20 billion. The currency (rupiah) was indexed to the US dollar up until that time, but was floated in July 1997 and the currency trading band

widened from 8.0 to 12.0 percent, a month after which it came under speculative attack. The US$23 billion support by IMF in August 1997 was unable to save the rupiah, which when freely floated depreciated from pre-crisis level of 2,600 rupiah to the US dollar to 11,000 rupiah – it sank as low as 14,000 rupiah to the dollar in early 1998. The flight to US dollar as hedge against growing servicing cost of corporate debts further excessabated the currency crisis. Both the central bank Governor (sacked by the President) and the President himself forced out of office by the emergent political turmoil fell victims of the currency crisis and recession.

Prior to the crisis, the South Korean economy was the fastest growing in the world, having attracted considerable foreign investments and debt. Like other EMEs that had similar exposures, the Korean won depreciated rapidly by over 100.0 percent (from about 800 won to the US dollar to 1,700 won, while national debt-to-GDP ratio rose from about 13.0 to 30.0 percent. The IMF provided a bailout of US$57billion and required restructuring measures that included removing the ceiling (of 26.0 percent) on foreign investment in Korean companies and reform of the financial sector that had piled up huge non-performing loans that financed the burgeoning chaebols.

The experiences of the Philippines, Hong Kong, Malaysia and Singapore were not any significantly different from those of Thailand, Indonesia and South Korea. They all had export-oriented economies that racked up production capacity funded with foreign investments and loans, most of their currencies were pegged to the US dollar and their corporate sectors were also closely interconnected. As such, they were susceptible to interest rate adjustments in the US in particular, and exchange rate risk that deepened as they abandoned the intermediate exchange rate system for the polar float.

In summary, the Southeast Asian crisis can be adduced to the following factors:
- Fixed exchange rates led to overvalued currencies and became very difficult to maintain, and when floated, many of the currencies collapsed in value.
- Privately-held debt rapidly increased, with considerable asset bubbles driven by foreign investments. As defaults increased, foreign capital inflows reversed and speculative attacks persisted over several months in a row.
- Most foreign investments were suspected to have been partially speculative, and thus quick to herd out at the earliest signs of trouble.
- Political uncertainty also played some role, especially in Thailand and Philippines where changes in leadership occurred in the aftermath of the currency and economic crisis.
- There was pervasive speculative attack on the currencies of most

Southeast Asian economies, and the IMF played an important role in providing bailout, just as Malaysia was outstanding in confronting the currency attackers.

- The polar fixed exchange rate was abandoned for the polar float, but some of the countries ended with managed floats.

The lessons of the 1997/1998 currency crisis served well in handling the one triggered by the GFC, as the currencies of some of the countries affected depreciated sharply in the second half of 2008, with the Japanese yen being a notable exception. The volatility in their markets were quickly resolved with interest rate cuts and fiscal stimulus that mirrored what the US did. The resulting appreciation of the yen adversely affected Japanese exporters, while depreciated currencies (including the South Korean won that depreciated by 60.0 percent and later gained 10.0 percent) helped the markets to stabilize quickly and the Chinese Yuan that was dollar-pegged also faired well.

IV.4   Russian Crisis of 1998 and 2014

The contagion effect of the East Asian crisis and collapse of commodity prices (notably crude oil and other Russian exportable) resulted in massive fiscal deficits, rising inflation and sharp decrease in external reserves. With a pegged exchange rate (rubble-to-dollar peg within a narrow band outside which the central bank will intervene), trouble soon started in 1998 for the Russian stock, bond and currency markets as a result of anticipated ruble devaluation and a default on domestic debt. This followed interest rate rises (to support the rubble), rising capital outflows and the general erosion of investor confidence in EMEs.

The Government responded with emergency measures to prevent further escalation of the crisis by allowing rubble devaluation (allowed to fluctuate within 6.00-9.50 rubble to the US dollar), default on short-term Treasury Bills (GKOs) as well as on longer-dated ruble denominated bonds (OFZs), and a 90-day moratorium on payments by commercial banks to foreign creditors. Some of these did not sit well with foreign investors and the rubble suffered massive attacks.

In July 1998, both the IMF and World Bank provided US$22.6 billion to support reforms, especially to swap out the quickly maturing GKOs for long-term Eurobonds. Subsequent to that, the rubble was floated in September 1998 and within the same month, depreciated by about 62.6 per cent to 21rubble/US$. Inflation rose to 27.6 per cent in 1998 and 85.7 per cent in 1999 as food price increased. The respite came as the price of crude oil in the international market recovered.

It was a different scenario in 2014, as the ruble had fallen to as low as 80 to the dollar and 100 to the euro. There were conversations around capital controls, but the central bank opted to raise policy rate to 17.0 percent. This was, however, not enough protection for the rulble, which started to suffer from capital outflows and speculative attacks, especially the possibility of default. Imports became more expensive and the only option was for the central bank to further hike rates.

V.   Lessons and Highpoints

There are several important lessons to be learnt from these crises and how they were resolved, among which are:

1.   Macroeconomic stability is not insulation against a currency crisis.
2.   A combination of persistent fiscal deficit, growing external borrowing (sovereign and corporate) and overdependence on one major source of foreign earnings is a recipe for currency crisis.
3.   An open economy with free capital movement and overdependence on foreign investments to fund growth make economies and currency markets prone to crisis.
4.   Current account surpluses and single-digit inflation rates minimise the risk and impact of a crisis on the economy.
5.   Speculative attack is difficult to stop, especially in times of political turmoil and dwindling external reserves.
6.   Retaining the peg (whether in fixed or adjustable peg) helps when there is sufficient external reserves to defend the currency. Market participants will ultimately consider the central bank's ability to maintain the policy. Where they doubt this, speculative attacks will ensue.
7.   Transition from a fixed exchange rate to flexible rate require surgical strike action, otherwise investors and currency market participants will doubt the central bank's capacity to sustain the policy. The central bank will have to make significant devaluation in order to appear credible.
8.   Contagion is a strong factor when trade ties and other economic activities linking countries are strong.
9.   Externally funded growth is positive to the extent that external dependence is not dominant on the balance sheet of financial institutions, non-financial corporate entities and government (in form of sovereign debt),
10.   Being of economic and political significance is important to access bailout in times of currency crisis.
11.   Re-denominating public debt in US dollar is counterproductive when the bulk of government revenue is not in sustainable dollar inflows.

VI.   Recommendations for Nigeria

Following from the lessons listed in Section 5, the following are few policy options recommended for Nigeria in dealing with the ongoing currency crisis and driving sustainable, inclusive economic growth.

1.   Fiscal operations and leakages. Given that the Nigerian economy is technically out of recession and on to recovery, the federal government (largest unit spender in the public sector) should start to reduce budget and fiscal deficit from 2019, by which time the economy should be fully on the growth path. The fight against corruption must be intensified, as observed that corruption played an important role in the Argentine currency crises, especially that of the early 1990s.

2.   CBN's policy rate should be more flexible. As the Nigerian economy becomes more sophisticated, the quarterly changes or retention of the policy rate will become a major factor in investment decisions in the corporate sector. Not only will the announcement effect become more far reaching, it will also begin to have expectation value. There is no evidence that significant amounts of foreign investments shift between Nigeria and the US based on interest rate differentials, as much as it is hard to find concrete evidence of domestic borrowing by currency speculators. Keeping high and 'fixed' policy rate during a currency crisis in Nigeria cannot be justified beyond the attraction it creates for instruments in which foreign investors (mostly portfolio) are interested in.

3.   External borrowing by governments and corporates need to be kept within the borrowing limits constitutionally specified and agreed to by the country in the regional and sub-regional groups Nigeria belongs to. An overleveraged balance of payments and corporate balance sheets can spell trouble in a time of turmoil by making servicing external debts expensive and unsustainable. A default is also not an option to be entertained because of its future implications.

4.   Dependence and fixation on foreign investments is not a healthy approach to funding economic growth. While avoiding capital controls, there are creative ways to attract, retain and assure orderly exit of foreign investments by way of incentives and taxes. This of course, requires close collaboration between the monetary and fiscal authorities.

5.   Avoid the polar float of the exchange rate continuum. The naira for now, is highly vulnerable because of the overdependence of

the economy on foreign earnings from the export of hydrocarbons. The issue is not the diversification of the economy (it already is by way of sectoral contributions to the national GDP), but that of foreign earnings. When non-oil economic activities account for anything from 55.0 percent and above of total government revenue and up to 40.0 percent of foreign earnings, the economy would have developed resilience in dealing with external shocks.

6.   Lack of capacity to meet maturing obligations on domestic debt should not be too attractive an option to the fiscal authorities to re-denominate domestic debts in US dollar in the expectation that three or five years down the road, sufficient US dollar inflows will enable government discharge those obligations easily. There is no such guarantee anywhere and Nigeria should not fall into the mistake that some EMEs had made in this regard.

VII.   Conclusion

One of the greatest challenges of economic management arises when an economic recession coincides with a currency crisis, as Nigeria had experienced during 2014 to Q1:2017. This of course, was not the first time such phenomenon would occur, especially among emerging economies that foreign investors have found attractive for diverse reasons.

Lessons have been teased out from both the review of literature and empirical studies of several EMEs and a good number of those lessons are pointers for Nigeria.

One important observation though is that no country has resolved its crisis by replicating what another country did. Each jurisdiction is peculiar as much as time elapse also determines relevance of policy cocktails and there is increasing tendency towards pragmatism.

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Fiscal and Monetary Policy Management During Recession and Exchange Rate Crisis

Akpan H. Ekpo[*]

Abstract

There seems to be a consensus that in a recession, fiscal policy is more effective in returning an economy to the path of sustained growth. In the last global recession, austerity measures did not favour the European economies while fiscal stimulus returned the USA economy to sluggish growth. Monetary policy is effective in stimulating growth when an economy exits a recession, while the management of the exchange rate depends on its fundamentals. For Nigeria, signs of economic downturn were evident from 2010, in spite of the positive growth rates.

I.   Introduction

It is the way of life of nations to experience from time to time booms and busts in economic activity, otherwise known as business cycles. The cycles are often real, that is fluctuation in economic activity or monetary, where financial crisis take the center stage. Recession is at the contraction point in economic activity. No country grows monotonically with time without experiencing some downturn at some point. Policymakers respond with fiscal and monetary policies to address the macroeconomic shocks, and bring the economy back on the path of growth in the case of recession. The same demand management policies, albeit, with different policy thrusts are used in booms to address associated challenges.

On the exchange rate crises, many academic economists and policymakers have argued, that the inappropriate, unrealistic exchange rate policies pursued by a number of countries in the late 1970's exacerbated the exchange rate and international debt crises. Some have blamed overvalued real exchange rates in many African countries for the financial crises, the poor performance of the agricultural sector, development of black currency markets, loss of international competitiveness, trade deficit, and other disharmonies of the economy.

The growing consensus has been that exchange rate crises are a reflection of maintaining the real exchange rate at the "wrong" level, that is, a level different from the long-run equilibrium value, thus significantly reducing a country's growth and development. Policymakers, often resort to fiscal and monetary policies including external sector policy arsenals to correct the misalignment in exchange rate and bring it on the path of growth, that is, along its fundamental equilibrium exchange rate (FEER) which is consistent with internal and external balance.

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Extant literature is replete with studies that have investigated the relative effectiveness of fiscal and monetary polices during the recession and exchange rate crises. This paper reviews a few of them only for illustrative purposes. In its 2009 report, the IMF argued that most studies are of the view that fiscal policy is more effective than monetary policy during recession and financial crises and, therefore, fiscal expansion can reduce output loss or output cost (IMF, 2008 and 2009). The reports also aver that monetary policy can support shortening of economic recession, but that, however, its efficiency is limited during financial crises. Baldacci et al (2009) reckoned that government consumption can shorten duration of the financial crisis, in their study linking fiscal policy to real output during financial crisis. They also aver that government consumption is more effective than policy supporting investment or tax cuts. Investigating the relative effectiveness of fiscal and monetary policies during balance of payments crises in emerging and developing countries, Hutchison et al (2010) found that fiscal expansion generates smaller output cost but monetary expansion is neutral. They suggested the need for deeper coordination of monetary and fiscal policies during financial crisis.

During balance of payment and financial crisis in the period 1977 – 2010 in 57 emerging and developing countries, Li and Tang(2010) find that monetary and fiscal policy contractions are associated with an increase of the output cost during the financial crisis. In addition, fiscal policy expansion is accompanied with smaller output cost over the financial crisis, whereas monetary expansion seems neutral in its effects. The macroeconomic policy mix with a discretionary fiscal expansion and a neutral monetary policy are likely to mitigate output cost during the financial crisis in developing and emerging countries. In their study for the period 1980 – 1998 for 80 countries, Goldfan and Gupta (2003) found that both the fiscal and monetary policies were ineffective. In sum, it remained a controversial issue what kind of macroeconomic measures in the developing and emerging contries should be used during economic crisis to alleviate recession and financial crisis (Fetai et. al., 2013).

The purpose of this paper is twofold. First, is to lay bare the theoretical prescriptions/approaches often used by countries to address the problems of recession and exchange rate crises. Second, is to review the recent recession in Nigeria, articulate the causative factors and approaches adopted or being adopted to address the recession and the exchange rate crises. To this end, the paper is divided into five parts. After this introductory section, Part II dwells on theoretical issues relating to demand management approaches to recession and exchange rate crises. Part III articulates the conventional anti-recession and exchange rate crises management. Part IV analyzes Nigeria's case study: current recession and exchange crises management. Part V contains some leading

issues: imperatives of economic diversification and central bank independence. Part VI provides concluding remarks.

II.   Theoretical Issues

II.I   Demand and Supply Side Shocks

II.1.1   Demand Side Shocks

Recessions are too often explained in terms of Keynesian/neo-keynesian economics. The Keynesian perspective says that recessions are caused not so much by adverse supply shocks, but hugely by too low a level of aggregate demand (demand side shocks). Aggregate demand or an economy's output of goods and services is composed of consumption, investment, government expenditure and net exports, (the difference between what a country sells to and buys from, foreign countries). Consumption is typically the largest component of demand and investment, the most volatile but dynamic domestic component.

Keynes argued that inadequate overall demand could lead to prolonged periods of high unemployment. Increase in demand has to come from one of consumption, investment, government expenditure and net exports. But during a recession, strong forces often dampen demand as spending goes down. For example, during economic downturns, uncertainty often erodes consumer confidence, causing them to reduce their spending, especially on discretionary purchases. This reduction in spending by consumers can result in less investment spending by businesses, as firms respond to weakened demand for their products. This puts the task of increasing output or aggregate demand on the shoulders of the government (S. Jahen, A.S. Mahmud; C. Papageorgious, 2014).

Thus, Keynes upholds the paramountcy of fiscal policy (spending, taxation, net lending) in the economy. Prior to Keynes, a different view held sway, a government's financial operations were considered not very important in exerting strong influence on the level of employment and aggregate demand. At that time, the role of government was limited to re-allocating its financial resources from the private sector to the government. This view was supported by Say's Law that under conditions of full employment each increase in government spending will cause a decrease in private spending (crowding out) in the same amount of spending, resulting in an unchanged level of aggregate income.

Keynes altered that view and since then economists have given emphasis to the macroeconomic effects of government spending and taxes. He argued that increases in government spending do not move resources from the private sector to the government, stressing the multiplier effects of these expenditures.

Following Keynesian economics, state intervention is necessary to moderate the booms and busts in economic activity. In other words, Keynesian models in their various forms link the low level of demand by the common theme of market failure. If prices could not be relied upon to create demand, then governments needed to pump demand into the economy by raising government expenditures, cutting taxes (fiscal policy) or lowering interest rates (monetary policy).

A popular strand of Keynesian thought, however, is that prices and wages are sticky downwards, that they do not adjust instantaneously in response to changes in output or employment. That is, prices and wages do not adjust to clear the market – dubbed in the literature as a case of aggregate demand externality, which has the effect of lowering demand since firms are monopolists who set too high a price, thus causing lower demand and lower output. This problem of lower demand, the theory says, can be overcome if government tries to boost the demand for all commodities. If monopolists will not lower prices, then the government should increase the money supply.

Figure 1: Demand – Side Shock

real GDP
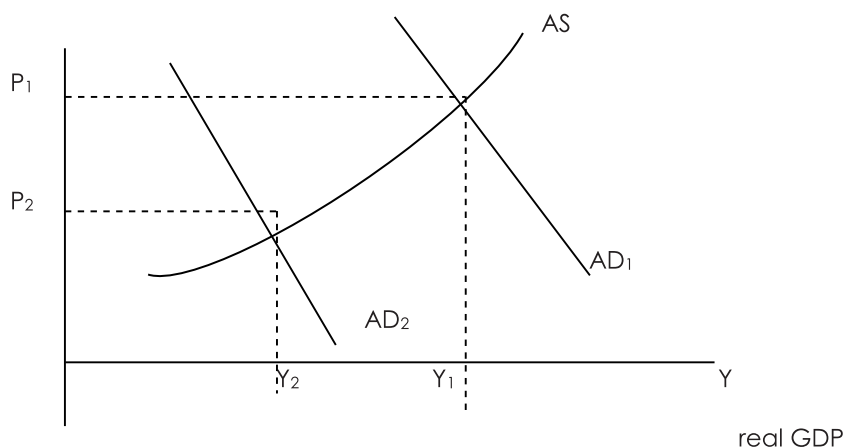
Other Demand-Side shocks
- Credit crunch which causes a decline in bank lending and therefore lowers investment.
- A period of deflation, falling-prices and prevailing uncertainty which often encourage people to delay spending. Delayed spending leads to reduction in spending by consumers, resulting in less investment spending by businesses. Also, deflation increases the real value of debt causing debtors to be worse off.
- Appreciation in exchange rate makes exports expensive and reduces demand for exports.

II.1.2   Supply Side Shocks

Higher oil prices would increase the cost of production and cause the short run aggregate supply curve to shift to the left.
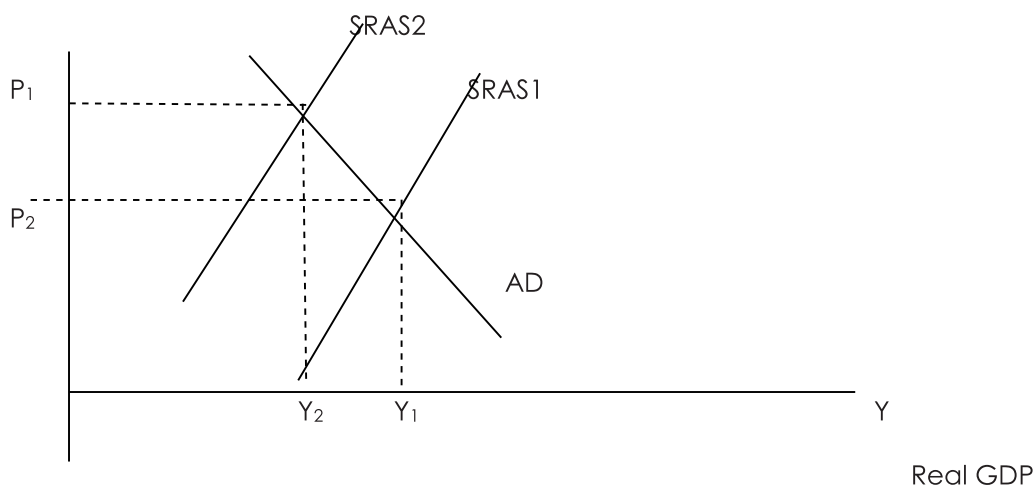
Real GDP

The supply side shock causes lower real GDP and higher inflation. This is difficult to address with monetary policy considering that the economy is having both inflation and lower output. Changing interest rates cannot do both at once.

II.2   Demand Management Policies during Exchange Rate Crises
Misalignment

When changes in economic fundamentals occur, the equilibrium real exchange rate (RER) changes, resulting in misalignment from equilibrium. Persistent misalignment in terms of occurrence of exchange rate appreciation or depreciation is a reflection of exchange rate crisis. Indeed, at any point in time misalignment in exchange rate is determined by changes in economic fundamentals and the expected rate of change (depreciation) of the exchange rate. Let us formalize the scenario thus:

$$e \quad = \quad Ft + LE\,(dl_t)/d_t \qquad\qquad (1)$$
$$\partial > 0$$

Where:

$e \quad = \quad$ exchange rate
$F \quad = \quad$ economic fundamental
$L \quad = \quad$ interest rate elasticity of money demand
$E \quad = \quad$ expectations operator

Equation (1) is analogous to the standard demand for money function.

$M - P - c + ay$ - $Li + u$ and the interest parity condition,

$i = i^f + E \ (dl_t)/dt$; under this specification the fundamental, F, is given by:

$$F = M_t + q_t - c + ay - Li^f - u \qquad (2)$$

Where:

F	=	Fundamental
M	=	Money supply
q	=	$e + p^f/p^d$, real exchange rate
p^d	=	domestic price level
p^f	=	world price level
c	=	constant of the money demand equation
a	=	output elasticity of money
y	=	domestic output, GDP
i	=	domestic interest rate
i^f	=	world rate of interest
u	=	stochastic disturbance term

Algebraically, the fundamental long-run RER is represented by Equation (3) below:

$$RER = q = b_0 + b_1 \ln\left(\frac{NFA}{Y}\right) + b_2 \ln\left(\frac{Y_t/Y_t^*}{A_n/A_n^*}\right) + b_3 \ln\left(\frac{P_t^x}{P_t^m}\right) + b_4 \ln\left(\frac{G_n}{G_n^*}\right) \qquad (3)$$

Long-run $(b_1>0)$ $(b_2>0)$ $(b_3>0)$ $(b_4>0)$
Where

q	=	misalignment
NFA	=	Net Foreign Assets
$\ln q$	=	denotes a real appreciation (depreciation) of the local currency.
Y_t/Y_t^*	=	labour productivity of the traded sector in the home country relative to the foreign country.
A_n/A_n^*	=	Labour productivity in the non-traded sector in the home country relative to the foreign country.
G_n/G_n^*	=	Government spending as a percentage of GDP for the home country relative to the foreign country.
P_t^x/P_t^m	=	terms of trade index

The fundamental measure of RER misalignment is obtained by subtracting the equilibrium from the actual RER. The equilibrium RER is derived by the multiplication of the estimated coefficients, the bs, and the long-run values of the RER fundamentals in Equation (3) (Aguirre and Calderon, 2013).

Thus changes in fiscal and monetary policies affect the fundamentals, causing the real exchange rate to attain or deviate from its fundamental equilibrium exchange rate (FEER). In the normal run of governance, especially during exchange rate crisis, government fiscal and monetary policies should be targeted at promoting activities that will move the exchange rate decisively towards its FEER, raising output and employment levels in the economy in recession.

Such activities are in the fiscal and monetary realms, which form the bulk of fundamentals determining exchange rate out-turns. In other words, changes in money supply, net foreign assets, government spending or changes in credit to government are very influential in exchange rate out-turns.

III   Anti-Recession and Exchange Rate Crisis: Demand Management Policies

III.1   The Keynesian model is most applicable to the design of antirecession policy. During a recession, the primary objective is to increase the level of employment, real output and the growth rate. Until the expansion begins, there is little danger of serious pressure on prices from the demand side or balance of payment difficulties.

Policy instruments for antirecession action include increases in public spending, tax cuts, and increases in the money supply. However, it must be noted that spending increases are often irreversible, posing threats to sustainability of public sector over the cycle following secular increase in the size of the sector. Even when the programmes have merit, however, the use of government expenditure as a means of stimulating the economy builds in a bias toward an ever-growing public sector, considering that it is easier to increase spending in a recession than it is to reduce spending in boom periods.

A cut in personal income taxes generally stimulates consumption with a short lag. In fact, the short-run marginal propensity to consume when taxes are reduced is generally greater than the cut back in consumption when taxes are increased. A reduction in corporate income taxes will stimulate investment and consumption, especially if profits are distributed to shareholders. A reduction in corporate taxes can take the form of liberalized depreciation allowances and investment tax credit as well as reduction in tax rates.

Despite its favourable impact on investment, tax policy is not as reliable as expenditure policy for stimulating demand. This is because a given cut in exogenous taxes, while increasing aggregate demand, increases it by less than does an equal increase in government expenditure. This flows from the

expectation that whereas government expenditure is itself, a component of aggregate demand, changes in taxes only affect expenditure as far as the changes in disposable income which they bring about affect aggregate consumption. Thus, tax changes affect aggregate demand through the filter" of the marginal propensity to consume. So long as this is less than unity, the tax multiplier will be less than the government expenditure multiplier. (Blinder, 1973)

Monetary policy: increases in the money supply, by causing interest rates to fall may provide a stimulus to investment and consumption spending during but very rare in a recession. However, monetary policy is most likely to be effective immediately following a boom period in which credit has been very tight and there may be pent up demand. In general, however economists question the efficacy of monetary policy for stimulating the economy in the absence of expansionary fiscal policy. Increases in money supply may be ineffective in reducing interest rates to the level required to induce enough demand to trigger an expansion.

If there are no signs that demand will increase, investment and consumption spending may be quite inelastic to reduction in the interest rate.

However, it is debatable theoretically that where a Central Bank aggressively eases monetary policy in the milieu of inflation targeting and in the face of negative demand shocks to the economy, monetary authorities could stabilize the economy through monetary policy easing that is consistent with the preservation of price stability. Mishkin, 2009.

It should be noted that in a recession, inflation is not caused by excessive aggregate demand. Consequently, Keynesian anti-inflation measures that would reduce demand still further are not the most effective means of stabilizing prices. On the contrary, policies that affect aggregate demand should be mildly expansionary, since the recession will be characterized by a decline in real output and an increase in the unemployment rate, reflecting inadequate aggregate demand.

III.2   On the issue of exchange rate crisis, there is the need to focus government action on controlling excessive import demand and increasing supply of foreign exchange from non-oil sources. It is a truism that the exchange rate mirrors the economy. A weak economy with expanded "wrong"[6] fundamentals produces a weak or depreciated currency, because the exchange rate evolves from the movement of the economic fundamentals. The Central Bank alone cannot cause the exchange rate to appreciate unless its actions are supported by complementary fiscal actions of government. The

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[6] A fundamental is deemed 'wrong' because it causes the exchange rate to depreciate. The "right" fundamentals are those whose expansion leads to real exchange appreciation.

support of the general public is also critical by scaling down demand for imported consumer goods. Indeed, all hands must be on deck to boost economic performance and shore up the exchange rate.

Following from above, there is urgent need for the monetary and fiscal authorities to make constant adjustments to policies, review monetary implications of any tended huge lump sum releases to the economy, in order to avoid unsustainable monetary expansion which further depreciates the exchange rate through higher price inflation. Exchange rate appreciation cannot be done by fiat; appreciation will result from sustained substantial reduction in inflation, increased external reserves, reduced interest rates, reduced government deficit/GDP ratio to not more than 3 percent, greater accountability/transparency in governance, reduced import demand especially of goods/food that can be produced locally etc. In other words, exchange rate movements inexorably respond to movements in economic fundamentals. It is the economy which imparts appreciation or depreciation on the exchange rate. Where the wrong economic fundamentals are allowed to move to "excessive" levels and where the country is unduly import dependent and afflicted by prolonged foreign exchange shortages, the exchange rate will experience worrisome episodes of depreciation such as the Naira has experienced.

Where, however, economic fundamentals are religiously controlled and sources of foreign exchange diversified as in countries with convertible currencies, e.g. UK, USA, Japan, exchange rate stabilizes and even appreciates. The preceding section has highlighted the conventional demand management measures by countries, especially developing and emerging markets targeted at moving their economies out of recession and stabilizing the exchange rate. The following section briefly reviews Nigeria's current recession and its efforts at mitigating it, including the management of the exchange rate crisis.

Figures 1-3 below summarize the outcome of fiscal and monetary policy in the Nigerian economy from 1981-2016. Monetary policy is supposed to lower lending rates and grow the real sector of the economy. Furthermore, its outcome is to ensure price stability. Rather, lending rates are very high averaging about 27 per cent before and during the recession (see data in the appendix). Increasing the MPR in order to fight inflation did not produce the needed results – inflation jumped to double digit from 2012 and has remained so with marginal decline in recent months (food inflation continues to surge). We have argued elsewhere that during the period 1981 to 2015, the economy was characterized by fiscal dominance (Ekpo et al., 2014).

The management of the exchange rate was sub-optimal as the CBN was interested in fighting inflation rather than sacrificing some inflation for growth. There is no question that the negative shock in global oil prices resulted in a sharp decline in reserves thus affected the supply of foreign exchange to end-users. The inconvertibility of the local currency further worsened the situation. However, recent foreign exchange policies seem to have stabilize the foreign exchange market. It is important that the foreign exchange policy of the CBN be complemented by an accommodating fiscal policy as well as sustained structural reforms for the Naira/dollar to move close to the 'equilibirum' exchange rate.

Figure 1: Nigeria: Growth in Money Supply, Growth in Real GDP, Unemployment and Inflation, 1998-2016 (per cent)
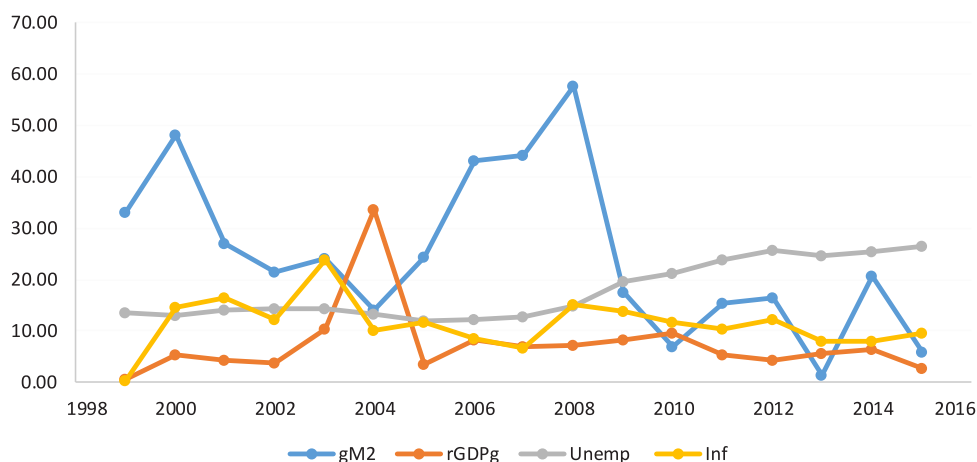
Figure 2: Nigeria: Monetary Policy Rate (MPR), Inflation, Prime and Maximum Lending Rates, 1981-2015 (per cent)
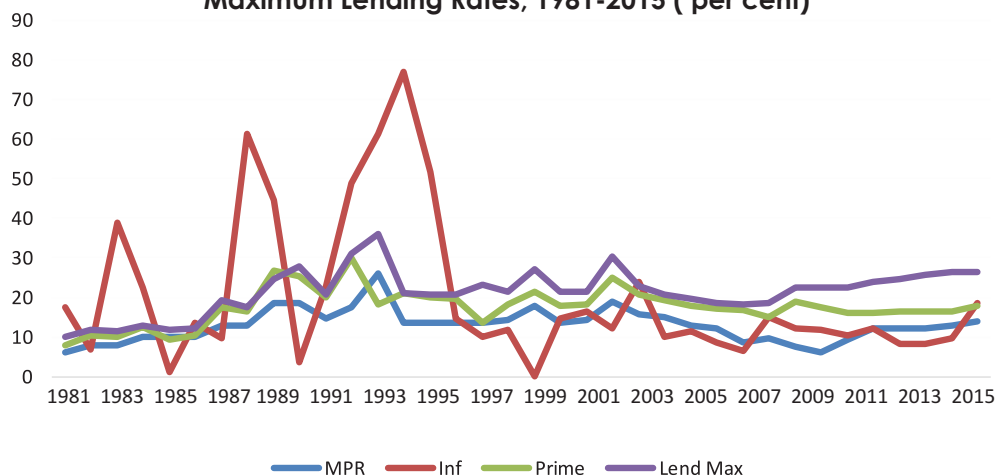
The high rates of unemployment from 2010 to 2016 confirms the man hour loss to the economy as well as the fact that the economy was producing below potential output. In addition, it makes mockery of the growth rate of almost 6 per cent during the period. From 2010 to 2016, unemployment exceeded the growth of GDP (see figure 3 below). It is, therefore, clear that economic policies were not effective during the period 1998 to 2016. That the economy did not enter a depression was due to the robustness of the informal sector. It was not surprising that in the year 2016, the economy was deep in a recession. Several reasons have been articulated for the cause of the recession. We examine a few below.

Figure 3: Nigeria Unemployment and Growth in Real GDP, 2010-2016 (per cent)
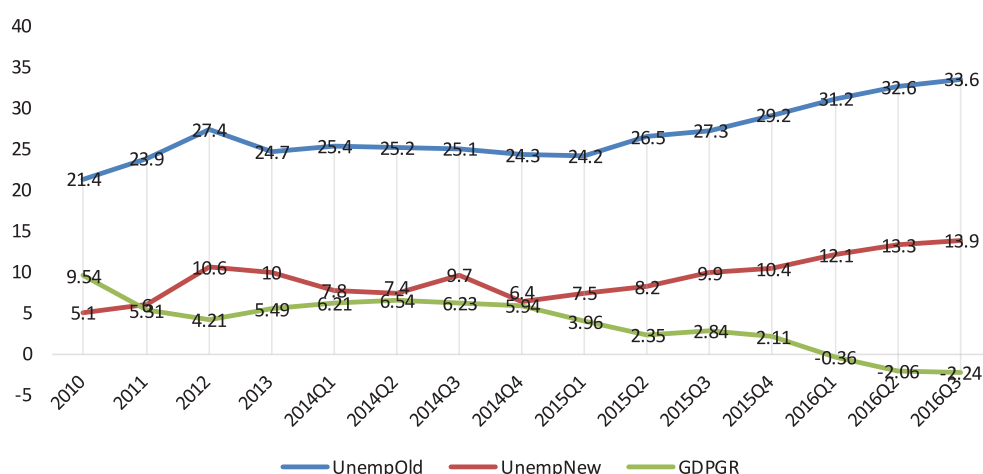
IV.   Nigeria's Current Recession

IV.1   Causative Factors

The causes of economic recession in Nigeria have included:

1. **Poor governance andpoor economic planning** with little concrete implementation of her economic plans.
    - lack of diversification of the economy and the slump in oil prices.
    - weak manufacturing/mining sector, with heavy dependence on imported inputs.
    - low agriculture output
    - weak foreign investment inflow, reflecting, among others, absence of any concrete strategic plan for growth, to attract foreign investment. The elimination of dollar purchase privileges for importers of 41 items such as rice, cement, toothpicks, private

planes, poultry, meals, margarine, wheelbarrows, textiles and soaps, understandably pursued in efforts to stem the rapid depreciation of the naira/dollar exchange rate has unwittingly reduced foreign investment inflow.

2. **High inflation rate**
    Elevation of inflation rate reflected the speculation in stock market due to budget delay and rise in energy prices.

3. **High interest rate**
    The lending rate is between 26.77 and 27.0 percent, extremely discouraging to investors. The consequent poor investment performance leads to a high rate of unemployment in the country.

4. High tax rate and interest rates have inhibitive effects on aggregate demand.

5. Conflicts of policy

6. Delays in implementing economic (especially fiscal policy). This has adverse implications on the economy, known as the lag structure problem.

IV.2   Suggested Measures to exit the Recession

1. Counter-cyclical spending and investment
    *   higher spending on agriculture and manufacturing seeking to boost local production.
    *   facilitate teaching in skills acquisition for enhanced entrepreneurship
    *   Promote diversification of the economy
    *   Invest in the energy sector; implement short-run, medium term and long-run reforms.

2. Engage the Niger-Delta militants in a dialogue to remove constraint to oil production.

3. Provide more incentives to small and medium enterprises (SMEs) such as cut in their tax rates and provision of enhanced access to credit and foreign exchange for essential imports.

4. Sustain the independence of Central Bank in its management of exchange rate and domestic credit.

5. Flexible exchange rate regime should continue to be pursued because an economy cannot maintain a fixed exchange rate at the same time when it runs an independent monetary policy and capital account liberalization (recall the impossible trilogy) policy.

6. Actions already put in place such as maintaining a flexible exchange rate system, delisting of 41 importable items from access to foreign exchange for their importation, liberalising the supply of foreign exchange to bureau-de-change and regular intervention in the foreign exchange market to shore up the naira from steep depreciation among all, have proven effective. They have contributed in no small measure to stabilizing the exchange rate at about N360.00 to the dollar.

7. Other measures including the introduction of investor's and exporter's foreign exchange window, and the foreign exchange window for SMEs are welcome developments.In particular, the creation of The Nigerian Autonomous Foreign Exchange Rate Fixing (NAFEX) rate in April 2017 to allow investors trade the naira at rates determined by the market has also been helpful. The NAFEX market or the investors' and exporters' window was intended to improve dollar supply. The market has reportedly handled about US$4 billion since its introduction. Again, to enhance availability of foreign exchange to all endusers, the CBN has reduced the tenor of its forward sales from the hitherto maximum cycle of 180 days to not more than 60 days from the date of transaction. At N360/US$, the naira is reasonably undervalued, and is gyrating towards its FEER. There is need to delist more importable items from access to foreign exchange than the 41 items already barred. Government-induced financing of interventions in the private sector by the CBN needs to be discouraged. Also, the payment of lump sum excess crude account to the states should be made on piecemeal basis as CBN has no power to sterilize such funds from increasing money supply and elevating inflation.

V.   Issues on the Front Burner

The preceding sections have analysed the available theoretical models that policymakers especially in developing and emerging markets often use in efforts to address recession and exchange rate crises with demand management policies – fiscal and monetary policies. Discussions have also featured issues of relative effectiveness of policies in handling of those episodes.

This section seeks to highlight some two leading issues or consensus emanating from the analysis in the paper that need to be deeply addressed if greater

successes are to be achieved in enhancing output and employment during recession and stabilizing exchanging rates along its FEER for optimal rebound to growth.

The issues relate to appropriate economic diversification and central bank independence.

(i)   Economic Diversification

For the avoidance of doubt, economic diversification may be defined as a situation in which an economy has diverse sources of earning revenue and not heavily dependent on one source (Ekpo, 2016). The key drivers of diversification have included quality of leadership, peace and stability, macroeconomic stability, human and natural resources, capacity building and training, competitive federalism and building infrastructure (ibid, pp 11-12).

At some point in the analysis, this paper notes that during recession or economic downturn, uncertainty often erodes consumer confidence, causing a reduction in their spending which results in less investment spending by businesses as firms respond to weakened demand for their products. This thrusts the task of increasing output on the shoulders of the government. The question arises, suppose there are inadequate funds at the disposal of government if the oil resource is no longer in demand following sweeping technological advancement that creates oil substitutes, can the government sustainably rely on external borrowing to address a downturn? This is where the need for economic diversification away from oil has become urgent.

Besides, addressing recession calls for an aggressive countercyclical fiscal policy, involving large fiscal stimulus that is significantly long-lasting, diversified, collective and sustainable (Spilim bergo et al, 2008). The urgency of diversification of the economy is given bold relief by the problematic of financing fiscal expansions through external borrowing in a more risk-averse global environment. It is indeed, a truism that insufficient fiscal space, that is, the capacity to spend more without jeopardising fiscal solvency and concerns about the sustainability of domestic debt and eventually, public debt can limit the effectiveness of fiscal expansions during crises. Indeed, theoretically, high levels of debt make it more difficult to exit a crisis and limit the ability of expansionary fiscal policy to support output growth (Emmanuelle Baldacci and Sanjie Gupta, 2008).

(ii)   Central Bank Independence

The Central Bank of Nigeria enjoys some instrument independence under the Presidency. However, its operational independence is being seriously eroded by

its penchant for funding activities in the private sector at the promptings of government under the umbrella of developmental functions. The resultant increase in credit to the private sector has had the effect of boosting the balance sheets of central bank while making control of money supply by the Bank increasingly problematic.

Money supply gets increasingly exogenous and the ability of the CBN to achieve price stability, its traditional primary mandate, is increasingly compromised. This has also meant that the CBN will find it problematic exiting the current monetary policy framework anchored on monetary targeting for the much touted inflation targeting that is gaining traction in many countries of comparable level of development to Nigeria.

Of importance too, is the reality that increases in money supply are inflationary; government spending is also inflationary at least in the short-run. Thus, both monetary and fiscal policies operate to elevate inflation which in relation to trading partner's inflation is a major fundamental that depreciates the exchange rate. Inflation may inhibit consumer demand, stagnate growth and prolong the recession.

VI.   Concluding Remarks

During currency crisis and even in its aftermath, many economies have seen their exchange rates depreciate beyond what could be justified by fundamentals. Policymakers, too often have to decide whether to tighten monetary policies to stabilize the exchange rate and in particular, whether higher interest rates are the appropriate policy response. While there seems to be no consensus on the effectiveness of monetary policy in reversing exchange rate crisis, some studies in literature aver that tight monetary policy substantially increase the probability of reversing undervaluation through nominal appreciation rather than through higher inflation.

Some pundits are, however, dismissive of any claim that monetary policy is effective in reviving the economy during recession. They maintain that the recent attempts of the US and European Central banks to revive, then stabilise economies following recession have not been effective. Indeed, there seems to be no magisterial view of the dispute that provides a certain conclusion that monetary policy is effective or ineffective, considering that any failure can be interpreted as the consequence of an insufficiently robust monetary policy on the one hand, or as the result of the very implementation of that policy on the other. Even so, existing literature provides mixed findings about the effect of monetary policy on exchange rate movements.

But findings in developing and emerging economies reveal that fiscal policy is a more effective tool for handling financial crisis, including exchange rate crises, than monetary policy. Results of empirical literature indicate that monetary and fiscal contractions during financial crises are associated with larger output loss, whereas fiscal expansion is associated with smaller output loss, while monetary expansion has no clear effect as its coefficients are not statistically significant.

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APPENDIX

Table A1: Nigeria: Monetary Policy Rate, Inflation and Commercial Banks Lending Rates, 1981-2016 (percent)

	MPR	Annual Inflation	Prime lending rates	(Maximum) Lending Rates
1981	6.00	17.4	7.75	10.00
1982	8.00	6.9	10.25	11.75
1983	8.00	38.8	10.00	11.50
1984	10.00	22.6	12.50	13.00
1985	10.00	1.0	9.25	11.75
1986	10.00	13.7	10.50	12.00
1987	12.75	9.7	17.50	19.20
1988	12.75	61.2	16.50	17.60
1989	18.50	44.7	26.80	24.60
1990	18.50	3.6	25.50	27.70
1991	14.50	23.0	20.01	20.80
1992	17.50	48.8	29.80	31.20
1993	26.00	61.3	18.32	36.09
1994	13.50	76.8	21.00	21.00
1995	13.50	51.6	20.18	20.79
1996	13.50	14.6	19.74	20.86
1997	13.50	10.2	13.54	23.32
1998	14.31	11.9	18.29	21.34
1999	18.00	0.2	21.32	27.19
2000	13.50	14.5	17.98	21.55
2001	14.31	16.5	18.29	21.34
2002	19.00	12.1	24.85	30.19
2003	15.75	23.8	20.71	22.88
2004	15.00	10.0	19.18	20.82
2005	13.00	11.6	17.95	19.49
2006	12.25	8.6	17.26	18.70
2007	8.75	6.6	16.94	18.36
2008	9.81	15.1	15.14	18.70
2009	7.44	12.1	18.99	22.62
2010	6.13	11.8	17.59	22.51
2011	9.19	10.3	16.02	22.51
2012	12.00	12.0	16.02	23.79
2013	12.00	8.4	16.59	24.69
2014	12.25	8.1	16.55	25.80
2015	13.00	9.6	16.28	26.40
2016	14.00	18.5	18.00	26.5

Source: Statistical Bulletins, CBN, Abuja

Table A2: Nigeria: Fiscal Balance (N' billion) and Deficit/GDP (percent), 1981 – 2016

Year	Surplus /Deficit (N'billion)	Def/GDP percent
1981	-3.90	-4.14
1982	-6.10	-6.04
1983	-3.36	-3.06
1984	-2.66	-2.29
1985	-3.04	-2.26
1986	-8.25	-6.13
1987	-5.89	-3.05
1988	-12.16	-4.62
1989	15.13	-3.96
1990	-22.12	-6.73
1991	-35.76	-6.55
1992	-39.53	-4.52
1993	-65.16	-5.98
1994	-70.27	-5.02
1995	1.00	0.03
1996	32.05	0.79
1997	-5.00	-0.12
1998	-133.39	-3.34
1999	-285.10	-6.09
2000	-103.78	-1.55
2001	-221.05	-3.21
2002	-301.40	-3.87
2003	-202.72	-2.04
2004	-172.60	-1.51
2005	-161.41	-1.10
2006	-101.40	-0.55
2007	-117.24	-0.57
2008	-47.38	-0.20
2009	-810.01	-3.27
2010	-1,105.40	-2.04
2011	-1158.52	-1.83
2012	-975.68	-1.37
2013	-1153.49	0.00
2014	-978.43	-1.10
2015	-1.65	-0.84
2016	-2.78	-2.80

Source: CBN, Statistical Bulletin, Vol. 25, 2014

Creating Fiscal Space from Public Debt to address Recession and Exchange Rate Crisis

*Abraham Nwankwo**

I.   Introduction

Following the shock caused by the collapse of the international price of crude oil in July 2014, the Nigerian economy slid into recession from the second quarter of 2016 along with exchange rate crisis due to low government and foreign exchange revenue, depleting external reserves and acute foreign exchange demand-supply imbalance.   This paper highlights the opportunities in the fiscal space to address the challenges of the twin problem of exogenously induced recession and exchange rate crisis. Following this introduction, the next section reviews the effect of the twin crises on the state of the fiscal space and debt sustainability. Section 3 discusses the various options for regaining and strengthening the fiscal space. The last section examines how external borrowing could be used to enhance the fiscal space and restore economic growth and exchange rate stability.

II.   The State of Fiscal Space and Debt Sustainability

Fiscal space refers to the opportunities for a government to redeem its obligations as well as finance its projects and programmes, while maintaining its current taxation and expenditure policies. In other words, it denotes the ability of the government to carry out its responsibilities within the defined policy framework without jeopardizing fiscal sustainability. The established sources of changes in fiscal space of a government include grants, taxation, government expenditure, borrowing from the domestic banking system and non-banks as well as external sources.

To understand the current state of Nigeria's fiscal space, it would be useful to examine the nature of the economic downturn and exchange rate crisis, which prevailed since mid-2014. Before the drastic fall in the price of crude oil exports in mid-2014, Nigeria had experienced intermittent economic downturns as a result of over-dependence on the export of crude oil. The country depended on crude oil exports for over 90.0 per cent of total foreign exchange earnings and over 70.0 per cent of government revenue. This, according to Nwankwo (2011) precipitated ''irrational expenditure behaviour'' syndrome, that is, expenditure behaviour which fails to moderate the pace, quantum and mix of the

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expenditure to reflect the volatility of revenue, whereas "optimal expenditure behaviour would be one that follows a pattern such that the negative effects of any eventual crisis will be minimal" (p.29).

The price of oil, which averaged US$110 per barrel between 2010 and mid-2014, fell from US$114 per barrel in June, 2014 to US$38 per barrel in December, 2014. By February 2016, the price hovered around US$30 per barrel. Despite the gradual recovery from the second half of 2017, crude oil price remained below US$60 per barrel as at the end of July 2017. In essence, public revenue per annum since 2014 averaged below 50.0 per cent of its pre-crisis level. It is, therefore, obvious that the fiscal space has greatly shrank as a result of the negative impact on government revenue due to oil price shock. Government has been unable to adequately fund existing projects and services, leading to a general contraction of aggregate expenditure. The consequence has been economic downturn, with recession setting in by the first quarter of 2016 with a negative growth rate of 0.36 per cent and continuing up to the first quarter of 2017 with a negative growth rate of 0.5 per cent.

Exchange rate crisis was an inevitable consequence of the shock since oil exports accounted for about 90.0 per cent of the country's foreign exchange earnings. Moreover, following strong indications in the global oil market that this particular collapse marked a permanent wither in the importance of the commodity in the global economy concerns about the potential for quick recovery of the Nigeria economy became prevalent, culminating in capital flight and speculative attack on the local currency. Consequently, there was the devaluation and depreciation of the naira from N155.25/US$ in December, 2016 to N305.56/US$ in July 2017 at the official window and from N162.45 to N365.38/US$ at the bureau-de-change over the same period. It is, however, important to note that the contraction of the fiscal space due to lower inflow of foreign exchange was slightly offset by the impact of the higher naira to dollar exchange rate.

Recession and exchange rate crisis also made public debt management more challenging. After the pay-off and exit from the external debt burdens of the Paris Club and London Club between 2005 and 2006, the country's debt profile remained sustainable in terms of both solvency and liquidity. This has been breached during the subject recession. The solvency ratio remained robust; for example, the total-debt-to-GDP (solvency) ratio remained robust at 17.9 per cent at end-March 2017, compared with the peer group threshold of 56.0 per cent. The liquidity ratio deteriorated significantly especially with respect to both domestic and external debt service. For the first time after the debt relief, the Total-Debt-Service-to-Revenue ratio reached 30.0 per cent in 2016, a clear breach of the country specific threshold of 28.0 per cent. The situation was

succinctly captured by the Debt Management Office (2016) that "Nigeria's debt position experienced some deterioration and slipped from a low-risk of debt distress to a medium-risk of debt distress. Although the level of debt stock is still appreciably low relative to the country's aggregate output (GDP), the debt portfolio remains mostly vulnerable to the various shocks associated with revenue, exports and currency devaluation"(p.41).

A different approach to the assessment of the issues of fiscal space and debt sustainability is the perspective of the International Monetary Fund (IMF) technical definition. According to the IMF (2016), "Fiscal space exists if a government can increase spending or lower taxes without endangering market access or putting debt sustainability at risk"(p.6). As earlier noted, it is evident that if the government either reduces taxes or raises spending without an additional inflow from whatever source, its credit worthiness would deteriorate as it would make its ability to service its debt even more difficult than already exists. In addition, capital market financiers may also be discouraged from lending to such government. Moreover, it would also put its debt sustainability at greater risk. Following the above, the fiscal space in Nigeria under recession and exchange rate crisis was greatly challenged.

But there is a snag in the asymmetry between the domestic and external components of the debt portfolio. Based on the debt profile at end-March 2017, domestic debt accounted for about 85.0 per cent of the portfolio and attracts average interest rate which is about 8.0 per cent higher than the average cost of external debt. On the other hand, the external component constituted about 15.0 per cent. Though the Total-Debt-Service-to-Revenue ratio shows unsustainability, the External Debt Service-to-Revenue ratio ans the External-Debt-Service-to-Export ratio, remain very healthy at less than 3.0 and 1.0 per cent, respectively, compared to the threshold of 20.0 per cent for each. In other words, a desegregated approach indicated that there is significant fiscal space for external debt.

III.   Options for Regaining Fiscal Space

Prior to the 2016 economic recession, investment requirement by Nigeria to address the shortfall in the stock and quality of infrastructure was estimated at US$25 billion per annum over the next five to seven years. Of this, 52.0 per cent was to be contributed by the public sector and 48.0 per cent by the private sector. With the crash of oil revenue and loss of public revenue estimated at US$20 billion per annum, however, the required investment per annum rose to about US$45 billion. Though appropriate policy measures and incentives could motivate the private sector to make its expected contribution, success of the process depends, largely, on the ability of the public sector fulfill its part of the bargain.

Accordingly, appropriate economy management requires focus on what could be done to regain or enhance fiscal space and facilitate economy growth. This aligns with the observation of Heller (2005) that some governments are of the view that fiscal constraints ought to be relaxed for additional borrowing to finance infrastructure projects. The logic is that such expenditure would create productive assets, which will pay for themselves over the long-term. It is, however, imperative that the underlying logic (enhancement of the fiscal space) should be applied, not only to borrowing but to other options. In this regard, each source of change to fiscal space(that is, increase in grants, increase tax revenue, reduction in expenditure, borrowing from the domestic banking system, and, non-bank domestic borrowing and external borrowing) must be assessed in a similar way. `

III.1   Grants

Nigeria has not been a grant dependent economy as indicated by its aid-GDP ratio stood at only 0.4 per cent, compared with Ghana's 10.0 per cent. Moreover, Leo (2014) noted that owing to its low government revenue-to-GDP ratio and inability to provide matching contributions to global commitments, Nigeria losses additional external aid of about US$11 billion per annum. Overall, grants are not a viable source for enhancing Nigeria's fiscal apace.

III.2   Taxes

Where feasible, raising tax revenue would enhance the fiscal space. However, with the country's non-oil tax GDP ratio at less than 6.0 per cent implying that the non-oil sector does not, for now, provide a viable second line of defence for public revenue. Moreover, oil- tax revenue included in the government revenue, the tax-GDP ratio increases to only 10.0 per cent. This indicated 15.0 - 19.0 per cent gap, compared to the median African ratio of about 25.0 per cent, based on IMF's estimate for 2013. This probably informed Leo (2014)'sconclusion that Nigeria loses about US$67 billion per annum in collectable revenue.

Notably, much of the formal, adequately monetised segment of the economy, including manufacturing, construction and real estate, banking and finance, among others, are powered by spending of oil revenue by the public sector. The public sector which consists of the Federal Government, the 36 State Governments and 774 Local Governments, among who oil revenue is appropriated. The implication is that with drastic shrinking of oil revenue, non-oil tax and other revenue sources for the government also dropped.

The fiscal authorities appreciate the need to deal with this challenge through various administrative capacity building, technological innovations and compliance initiatives introduced especially to bring in the non-formal sector, which contributes significantly to economic activity into the taxable system. There are plans to introduce special taxes on luxury consumption items and the Voluntary Assets and Income Declaration Scheme (VAIDS) scheme which requires the rich class with property and other taxable assets at home and abroad, (on which zero tax or inadequate tax is paid) to voluntarily declare and begin to settle their liabilities or face conviction for tax evasion. Yet, given the structure of the Nigerian economy, as well as the debilitating impact of the oil-revenue shock, significant enlargement of the fiscal space through the taxation route could be considered a headwind challenge, at least in the short-to-medium term.

III.3   Expenditure

Prioritisation and weeding out of some items of expenditure could be an options for increasing the fiscal space. The problem is that in an economy such as Nigeria, characaterised by highly polarised political, cultural and ethnic issues and group, and which thrives on the principle of balance of insincerity and impropriety, little progress can be made on this front because vested interests would not allow a rational set of policies and actions to be designed and implemented.

III.4   Borrowing From the Domestic Banking System

Given the degree of macroeconomic instability in the economy (including high inflation, interest rate and exchange rate), attempt to expand the fiscal space by borrowing from the domestic banking system would be highly dangerous. This would lead to undesirable expansion of money supply, and crowding out the private sector .In this regard, the CBN must continually conduct comprehensive and credible input-ouput as well as impact analysis of its quasi-fiscal operations (development finance interventions), to ensure optimal operations.

III.5   Non-Bank Domestic Borrowing and External Borrowing

The only options left for consideration for enhancing fiscal space is debt financing from the domestic non-bank and external sources. In contrast to external borrowing, domestic borrowing from non-banks in Nigeria, may not efficiently address the constraints in the fiscal space due to a number of reasons. First, the average cost of domestic debt is significantly higher than the average cost of external debt. Secondly, in the existing public debt portfolio, the domestic debt

to external debt ratio is about 85:15 and needed to be changed to a more sustainable distribution of 60:40 mix recommended as appropriate in Nigeria's Debt Management Strategy, 2016-2019 (2016). Domestic borrowing therefore need to be minimised. Moreover, significant additional to the stock domestic borrowing would exacerbate the domestic debt service revenue ratio, which has already become unacceptably high. The fourth is that to avoid crowding out the private sector, government domestic borrowing should be minimised. Specifically, as government provides the policy and infrastructure environment for rising economic activity, the private sector is expected to respond by playing the lead role in direct production in the real sector. It stands to reason that government should also leave ample borrowing space for the private sector to enable it adequately and affordably fund its production activities. Accordingly, the preferred sources for additional borrowing are external.

We will discuss this option more elaborately in the next section.

IV.   Using External Debt to Address Recession and Exchange Rate Crisis

Government could adopt two strategies towards enhancement of the fiscal space through external borrowing. One is external borrowing for refinancing a portion of the existing domestic debt and the other is new external borrowing for new spending.

IV.1   External Borrowing for Refinancing

There is potential for expansion of the fiscal space in Nigeria within the current structure of public debt. The existing public debt stock is dominated by domestic debt, which account for about 80.0 per cent of the total at an average cost that is 8.0 per cent higher than the average cost of external debt based on funds from the commercial capital market. The cost is much higher if concessional and bilateral loans are considered. It, therefore, makes sense that as domestic debt matures, it should be refinanced with external debt rather than with domestic debt as has been the practice. This would lead to savings in debt service and create fiscal space for additional spending on priority projects.

The increase in fiscal space could be significant, given that Nigeria's Debt Management Strategy for 2016 – 2019 recommends that the existing composition of the public debt stock should be remixed o achieve a debt mix of ratio of 40.0 per cent external debt contributing and60.0 per cent domestic debt. Apart from creating fiscal space, this strategy would bring down domestic interest rates and ensure cheaper cost of capital to stimulate economic activity. Moreover,

substituting maturing domestic debt with external debt would lead to increased inflow of foreign exchange, increase reserves and facilitate resolution of the exchange rate crisis.

IV.2   New External Borrowing for New Spending

A direct strategy for expanding the fiscal space is to borrow externally for new spending. This strategy would not only preserve debt sustainability but also provide appropriate funding to address Nigeria's huge infrastructure deficit and facilitate productive use of the abundant real sector opportunities in agriculture, manufacturing, solid minerals. The resulting boost in economic growth will include production for diversified export earnings and boost to foreign exchange reserves. Accordingly, expanding the fiscal space through external borrowing will go a long way in resolving Nigeria's twin problem of recession and exchange rate crisis.

The natural reservation about external borrowing is the exposure to foreign exchange risk. There is usually concern about the future foreign exchange earning capabilities of the economy to generate enough foreign exchange to service and repay the foreign loans, especially with the significant depreciation of the naira. Important as these concerns may be, they do not negate the the fact that creating additional fiscal space through external borrowing could be portent in helping Nigeria exit from recession to robust growth and resolving the exchange rate crisis.

Overall, the consensus is that creation and enhancement of the fiscal space must be designed and implemented in the context of a well-articulated economic plan. Such plan must contain not just credible projections of how various sectors will be transformed over time but also how relevant macroeconomic variables will become more favourable to support sustainable economic growth. As posited by Nwankwo (2016), the plan would "show how the balance of payments and the reserve position will trend towards healthy conditions" (p.21). It would ensure that the fiscal space provided by the possibility of more external borrowing is not waster. Indeed, to design and implement such a plan would be he basis for evaluating the appropriateness of the management of Nigeria's economy, in the years immediately after 2014.

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Rethinking Monetary Policy in Times of Recession and Exchange Rate Crisis

Mike Obadan[*]

I.   Introduction

Rethinking monetary policy in Nigeria has become pertinent, perhaps, because of concerns of stakeholders relating to the contractionary stance of the policy in an environment of recession and its seeming limited effectiveness in the past two years. However, what Nigeria has witnessed is not the normal recession characterised by decline in economic activities and low prices which could be tackled with expansionary monetary and fiscal policies. Rather, the country has been challenged by a recession characterised by stagflation.

Normally, during economic slowdowns, monetary policy is expansionary. This was why in the US, during the 2007/2009 global financial crisis, the Federal Reserve Bank (Fed) incrementally lowered its target federal funds rate, from 3.5 percent to near 0 below 0.25 percent for quite some time. The Fed also adopted non-conventional measures aimed at increasing money supply and spending. Besides, during the economic slowdown, the US government adopted a fiscal stimulus package of US$787 billion, aimed at economic recovery. Both the monetary and fiscal policy stance aided the recovery of the economy and promoted growth and development.

In the light of Nigeria's stagflation experience, the question may be asked: to what extent does monetary policy need a re-thinking in terms of its objectives, stance, strategies, among others? In reflecting on this, the paper covers the following:
- Nigeria's stagflation, the validity of the Phillip's Curve, and the dilemma of economic policy;
- Goals and objectives of monetary policy and independence of the CBN;
- Monetary policy frameworks and strategies – strengths and weaknesses;
- Nigeria's monetary policy strategies; and
- Issues in re-thinking monetary policy.

II.   Nigeria's Stagflation, the Phillip's Curve and the Dilemma of Economic Policy

Nigeria's current economic situation is different from the experience of the 2007/2009 global financial crisis. Since the first quarter of 2016, the country has

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experienced serious economic difficulties, reflected in a debilitating stagflation whose features include negative economic growth, high unemployment and high inflation. Cost-push factors complemented monetary factors, resulting in supply shocks. Among the factors are:

- High domestic energy prices (petroleum products and electricity), high foreign exchange rates and high interest rates.
  - Fall in oil prices in the world market and reduced production of oil have resulted in low foreign exchange availability and low domestic revenue.
  - The various factors have resulted in devastating supply shocks, reduced output and increased prices of goods and services and cost of production.
- Monetisation of crude oil foreign exchange earnings and monetary financing of fiscal deficits. These suggest a monetary dimension to the inflation in line with the arguments of monetarists.

However, considering the behaviour of monetary aggregates in Nigeria over the period, 2012 - 2016, the available data suggest very moderate growth in M1, M2 and reserve money (Table 1). The behaviour of money supply growth has not been consistent with that of the inflation rate, suggesting the important role of cost-push factors in the stagflation.

Table 1: Inflation and Growth of Monetary Aggregates, 2012 – 2016(Percent)

Year	Narrow Money (M1)	Broad Money (M2)	Reserve Money	Inflation Rate+
2012	9.6	16.4	33.1	12.2
2013	-5.2	1.3	37.4	8.5
2014	-11.1	7.2	16.5	8.0
2015	24.1	5.9	-2.0	9.0
2016	-3.4	6.5	4.8	12.6

Note: + Moving average

Source: Central Bank Annual Report, 2015; Economic Report, 1st Quarter, 2017

Generally, stagflation generally poses a dilemma for economic policy. Governments and central banks respond to recessions through expansionary monetary and fiscal policy, yet inflation is normally fought through contractionary monetary and fiscal policy. Actions designed to lower inflation may exacerbate unemployment, and vice versa. And, actions to raise economic growth may worsen inflation. This is the current challenge in Nigeria.

Thus, the standard macroeconomic remedies for inflation or unemployment tend to be ineffective against stagflation. This ineffectiveness underscores the invalidity of the assumption of the Phillips curve that concurrent rising inflation and

unemployment was impossible. Currently, the economy is faced with both inflation and unemployment co-existing against the trade-off suggested by the Phillips curve.

Based on the principles of supply and demand, inflation ought to be low when unemployment is high, and vice versa. An increase in the demand for goods and services would drive up prices, which in turn would encourage firms to expand and hire more workers .But the presence of stagflation has tended to prove the invalidity of the Phillips curve.

In view of the nature and magnitude of the current recession in Nigeria, should monetary policy have been less contractionary?

Monetary policy in Nigeria has been quite restrictive, before recession set in from Q1:2016. Table 2shows monetary policy instruments over the period, 2007 – 2017. MPR and CRR are highest during the current recession.

Table 2: Key Monetary Policy Instruments, 2007 – 2017

Year	Monetary Policy Rate (percent)	Cash Reserve Requirement (3 percent)	Liquidity Ratio (percent)
2007	9.0	3.0	40.0
2008	9.9	3.0	30.0
2009	8.0	1.0	25.0
2010	6.13	-	-
2011	9.5	4.7	30.0
2012	12.0	10.0	30.0
2013	12.0	12; 50	30.0
2014	12.2	15.3; 75	30.0
2015	12.7	2.8	30.0
2016	12.6	22.0	30.0
2017	14.0	22.5	30.0

Note: The indicators are the yearly averages of the Monetary Policy Committee decisions.

One thing to note though is that the rapid reduction in inflation has cost in terms of unemployment. Therefore, inflation needs to be reduced slowly in order to avoid a depression or aggravate a recession, especially when expansionary monetary policy is not the primary source of the inflation. An expanding economy requires an expanding supply of money; any protracted shrinkage of the money supply may well lead to the shrinkage of economic activity.

How then can the stagflation be addressed?

The answer requires addressing the inflation and unemployment aspects of the recession simultaneously with a combination of fiscal and monetary policies. Monetary restraint is suggestive to achieve gradual reduction in inflation, while the recession (low growth and unemployment) can be addressed with fiscal ease (corporate tax cuts and increased public expenditure aimed at enhancing productivity).Thus, while monetary policy is aimed at controlling inflation, fiscal ease will target increased production, growth and employment to lift the economy out of recession.

III.   Goals of Monetary Policy and Central Bank Independence

The monetary policy experiences of industrialised and developing countries indicate that the primary mandate of the central banks is price stability, while not losing sight of the objectives of sustained economic growth and higher employment. The empirical evidence is that sustainable growth cannot be achieved in the midst of price volatility. Domestic price volatility undermines the value of money as a store of value, and frustrates investments and growth.

The growth objective may be better achieved by maintaining low rate of inflation and ensuring the health of the financial system. In Nigeria, the objectives of monetary policy have historically been multiple, including monetary and price stability, sustainable economic growth, exchange rate stability, a healthy balance of payments position and development of a sound financial system.

The extant Central Bank of Nigeria (CBN) Act, 2007 specifies the mandates of the CBN from which emanates monetary and price stability, as the overriding objective of monetary policy. Also, flowing from the mandates are the objectives of promoting a sound financial system in the country and maintenance of adequate level of external reserves. The focus of monetary policy on promoting a sound financial system as an objective is in order considering that the financial system has often been highly vulnerable to internal and external shocks – often destabilising.

But the current stagflation in the country points to the apparent narrowness of the inflation control objective. The pursuit of the goal of lower inflation seems to be at the detriment of other objectives, especially output stability. There is thus, need for monetary policy to be directly supportive of the growth and development objective, perhaps through the implementation of non-conventional monetary policy measures.

For monetary policy to be effective in achieving its goals, a central bank needs to be independent of undue political interference. This is vital and, as research has shown, central bank independence, at least along some dimensions, is important to maintaining low inflation. As at today, the CBN has instrument autonomy (but not goal independence) which is in line with international best practice. However, the Bank would strive to ensure that this independence is not undermined by political interferences through its direct development interventions.

IV. Monetary Policy Strategies: Strengths and Weaknesses

A review of these is important to properly situate Nigeria's current strategies. The literature identifies three major monetary policy strategies in relation to choosing a nominal anchor: exchange rate targeting, monetary targeting, and inflation targeting. A credible commitment to a nominal anchor is crucial to successful monetary policy outcomes. Also, commitment to a nominal anchor can encourage the government to be more fiscally responsible.

IV.1 Monetary Targeting

Under the monetary targeting framework, the central bank sets money supply growth target as a nominal anchor in order to achieve long-term price stability or inflation control. The strategy is predicated on the following (Mishkin, 2002):
- reliance on information conveyed by a monetary aggregate to conduct monetary policy;
- announcement of targets on a monetary aggregate to guide the public's inflation expectations;
- some accountability mechanism that precludes large and systematic deviations from the monetary targets; and
- a stable and predictable relationship between monetary aggregates and monetary policy goal (inflation).

Also, the strategy presupposes a lack of fiscal dominance, and that the exchange rate is "flexible". Importantly, monetary targeting is predicated on the quantity theory of money, which suggests that inflation is a monetary phenomenon. Hence, the need for the monetary authorities to restrain excessive growth in money supply.

Experience has shown that macroeconomic stability is achievable if excessive growth of money supply can be contained (Nnanna, 2002). However, one major weakness of the strategy is the instability of money–inflation relationship and this creates difficulties for monetary policy. It has been found that the relationship between monetary aggregates and other macroeconomic variables is highly

unstable, and could lead the monetary authority to miss the monetary targets. The lesson is that, where monetary aggregates become less reliable indicators of future inflation, a central bank will be well advised to downplay the importance of monetary aggregates, and search for alternative nominal anchors.

IV.2   Exchange Rate Targeting

Exchange rate targeting consists of maintaining a fixed exchange rate with a foreign currency. Of particular significance is exchange rate targeting through a hard peg. A hard peg may be achieved through a currency board or dollarisation. It is desirable in a country whose political and monetary institutions are so weak that it canachieve macroeconomic stability by giving its monetary authorities little or no policy discretion. Full dollarization involves eliminating altogether the domestic currency and replacing it with a foreign currency. It has the advantage of being able to deliver low inflation. However, exiting from a fully dollarized economy is even more troublesome than exiting from a hard peg.

Under a currency board, the domestic currency is backed 100 percent by a foreign reference currency and foreign exchange reserves. For the success of a hard peg, there are two necessary conditions: a solid banking and financial system, and sound and sustainable fiscal policies. The major advantage of a hard peg is that it may control inflation and provide price stability. The problem of pursuing currency stability is limited.

However, the currency board is characterized by many problems:
- it undermines policy flexibility, which can have serious implications for internal and external balance;
- loss of capacity by the central bank to pursue independent monetary policy; rather, monetary policy is abdicated to the foreign monetary authority; and
- the foreign currency dependent economy cannot act as a lender of last resort to deposit money banks and cannot operate a fractional reserve system; it can also not lend to the government.

Their shortcomings, notwithstanding, hard pegs may be a second best monetary policy strategy for those emerging market countries whose political and economic institutions cannot support an independent central bank focused on preserving price stability.

IV.3   Inflation Targeting

Inflation targeting (IT) is a strategy in which a central bank commits to achieving an announced numerical target of inflation rate as a primary goal of monetary

policy. Associated with inflation targeting are the following features (Mikshin, 2002):

i.   an institutional commitment to price stability as the primary goal of monetary policy, to which other goals are subordinated;
ii. the public announcement of medium-term numerical targets for inflation;
iii. an information-inclusive strategy in which many variables, and not just monetary aggregates or the exchange rate, are used for deciding the setting of policy instruments;
iv. a transparent monetary policy strategy that ascribes a central role to communicating to the public and markets, the plans, objectives, and rationale for the decisions of the central bank; and
v.   mechanisms that make the central bank accountable for attaining its inflation objectives.

All the five elements must be present for the strategy to be described as inflation targeting. In IT, a monetary authority uses periodic adjustments of interest rate to keep inflation aligned with or close to the target. If inflation rate is above the target, the central bank is likely to raise the policy rate. A simple but popular method of inflation targeting is the Taylor Rule, which specifies that for each one percent increase in inflation, the central bank should raise the nominal interest rate by more than one percent.

As in the case of hard pegs, there are two vital conditions for the success and viability of IT: fiscal discipline and a sound and well-regulated banking system. Fiscal dominance is the single greatest threat to the smooth functioning of monetary policy frameworks. Therefore, setting up institutions that help keep fiscal policy in check and others that promote and enforce sound banking practices, appear to be the only solutions that may prove lasting and workable for emerging market countries like Nigeria.

A number of lessons learnt from the IT experiences of a number of countries have been documented, for example, Mishkin (2000, 2002). Four of them are as follows:

• IT can become a viable medium-term strategy for monetary policy for many emerging market economies.
• Support for an independent central bank, which is pursuing price stability can erode if the central bank is perceived as focusing too narrowly on lowering inflation to the detriment of other objectives, particularly output stability.
• IT has helped the countries applying it to significantly reduce the rate of inflation from what might have been expected given their past experiences.

- It is not appropriate to introduce IT when inflation is initially high. During such a period, it is difficult for the monetary authorities to control inflation; they can lose credibility when targets are missed. Consequently, IT should be introduced only after there has been disinflation.

Overall, a monetary policy strategy will not be successful in maintaining low inflation over the medium term in an emerging market country unless government policies create the right institutional environment. Rigorous prudential supervision and sound fiscal policy are essential to the success of any monetary policy strategy.

V.   Nigeria's Monetary Policy Strategies/Frameworks

The current framework for monetary policy in Nigeria is monetary targeting which relies on the relationship between money supply and the price level. During the first 14 years of the life of the CBN (1959 – 1973), exchange rate targeting framework held sway. During this period, the instrument of monetary policy was the exchange rate. The Nigerian pound was fixed in relation to the British pound sterling in line with prevailing world economic conditions at the time (CBN, 2011). The fixed exchange rate enabled the sustenance of balance of payments position and control of inflation. However, it appears that even during the period of fixed exchange rate, money supply growth was also targeted (Oyejide, 2002).

V.1   Monetary Targeting Framework, 1974 – date

Nigeria switched from exchange rate targeting to direct monetary targeting framework in 1974 and has remained the primary monetary policy framework till date. I say primary monetary policy framework because it appears that inflation rate has also been targeted, although rather informally through routine reporting of numerical inflation targets or objectives as part of government's economic plan for the coming year. Yet, she has not been pursuing inflation targeting.

The changed economic circumstances occasioned by the oil boom of the early 1970s provided the background to the adoption of monetary targeting. Inflationary expectations heightened, prompting the need to attempt to tame inflation through monetary targeting framework in the belief that inflation was driven by monetary expansion.

Monetary targeting framework has featured under two different regimes of monetary management: direct control and indirect control (market-based) regime. Under the monetary targeting framework in the market-based approach, currently in vogue, the CBN attempts to keep the base money and eventually, broad money supply at levels adequate for non-inflationary growth. It

complements the use of OMO with other policy instruments: reserve requirements, MPR, liquidity ratio, among others.

V.2   The Experience with Monetary Targeting Framework

Now, what has the experience with monetary targeting in Nigeria been like?

The outcomes of the framework have been mixed. It has been characterized by the problem of target overshooting or undershooting. Growth in monetary aggregates exceeded targets by substantial margins in most of the years, while in others it is below the targets (Table 3).

Table 3:Key Policy Targets and Outcomes, 2011-2015 (Percent)

	2011		2012 [1] /		2013 [1] /		2014 [1] /		2015 [2] /	
	Target	Outcome	Target	Outcome	Target	Outcome	Target	Outcome	Target	Outcome
Growth in Base Money	12.67	50.80	8.23	33.06	35.24	37.41	9.30	17.18	16.78	2.00
Growth in Broad Money (M2)	13.75	15.43	24.64	13.72	15.20	1.32	15.02	7.29	15.24	5.90
Growth in Narrow Money (M1)	15.75	21.54	34.71	4.34	17.44	-5.23	16.23	-10.89	9.91	24.14
Growth in Aggregate Bank Credit	27.69	54.76	52.17	1.98	23.58	14.47	28.40	10.97	29.30	12.13
Growth in Bank Credit to the Private Sector	29.09	44.28	47.50	7.77	17.52	6.86	23.07	12.08	26.06	3.29
Inflation Rate	10.10	10.30	11.20	12.30	9.87	8.00	8.00	8.00	8.00	9.60

Notes:1 - revised; 2 - provisional
Source: CBN, *Annual Report*, 2015

The overshooting of targets is largely due to fiscal dominance, that is, excessive fiscal operations of the government.The outcome of inflation rate has also been mixed. For example, the single digit inflation rate achieved from 2013 – 2015 turned into double digits from 2016, rising up to 18.7 percent in January 2017. However, a period of disinflation appears to have set in, as the inflation has shown continuous decline in the last few months, standing at 16.05 percent in July 2017.

VI.   Issues in rethinking Monetary Policy

This section concludes the presentation by examining new directions relating to monetary policy.

VI.1   Monetary Policy Strategy

Nigeria's current monetary policy framework has elements of monetary targeting and inflation targeting – a kind of hybrid framework. The country has an explicit money target with an indicative target for inflation. In other words, some form of implicit inflation targeting as a monetary policy framework exists in Nigeria. The current system is consistent with an inflation objective. Then, as observed earlier, the current high inflation rate in the country is not due solely to liquidity surfeit, but to the triple shocks that hit the economy in the mid-2016: exchange rate liberalization resulting in sharp depreciation of the naira, hiking of petroleum product prices, and electricity prices.

The latter two produced one-off shocks to prices and the effects have tended to taper-off as the prices stabilize. The effects of the exchange rate shock have gradually dampened following the continued intervention of the CBN in the foreign exchange market. The present downward trend in inflation from 18.7 percent in January 2017 to 16.05 percent in July2017 provides an opportunity to consider gradually moving towards a flexible inflation targeting, which pursues its objective directly. This can be introduced when disinflation has been achieved.

Flexible IT will allow a strong, credible commitment by the Central Bank to stabilize inflation in the long run as well as pursue policies to stabilize output around its natural rate level in the short run. An IT system would commit the CBN to the Nigerian public than the current system which is unlikely to stabilise expected inflation to nearly the degree that an IT framework would.

In the interim, non-conventional monetary policy measures, being explored should be sustained in light of the other desired objectives of economic policy. The US and some European countries used the strategy effectively during the 2007/2009 financial crisis. In addition, there will be need to coordinate monetary policy with macro-prudential policies, more especially as the three objectives of price stability, output stability and financial stability are being pursued.

VI.2   Supportive Fiscal Policy

The most significant contribution to unalloyed success of an IT strategy would be a political consensus that establishes credible fiscal management of oil revenues at all levels of government. The absence of such a consensus may make the IT path risky but would not overcome the advantages of its adoption as a mechanism for enhancing the transparency and accountability of policy.
Essentially, supportive fiscal policy is indispensable to the effectiveness of IT framework. Such support can take the form of:
   •   Limited fiscal deficit and its financing;

- Avoidance of monetization of foreign assets by sharing Federation Account foreign exchange receipts in foreign currency rather than in naira; and
- Weak fiscal control would mean that monetary policy is being conducted in an environment of substantial fiscal dominance.

VI.3   Nature of Exchange Rate under IT

An important question is: What is the role of the exchange rate in an inflation targeting strategy/framework? The IMF recommends a combination of free float and inflation targeting as a way of reducing the probability of a currency crisis. Targeting the exchange rate, may worsen performance under inflation targeting. But then, in small open economies, central banks have good reasons to be concerned about the value of the domestic currency. Therefore, some exchange rate intervention would be appropriate.

However, the monetary authority must avoid the temptation to respond too heavily and too frequently to movements in a floating exchange rate regime and in the process transforming the exchange rate into a nominal anchor for monetary policy that takes precedence over inflation as the nominal anchor. Therefore, if Nigeria adopts a flexible IT regime, in line with the practice of many IT countries that intervene from time to time in the foreign exchange market, she can continue with the managed float exchange rate regime. But then, there would be need to be more transparent regarding the role that the CBN ascribes to the exchange rate in the monetary policy framework. It may also be necessary to inform that the authorities are not beholden to any specific value of the currency, thereby removing incentives for speculative attacks against it.

VI.4   Multiple vs Uniform Exchange Rate

Meanwhile, it is important to address the issue of multiple exchange rates. As part of the CBN's intervention in the foreign exchange market, the Bank has created different windows for various segments of the economy. At present, a special foreign exchange window exists for small and medium enterprises (SMEs), investors and export proceeds, manufacturers, invisibles and others. These have resulted in multiple exchange rates (MERs).

Although the CBN has argued in favour of preferential rates for critical sectors in view of the present economic situation, a multiple exchange rates system has many costs in relation to the benefits, one of which is that large differentials in rates may encourage the over-invoicing of imports and the under-invoicing of exports in those markets with relatively low rates. Also, MERs may create distortions, become permanent, costly and inefficient for resource allocation,

unstable and not effective for their stated goals (Obadan and Nwobike, 1991). Therefore, the CBN may consider re-introduction of a uniform exchange rate regime, to eliminate distortions created by MERs. It should then enhance access of preferred sectors/activities to foreign exchange by making it easily available.

VI.5   CBN's Monetary Policy Role in Development

Finally, what should be the CBN's monetary policy role in development? Should it include direct involvement through various interventions? The Central Bank of Nigeria (CBN) Act, 2007, Section 31, provides for a developmental function for the Bank relating to subscription, holding, selling of shares/debentures of any corporation/company for the purpose of stimulating financial and economic development in Nigeria.

Now, stakeholders have expressed concerns relating to the Bank's special development interventions. For example, Nwankwo (2017) observed that the CBN has been proactive in financing various sectors of the economy and many of the interventions seem to be more or less direct rather than intermediated. He listed issues of concern regarding the CBN's financing of real sector as follows:
   • Intrusion into the fiscal operation space;
   • Weakening of focus on core mandate of monetary policy;
   • Creating a conducive atmosphere for conflict of interest and compromise of standards and principles;
   • The nature of intervention inevitably brings the CBN dangerously close to politicians, who must be involved in the "officially" sponsored real sector projects, thereby breaking the thin barrier protecting the Bank from predation of the politicians.

In the current stagflationary environment, the special interventions may be seen as one of the non-conventional monetary policy interventions aimed at stimulating recovery and growth of the economy. However, stakeholders are concerned about the possible impact of the interventions on CBN's independence. Also, there is the concern that the Bank may be competing with MDAs in project activities.

VII.   Conclusion

No doubt, the interventions are desirable, and the CBN may have acted in consideration of the need for overall economic stability in the country. However, the Bank would need to determine its degree of involvement that will not compromise its independence.

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Consumer Behaviour in the Foreign Exchange Market in Nigeria

Chris O. Itsede [*]

Abstract

The paper attempts to provide a rational framework for understanding consumer decision making process within the context of the Nigerian foreign exchange market, identifying what is predictable and what isn't. The Nigerian foreign market is not a "run-of-the-mill" foreign exchange market. It is a unique market that has evolved some unique functions in addition to the traditional ones performed by the typical foreign exchange market. There are some peculiar participants whose behaviours defy mainstream consumer decision making process analytic models. Consumers in the market are influenced by market sentiment, psychological, and sociological determinants in addition to economic fundamentals, which are traditionally held out as the drivers of consumer behaviour. Understanding what drives the Nigerian foreign exchange market consumer behaviour can aid the Central Bank of Nigeria (CBN) to develop effective interventions and communication strategies to influence consumer behaviour in the market place.

I.   Introduction

Whichever way the Nigerian foreign exchange market zigs or zags, analysts always come up with ready explanations. The consumer is either reacting to economic fundamentals, such as inflation, interest rates and trade balance. Whatever the explanation, economic theory posits that the consumer is influenced by economic forces such as inflation, interest rates, and the balance of payments, which, if well forecasted, puts the forecaster in a vantage position to accurately predict foreign exchange market dynamics.

Outside the academia, it is not generally recognized that the consumer in the Nigerian foreign exchange market is not driven solely by economic fundamentals, especially in the short term. Thus, ability to forecast money supply, inflation rate, interest rates, the trade balance or other theoretical influences is a necessary but not sufficient condition to predict consumer behaviour in the foreign exchange market. Economists have realized that factors other than economic fundamentals also loom large in the decision matrix of the consumer in the foreign exchange market, at least in the short run.

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This paper attempts to provide a framework for understanding consumer decision making process within the context of the Nigerian foreign exchange market. The consumer seems to be influenced by market sentiment, psychological, and sociological determinants in addition to economic fundamentals, which are traditionally held out as the drivers of consumer behaviour. Consequently, understanding the determinants of consumer behaviour can aid the Central Bank of Nigeria (CBN) to develop effective interventions and communication strategies to influence consumer behaviour in the foreign exchange market.

High performing organizations have found that interrogating consumer behaviour — how customers think and make decisions - can unlock product success in the marketplace. Thus, the rapid growth in the size, structure, number of participants and product mix in the foreign exchange market of Nigeria in recent years, impel the CBN to constantly develop an appropriate suite of policies, products and strategies to meet consumer needs.

The foreign exchange market is the market in which participants buy, sell and speculate on currencies. It is arguably the largest financial market in the world, processing trillions of dollars' worth of transactions each day. The Nigerian foreign market similarly processes billions of naira worth of transactions daily. The participants in the Nigerian foreign exchange market include the CBN, banks, brokers, investors and individuals. A good grasp of consumer behaviour models will help to understand why consumers behave the way they do. In the specific case of the Nigerian foreign exchange market, such knowledge will be helpful to policymakers to formulate appropriate policies and implementation strategies to maintain stability in the foreign exchange market.

The foreign exchange market involves a global network of banks, computers and brokers from around the world. Central banks use their regulatory instruments to alter exchange rates in the market through their open market activities and in many cases, do so not with a profit motive, but rather for any number of policy reasons. Brokers act as market makers, posting bid and offer prices for a currency pair that differs from the most competitive bid in the market.

Consumers in the Nigerian foreign exchange market make buying decisions every day that are the focal point of the monetary authorities who want to know exactly what influences that decision. Thus, the desire to improve the smooth functioning and effectiveness of the foreign exchange market is a passionate objective of the CBN. Following this introduction, the rest of the paper is organized into four sections. Section 2 reviewed the literature on the subject, while Section 3 discussed the overview of the Nigerian Foreign Exchange Markets. Section 4

provided a summary of the papers and Section 5 presented policy recommendations.

II. Literature Review

II.1 Basic Definitions

The mainstream literature defines the consumer as a person or organization that buys goods and services for personal use and not for processing or resale. Thus, a consumer is the end user or a target to whom the ideas, goods or services are sold by the producer or marketer. In the context of this paper, we define a consumer as an economic agent who can make the decision whether to purchase foreign exchange in the market. Thus, consumer behaviour is the study of how economic agents or consumers select, buy, use, and dispose of ideas, goods, and services to satisfy their needs and wants. It also focuses on the social and economic consequences that buying and consumption choices exert on both the individual consumer and on the larger economy. Consumer behaviour combines elements from economics, sociology, psychology, and marketing. The concept also seeks to explain how the family, friends, reference groups and society influence consumer behaviour.

Understanding consumer behaviour has generated considerable interest among economists over the past 300 hundred years. Early economists, including Nicholas Bernoulli, John von Neumann and Oskar Morgenstern, started to inquire into the drivers of consumer decision making in the eighteenth century (Richarme 2007). This early work tackled the topic from an economic viewpoint, and focused solely on the act of purchase (Loudon and Della Bitta (1993). The most widespread model from this perspective is 'Utility Theory'. In the 1700s, Jeremy Bentham coined the term "utility" to describe consumer satisfaction of wants and needs. He posited that people are motivated by the desire to maximize utility. The nineteenth century classical economist, John Stuart Mill, extended and popularized this concept in his seminal work *Principles of Political Economy* (1848). The concept argues that consumers will carefully evaluate and purchase the bundle of goods and services that creates the most total satisfaction. Consumers are viewed as rational decision makers who are only motivated by self-interest (Schiffman and Kanuk 2007, Zinkhan 1992).

Whereas the utility theory views the consumer as a rational economic man, contemporary narrative contends that the consumer is influenced by several factors, and is involved in a range of consumption activities beyond purchasing. These include: need recognition, information search, evaluation of alternatives, the building of purchase intention, the act of purchasing, consumption and

finally disposal. A more robust view of consumer behaviour has evolved over the past century against the backdrop of emerging research methodologies and paradigmatic approaches being adopted (Jeff, Murray…). This is evident in contemporary definitions of consumer behaviour: "consumer behaviour…… is the study of the processes involved when individuals or groups select, purchase, use or dispose of products, services, ideas or experiences to satisfy needs and desires." (Solomon, Bamossy et al. 2006, p6). According to (Schiffman and Kanuk, 2007), consumer behaviour is "the behaviour that consumers display in searching for, purchasing, using, evaluating, and disposing of products and services that they expect will satisfy their needs" (p.3).

II.2   A Typology of Models of Consumer Behaviour

Drawing on psychology, several writers suggest alternative classifications of models of consumer behaviour. We review four major approaches. Each of them posits differing models of man, emphasizing diverse variables (Foxall 1990):

- Economic Man
- Psychodynamic
- Behaviourist
- Cognitive

II.2.1   Economic Man Model

As stated earlier, studies on consumer behaviour which began about 300 years ago viewed man as entirely rational and self-centered, making decisions geared toward maximizing utility at minimum cost. The term 'economic man' (or even *Homo economicus*) was first used in the late 19th century (Persky 1995) with the advent of more sustained research on the subject. The economic man model assumes the rational consumer to know all the available consumption options, be capable of correctly ranking each alternative and select the optimum course of action (Schiffman and Kanuk 2007). In real life, consumers hardly have adequate information, motivation or time to make such a 'flawless' decision. Besides, they are often influenced by such factors as social relationships and values (Simon 1997). Furthermore, individuals tend to seek satisfactory rather than optimum choices, as postulated by the Satisficing Theory (Simon 1997), or Kahneman and Tversky's Prospect Theory (Kahneman and Tversky 1979) which espouses bounded rationality (Simon 1991). In his book: *Income, Saving and the Theory of Consumer Behaviour*, James Duesenberry (1949), postulated in what became known as the Relative Income Hypothesis that individuals' consumption behaviours are inter-dependent. In other words, consumers' purchases are

influenced by the people or social groups they hobnob with. By the 1950's the notion of consumer behaviour had expanded to include an array of activities that impact upon consumer decision (Blackwell, Miniard *et al.* 2001).

II.2.2   Psychoanalytic Model

This model was pioneered by Sigmund Freud (Stewart 1994) who posited that behaviour is propelled by biological stimuli through 'instinctive forces' or 'drives' which act outside of conscious thought (Arnold, Robertson *et al.* 1991). Freud identified three aspects of the psyche, namely the Id, the Ego and the Superego (Freud 1923); other writers, notably Carl Jung, have since recognized additional drives (Ribeaux and Poppleton 1978). Although his main concern was not about consumer behaviour, his theory of human behaviour was revolutionary. Freud argued that humans are not able to fully understand their own motivations because the psychological factors that shape them are largely unconscious. A major part of the unconscious mind is comprised of strong urges and desires.

According to psychoanalytic theory, consumers respond to symbolic concerns as much as they respond to what we now know as economic fundamentals. Freud's work suggests that external factors such as price and income cannot fully account for consumer behaviour because other motivations lay deep in the psyche. Thus, a monetary authory desiring to influence consumer behaviour in the foreign exchange market should look beyond rational issues and pitch their message to include factors that contain an emotional appeal to the consumers' subconscious drives.

II.2.3   Behaviourist Approach

Behaviourism is a school of philosophies which attributes the behaviour of the individual to factors external to the individual. A leading proponent of behaviourism was Ivan Pavlov who investigated classical conditioning. In his landmark study in 1920 entitled "*Little Albert",* John B. Watson, experimented with teaching a small child (Albert) to fear otherwise benign objects through repeated pairing with loud noises (Watson and Rayner 1920). The study proved that behaviour can be learned by external events, thereby largely discrediting the psychodynamic approach that was predominant at the time. Among the most influential proponents of the behavioural approach were Ivan Pavlov (1849-1936) who investigated classical conditioning, John Watson (1878-1958) who rejected introspective methods and Burrhus Skinner (1904-1990) who developed operant conditioning. Each of these approaches relied heavily on logical positivism, claiming that objective and empirical methods used in the physical sciences can be applied to the study of consumer behaviour (Eysenck and

Keane 2000). While behavioural research still contributes to our understanding of human behaviour, it is now widely recognized as being only part of any possible full explanation (Stewart 1994). Behaviourism does not appear to adequately account for the great diversity of response generated by a population exposed to similar, or even near identical stimuli.

II.2.4   Cognitive Approach

The cognitive approach recognizes the influential role of the environment and social stimuli as informational inputs supporting internal decision making (Stewart 1994). It sprouts from Cognitive Psychology which can trace its roots to early Greek philosophers such as Socrates who was interested in the origins of knowledge (Plato 360 B.C.), and Aristotle who proposed the first theory of memory (Aristotle 350 B.C.). The French philosopher Descartes explored how knowledge is represented mentally in his Meditations (Descartes 1640) (Sternberg 1996). In the middle of the 21st Century Cognitive Psychology emerged as a mainstream and useful field of study with the development of the Stimulus-Organism-Response model by Hebb during the 1950's (Figure 1.1) (Cziko, G, 2000) and the publication of the landmark text by Ulric Neisser in 1967 (Neisser).

**Figure 1: Stimulus-Organism-Response Model**
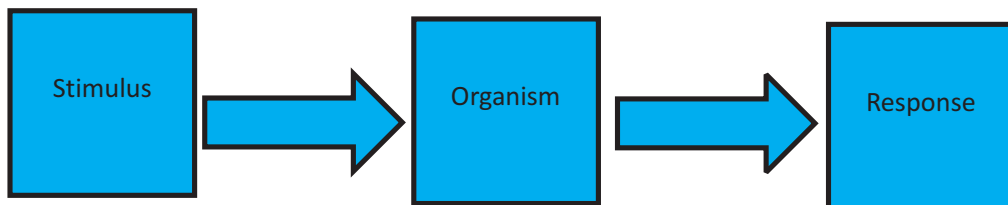
Distinct branches of cognitive psychology exist, but they are all interested in exploring and understanding the mental structures and processes that connect stimulus and response (Kihlstrom 1987). Modern theorists now accept that an organism's information processing is influenced by its experience and even what information is sought and received. Hence information processing is both stimulus and concept driven (Moital 2007) (cited in Jeff Bray, 2007).

II.3   Pavlovian Theory

This theory comes from the work of Russian psychologist Ivan Pavlov (1927), Hock, R.R (2002). In a famous experiment, Pavlov discovered that if he rang a bell immediately prior to feeding a dog, he could eventually get the dog to salivate just by ringing it (Figure 4).

Figure 4
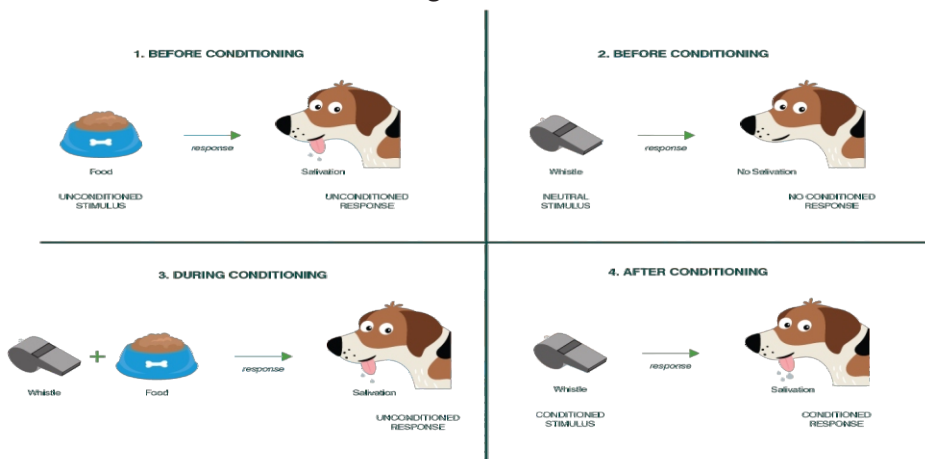
He concluded that much of human behaviour results from conditioned responses. For practical purposes, the Pavlovian theory can prove highly useful for marketers and regulators that want to influence consumers in the market. It illustrates the power that 'announcement effect' as a stimulus can have on the psyche of the consumer with the attendant behaviour. Thus, if the Central Bank wants to influence consumer buying behaviour in the foreign exchange market with an administrative or policy measure, the content and strategy of communicating it to the target audience count in creating or changing consumer habits.

II.4   Consumer Decision Approach

Mainstream literature illustrates consumer decision-making as a multi-staged and complex process that involves five main stages: (1) problem recognition, (2) information search, (3) alternative evaluation and selection, (4) outlet selection and purchase, and (5) post-purchase processes. This theory likens the consumer decision-making process to a funnel whereby consumers narrow down choices among alternatives (Figure 5):

Figure 5: The Consumer Buying Process

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Gilbert (1991) explains that grand models have 6 common points: (1) it perceives consumer behaviour to be a constant decision making process; (2) the behaviour of individual consumer is emphasized; (3) behaviour is treated as a functional (or utilitarian) concept that can be explained; (4) a buyer is viewed as an individual who searches, evaluates and stores information; (5) buyers narrow down the range of information in time, and choose from the alternatives they developed during the decision process; (6) and feedback from the final purchase is included in the models to emphasize the effect of the decision on future purchases. The thrust of the models in the context of the foreign exchange market discusses the steps a consumer will take after recognizing the need to buy foreign exchange:

II.4.1   Stage 1- Motivation

First stage of grand models within the context of the foreign exchange market explains that people may intend to buy foreign exchange to meet their physiological and psychological needs. This feeling can come from a marketing message or simply a friend's advice. The consumer may feel an internal desire to purchase a foreign product or service. These include buying merchandise, medical tourism, going on overseas vacation, securing admission for a child in a foreign educational institution, or attendance at a foreign business meeting or conference to satisfy a physiological, psychological or professional need.

II.4.2   Stage 2- Information Search

Consumer behaviour research has identified two types of search that buyers engage in as they make purchase decisions. A personal information search acquired from previous experience and word-of-mouth or advice from friends and relatives. A second type of search which is non-personal or external in nature for example, advertisements in print, electronic and social media and travel agents. The consumer in the foreign exchange market is interested in getting new information on exchange tendencies, location of dealers and their practices and general market trends.

II.4.3   Stage 3- Evaluation of Alternatives

Alternative evaluation is a very crucial stage in the consumer decision process whereby he makes the final decision by choosing which product or service to purchase and from which seller to buy. In this stage, a potential consumer analyzes all the information on the available options, weighs each against the alternatives and makes a purchase decision. Factors considered include the

relative effective exchange rates of the various dealers, degree of documentation required to close a transaction, timeline from purchase to access to the funds, depending on the segment of the Nigerian foreign exchange market where he intends to make the purchase and proximity of the foreign exchange dealer. For instance, a potential consumer must figure out the right market outlet at the right time and right place. A market outlet that is within the consumer's locality and at the same time can meet her foreign exchange needs at a competitive price, would always be preferable to the rational consumer.

II.4.4   Stage 4- Purchase

Completing the purchase process by the foreign exchange consumer following the evaluation stage depends on several factors. These include the segment of the market in which the purchase is taking place, purpose for which the foreign exchange is intended, and the volume of documentation required to close a transaction. However, if the consumer is unfamiliar with the process, the purchase process can take a longer time. Overall, the purchase decision will generally be made according to the result of the evaluation process. It can be either simple or lengthy and extensive, based on the type of product or service and the amount involved.

II.4.5   Stage 5- Post Purchase

Researchers tend to agree on the significance of consumers' satisfaction and their post purchase intentions. It has been observed that satisfied consumers tend to recommend the specific foreign exchange dealer to others. They also tend to engage in repeat purchase from the same dealer.

II.5   The Theory of Trying

The Theory of Trying (Bagozzi and Warshaw,1990), represented in Figure 2 below, depicts the consumer *trying* to act. Subjective norms, attitude toward the process or means of trying, attitudes and expectations of success and attitudes and expectations of failure are posed as the key antecedent variables to intention to try – itself, the key forerunner to trying. Past behaviour was found to influence consumer choice in several studies (Leone, Perugini *et al.* 1999), Norman and Conner (1996), and is thus included in the theory as a critical influence.

Figure 2: The Theory of Trying
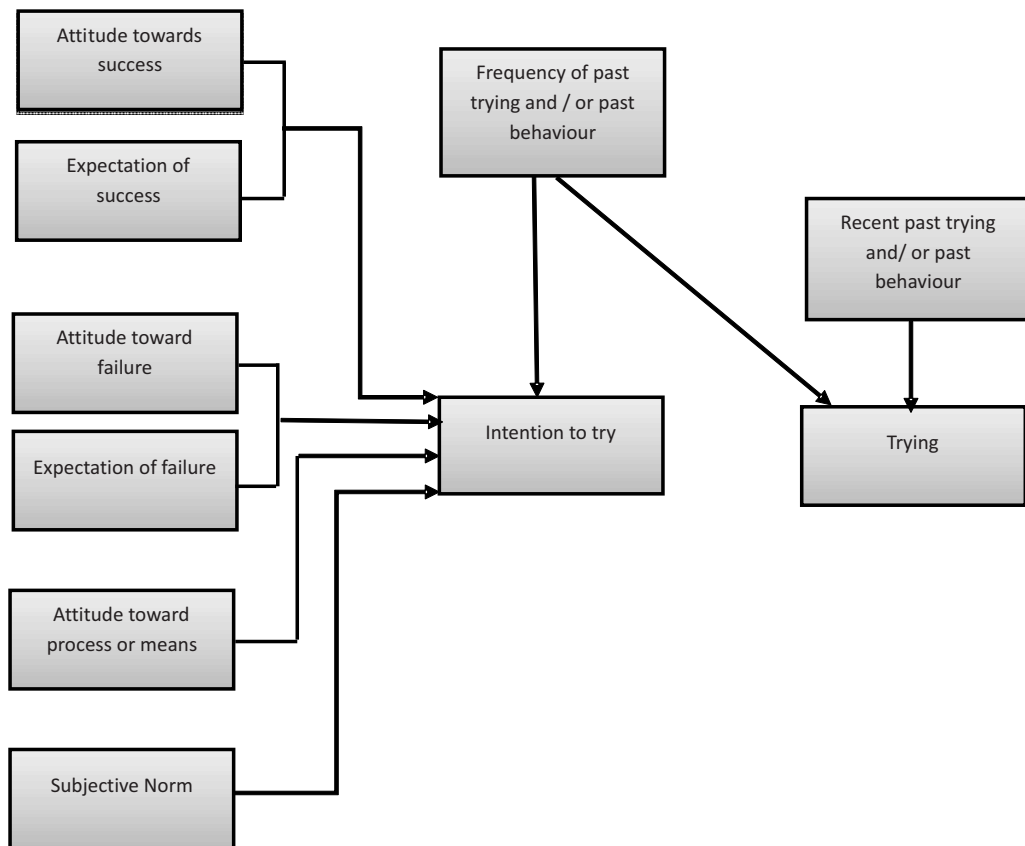
Bagozzi *et al.* (2002) submit that rather than consumers having behavioural intentions, they tend to have behavioural goals in many situations. They must exert effort and make purposive endeavor to fulfil these goals. The theory of trying has mostly been applied to health-related decisions. Some parts of the theory have been supported empirically, but not all the variables have been found to be significant (Bay and Daniel 2003). In a fillip to the theory, Gould *et al.* (1997) published research into the reasons for consumers 'failing to try to consume'. Consumers were found to either fail to see or be ignorant of their options, or make a conscious effort not to purchase (Schiffman and Kanuk 2007).

Consumer behaviour models are widely used in consumer product market research and decision making by producers and marketers. Early models of consumer behaviour primarily focused on a systematic and in-depth understanding of consumer buying processes (Howard, 1994). The products or services a consumer often uses are of great interest to the marketers, because this can help them to find out how a product is best positioned to influence consumer

consumption (Belch, M, 1998). On the supply side the equation, (Saha. S, et al 2010), suggest that the marketing mix namely, the product, price, promotion and place should be appropriate to serve the target market. They argue that the strategy must be designed to drive the elements of the marketing mix.

II.6   A Critique of the Traditional Consumer Behaviour Models

In discussing their contribution of a 'grand model' Engel *et al.* (1995) state that "a model is nothing more than a replica of the phenomenum it is designed to present. It specifies the building blocks (variables) and the ways in which they are interrelated" (p.143). While such models do appear to serve this function, several concerns and limitations of this approach have been mentioned (Erasmus, Boshoff *et al.* 2001, Van Tonder 2003). The criticisms against these models include: Most models, being first proposed in 1960's and 1970's, have been developed with *limited theoretical background* due to the embryonic nature of the discipline at that time (Du Plessis, Rousseau et al. 1991). The assumption of rational consumer decision making, which formed the basis of the models, has been interrogated since the 1980s (Erasmus, Boshoff et al. 2001). It was found that many consumers engaged in non-conscious behaviours that did not fit into archetypical information processing (Bozinoff 1982, Erasmus, Boshoff et al. 2001). Consumer behaviour has also been found, in certain circumstances, which appear haphazard, disorderly or opportunistic.

Specifically, emotional considerations such as sentiments are not given adequate consideration through the rational approach. For instance, consumers tend to judge exchange rates in the foreign market by facts on the ground, like economic news, central bank interventions, political interferences, expectations and sentiments. However, exchange rates movement may not be correctly predicted in the short-run, based solely on the economic fundamentals. Economists have found that the best predictor of the exchange rate is whatever happens in the short term Menkhoff, Lukas, R, Rebitzky (2006).

The short term is dominated by what has come to be known as the "exchange rate disconnect puzzle" (Obstfeld and Rogoff, 2000). In the long term, however, exchange rates appear linked with economic fundamentals (Sarno and Taylor, 2005). Sentiments inspire consumers to attach importance to market expectations of the future exchange rate. Hence, if the consumer expects the dollar price of the naira to become higher in the future than it is today, the dollar price of the naira will tend to be high today. But if the consumer expects the dollar price of the naira to be lower in the future than it is today, the dollar price of the naira will tend to be low today. Yet, there exists a lot of evidence which shows that exchange rates are linked to fundamentals in the long run (MacDonald and

Taylor, 1994; Mark, 1995). Thus, the case for macroeconomic determinants of consumer behaviour in the foreign exchange market is not settled. The evidence suggests that no model, based on such standard fundamentals like money supply, real income, interest rates, inflation rates, or current account balances, will ever succeed in aptly explaining or predicting consumer behaviour in the foreign exchange market. Any attempt to get a good handle on consumer behaviour to fashion out appropriate policy measures to influence his behaviour in the Nigerian foreign exchange market must also consider the non-economic drives that determine his behaviour.

III.   The Nigerian Foreign Exchange Market

The foreign exchange market provides the physical and institutional structures through which the currency of one country is exchanged for that of another country, the rate of exchange between currencies is determined, and foreign exchange transactions are carried out. Central banks and treasuries use the market to acquire or spend their country's foreign exchange reserves as well as influence the price at which their own currency is traded. In many instances, they willingly take a loss on their foreign exchange transactions. As willing loss takers, central banks and treasuries differ in motive and behaviour from all other market participants.

Figure 3: Functions of the Foreign Exchange Market

A foreign exchange transaction is an agreement between a buyer and a seller that a given amount of one currency is to be delivered at a specified rate for some other currency. The Nigerian foreign exchange market performs essential functions that facilitate the smooth functioning and growth of the nation's economy. Mainstream consensus is that a foreign exchange market performs

three basic functions namely; transfer, credit, and hedge. However, the Nigerian foreign exchange market is not your run-of-the-mill forex market that performs only the three traditional functions. It is a peculiar market with some unorthodox participants. The market has evolved and added a fourth function to the mix to serve the needs of the unorthodox players (Figure 3). This set of market participants have found the forex market an effective performer of the function of store of value, like the store of value function performed by money. We shall briefly discuss the identified four functions performed by the Nigerian foreign exchange market.

III.1   Functions of the Nigerian Foreign Exchange Market

III.1.1   Transfer Function

The most visible function performed by the foreign exchange market in Nigeria is the transfer and receipt of funds (foreign currency) between Nigeria and other countries for the settlement of payments. In doing so, the foreign exchange market provides the mechanism for the transfer of purchasing power from one country to another because buyers and sellers live in different countries. When an importer in Nigeria imports goods manufactured in Japan, for example, the exporter wishes to be paid in yen. The conversion of the Nigerian naira to yen is done through the foreign exchange market. Likewise, if a Nigerian businessman plans a trip to Germany, he exchanges the Nigerian naira for Euros through the foreign exchange market. Through this mechanism, Nigerians can buy and sell goods and services from and to other countries in different parts of the world and effectively transfer purchasing power in the process.

III.1.2   Credit Function

Through the mechanism of the foreign exchange market, importers can obtain credit to finance their foreign purchases. Suppose a Nigerian company wishes to purchase a consignment of Chinese-manufactured goods. The Nigerian importer can pay for the purchase by using a bill of exchange in the foreign exchange market. This is akin to an IOU with a three-month maturity. This instrument locks in the exchange rate for the transaction. The arrangement permits the importer a period of 90 days within which to sell his goods before the bill of exchange matures, thereby minimizing the traders' exposure to exchange rate risk.

III.1.3   Hedging Function

While exchange rates fluctuate, they do not ordinarily exhibit dramatic swings, barring unexpected international crises. Nevertheless, the chance that rates may

change poses a risk to traders whose business lies in buying and selling merchandise. If a business is concerned that rates may change against it before the transaction is completed, the firm can make an offsetting transaction in the forward exchange market and then liquidate it when the initial transaction is completed. An exchange-rate profit in one currency will be balanced by a loss in the other, allowing it to complete the primary transaction with no fear of losing money because of an adverse currency movement. The hedging function of the Nigerian foreign exchange market has also been used by market participants who covert naira balances into foreign exchange in a buy-and-hold syndrome to hedge against anticipated depreciation of the local currency.

III.1.4   Store of Value Function

Participants have found the Nigerian foreign exchange market as a veritable repository to store the value of a component of their wealth in response to economic, political and sociological dynamics. Consumers seeking to minimize erosion in assets' value partly induced by sustained depreciation of the naira head to the foreign exchange market to purchase and hold foreign exchange that they do not actually have the need for, at least in the short term. They flee from the perceived unsafe or weak local currency to a relatively safer or stronger foreign currency. The war against corruption waged by the current administration has also triggered a rush to purchase and hold large sums of foreign exchange by those firms, public officials and politically exposed persons (PEPs) who may have amassed huge naira balances through illicit earnings. Such persons or firms tend to find it more convenient to store large sums of naira in foreign currencies that invariably require comparatively smaller storage space than when such amounts are held in the local currency. The media publicity given to cases of shrewdly concealed humongous cache of foreign currencies allegedly uncovered by law enforcement agencies may have had the unintended effect of popularizing the practice. Potential practitioners of this method include corrupt elements in the public and private institutions, crude oil thieves, illegal solid mineral miners, money launders, and other sundry outlaw economic operators seeking to stash away proceeds of their illegal activities in foreign currencies. When this set of consumers raid the foreign exchange market, the shockwaves reverberate across the fault lines of exchange rates.

III.2   Structure of the Nigerian Foreign Exchange Market

The Nigerian foreign exchange market consists of three tiers: the interbank or wholesale market, the client or retail market and the parallel (unofficial) market. The official segment consists of the CBN, banks, bureau de change, oil companies, and multinational companies, etc. The banks also operate at the

retail end of the market, where they sell foreign exchange to and buy from individuals, firms and public agencies. The BDCs also receive funding from the central bank, raising the question whether they should be classified among the official or unofficial segment of the market. Individual transactions in the inter-bank market usually involve large sums that are multiples of a million US$ or the equivalent value in other currencies. By contrast, contracts between a bank and its client are usually for specific amounts, sometimes down to the last kobo. The unofficial segment of the market or parallel market, consists of individuals and firms, mainly micro-enterprises most of whom do not have the requisite capacity or documentation to channel transactions through the official segment of the market. The unofficial segment also caters to the needs of smugglers, medical tourists and sundry commercial operators.

III.3   Market Participants

Particiapnts in the Nigerian foreign exchange market includes the following: the Central Bank of Nigeria, Authorized Foreign Exchange Dealers namely; the banks, BDCs, high-end credible hotels, airlines. Other non-bank foreign exchange dealers operate in both the inter-bank and client markets. The market also includes speculators, noise traders and 'savers'. The non-bank foreign exchange dealers profit from buying foreign exchange at a bid price and reselling it at a slightly higher (regulated) ask price. Market competition among dealers narrows the spread between bid and ask rates, thereby contributing to efficient working of the foreign exchange market.

In the official segment of the market, dealers in the foreign exchange departments of large international banks often function as market makers. They stand willing to buy and sell those currencies in which they specialize by maintaining an inventory position in those currencies. Participants in commercial and investment transactions - importers and exporters, international portfolio investors, multinational firms, tourists, and others use the foreign exchange market to execute commercial and investment transactions. Some of these participants use the market to hedge for profit motives.

The unofficial segment of the market comprises the BDCs, and 'noise traders' (also known as speculators and arbitrageurs). Speculators and arbitrageurs seek to profit from trading in the market. They operate largely in their own interest, without a need or obligation to serve clients or to ensure a continuous market. Speculators make all their profit from exchange rates differentials. Arbitrageurs try to profit from simultaneous exchange rates differences in different markets. A peculiar set of consumers have emerged in the Nigerian foreign exchange market over the years. These are what we would call the 'neo-savers'. To these

consumers, (their ranks include public officials, politically exposed persons, illegal miners, crude oil thieves, etc.), the market is akin to money, which performs a store of value function. They generally own huge naira cash balances which are invariably proceeds from some illicit transaction. On the run from law enforcement agencies, but desirous to retain their holding in cash form, they hit the market where they purchase large amounts of foreign currencies which they 'store' away in bunkers, cellars, safes, boxes and other form of repositories as cash 'savings'. Their purchase decisions have a huge effect on the market volumes.

III.4   How Do Consumers in the Foreign Exchange Market Behave in Real Life?

Mainstream economic thinking is that when individuals make poor choices it is the result of misinformation or a lack of information. In real life, consumers rarely search out, read or properly digest all the available relevant information to weigh up all the costs and benefits of choices. Instead, purchasing decisions may be made automatically, habitually, or be heavily influenced by an individual's emotions or the behaviour of others. Both marketing and the behavioural sciences have found this 'information-deficit' model to be deeply flawed. The model discounts the impact of other factors such as 'announcement effect' that have been found to also shape individual behaviour.

Humans are social creatures, who conform to the standards of the culture and subgroups in which they live. Some writers believe that people's individual needs and desires are created and influenced by group membership. This is especially relevant in trying to understand consumer purchase decisions in the foreign exchange market to fund luxury and exotic goods and services. The import of this theory suggests that CBN should also understand the social influences that drive consumers to better comprehend their purchase behaviour in the foreign exchange market. Monetary models are not sufficient in explaining the changes in foreign exchange rate movements. Changes in foreign exchange movement are not determined only by economic fundamental but by some other factors, like market sentiments Dogo, Mela Y., Ezema, et al (2016).

This alternative view is that exchange rates are determined, at least in the short run (i.e., periods less than two years), by market sentiment. Under this view, the level of the exchange rate is the result of a self-fulfilling prophecy: consumers in the foreign exchange market expect a currency to be at a certain level in the future; when they act on their expectations and buy or sell the currency, it ends up at the predicted level, confirming their expectations. However, even if exchange rates are determined by market sentiment in the short run, the fundamentals still count, but not in the commonly supposed way.

III.5   Speculative Attacks

By paying careful attention to a country's economic and political developments, speculators can sometimes predict the direction of a country's exchange rate movement. During the second half of 2015, a weak Nigerian economy provoked speculators, who mounted an attack on the naira. They reasoned that the weak economy would impel the CBN to abandon its official exchange rate and depreciate the naira. Motivated by profit opportunities since they expected the depreciation to happen, they decided to sell the naira immediately, that is to say, mount a speculative attack on the currency. The sustained attack put pressure on CBN to combat the currency depreciation. The Bank rolled out some measures, including the exclusion of 41 items from the official window of the foreign exchange market, and others it wouldn't ordinarily want in the face of sluggish economic growth, in a bid to reduce the pressure on the naira. The speculators were deterred, but not for long. They reasoned that the CBN had to either raise short-term interest rates or intervene in the market to support the currency. But they were betting that the Bank wouldn't fight off the attack for long, especially against the backdrop of the combined forces of a collapse in crude oil output and prices, weak economic growth and diminution in the country's external reserves.

Profit opportunities such as this one can sometimes be exploited by speculators who recognize that a country's exchange-rate policy is inconsistent with the monetary policy needed, given a country's domestic situation. If speculators expect the value of the currency to fall, and they are right, they can profit by selling the currency short. For instance, suppose a speculator anticipates that the value of the naira with respect to the dollar will fall in one week. He could borrow naira and sell them for dollars at the current exchange rate. If his calculation is correct and the naira does depreciate, at the end of the week the speculator can buy back the naira for fewer dollars than he sold them for. Provided the naira fell enough over the week, the speculator can repay the loan with interest and still make a profit in dollars. However, if the central bank raises short-term interest rates high enough, it can render this transaction unprofitable. Thus, one defense against a speculative attack on a currency is for the central bank to substantially raise short term interest rates. Another approach is for the central bank to inject substantial liquidity into the foreign exchange market.

IV.   Summary

This brief review of extant literature surveys the factors that drive consumer behaviour that previous writers have examined. It discussed how consumers search for a desired product or service, the evaluation thereof based on

available information and the emotions consumers attach to them. The central focus of much of the paper dealt with the motivation and process that lead to the eventual purchase decision. In addition to economic fundamentals, social, psychological, and personal factors play a part in the motivation of the individual consumer in the Nigerian foreign exchange market to make his choices. Like the typical marketer would do, the CBN can tweak the price, place and promotion to influence the consumers' behaviour in the market place. But it is advisable to always bear in mind, the contextual factors that affect human behaviour to answer questions relating to consumer behaviour by saying that 'it depends'.

V.   Recommendations for Policy Makers

1. Design policy that works with the real drivers of consumer behaviour, not just the "rational consumer" described in standard economics. Differences between the two exist and can lead to different policy outcomes. Mainstream economics argues that all that consumers need is adequate information about the available products mix and will act to maximize their benefits. Evidence from marketing and behavioural economics and other disciplines negates this assumption. An improved understanding of consumer behaviour gives policy makers a wider range of policy instruments with which to achieve policy objectives. Used in the right context, these instruments are likely to be more cost-effective than those based on standard policy tools.

2. Consumer behaviour is both context- and product-specific. To design effective policy instruments, policymakers need to develop a sound knowledge base, including staff expertise, on how consumers actually behave. The paper examined the existing evidence on consumer behaviour and how people make choices. However, policy-makers need to remember that consumer responses will vary across product groups and policy areas. Consumer behaviour would differ in relation to purchasing foreign exchange for private vehicles, toys, toothpicks, sparklers, consumer electronics, food and drink, and healthcare products.

3. Test-run proposed policies in a 'real world' setting. Precise information about likely consumer reaction to proposed policies is difficult to forecast prior to the roll out of the policies. Be smart in how you obtain this information. Policy pilots and trials provide an opportunity to observe consumer behaviour in a 'real world' environment.

4. Conduct evaluation of the impact of applied policy instruments on consumer behaviour in a 'real world' setting.

5. Marketing management tells us that consumers are heterogeneous and that different consumers of a product or service will respond differently to different policy interventions. Use consumer segmentation technique to identify – and subsequently target – key audiences with appropriate policy interventions. Explore working with banks and BDCs in ways that encourage them to market certain products to influence consumer behaviour.

6. Pay attention to your communication strategy. Remember, the way in which messages are crafted plays a huge role in how consumers interpret them. Present information in ways that appeal to consumers, recognizing that this may differ according to consumers and products.

7. Avoid an overarching, one-size-fits-all approach to consumer policy framework design. A nuanced consumer product design approach is recommended.

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The Role of Reliable and Adequate Data in Managing Recession and Exchange Rate Crisis

Mohammed M. Tumala[*]

I.   Introduction

This paper focuses on the role data plays in the management of recession and foreign exchange crisis. For the purpose, recession will be taken as a state of persistent decline in the productive capacity of most sectors of an economy, or the successive negative growth of the real GDP of an economy measured quarterly. Economies around the world have suffered from incidences of recession over the years. The National Bureau of Economic Research (NBER) for instance recorded eleven incidences of recession in the US over the period 1945 – 2009, while the Nigerian economy recorded fewer incidences of recession attributed, mainly, to movements in the prices of primary commodities and the structural deficiencies in the economy that makes it less resilient to external shocks. The depth and duration of recession vary across economies, and the effects on households and businesses also vary. Incidences of economic recession in Nigeria were induced, mainly by developments in other economies, complemented by internal shocks.

Exchange rate is the price of domestic currency in terms of foreign currencies. International Transactions emanating in a domestic economy require foreign currencies to pay for goods and services provided by residents of other economies. In turn, foreign currencies are earned by residents through exports of goods and services, or earnings from investments in other economies. Crisis in the foreign exchange market could arise from distortions in supply or demand chains.

Data plays an important role in the management of economic crisis including external balance challenges. It is data that indicates that an economy is in crisis or is heading toward one. It is data that expresses the depth and effects of economic crisis on various sectors of the economy; and it is data that indicates the crisis is over. Data could be used to identify areas of vulnerability in the structure of the economy, the possible causative factors and policy options that could be adopted to manage and resolve crisis.

For instance, in the absence of data on aggregate output, or because it usually comes with lag, it has been demonstrated that developments in certain economic variables lead, coincide or lag with developments in aggregate

output of the economy. These indicators may therefore, be used when data is available to signal impending economic crisis, or that the economy is indeed in crisis or the economy has bottomed out. These indicators generally identify critical/global turning points of the value of aggregate output.

The effects of economic shocks and any policy endeavors on households and enterprises may be observed from specialised studies or the collection of structured longitudinal data. The absence of longitudinal data in developing economies like Nigeria inhibits researchers from a number of options to study the effects of policies and changing economic environments on the population and business concerns.

In this paper, we shall attempt to use data to understand the effects of the recent recession on Nigerian households and enterprises, identify patterns to be managed to avoid recession or manage recession, and attempt to understand the decision pattern of key players in the foreign exchange market when such crisis is induced by crude oil price developments. We shall also highlight steps taken by data producers to bridge data gaps necessary for effective management of the economy.

II.   Literature Review

As pointed out earlier, recession come in different forms and may impact the different economic agents in different ways. Attempts have been made to understand how the different incidences of recession affected sectors of economies around the world.

Geroski and Gregg (1993) for instance, using structure questionnaire, to collect data from a sample of firms, examined the effects of the 1990 recession in UK on firms and how firms cope within recessive periods. They find that firms perceived varying degree of effects of recession on their firms, and where there were effects, these were in the forms of: decline in sales; reduced capacity utilization; excess inventories; indebtedness; and cash flow constraints, while response to these effects mainly were cost cutting operations. They however noted that firms who embarked on over-expansion in periods preceding the recession were more likely to be exposed to severe effects in periods of recession.

Looking at households, Schmidtt and Baker (2008) suggests that incidence of recession have far-reaching impacts on economic and social outcomes like; employment, family income, poverty and general wellbeing of households. They observed that the 1979, 1989 and 2000 recessions in the US resulted in significant increases in unemployment, increases in poverty rate, decline in income and losses in health insurance of households among others.

As a result of economic integration and workers migration, recessive periods in some economies may have far reaching effects in others. Khawaja *et al* (2010), examined the social impact of the 2008 global financial crisis on Pakistan by examining the dynamics of: inflow of remittances, output growth, fiscal operations and exchange rate. They find that the global financial crisis saw: inflation rising from 7.8 per cent in 2006 to 20.8 per cent in 2009, in Pakistan; output growth declining from 7.8 per cent to 2.0 per cent; and large scale manufacturing declining from a growth of 8.65 in 2006 to contraction of 8.25 per cent in 2009 which led to a reduction in total exports of Pakistan by 5.9 per cent. The recession induced decreases in workers' remittances from the US, increased the poverty rate and migration to other countries in the Middle East. In managing the impact, Pakistan adopted fiscal tightening which minimized the effect of these developments on the populace.

Cherlin *et al* (2013) also examined the effects of the 2008 recession in the US on family structure and fertility. They observed that the great recession had resulted in extreme family economic disruptions resulting in changes in family patterns, such as timing of fertility, delays in marriage, reduced residential independence of married couples, drop in period fertility levels, and a temporary fall in divorce. They observed for instance that, fertility dropped by 11 per cent between 2007 and 2011, with noticeable drops in states with highest levels of unemployment, but marriage, divorce, and cohabitation rates remained unchanged during the same period.

Most of the studies that examined the effects of economic crisis involved the use of data from structure longitudinal surveys on households and firms as in Schmidtt and Baker (2008) and Cherlin *et al* (2013), or data generated from a system of administrative statistics as in Khawaja *et al* (2010). Special focused surveys may also be conducted as in Geroski and Gregg (1993) to solicit data from a wide range of stakeholders.

Recession or cyclical swings in the general volume of activities in an economy has been attributed to many factors and varied with the structure of the economy. Because of interconnectedness of economies, the occurrence of recession in one economy may trigger developments that could affect the level of economic activities in other economies. Overall, the cause, effects and mitigation approaches to recessive periods are better understood with well-structured data on the domestic and other economies with significant ties with the domestic economy. Indeed, Toyo (1984) observed that understanding the causes of the recession that hit Nigeria in the early eighties was synonymous with understanding the workings of the economies to which Nigeria played clients to.

Recession incidences in Nigeria were mainly induced by developments in other economies which affected the Nigerian economy not only through commodity price volatilities but investment decisions that affect the demand and supply of foreign exchange. For instance, for oil dependent economies, substantial increases in crude oil prices are known to be associated with economic recessions, inflationary pressures, trade deficits and unpredictable out-turn in investments in oil importing economies, while on the other hand, decreases in prices generate balance of payments challenges as experienced by Nigeria and Venezuela in recent years. The dollar being the currency of denomination of crude oil prices, Yaya et al (2017), examined the bidirectional relationship between crude oil prices and naira/US-dollar exchange rate. The study investigates returns and volatility transmissions between oil prices and US-dollar exchange rates of oil-exporting economies' currencies using VARMA-GARCH approach. We shall discuss the results of this as it applies to exchange rate management.

We shall attempt to examine the impact of the current economic crisis on macroeconomic outcomes heuristically, identify vulnerabilities and suggest critical policy response areas. In addition, will shall discuss the oil price and exchange returns and volatility spillovers in in Nigeria and the optimal portfolio allocation by portfolio investors in the two markets (as examined by OlaOluwa S. Yaya, Saka Luqman, Damola M. Akinlana, Mohammed M. Tumala and Ahamuefula E. Ogbonna1, 2017), an information important for foreign exchange market managers. We shall highlight actions taken by statistics producers towards the provision of structured data on households and firms for the effective management of the economy.

III.   Effects of Current Recession on Macroeconomic Outcomes

The current recession came with significant impacts on both households and firms. In this section, we shall highlight heuristically, few areas where the impact showed up in available data. As observed by Geroski and Gregg (1993), policy responses to recessive developments often precipitate the foundation for the next recession or themselves introduce structural issues in the economy. Walker (2000) for instance, is an attempt to the assess the impact of the 1986 structural adjustment program on the key players in the cocoa value chain in Nigeria; cocoa farmers, middlemen, labor relations, and the maintenance of cocoa farms. The Nigerian authorities had responded to the 1982 recession by implementing a structural adjustment program which resulted in price adjustment and devaluation of the naira. This heightens the need for proper assessments during policy design in response to negative impacts of economic crises.

III.1   Impact on Prices

The down-turn in oil prices preceded the current economic crisis, and one of the first outcomes is the decline in external reserves, mounting pressure on the exchange rate and consumer goods and services. The CPI inflation measuring the aggregate change in price level of consumer goods and services both in the eve of the 2008 global financial crisis and the 2016 recession ticked upward reaching 18.7 per cent in January 2017 before decelerating, with the food component persisting. In both periods, sharp depreciation in the local currency against the US$ were recorded (Figures 3.1). As a result both domestic and foreign goods and services became more expensive in addition to the diminishing purchasing power of household income. Trade balance also deteriorated.
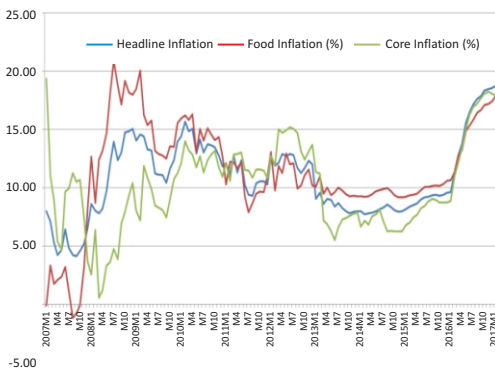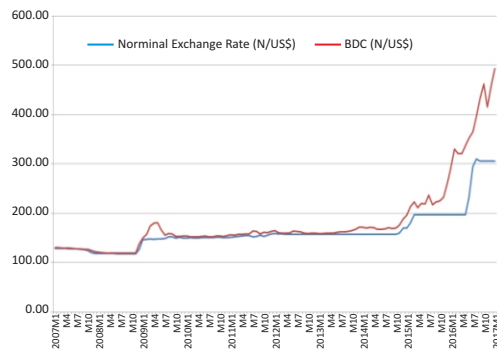
Figure 3.1a: CPI Inflation

Figure 3.1b: Nominal Exchange Rate

III.2   Impact on Labour Market Outcomes

Unemployment rate more than doubled as moved from 6.4 per cent in Q4 of 2014 to 14.2 per cent by Q4 of 2016, and trended upward for all age groups, educational levels and urban/rural residence amongst both men and women. Just as it is very high among youths (47.4 per cent among the 15-24 age group), the change in unemployment rate accelerated among graduates as result of seasonal supply into the job market with no corresponding absorption capacity.

Figure 3.2: Unemployment Rate for Age/Educational level groups
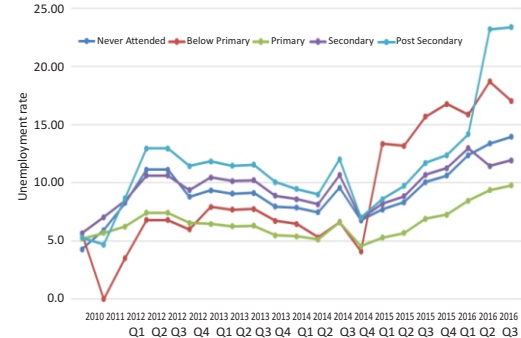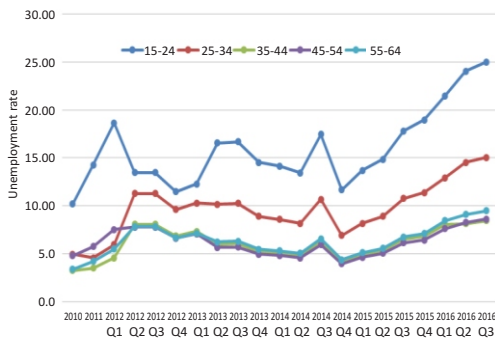
Growth in nominal compensation of employees reversed as operating surplus of employers declined, but compensation of migrant workers increased (Figure 3.3) (the increase may be as a result of currency depreciation).

Figure 3.3a: Compensation of Employees

III.3   Impact on Households Uptake of Financial Services

In addition to the labour force data, financial inclusion of members of households across the country produced by EFInA for 2016 that the current financial crisis may have eroded the gains made towards the achievement of the national financial inclusion target of reducing exclusion rate to 20 per cent by the year 2020 (Figure 3.4).

**Figure 3.4: Access Strand of Financial Services by Adult Population**
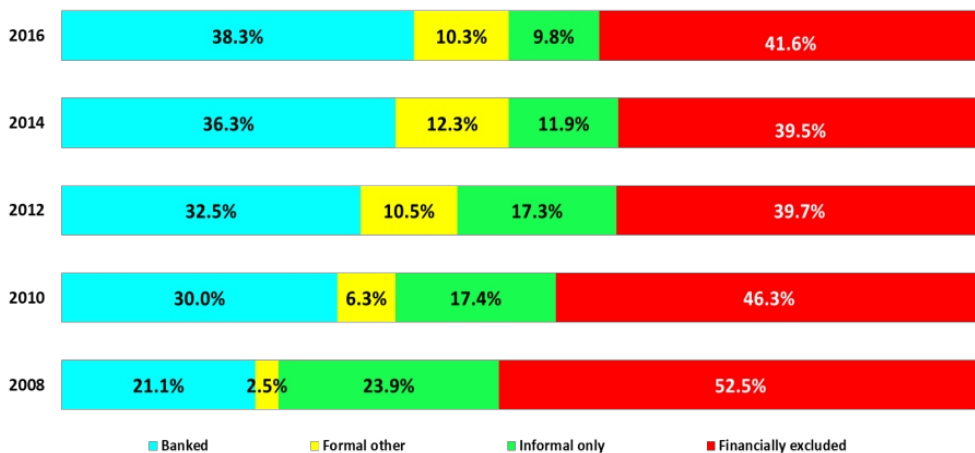
IV.   The Role of Agriculture and Population Data

IV.1   Population and Productivity of Agriculture

The Nigerian economy is largely informal with most households involved in subsistent activities in the agricultural sector. Over the years, policy discuss have come to converge on the consensus that diversification of the economy through focusing on agriculture and agro processing, and solid minerals may be the workable way out of the current structure of the Nigerian economy that is vulnerable to external shocks induced by volatility in crude oil prices. In addition to increasing government spending, support to the agricultural sector had always been the first policy response over the years to manage economic crisis. This section discusses the role data plays in understanding the context and policy options for optimal results in this sector.

First, we need to understand the population and participants in the agricultural value chain in Nigeria. Nigeria's population is young, with over 70 per cent below the age of 30, over 90 per cent are below 50 and only 5 per cent are above 60 years (Figure 4.1). This is a huge labour market not only for agriculture but for other productive sectors, but with its own social consequences. The Development Finance of the Central Bank recently reported recently that the average age of farmers participating in its programmes is 60 years. This has serious consequences for sustainability, and with about 65/35 rural/urban in population residency, the country's policies in agriculture should not only focus on the provision of funding support to farmers but to address the urban/rural drift and the motivation of youths to embrace agriculture as an enterprise.

Figure 4.1: Nigeria 2017 Population Distribution by Age Groups
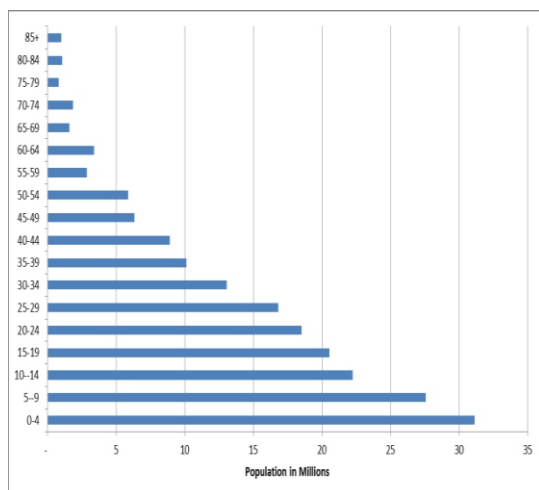
| AGE GROUP	2016 Population
0-4	31,116,156
5--9	27,549,964
10--14	22,221,265
15-19	20,518,404
20-24	18,501,820
25-29	16,816,694
30-34	13,038,009
35-39	10,096,763
40-44	8,891,384
45-49	6,322,797
50-54	5,851,717
55-59	2,845,486
60-64	3,374,357
65-69	1,585,140
70-74	1,832,402
75-79	798,511
80-84	1,046,690
85+	984,956
TOTAL	**193,392,517**

Nigeria's agriculture holds great potentials for exports and earning of foreign exchange for the economy. Exportable agricultural produce are grown all over Nigeria (Table 4.1), and in 2016, over 8 million farmers were involved in the cultivation of exportable farm produce with an average age of 49 years showing that this component is more attractive to the young population. However, as important as this component of farming is, most of those involved are likely not to see production from entrepreneurial point of view because of their low educational achievement, as only 7.6 per cent of them were educated beyond secondary school level (Figure 4.1). Increases in the volume of production over the years mainly were as a result of the expansion of land under cultivation while yield remained very low as compared to yields in most countries (Tables 4.2). For instance, the average cereal yield in Nigeria per hectare was 1,591.8 tons in 2014 as compared with 4,355.8 in Israel and as much as 41,907.80 in the UAE. This leaves us with issues of policies around research and development to produce high yielding varieties of the cereal grown in the country or adoption of already high yielding verities grown elsewhere in addition to the current focus on increasing the number of participants.

Table 4.1: Exportable Crops and Productivity in 2016

Product	Area under Cultivation	Total Produced	Productivity	Product	Area under Cultivation	Total Produced	Productivity
Cassava	6,591.92	57,172.33	8.67	Cocoa	1,146.12	318.00	0.28
Groundnut	2,530.74	3,402.50	1.34	Kolanut	216.07	158.02	0.73
Cotton	412.94	189.74	0.46	Palm Oil	1,831.61	1,432.10	0.78
Beniseed	329.46	171.90	0.52	Rubber	77.98	65.09	0.83
Coffee	48.07	31.03	0.65	Sheanuts	323.46	315.08	0.97
Ginger	36.77	165.75	4.51	Tea	2.02	7.32	3.63
Sugarcane	82.06	1,406.77	17.14	Gum Arabic	16.73	13.30	0.80

Table 4.2: Average Cereal Yield per Hectre in Nigeria and Selected Countries

Country	2008	2009	2010	2011	2012	2013	2014
UAE	54,613.90	66,589.60	74,205.60	68,683.20	33,113.30	23,881.70	41,907.80
Australia	1,688.20	1,692.10	1,722.80	2,097.10	2,231.30	1,992.50	2,137.10
Cabo Verde	336.90	230.80	220.00	177.80	196.20	182.30	201.80
Ghana	1,598.10	1,659.80	1,814.30	1,594.20	1,768.10	1,688.80	1,703.40
Grenada	1,005.90	1,007.40	1,008.70	1,009.40	1,028.60	1,000.00	1,002.80
Israel	2,439.50	3,175.10	3,036.70	3,400.70	3,898.90	3,845.90	4,355.80
Kenya	1,417.50	1,242.80	1,710.10	1,514.60	1,744.80	1,661.50	1,627.60
Nigeria	1,598.40	1,531.10	1,528.00	1,334.50	1,400.00	1,234.90	1,591.80
Zimbabwe	310.00	452.00	734.60	593.20	688.90	669.40	540.80

Figure 4.1: Age Distribution of Farmers Involved in the Cultivation of Exportable Crops
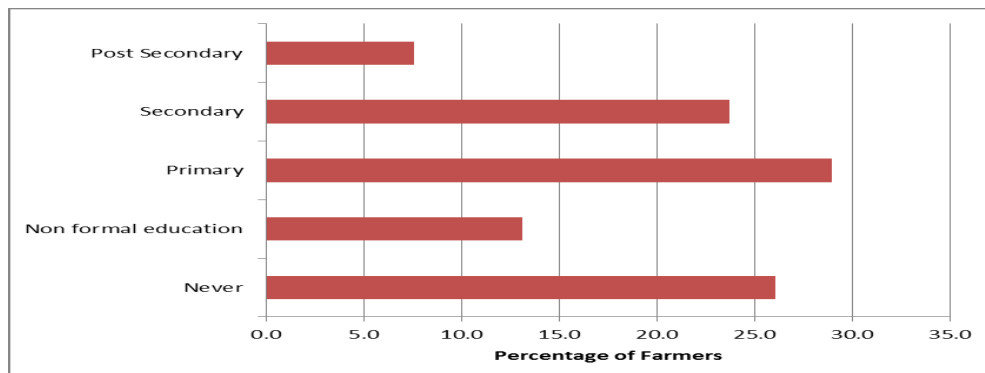
IV.2   Agriculture Funding and Income of Farmers

The funding of agricultural value chain in Nigeria had come under focus over time with the provision of special funds under various schemes with the objective of increasing access to finance at affordable cost. This is as a result of the high cost of funds and low credit uptake from the banking system by farmers. As at 2016, less than 1 per cent of the over 8 million farmers (Table 4.3) involved in the production of exportable farm produce sourced various levels of funding from the formal credit granting institutions. This unfortunate development has trapped Nigeria farmers in a poverty cycle, with farming largely remaining at subsistence level.In 2016, the income of over 50 per cent of farmers who produced exportable agriculture produce were less than the national minimum wage, with over 28 per cent earning far less than a dollar per day. Production is labour intensive, as about 97 per cent of farmers used hoes and only 6 per cent used motorized for ploughing in 2016. These developments make farming less attractive particularly to youths thereby posing the question of appropriateness of policies.

Table 4.3: Sources of Funds, Sales and Ploughing Implements of Farmers in 2016

| Source of Fund	Farmers (percent)	Total Annual Sales	Farmers (percent)
Own funds	76.88	< N100,000	28.1
Friends/Relations	11.54	N100,000 < N250,000	33.5
Credit in kind	0.34	N250,000 < N500,000	21.1
Micro Finance Bank	0.47	N500,000 < N750,000	8.3
Bank of Agriculture	0.06	N750,000 < N1,000,000	5.1
Commercial Bank	0.13	N1,000,000 and above	3.9
Cooperative Society	1.42	Ploughing Implements	Farmers (percent)
Local Money Lender	3.62	Hoe	96.83
Micro Credit (Esusu, etc)	4.90	Cutlass	76.53
Other Sources	0.64	Animal drawn plough	27.84
		Motorized Plough	5.75
		Others	2.31

IV.3   Risks in Agriculture Production

Nigeria has four climate belts giving it the position of suitability for both cropping and animal husbandry. Various cereals and tubers are being cultivated, tropical animals are reared and rain forest crops including timber trees are grown. Over the years, the level and distribution of rainfall have been sources of challenges that often led to crop failure in times of low rainfall and losses in times of floods. In managing and anticipating economic or food supply crises, concerted efforts must be made to understand rainfall patterns.

Tumala (2000) looked at the long term cyclical pattern in rainfall recorded at the meteorological station at Maiduguri related it to occurrence of draughts in history to guide grain reserve management in the Sahel savannah region using spectral analysis. The study observed that, in addition to the annual seasonal peaks, long term cyclical patterns of two periodicities of 8 and 11 years existed. This indicates that drought of varying intensity could occur with intervals of 8 or 11 years, calling for targeted policies on food management and research towards developing drought resistant varieties.

In addition to the production risk of rainfall patterns, the Nigerian farmer takes the other risks of production and those of distribution and marketing. The farmer, as a result of lack of good storage practices, has no option to the low pricing regime during harvests, unprotected to the incidences of flooding, drought, diseases and pests. These evidences, should feed into the policy decision processes in agriculture to safeguard the income of farmers, ensure food security and conserve foreign reserves.

Figure 3.4: Climatic Regions and Annual Monthly Pattern in Nigeria
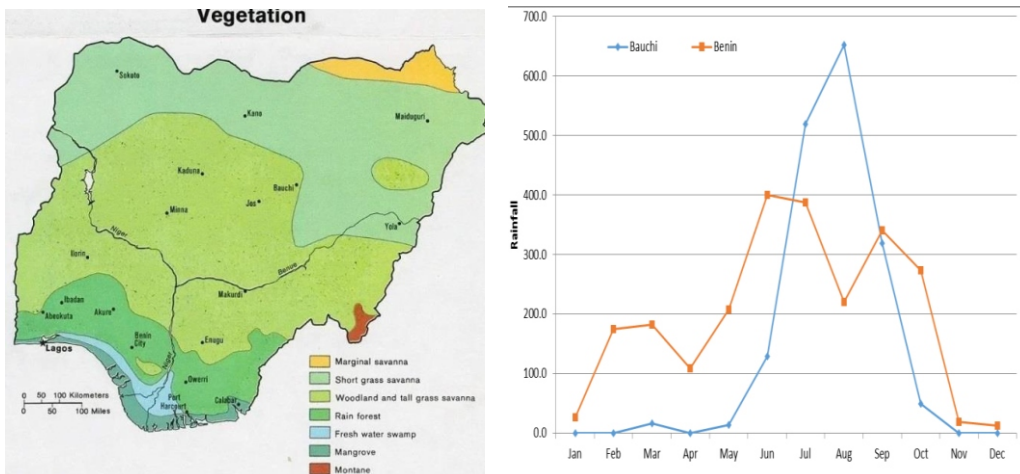
V.   Managing Foreign Exchange Crisis induced by Oil price Volatility

The current recession was preceded by a steep decline in crude oil prices after August 2014. Coupled with low levels of reserve, the significantly reduced inflow of foreign exchange earnings (Figure 5.1) precipitated into an FX crisis (Figure 3.1b).

Figure 5.1: Movements in Crude Oil Prices and Foreign Reserves
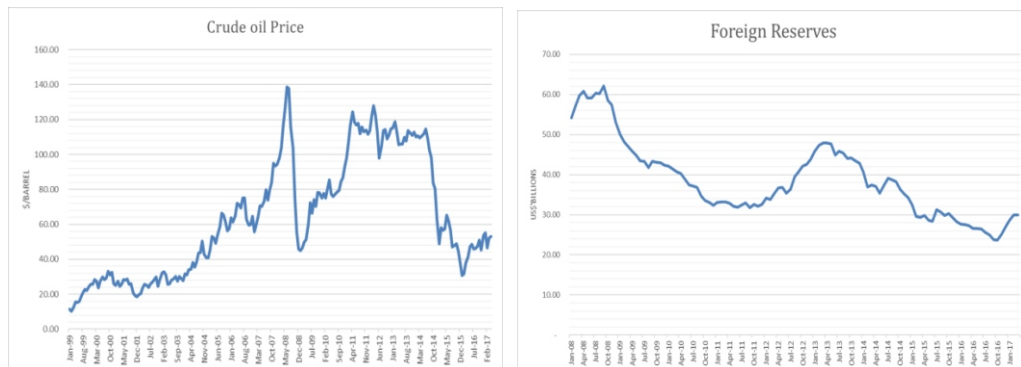
Here, we discuss the results observed by Yaya et al (2017) which examined the bidirectional relationship between crude oil prices and naira/US$ exchange rate in crude oil exporting countries and the policy implications for Nigeria. The study investigates returns and volatility transmissions between oil prices and US-dollar exchange rates of oil-exporting economies' currencies using VARMA-GARCH approach noting that several other approaches are used to understanding spill-overs in prices volatility.

The existence and sign of conditional correlation between US dollar-naira exchange rate and oil prices would usually guide the decision of investors in the oil and FX markets of an economy like Nigeria if spill-overs exist. Portfolio managers with FX and oil related assets have to therefore balance their investment decisions based on the direction of the relationships. To further understand the optimal hedging behaviour of portfolio managers with investment interest in both crude oil and FX markets, optimal portfolio hedge ratios between oil/FX assets. The study find negative conditional correlations in oil exporting countries here reproduced in Table 5.1.

The study further computed optimal portfolio hedge ratios between oil/FX assets for these countries including Nigeria.

Table 1: Estimates of Optimal Portfolio Weights and Hedge Ration

Parameter	Algeria	Iran	Iraq	Kuwait	Nigeria	Qatar	S.Arabia	UAE	Venez.
w_{oil}	0.0815	0.5257	0.2544	0.0046	0.2919	0.0058	0.0028	0.0023	0.767
$1-w_{oil}$	0.9185	0.4743	0.7456	0.9954	0.7081	0.9942	0.9972	0.9977	0.233
β_{oil}	-0.0677	-0.019	-0.041	-0.0003	-0.0282	-0.0139	-0.5036	-0.714	-0.0017

Source : Yaya et al (2017)

For Nigeria, the existence of an inverse conditional relationship is indicative that the optimal allocation by portfolio managers in periods of high downturns in oil prices would be around 71:29 in favour FX investment holding. This development would subject the FX market to speculative pressures in the absence of vibrant manufacturing and preference for FX than oil production. Managers of the foreign exchange market need therefore to pay great attention to speculative activities by identifying areas of genuine needs as portfolio managers will move most attention to the FX market.

VI.   Data Requirements for Economic and Foreign Exchange Crises Management

To effectively manage an economy with or without crisis, data mainly from three sources is required; from the system of administrative statistics, structured surveys of households, and structured surveys of firms. At present, Nigeria's system of administrative statistics is weak, while longitudinal surveys for both households and firms are completely absent. It is therefore very challenging for policy makers to comprehensively understand the economy to make effective policies or measure the effectiveness of existing policies.

There is however recent efforts by data producers to establishment longitudinal surveys for both households and firms in Nigeria. Special purpose surveys are also being conducted; a number of states are also making efforts towards the production of state level data. Although a national strategy for the development of administrative statistics has been launched, funding for the implementation of the strategy by MDAs has been minimal or completely absent in some cases.

VII.   Summary and Recommendations

Data plays an important role in the management of economic crisis including external balance challenges. It is data that indicates an economy is in crisis or is heading to one. It is data that expresses the depth and effects of economic crisis on various sectors of the economy, and indeed that the crisis is over. Data could be used to identify areas of vulnerability in the structure of the economy, the possible causative factors and policy options that could be adopted to manage and resolve the crisis.

The effects of economic shocks and any policy endeavors focused on households and enterprises may be observed from specialized studies or the collection of structured data overtime. Most of the observations made on firms and households in the studies on effects of recession in the US came from longitudinal data on households and firms. The absence of longitudinal surveys in Nigeria inhibits analyst from a number of options to study the effects of policies and changing economic environments on the population and business concerns. This calls for the need for comprehensive timely data production through the development of administrative data sources and longitudinal surveys of households and firms.

From available data, the current economic crisis impacted the sectors of the Nigerian economy, in particular, external reserves declined and the naira depreciated against the US$, unemployment and aggregate prices accelerated, wages declined and financial exclusion widened.

The productivity of most farmers measured by farm output, income from sales and yield per hectre of land under cultivation, is very poor. The farmers are also subject to risks associated with the production, distribution and marketing of agro-produce. This informs the need for; research to develop draught resistant and high yielding varieties, establishment of attractive farm gate pricing mechanism to ensure farmers' income, and greater attention to environmental changes to minimize effects on the productive population.

Diversification of the economy has always been the preferred option out of economic crises in Nigeria, and the agricultural sector received the attention of policy makers targeting increased production and food security. Data on the agricultural sector indicated low participation by youths, participating farmers having almost no access to credit from formal financial institutions, low income of farmers from agricultural produce, and over dependence on traditional farm implements for ploughing. These are pointers to areas of policy need.

The current structure of the Nigerian economy creates volatility spill-overs between crude oil prices and exchange rate of the naira to the US dollar. Even though building up foreign reserves could be the medium term solution, diversification of the economy to reduce over-dependence on oil as major source of public sector revenue may be the long term solution. In times of crude oil price down turn, portfolio investors in the economy would move to the FX market. This result gives credence to the current policy stance where FX is made available to meet genuine needs while speculators trade within themselves (the "willing buyer/willing seller" platform).

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Regulatory Framework in Managing Recession and Exchange Rate Crisis

Emmanuel U. Ukeje[*]

I.   Introduction

Since the 2007/2009 global financial crisis, policy makers have grappled with the task of placing their economies on a path of economic recovery and growth. The global crisis, waslater followed by rising debt profiles in emerging markets, the effects of the United Kingdom (UK) vote to exit the European Union, and the global oil crisis, characterised by weak demand from China, exacerbating global economic conditions. In addition, increasing shale oil production in the United States, further rendered the path to recovery an arduous task in the face of increased uncertainties and volatile financial markets. The oil exporting economies have been most affected, as oil export earnings more than halved, from US$753 billion in 2014 to US$433 billion in 2016, and currency depreciation in oil exporting economies became the norm. In Nigeria, where oil continues to remain the dominant source of foreign earnings accounting for over 90 per cent of foreign exchange inflows, considerable oil prices declines from its peak of US$115 per barrel in June 2014 to less than US$35 per barrel in February 2016, drastically thinned the fiscal space. Net oil export revenues declined considerably from US$78 billion in 2014 to US$37 billion in 2015 and further to US$26 billion in 2016 (EIA, 2016; 2017). The foreign earnings resulted in reduced fiscal space for implementation of fiscal programs, amidst weak global demand and sluggish growth. By the third quarter of 2016, the Nigerian economy was officially in recession, following consecutive negative real GDP growth of 0.36 per cent and 2.06 per cent in the first and second quarters of 2016, respectively.

This paper discusses the policy and regulatory frameworks designed or modified by the Bank to mitigate the economic impact of the recession especially the exchange rate challenges. This paper is structured into 7 sections. Following the introduction, section 2 highlights some theoretical considerations. In section 3, the regulatory experiences of oil producing countries are examined, while section 4 conducts a review of the Nigerian experience and the role and responsibilities of the CBN during recessions. Section 5 analyses impact of measures adopted by the Bank during the crisis. Section 6 focuses on some burgeoning risks, while section 7 concludes the paper.

II.   Theoretical Considerations

The Mundell-Fleming policy trilemma, popularly known as the "unholy or impossible trinity" is quite clear as to the impracticability of attempting to achieve three policy goals of free capital movement, fixed exchange rate and the pursuit of an independent monetary policy, simultaneously.   Some underlying assumptions of the theory include; (i) the existence of a small open economy, (ii) the spot exchange rate (S_o) being equivalent to the Forward Exchange rate (F_o), (iii) perfect substitutability of financial instruments. i.e. no barriers to capital flows and (iv) similar tax rates.

In a world of perfect capital mobility, shifts in interest rates arising from a tightening of monetary policy can attract capital inflows, which appreciate the value of the domestic currency. In a fixed exchange rate regime, the central bank is committed to intervening in the market to prevent an excessive appreciation of the currency due to its adverse consequences on exports. This action adjusts interest rates to prevailing global rates. The converse holds in the case of a policy attempt to reduce interest rate through an expansionary monetary policy. It, therefore, holds that the conduct of an independent monetary policy under conditions of fixed exchange rate and perfect capital mobility is quite ineffective at affecting output levels and restoring economic stability.

When the exchange rate is fully flexible, interventions by the central bank are not obligatory to ensure stability since capital inflows and outflows move to adjust any imbalances in the Balance of Payments, leaving the central bank with the free will to conduct an independent expansionary or restrictive monetary policy as deemed fit for the domestic economy. With domestic and foreign prices held constant, shifts in interest rate will affect capital flows and cause the currency to either depreciate or appreciate. Exchange rate depreciation, resulting from capital outflows, improves the net export and boosts output levels. Suffice to say that expansionary monetary policy is more effective at influencing output levels under a flexible exchange rate system than in a fixed exchange rate system.

In the real world, however, tax differences exist across countries and there are capital controls, which hinder the smooth flow of capital across countries, increasing transaction costs. Domestic and foreign prices are also often times not equal. For economies with a low export base, exchange rate depreciation under a flexible exchange rate system may not necessarily boost income levels. Moreover, with increased globalisation and financial integration, business cycles generally follow similar trend across economies. When countries simultaneously depreciate their exchange rate, this impairs any competitive advantage from exchange rate adjustment, resembling the beggar-thy neighbor policies observed during the global oil crisis of 2014.

III.   Policy and Regulatory Frameworks of Oil Producing Countries in the unfolding Global oil crisis

This section highlights some policy and regulatory measures by oil producing economies, including non-OPEC economies.

III.1   Angola

The second largest oil producer in Africa derives 98.0 per cent and 75.0 per cent of export earnings and government revenue from the oil industry. With its gross external reserves declining steadily to US$21.4 billion in 2016 from US$32 billion in 2013, the Bank of Angola which pegs its currency to the US dollars, implemented several intervention measure sincluding the raising of policy rates at different intervals from 9.0 to 16.0 per cent. Other short-term measures include standing lending facility at 20.0 per cent, liquidity-absorbing facility at 7.25 per cent, cash reserve requirements from 12.5 to 25.0 per cent, prioritised the supply of foreign exchange to critical sectors such as health, food and oil sector as well as supported the devaluation of the Angolan Kwanza.

Consequently, GDP growth declined by half from 4.8 per cent in 2014 to 2.8 per cent in 2015 and 1.1 per cent in 2016. Inflation rose from a record low of 6.8 per cent in June 2014 to 14.3 per cent in 2015 and an estimated 41.95 per cent in 2016. Angola's economic situation was further constrained by the withdrawal of dollar funding from some international banks. As a further response, the Bank of Angola, embarked on a reform of its financial system regulatory framework, comprising anti-money laundering measures as well as bank licensing and ownership structure, to comply with international standards. As at 2016, 23 of 41 regulations had been issued. This was complemented by fiscal measures such as budgetary cuts, and the resort to increased external financing amounting to an aggregate sum of US$24.5 billion in 2015 and 2016. Inflation in Angola has decelerated gradually from its peak in 2016 to 27.29 per cent in July 2017, prompting the Central Bank of Angola to maintain its tight policy stance.

III.2   Algeria

As the third largest crude oil producer in Africa earning about 60.0 per cent of its budgeted revenue and 94.0 per cent of its export revenue from oil, Algeria, as Nigeria and Angola, also faced challenges arising from declines in oil prices. The country's trade deficits, for the first time in its history, rose to 10.2 per cent of GDP in 2015, while fiscal deficits which stood at 15.2 per cent of GDP in 2015, declined to 13.2 per cent of GDP in 2016. The external reserves position, equally decreased from US$192 billion in 2013 to US$143 billion and US$114 billion in 2015 and 2016,

respectively. Consequently, real GDP decelerated from 3.8 per cent in 2014 to 3.5 per cent in 2016.

In an attempt to cushion the negative impact of falling prices, the Bank of Algeria, which hitherto adopted a managed float system and acts as the implementation institution for monetary policy, resorted to a more flexible exchange rate system as a first line of defense. Consequently, the exchange rate depreciated against the dollar from 87.92 DZD/USD in 2014 to 110.4 DZD/USD in 2016. The Bank also tightened system liquidity using open market operations as the primary tool, complemented by the standing facilities, reserve requirements, discount of government securities and rediscount of credit transactions. Consequently, inflation rose steadily from 2.9 per cent in 2014 to 4.8 and 6.4 per cent in 2015 and 2016, respectively. As at June 2017, inflation declined to 4.1 per cent. In 2017, a new financial law was introduced, amidst protests, to among other things, entrench obligatory requirements for companies on transfer pricing, to commence the taxation of capital gains from constructed and non-constructed structures, taxation of internet mobile service providers, upward revision of value added tax, petroleum profit tax and energy efficiency tax. Similarly, the fiscal authorities placed restrictions on imports, increased domestic fuel price, and embarked on a drawdown of over 60 per cent from the country's Revenue Regulation Fund[7] which was utilised to bridge the fall in commodity prices and has reduced the risk of a debt crisis in the medium term. In addition, a new growth plan was launched in July 2016 to diversify the country from oil-related resources, re-industrialize the economy, rationalize public spending and increase revenue from non-oil related activities.

III.3   Russia

The oil and gas industry occupies a unique position in Russia with about 50.0 per cent of government budgeted revenue earned from the industry. Prior to the fall in commodity prices, the Russian economy was already contending with the negative effects of Western sanctions as a fall out of its annexation of Crimea. A geo-political crisis soon translated to an economic cum financial crisis as Russian banks and investors were cut off from the funding channels of the international financial markets. In November 2014, the effect of these sanctions coupled with falling commodity prices led to a 0.5 per cent contraction in the Russian economy, the first since 2009. Russia, which operated a managed float regime prior to the crisis, transited in a phased process to a free float system in November 2014 with a maximum daily dollar sales of US$350million[8]. By December 2014, the Ruble had depreciated by 18.0 per cent against the US dollar and inflation had soared to 11.4 per cent, prompting the Bank of Russia in a desperate move to shore up its currency by increasing its policy rates from 10.5 per cent to 17.0 per cent in mid-December 2014, its highest hike in over 16 years.(Bank of Russia, 2015).

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[7]The Revenue Regulation Fund of Algeria has a legal floor limit of 740 billion Algerian Dinars (US$ 6.7billion). This floor limit was removed in 2017.
[8]Russia's decision to switch to a free float exchange rate regime forms part of a policy strategy to switch to inflation targeting monetary framework.

Figure 1: Russia's Effort at Stabilising its Economy
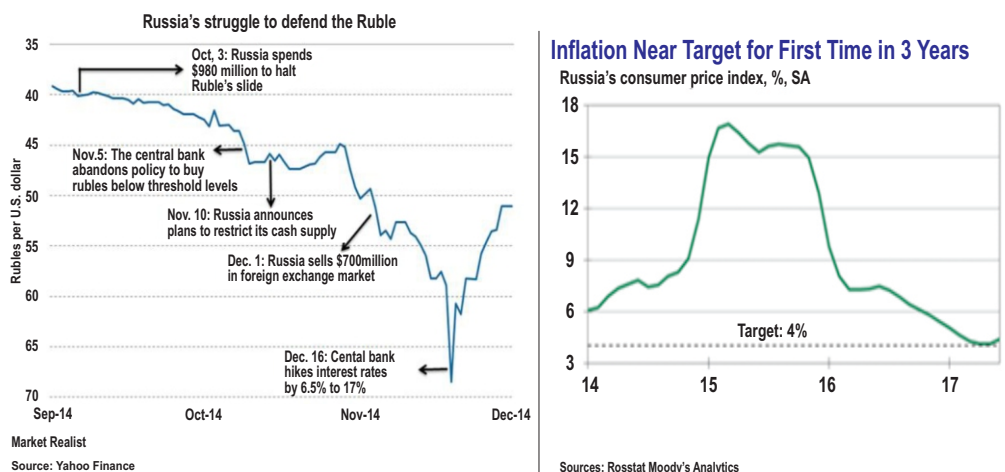
With interest rate hikes unable to slow down the depletion of in foreign reserves, the Bank of Russia in late December 2014, introduced informal capital control to stem the outflow of foreign reserves. It also permitted the use of about 10.0 per cent of its National Wealth Fund[9] (about US$9billion) for the recapitalisation of its banks and further provided for foreign dollar and euro denominated loans to banks in order to finance their operations. However, with US sanctions and oil price declines taking its toll on the Russian economy, the tightening measure of the regulatory authority has been moderated with the Bank of Russia gradually reducing policy rates since 2015. These measures have helped to stabilise expectations, reduce inflationary risks and improve business sentiments.

The afore-mentioned portrays the extent and depth of policy and regulatory measures adopted especially by oil producing economies to promote a sound and stable financial system in the light of anticipated and unanticipated shocks. Nigeria has not been an exception in this regard. The policy actions undertaken by oil producing economies are quite unique to resource rich economies and point to a commitment to the price stability objectives. Furthermore, a recurring predominant factor among these economies remain the need to diversify revenue sources away from oil. The pursuit of a contractionary policy stance, alongside some capital control measures, albeit in different degrees, by these oil producing economies is a pointer to the need to strike a delicate balance between the achievement of growth objectives and the need to attract capital inflows in the bid to stabilise prices.

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[7] The Revenue Regulation Fund of Algeria has a legal floor limit of 740 billion Algerian Dinars (US$ 6.7billion). This floor limit was removed in 2017.

[8] Russia's decision to switch to a free float exchange rate regime forms part of a policy strategy to switch to inflation targeting monetary framework.

[9] Russia operates two sovereign wealth funds. The Reserve Fund which warehouses the excess oil earnings to accommodate budgetary shortages and the National Wealth Fund which covers its Pension liabilities.

IV.   Reflections on Nigeria's Economic Recession and the Foreign Exchange Crisis: Evolving Role of the Central Bank of Nigeria

Though the Nigerian economy officially entered recession in the third quarter of 2016, the indications for a recession were imminent. For instance, in November 2014, the Naira exchange rate to the Dollar showed signs of depreciation of about 8.8 per cent at the inter-bank and BDC segments, while the rates at the wDAS/rDAS segments depreciated by 5.9 percent from their respective levels at end-January 2014.   The depreciation at the BDC segment spiraled beyond exchange rate outcomes in the other two market segments.

### Figure 2: Crude Oil Prices and the Naira-USD Exchange Rate
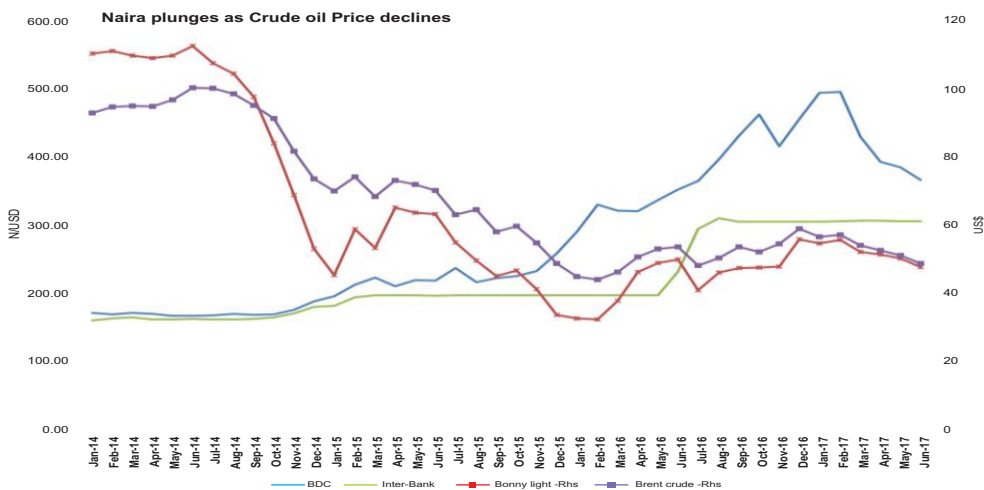
IV.1   What had Capital Flows got to do with the crisis?

The need for external capital flows to bridge the savings-investment gap in an economy is well propagated in the literature. For recipient countries, it finances domestic investment, while it is often used as a consumption smoothing or international diversification strategy by investing countries. Certainly, the compositions of capital flows are of huge significance for recipient economies. The preference for foreign flows channeled to direct investment is based on their long-term nature and non-susceptibility to sudden reversals. However, when external capital is largely channeled toward portfolio investments, chances are that they are more sensitive to both global and domestic economic fundamentals. Moreover, the size of flows, when in excess relative to domestic absorptive capacity, can be disruptive to the host economy. Such flows, which are often short to medium-term in nature, are prone to sudden reversals with the potential to trigger a crisis in the financial markets. In Nigeria, portfolio investments have dominated the structure of capital flows since 2008.

Figure 3: Composition of Capital Flows
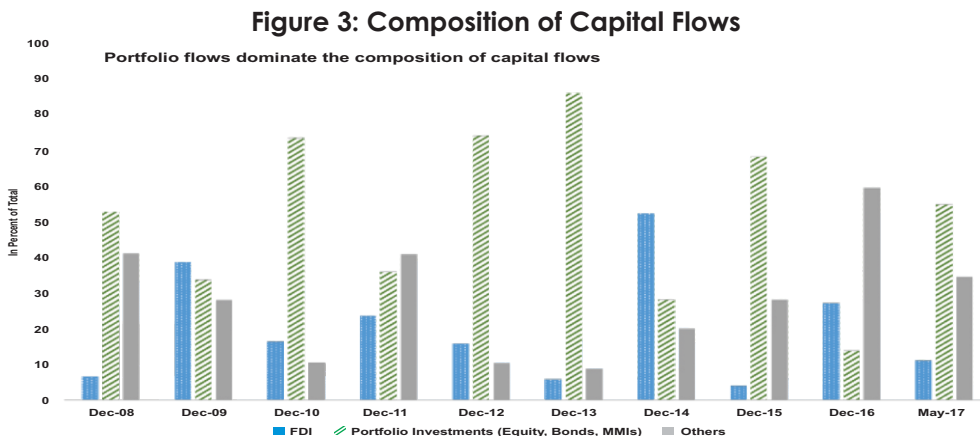
With the decline in oil prices and fall in global income levels, capital inflows were constrained.

Figure 4: Capital Flows and Exchange Rate
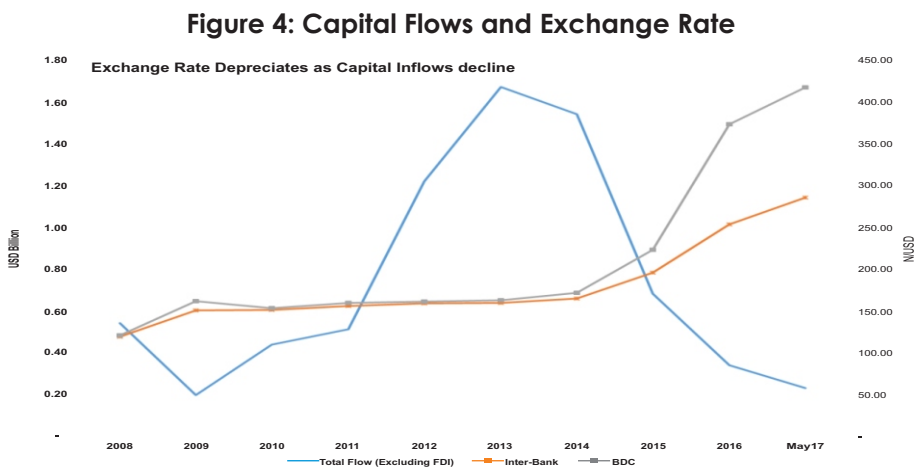
As cited in Singh and LaBrosse (2012), "*the primary objectives in containing a financial crisis are first, simply to stop it, and second, to prevent it from affecting the real economy*" (pp 12). Hence, the Bank adopted some new measures as well as modified existing instruments in the bid to address the unfolding situation. The initial response was a controlled and upward adjustment of the exchange rate mid-point to N168/US$ from N155/US$ and a widening of the exchange rate band to +/-5.0 per cent from +/-3.0 per cent. Subsequent measures included channeling of the foreign exchange financing of non-essential import related demand to the inter-bank market, and the reduction in the foreign currency trading exchange position limit to zero per cent from 1.0 per cent.

The decision to allow a depreciation of the currency against the US dollar to protect the external reserves, was not without the cost of rising inflation. driven mainly by the impact of the depreciation of exchange rate and energy price hike. In February 2015, the CBN closed the official rDAS window, and directed all

eligible foreign exchange transactions to the inter-bank and BDC segments. Depreciation persisted through 2015 and led to a further shift of the mid-point to N197/US$ at the inter-bank segment, which was maintained for a period of 16 months, and a subsequent restriction of foreign exchange supply to only 'strategic imports'. While this stemmed the foreign exchange demand for non-essential imports amidst some relative stability of rates at the inter-bank market, it did not totally abate the decline in external reserves[10] or the continuous depreciation in exchange rates at the BDC segment, which ranged from N242/US$-N350/US$ between November 2015 and May 2016.

Table 1: Synopsis of CBN Regulatory and Policy Measures

Policy Measures	Policy Action	Policy Stance	When?
Monetary Policy			
Asymmetric corridor	Narrowed the standing deposit corridor to +200/ -500 from +200/ -700		March 2016
Cash Reserve Requirement	Increased by 250 bps to 22.50 per cent		March 2016
Monetary Policy Rate (MPR)	**Upward adjustments:** 11.0 per cent to 12 per cent	Contractionary	March 2016
	12 percent to 14 per cent		July 2016
Conduct of OMO	OMO Sales		Ongoing
Foreign Exchange Policy			
Review of net foreign currency trading position	Reviewed from 0.5 to +0.5/ -10	Minimise speculative activities and moderate FX pressures	June 2016
Flexible Exchange rate regime	(i) Suspension and subsequent resumption of foreign exchange sales to bureau -de-change (ii) Conduct of non -deliverable Naira over the counter futures (iii) Re -introduction of two -way quote trading in the market.		July, 2016 - April 2017; Ongoing

Source: Bewaji (2017) and Author's Compilation

Figure 5- Monetary Policy Rate
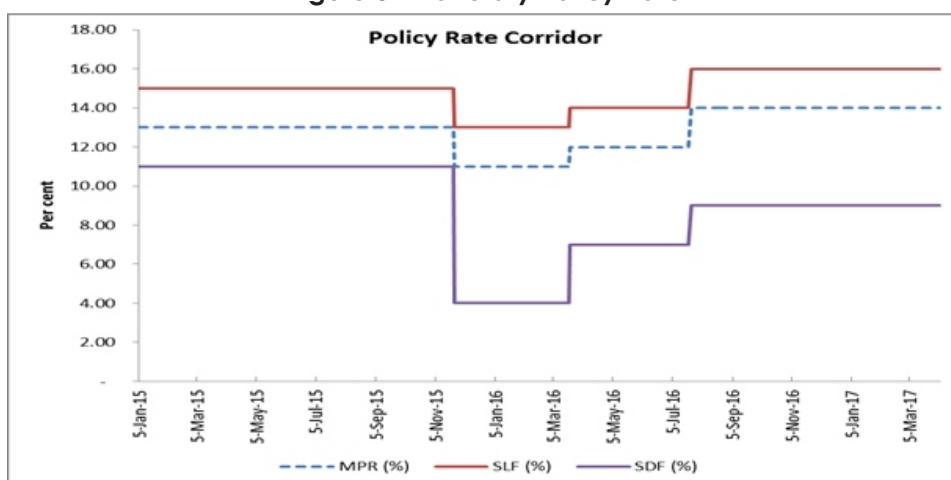
Source: Compiled from CBN Statistical Database

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[10] Nigeria's Stock of External reserves remained sufficient to cover 6.5 months of import cover in excess of the West African Monetary Zone (WMAZ) benchmark of 3 months import cover and International benchmark of 6 months of import cover.

IV.2   The Adoption of a Flexible Exchange Rate Policy

With the decline in oil prices and the dwindling foreign exchange earnings, coupled with the persisting pressures on foreign exchange demand, the Bank reviewed its exchange rate policy, transiting from a managed float exchange rate regime to a flexible exchange rate policy in June 2016. Some of the features and implementation modalities of the new policy have included;

- The introduction of foreign exchange forwards of 6 to 12 months and non-deliverable over the counter (OTC) naira-settled futures to enhance liquidity and reduce exchange rate volatility in the market. Most of the futures are non-standardised and of different tenors.
- The application of a single market rate, determined by the forces of demand and supply, for all spot transactions (private or public) in the inter-bank market. In addition, BDCs are not permitted to participate in the inter-bank foreign exchange market.
- Transaction-backed foreign exchange demand, which must be executed on a two-way quote basis.
- The appointment of 16 foreign exchange primary dealers (FXPD) as well as foreign exchange non-primary dealers, with the former dealing directly with the CBN on large trade sizes, as well as with other participants in the market.
- The non-existence of a predetermined spread on foreign exchange spot transactions, executed through the CBN intervention with primary dealers, while all foreign exchange spot purchased by the authorized dealers are transferable in the inter-bank market.

Other measures introduced were the classification of 41 items as "Not Valid for Foreign Exchange" which, till date, have remained inadmissible in the Nigerian foreign exchange market. SMEs access to foreign exchange was also improved with the introduction of Form Q to improve relative access of retail businesses to foreign exchange.

The Bank in its effort to deepen the foreign exchange market, allow for price discovery, boost liquidity and accommodate all foreign exchange obligations introduced.

IV.2.1   Introduction of the Secondary Market Intervention Sales (SMIS)

The CBN further introduced funding for various business sectors such as agriculture, raw materials, plants and machineries through forward sales in tenors, which range between 7 and 120 days. While some transactions such as capital repatriation, dividends and income remittances and interest payments are only eligible at the wholesale (Spots and Forwards) segment, international

airlines ticket sales' remittances are eligible both in the retail and wholesale segment and can be transacted in the spot or forward market. The CBN has also ensured the sustained provision of foreign exchange funding for Personal Travel Allowances (PTA), Business travel allowance (BTA), medical bills, and school fees, which should be processed with 24-48 hours.

Figure 6: Nigeria's Foreign Exchange Market Structure
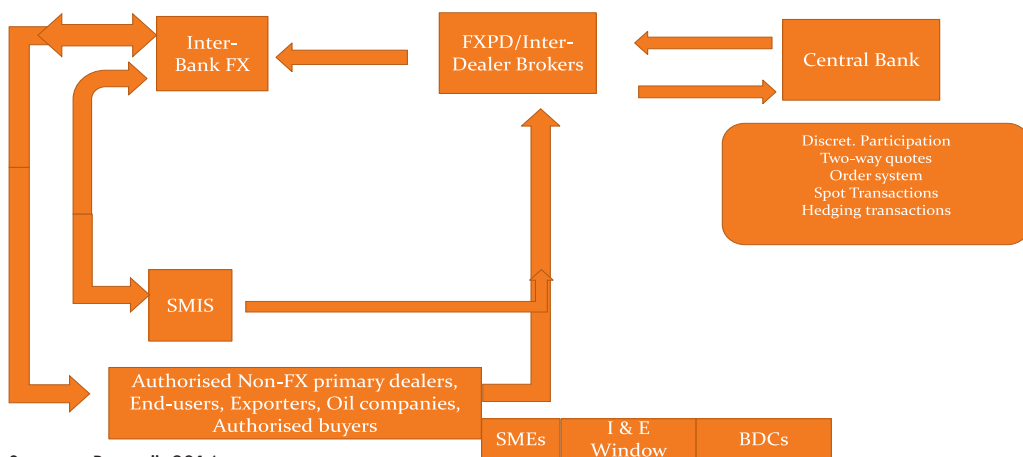
Source: Bewaji, 2016

IV.2.2   Establishment of the Investors and Exporters Window

This window has boosted liquidity and promoted the timely execution and settlement of eligible transactions. Transactions are conducted through portfolio investors, exporters, and authorized dealers with exchange rates determined as agreed between the two counterparties. The Nigerian autonomous foreign exchange rate fixing (NAFEX) rate, which is a polled rate, also provides a reference rate for transactions at this window.

IV.2.3   Sale of Foreign Exchange to Bureau-de-Change (BDCs)

The Bank resumed the sale of foreign exchange to BDCs in August 2016 with weekly sales of US$10,000. The practice was hitherto suspended in January 2016.

V.   Impact of Policy Measures

The aforementioned policy and regulatory tools have remained largely traditional and geared towards providing market-based solutions. Some positive outcomes have been achieved as discussed below:

V.1   Money Market

Theoretically, it is the central bank's expectation that money market transactions will largely fluctuate within the policy corridor, such that a market participant with excess funds will demand the minimum interest rate that any depositor would normally get from the central bank, while the maximum lending rates that can be charged should be below the standing lending rate that such a borrower would have received from the central bank. During the crisis characterised by uncertainties, markets often remain quite volatile resulting in the increase in demand for standing lending and repurchase facilities with the Bank. This suggests a constrained liquidity situation in the banking system, which pushed market rates upwards. This is not unexpected, given the contractionary stance of policy which is reflected in the huge withdrawals from the banking system through the conduct of OMO, the lingering effect of the Treasury Single Account (TSA) policy implementation in the last quarter of 2015 and the foreign exchange sales under the flexible exchange rate regime. Though market rates have remained volatile, a downward trend is observable since May 2017.

Figure 7: Money Market Rates and Interest Rate Corridor
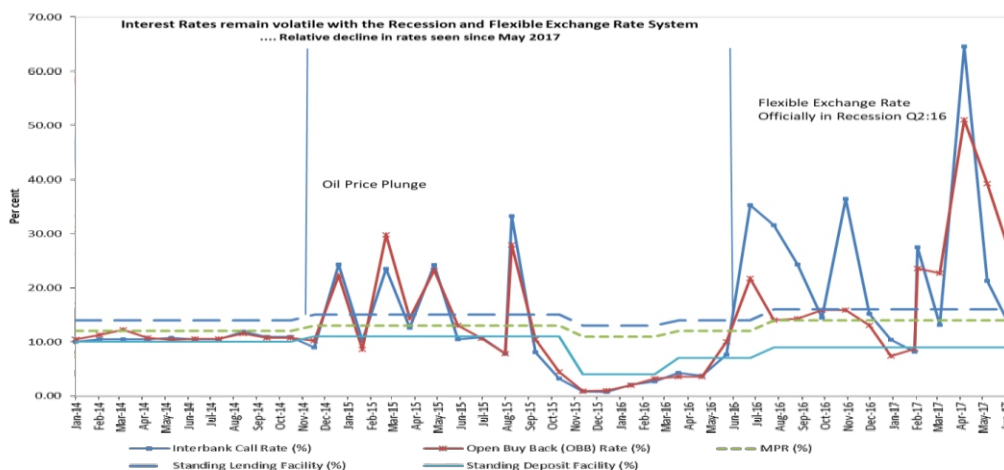
V.2   Growth and Inflation

Though economic growth conditions are not at pre-recession growth levels, available data indicates that the path of recovery has commenced with a gradual reversal of negative growth rates. Real GDP growth at 6.21 per cent in first quarter of 2014, declined considerably to 2.11 per cent at end-2015. The real GDP growth declined to the negative region with a growth rate of -1.49 per cent in the second quarter of 2016 when the economy was officially declared to be in a recession. Though still negative, the growth of the real economy is reversing

gradually into positive territory with real GDP growth at -0.52 per cent in the first quarter of 2017. Growth in non-oil GDP turned positive at 0.72 per cent in the first quarter of 2017 and is projected at 0.2 per cent by end-2017.

Figure 8: Real GDP, Oil and Non-Oil GDP
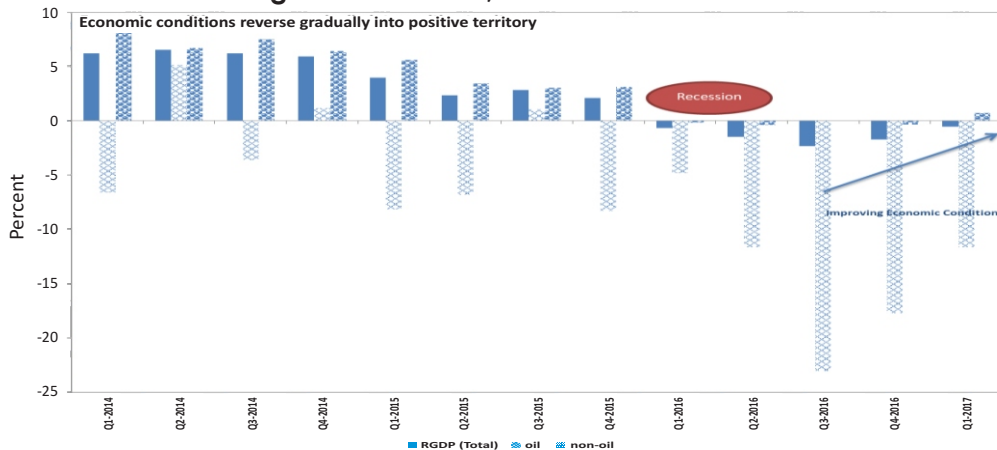
As inflation climbed steadily since November 2014, the policy rate was adjusted upwards to control growth in prices. In the initial declines in oil prices, the central bank appear to anticipate the future increase in prices and raised policy rate to 13.0 per cent, which largely contained growth in prices within a single digit until the end of 2015. However, spiraling prices from 2016, partly attributed to the sustained depreciation of the exchange rate, coupled with the introduction of a flexible exchange rate system prompted a stepwise increase in policy rate, albeit with an observed lag. The policy rate maintained at 14.0 per cent since June 2016, has yielded good results with an observable decline in inflation rates from 18.72 per cent in January 2017 to 16.1 per cent in June 2017 and further to 16.05 per cent in July 2017.

Figure 9: Policy Rate and Inflation
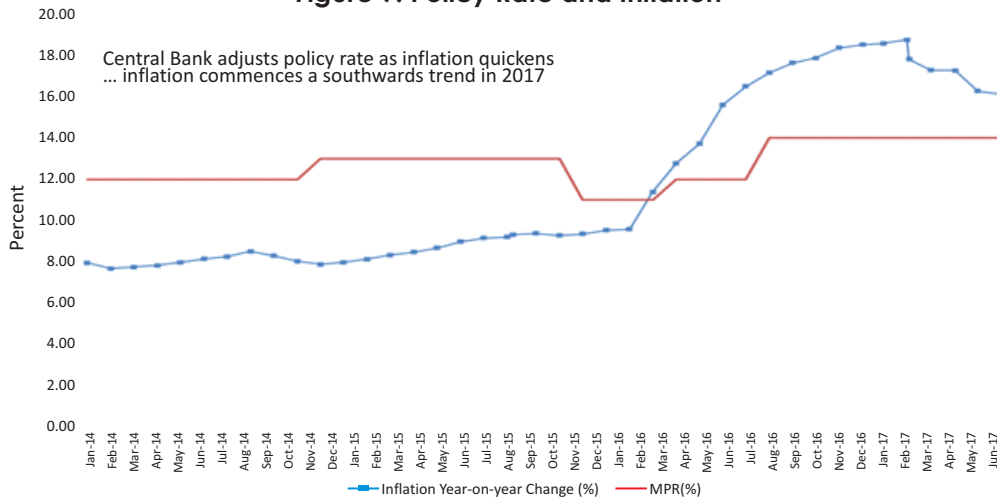
V.3   Exchange Rate Developments

Following the introduction of the forwards and futures market, there have been reduced foreign exchange demand pressure and foreign exchange volatility, especially with regards to the front-loading of demand for foreign exchange. With the OTC Future market, foreign investors can now hedge their foreign exchange exposures. There are also observed expenditure switching patterns in favour of domestic production and consumption, which has made some impact on growth outcomes, (See figure 2). The improved sales of foreign exchange have stabilised rates, resulting in a decline in the spread between the inter-bank and BDC rates, to pre-recession level. There is expectation for the convergence of exchange rates.

Figure 10: Inter-Bank and BDC Exchange Rates
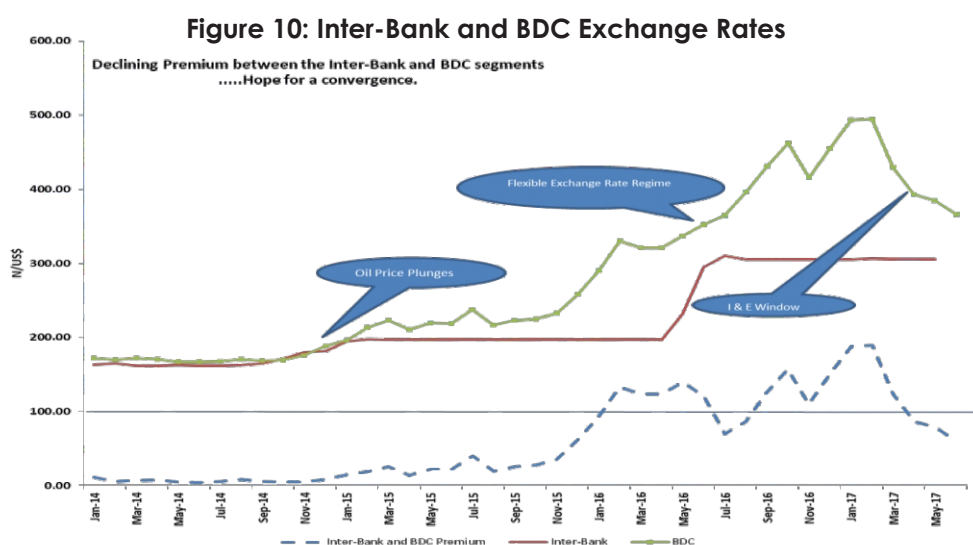
VI.   Risks and Challenges

The attempt to jump start the economy from recession is not without some headwinds. First, the rising debt profile incurred during the recession poses some inflationary risk. Second, the skewed structure of capital flows in favour of portfolio investments, which are susceptible to capital flights reversals, poses another risk. Third, as a price taker in the global oil industry, oil price shocks and the resultant volatility in foreign exchange inflows remains an ever-real possibility. Fourth,the highly import-dependent nature of the economy will continue to exert pressure on the foreign exchange market and external reserves. Fifth, with the prevalence of structural rigidities, there are bound to be limitations to the role of monetary policy. Hence, the need for continued engagement with the fiscal authority for the complementary fiscal measures.

VII.   Conclusion

The imperative for financial system regulation during a crisis is strengthened by the need to ensure stability amidst the negative and unintended consequences of a failure of the financial system on the wider economy. As the apex financial system regulator, the CBN has embarked on policy and regulatory measures designed to address both the supply and demand side issues. In particular, the role of the Bank during the period has been largely directed towards the achievement of primary objective of price stability, the preservation of the international value of the naira as well as promoting a sound and stable financial system. While some positive outcomes have been observed from the implementation of these measures, the achievements of some targets are yet to be realised. The sustainance of flexibility, liquidity and improved transparency in the foreign exchange market,in other to preserve the external reserves is paramount in the near term. In the medium to long-term, addressing the structural inadequacies, particularly the motivation to drive exports, diversify the sources of export earnings, and supporting import substitution consumption remains the most viable option. The growth outlook is promising if the collaborative policy efforts of both the fiscal and monetary authorities are sustained.

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Management of Recession and Exchange Rate Crisis in Nigeria: The Case for Stable Undervalued Exchange Rate Policy

Ademola T. Oyejide[*]

I.   Introduction

There are three key macroeconomic policy instruments for establishing and maintaining the internal and external balances required for macroeconomic stability, which is generally regarded as the pre-requisite for protecting the economy from the negative effects of both internal and external shocks as well as for exiting economic recession and restoring sustainable growth.

These policy instruments are fiscal, monetary and exchange rate policies. Policy makers are typically confronted by a set of challenges as they seek to select appropriate set of policy options which are drawn from a mix of these policy instruments. First, ultimate policy goals may differ across countries and over time. Second, different policy goals may be assigned to each of the policy instruments. Third, there are inherent interactions among the policy instruments themselves. Fourth, different organs of government often have jurisdiction over different policy instruments, and thus, call for various degrees of coordination.

More specifically, most central banks have a double mandate in terms of conducting monetary and exchange rate policies aimed at promoting non-inflationary economic growth; while the fiscal authority may have an economic growth and employment mandate which may not be fully and consistently aligned with that of the central bank. In addition, the optimal combination of the three key macroeconomic policy instruments needs to take into account the peculiar features of the economy, including how and the extent to which these special features evolve over time in the process of economic development and growth.

Against this background, this paper seeks to review the general framework for making appropriate macroeconomic policy choices presented in the impossible trinity or trilemma in section 2 below. To establish the context in which these choices must be made in Nigeria, an analysis of the relevant features of the economy is presented in section 3, together with a review of the implications of the policy choices that have been made since the 1970s. Section 4 provides a review of the experiences of a couple of countries in which there appears to have

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been a relatively closer alignment between their special features and the policy choices made. Section 5 distills from the preceding analysis relevant insights and lessons which suggest that the stable undervalued real exchange rate (SURER) policy could be appropriate for Nigeria. The paper concludes in section 6.

II.   The Impossible Trinity Framework

The impossible trinity or macroeconomic policy trilemma establishes the general framework for understanding why countries cannot exercise unlimited options in the combined use of capital mobility, exchange rate and monetary policy. In other words, a country cannot permit free flow of capital across its borders, maintain a fixed exchange rate and pursue an independent monetary policy simultaneously. In effect, the country is limited to only two of the three options.

The three options from which only two can be pursued at the same time are the following:

- A : set a fixed exchange rate for its currency and allow free capital mobility
- B: allow free capital mobility and set its own monetary policy
- C: set a fixed exchange rate and set its own monetary policy.

According to the trilemma, a country which selects option "A" will use a fixed exchange rate system and permit free capital mobility, but give up an independent monetary policy because if it raises its interest rate to combat rising inflation (an exercise of independent monetary policy), this will generate capital inflows whose ultimate effect would be to break the fixed exchange rate system. Similarly, a country which chooses potion "B" will allow free capital flow and have an independent monetary policy, but it cannot fix its exchange rate. If the country tries to hold down the exchange rate through intervention, this will increase the monetary base and hence reduce interest rates and thereby frustrate the attempt to exercise an independent monetary policy. In the same way, the country that wishes to have a fixed exchange and implement an independent monetary policy must give up free capital mobility (i.e, Option "C") because it is only when capital movement is restricted that the country can control both the interest rate and the exchange rate at the same time.

Despite of the rigidity of the corner solutions implied by the impossible trinity, many countries have applied various "middle ground" solution options based on their attempts to avoid some of the costs associated with the adoption of the rigid corner solution. In particular, countries that have experimented with tying their exchange rate to a stable monetary anchor, such as the United States dollar have typically done to control inflation. But this is achieved at a significant cost of

loss of monetary autonomy which means that interest rate policy is subordinated to maintaining the fixed exchange rate, and hence, cannot be used flexibly to stimulate or stabilise the domestic economy. Similarly, countries that choose to float their currencies typically face the challenges posed by sharp movements of their exchange rates. As a result, they could be tempted to reduce the extent of capital mobility by introducing capital controls, by adding to or depleting their foreign currency reserves or sacrificing monetary policy autonomy.

In effect, different countries have taken various measures as a means of escaping the rigidities associated with the trilemma options. These measures include selective capital controls and managed-intervention exchange rate regimes which enable countries to re-claim some degree of monetary policy autonomy. In this context, appropriate mixes of macroeconomic policy instruments can be designed with the degree of use of each policy instrument more closely aligned with the specific features and circumstances of each country. While this process may not necessarily eliminate all the complications that are inherent in all economic policy making, it should make more transparent the tensions and trade-offs that are part and parcel of each policy choice.

III.   Nigeria's Macroeconomic Policy Context

While the impossible trinity framework establishes the general basis for different policy options and their trade–offs, the specific features and circumstances of a country may also play an important role in those choices and their consequences. In the particular case of Nigeria, there are two major phenomena which have, apparently, not always been taken fully into account, but which can no longer be ignored. These are Dutch disease and fiscal dominance. These are discussed sequentially below in terms of their macroeconomic policy implications.

III.1   Dutch Disease

The Nigerian version of the Dutch disease phenomenon has its roots in the sharp increases in world crude oil prices from the early 1970s.This resource boom generally affects the rest of the economy through two channels. One of these is the spending effect which leads to increased income that, in turn, bring about increased imports and domestic absorption for both tradable and non-tradable goods. Since the prices of tradable goods are essentially set globally, this spending effect results in increasing prices and wages of non-tradable relative to tradable or, in other words, an appreciation of the real exchange rate. Similarly, the resource movement effect works through an increase in the price and profitability of the booming sector which, in turn, draws labour from the non-

booming sector (typically agriculture and manufacturing). As resources are thus, shifted from the non-booming tradable sectors, their share in total output (GDP) falls and the kind of structural transformation of the economy which is closely associated with rapid and sustainable economic growth either is retarded or completely fails to materialize. The immediate and direct manifestations of this tendency include increasing non-competitiveness of these sectors' products in the world market, and thus, reduction in their exports as well as increase in imports of similar products.

Beyond the decrease in output shares and exports, other macroeconomic indicators of the effects of Dutch disease include pro-cyclical fiscal policy which converts the ups and downs in natural resources prices and revenues into macroeconomic instability; accumulation of high levels of debt which leads to high interest rate spreads during periods of lower oil prices; as well as poor management of the windfall revenues associated with the oil boom.There are basically two ways through which the negative effects of the Dutch disease can be reduced, if not fully eliminated. One is to prevent the appreciation of the real exchange rate and the other is to boost the competitiveness of the non-booming tradable sectors. Preventing real exchange rate appreciation or, at least, reducing the speed and extent of real exchange rate appreciation can be achieved through a number of strategies. One of these is to sterilise the revenues generated by the boom. This will reduce the spending effect and some of its associated inflation pressures. Another is to increase saving in the economy by reducing income and profit taxes and ensuring that the government runs a budget surplus. If these strategies succeed in preventing real exchange rate appreciation, the question of boosting the competitiveness of the non-booming tradable sectors would be largely resolved. In addition, appropriate investments in education and infrastructure, which are specifically targeted at promoting competition, innovation and productivity, should be helpful in increasing profitability of the non-booming sectors.

III.2   Fiscal Dominance

In principle, fiscal dominance occurs when fiscal policy is set exogenously to monetary policy in an environment in which there is a limit to the amount of government debt that can be held by the non-bank public. Normally, budget deficit represents the change in government expenditure that is not covered by a corresponding change in tax revenue. This deficit is typically financed through insurance of public debt and money creation. The debt component is acquired from either internal or external or both sources. The internal component of public debt is, in turns, sourced from either the banking system or non-bank public or

both. Thus, fiscal operations are linked to money supply through the financing of budget deficits and, especially, through money creation.

The traditional theory, modeling and analysis of monetary policy are based on the assumption that the central bank uses monetary policy instruments to influence the general price level. This assumption translates into a monetary theory of the price level and implies monetary dominance in the determination of the price level. A direct interpretation of the classical quantity equation is that the effective control of the stock of money supply by the Central Bank will contain inflation within specified targets. This theory lies behind the general mandate of most Central Banks to "preserve the internal and external value" of their country's currency.

More recently, a new theory has emerged. This is the fiscal theory of the price level which questions the traditional belief that "inflation is always and everywhere a monetary phenomenon". This belief rests on the assumption that monetary policy is dominant in the determination of the price and hence, that the monetary authority never has to capitulate to the fiscal authorities. In fact, the fiscal theory of the price level asserts that, in most circumstances, fiscal policy is dominant and it is monetary policy that must adjust. The existence of fiscal dominance poses significant challenges to monetary policy making and effectiveness. In particular, it would clearly be more difficult to maintain macroeconomic stability whenever monetary policy is forced to "accommodate" the fall outs from fiscal operations. The direct linking of money supply to the financing of fiscal budgets means that the Central Bank cannot effectively fulfill its mandate of using monetary policy instruments to influence the inflation rate. When the government borrows from the Central Bank, monetary policy no longer remains an independent policy instrument; it becomes subservient to fiscal policy.

III.3   Macroeconomic Policy Challenges of Dutch Disease and Fiscal Dominance

The existence of the Dutch disease and fiscal dominance phenomena in the Nigerian economy poses significant problems for achieving and maintaining stable and sustainable growth as well as structural transformation. In the case of Dutch Disease, the problem emanates from real exchange rate appreciation pressures that are generated by large capital inflow. Oil-exporting countries which fully understand the growth–reducing and diversification-retarding effects of real exchange rate appreciation typically adopt countervailing measures which are aimed at preventing the tradable/non-tradable price ratios from continuing to fall as the oil boom proceeds. By comparison, in Nigeria, the

exchange rate policy was initially focused on maintaining a relatively constant nominal rate, until after 1974.

However, during 1974-78, which was the period of the first phase of the massive capital inflow associated with the oil boom, the CBN adopted the strategy of gradual nominal appreciation of the naira exchange rate with the primary aim of producing as exchange rate that would adequately reflect the country's balance of payments position. This policy was clearly the opposite of what was needed. That is, exchange rate protection. Its effect was to strengthen the tendency of capital inflow which further appreciated the real exchange rate. As a result, between 1973 and 1980 when the oil boom related capital inflow were particularly significant, the real exchange rate appreciated by 61.0 per cent compared to 17.0 per centappreciation in the case of the nominal exchange rate. This general trend of real exchange rate appreciation has been largely maintained over time.

In the case of fiscal dominance, its occurence is indicated by (a) the smallness of the size of the banking system relative to the volume of fiscal deficits, (b) the share of the banking system's holding of domestic public debt, (c) the domestic public debt's share of the total assets of the banking system, and (d) the fiscal deficit/GDP ratio over time. Given that ratio (a) is small while ratios (b), (c), and (d) have generally increased over time, the existence and sustenance of fiscal dominance in Nigeria continue to pose significant challenges for the CBN to effectively use monetary policy instruments as tools for achieving its primary statutory mandate of establishing and maintain price stability.

These challenges have been recognized and fully articulated by the CBN in its publications, including CBN (2001) which offers the following chain of explanation:

- over a long period of time from the mid-1970s, fiscal operations of the Federal Government have generated sustained fiscal deficits, the bulk of which is financed by CBN credit to the Government;
- the CBN has tried to deal with the excess liquidity in the economy by undertaking relatively large open market sales of treasury bills;
- this effort has been only partially successful, mainly because of the large new injections of liquidity arising from further Federal Government borrowing from the CBN;
- the result is that the behaviour of base money has ultimately been determined by the level of CBN's net credit to the Federal Government, irrespective of the level of open market operations; and
- This result largely explains the wide divergence between monetary policy targets and their actual values.

One might wonder whether this narrative speaks to the issue of central bank autonomy. In fact, the CBN has achieved increasing levels of autonomy over time. Starting at the lowest level, the CBN was granted an autonomous status in 1988, which meant that it did not have to report to the Federal Ministry of Finance. The next level of instrument autonomy was granted in 1998. This empowered the CBN to determine its own monetary policy instruments. Finally, in 2007, the CBN achieved full independence to formulate and implement monetary policy, through the Monetary Policy Committee; although a certain number of the members of this Committee is directly appointed by the President of Nigeria. What the narrative referred above clearly demonstrates is that despite of these increasing levels of statutory independence, the continued existence of a significant degree of fiscal dominance has tended to largely impair if not fully nullify the CBN's autonomy.

IV.   Policy Practice and Experiences

As discussed in section 2 above, the impossible trinity or monetary policy trilemma offers an internally consistent set of organising principles for categorizing three different macroeconomic policy choices, only two of which can be applied simultaneously. But it does not claim that any of the possible policy choices is best under all circumstances. What is critical is that in making the choices, policy makers must also factor in the peculiar features of their economy and the policy challenges that they may present.

IV.1   Penalty for Violating Impossible Trinity Principles

The policy practice and experiences of many countries bear witness to this admonition. For instance, it is well established that the attempt to implement a mix of the three policies of fixed exchange rate, free capital flow and independent monetary policy simultaneously will cause financial crisis. Several historical examples have demonstrated the validity of this conclusion. They include the Mexican peso crisis (1994-95), the East Asian financial crisis (1997-98), and the Argentinean financial collapse (2001-02).

In the particular case of the East Asian financial crisis, the emerging economies involved were largely seen as good examples of well-run countries which were enjoying rapid economic growth in the context of a policy environment which featured a de facto US dollar peg (or fixed exchange rate) and free movement of capital, in addition to which they implemented an independent monetary policy by setting domestic short-term interest rates that were higher than that of the US (whose dollar served as the monetary anchor for their exchange rate. The higher domestic interest rate attracted foreign investments that were permitted by the free capital flow and which were free of exchange rate fluctuations due to

the fixed exchange regime enabled by the dollar peg. This was a highly profitable business for foreign investors as long as the trade balance of the East Asian countries were favourable.

But when the trade balances shifted, the foreign investors quickly retrieved their money, using the existing free capital flow regime. This regime also facilitated the outflow of domestic capital as well. Eventually, East Asian countries such as Thailand ran out of dollar reserves and were, therefore, forced to exit the US dollar peg, allow their currencies to float and devalue. This devaluation of the domestic currencies magnified substantially the domestic value of existing short-term obligations that were denominated in US dollars. The ultimate result was that many businesses were unable to service their debts and had to shut down and declare bankruptcy. In this case and in the case of similar examples, the penalty for violating the basic principles of the impossible trinity can be harsh and unrelenting.

IV. 2 The Rewards of Innovative Adjustments

In reaction to thus, more feasible policy packages are being designed and implemented that include selective capital controls and managed-intervention exchange rate regimes in the context of which some monetary policy autonomy can be exercised. Such policy packages permit, in principle, different mixes of policy instruments where the extent of use of each instrument is calibrated to fit specific circumstances and focus on the most relevant challenges.

There already exist strong empirical results which suggest that real exchange rate appreciation is harmful to the growth of exports and the overall economy. There is also growing evidence that, in certain circumstance, undervaluation of the real exchange rate can boost export supply as well as export diversification. Based on this evidence, modified macroeconomic policy packages are emerging which focus particular attention on exchange policy but remain compatible with the general principles of the impossible trinity. More specifically, this set of policy packages include four macroeconomic policy instruments, each of which is linked to a specific policy goal. In this context, fiscal policy is linked to economic stabilisation, monetary policy focuses on economic growth and employment generation, the managed-intervention exchange rate policy is closely aligned with the current account balance, while partial capital controls are associated with the capital account. Under this arrangement, fiscal policy essentially retains its traditional focus; but monetary policy is freed from its usual tight linkages to the exchange rate and price stability so that it can focus more sharply on the challenges of promoting economic growth and employment generation by more actively supporting the private sector. In what follows, the policy practice

and experience of two countries is reviewed briefly in terms of the policy packages used and results obtained.

IV.2.1 Indonesia

As an oil-exporting country, Indonesia was quick to recognise that it was particularly susceptible to exchange rate overvaluation generated by high rates of capital inflows that normally accompany oil-boom phases. It also understood the growth-reducing effects of exchange rate appreciation and, therefore, adopted policies aimed at preventing the tradable/non-tradable price ratio from declining with the oil-boom. The specific preventive measures taken by Indonesia focused on exchange rate protection.

In this context, real exchange rate appreciation was limited through nominal devaluation, control over domestic absorption, and limited reliance on foreign borrowing. More specifically, while maintaining a fixed exchange rate regime, Indonesia tailored its use of the periodic devaluation of the nominal exchange rate of its national currency (rupiah) to respond to concerns over real appreciation following each phase of oil windfalls. An example of this occurred in 1978 when the rupiah was devalued from 415 rupiah per US dollar to 625 per dollar (50.6 per cent devaluation). This devaluation was not motivated by balance of payments problem; rather, it was aimed at maintaining the profitability of the non-oil tradable sector, the evidence of this is that in 1978, Indonesia had foreign exchange reserves of US $2.2 billion, while its trade surplus in the second quarter of the year was a healthy US$7.4 million.

In addition to this exchange rate protection policy, Indonesia took specific policy measures aimed at the enhancement of non-oil tradable. The share of capital spending was maintained at a high level, relative to the share of current expenditure; while capital expenditure was biased towards agriculture and industry. Beyond these measures, Indonesia took appropriate steps to partially sterilise its oil revenues through budget surpluses and containment of foreign borrowing. These enabled Indonesia to keep inflation under control, while ensuring that real exchange rate appreciation was contained and private investment in non-oil tradable sector of agriculture and manufacturing increased. The overall result of these policy choices is that the oil boom and its Dutch disease effects were effectively managed to ensure that share of agriculture and manufacturing in GDP actually increased and, thus, a good degree of structural transformation and sectoral diversification was achieved in the economy.

IV.2.2 Tanzania

In the early 1980s, Tanzania came to the conclusion that its long-term economic growth and development agenda needed comprehensive review and re-thinking; based on the understanding that the country lacked the minimum conditions for the productive use of its existing import substitution industrialisation strategy. This strategy had been accompanied by exchange rate over-valuation which penalized domestic exports that, in turn, slowed down the growth process. The resulting change of policy direction focused on the adoption of an undervalued real exchange rate policy regime.

The exchange rate liberalisation process was kicked off in a small way with a 10.0 per cent nominal currency devaluation in 1982. Subsequently, further devaluations of 20.0 per cent in 1983 and 26.0 per cent in 1984 followed quickly. In 1986, the liberalisation process was embedded in an agreement with the IMF. This agreement provided the support required to take the process further through an on-going series of exchange rate depreciations.

The ultimate goals of the new policy direction include reduction of reliance on the export of primary commodities and a corresponding shift to the export of manufactured products, enhancement of overall export, expansion and diversification of export base, promotion of structural transformation, and enhancement of more sustainable and inclusive economic growth performance.

Over the 1980-2012 periods, Tanzania's real exchange rate was undervalued by 2.6 per cent on average. This was achieved through the continuous build-up of the country's foreign exchange reserves to an average of 18.0 per cent of GDP over reform period. The policy worked in the sense of meeting the original goals that were set for it; i.e, increasing manufactured exports, expanding the export base, and promoting horizontal and vertical export diversification. In addition, more sustained export growth has contributed to the achievement of stable economic growth.

V.   The Case for Stable Undervalued Real Exchange Rate(SURER) Policy

Since the mid-1970s, Nigeria's economic growth pattern has been unstable and the resulting economic growth performance has neither been stable and sustainable nor has it been inclusive. It is expected that the economy will emerge from recession with increased oil output and export combined with higher world oil prices. This has happened twice before. But the retention of the current macroeconomic policy agenda is unlikely to bring the economy permanently out of the historic cycle of oscillations between growth and recession which have characterized the economy since the mid-1970s.

A new macroeconomic policy framework needs not only to be compatible with the general principles of the impossible trinity but must also take fully into account the special features of the economy and directly address the associated macroeconomic policy challenges. The two special features identified above are the Dutch disease and fiscal dominance.

In the case of the Dutch disease, it is well established that the capital inflows generated by periodic oil booms lead to real exchange rate appreciation which retards the growth of non-oil tradable sector output and exports. This chain of effects is responsible for the absence of structural transformation and the endemic roller-coastal, unsustainable and non-inclusive growth pattern. In order to free the economy from this pattern, the first step is to stop real exchange rate appreciation because this is what creates the incentive structure for establishing and maintaining the historic and undesirable growth pattern.

In the case of fiscal dominance, the chain starts with fiscal deficits and its financing largely by the banking system which makes the economy susceptible to high inflation pressures. The continuous attempts of the Central Bank of Nigeria to "accommodate" the demands from fiscal operations, on the one hand, and to fight inflation, on the other, lead to high interest rates. In both cases, the attempts are essentially self-defeating. Under fiscal dominance, monetary policy is impotent in reducing inflation whose fire is continuously stoked by bank-financed fiscal deficits. In addition, this financing and rising interest rate crow-out the private sector from adequate investment which, in turn, retards economic growth. In order to eliminate this chain of bad news, there are two options; one is to stop fiscal deficits, the other is to stop their financing primarily by the banking system.

The macroeconomic policy package that can address these challenges while remaining compatible with the general principles of the impossible trinity is the stable undervalued real exchange rate (SURER) policy regime.

The stable undervalued real exchange rate (SURER) policy is a proactive real exchange rate policy instrument that can be used to influence the specialisation pattern of a country's economy. In the context of this policy regime, a relatively weak real exchange rate is maintained through foreign reserve accumulation and sterilisation coupled with partial capital controls, as a means of providing a net subsidy to the tradable sector. This subsidy is, in turn, aimed at compensating for the institutional weaknesses and market failures which lead to underinvestment in the traded goods sector.

There are several growth-enhancing features of the tradable sector which this policy targets in order to promote economic growth. Productivity tends to be

higher in the tradable than non-tradable sector. Hence, there is a strong incentive to maintain the relative price of tradable goods high enough in order to make it attractive to shift resources into their production. There are also learning-by-doing effects external to the individual firms in this sector which justify the subsidy for supporting production through a weak real exchange rate. In terms of its ultimate effects, this policy boosts overall economic growth through several channels, including the shifting of resources to higher productivity tradable sectors, promotion of exports, structural transformation and diversification as well as higher saving and investment through lower labour costs and income re-distribution.

The stable undervalued real exchange rate policy requires the support of a number of accompanying measures such as accumulation of foreign exchange reserves, the sterilisation of the reserves and some form of capital controls.

In principle, the monetary authority of a country can accumulate as much foreign exchange reserves as it wishes through buying foreign currency with domestic currency. It is through the accumulation of foreign exchange reserves that an appropriate degree of real exchange rate undervaluation is achieved. But there is a catch. The accumulation of foreign exchange reserves can become self-defeating by generating inflation pressures that may, in turn, offset the impact of the real exchange rate on exports. Foreign reserve accumulation leads to an increase in the assets of the central bank which has to be either matched by increasing its liabilities or offset by reducing other asset items. More specifically, if foreign reserves accumulation leads to an equivalent increase in the currency in circulation, for instance, it will create the kind of inflationary pressures noted above and, hence, become self-defeating.

Alternatively, the central bank can offset its foreign reserves accumulation by selling some of the government debt that it holds. This could reduce the price of government debt and, hence, increase interest rates which can deal with the inflationary pressures. But this alternative is also problematic for two reasons. First, higher interest rates will adversely affect domestic investment and, thus, reduce tradable sector output and exports. Second, higher interest rates may also attract more short-term foreign capital inflow which may, in turn, create an upward pressure on the exchange rate. Both of these reasons imply that foreign reserve accumulation policy can become self-defeating.

In order to prevent foreign reserve accumulation policy from being self-defeating, two additional measures must be implemented. First, appropriate control needs to be exercised over capital flows so as to prevent sudden surge of capital inflows and outflows that threaten the stability of the undervalued real

exchange rate regime. Second, the accumulation of foreign exchange reserves must be financed through either government budget surplus or debt accumulation by the non-bank public or both. This means that government should not borrow from the banking system in general and especially from the central bank in particular, as a means of financing the accumulation of foreign exchange reserves. Therefore, if government has to borrow, it should be from the non-bank public by selling government saving certificates using various fiscal measures that will not affect domestic interest rates.

VI.   Concluding Remarks

In the context of a developing country, the mix of the three key macroeconomic policy instruments, i.e, fiscal, monetary and exchange rate policies, has two cardinal objectives. These are, first, to establish and maintain macroeconomic stability by smoothening the largely unavoidable fluctuations around an economy's growth trend that are associated with business cycles and, second, to provide the environment which facilitates the growth of the economy. The impossible trinity offers a general framework which can guide policy makers in making appropriate policy mix choices, depending on their preferences in relation to the cardinal objectives. In the case of countries, such as Nigeria, whose economies have certain features that require special attention, it may be necessary to ensure that the policy mix choices selected should not only be compatible with the general framework but also take specifically into account the requirements for incorporating the concerns emanating from these special features.

In the specific case of Nigeria, both the Dutch disease and fiscal phenomena constitute critical features which have inherently growth-reducing and stability-threatening consequences. It appears that the adoption and implementation of the stable undervalued real exchange rate (SURER) policy regime could provide an appropriate mix of macroeconomic policies that can cope with the challenges of macroeconomic stability and growth, provided that the necessary understanding and cooperation between the fiscal and monetary authorities can be secured.

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The Management of Recession and Exchange Rate Crisis: Policy Options

K. S. Adeyemi[*]

I.   Introduction

The importance of exchange rate stability in the achievement of macroeconomic policy objectives such as economic growth in developing economies cannot be over emphasized. The provision of credible explanation for economic recessions in relation to exchange rate has captured the attention of economists and policy makers in recent time. Exchange rate is one of the factors that can induce real production and productivity of an economy. A strong and stable exchange rate is a reflection of a strong and virile economy while a weak exchange rate, all things being equal, indicates a vulnerable and fragile economy. Governments, particularly in developing economies, over the years, have adopted different exchange rate management policies with a view to achieving realistic and stable exchange rate. However, persistently high exchange rate, negative growth and a general slowdown in economic activities for at least two consecutive quarters indicate an economic recession. In the Nigerian case, when one includes and traces the impact of falling oil prices on foreign exchange dynamics, it is easy to appreciate the current recession.

Sani (2006) posits that exchange rate policy has undergone a lot of transformations from 1970 till date. The period of exchange rate regulation covers 1970 to 1985 and was characterised by a fixed parity with the British pound and the near collapse of the economy between 1982 and 1985. On the other hand, the exchange rate deregulation and guided deregulation period covers from 1986 till date which is characterised by advent of the economic recessions of 1987 and 2016, respectively. Each of these regimes of exchange rate is believed to have important repercussions for the growth profiles of economic activities (Akpan & Atan, 2011).

Despite the different exchange regimes adopted to achieve a vibrant economy, there used to exist a wide variance between the official and the parallel market rates and the associated disequilibrium (Obadan, 1994). These regimes were to ensure economic stability but they were characterised by exchange rate fluctuation, oil price instability which oftentimes led to undesired economic growth. Any uncertainty in the exchange rate which is indicated through

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exchange volatility affects economic performance (Akpan & Atan, 2011; Bakare, 2011). The problem of exchange rate volatility is an issue in the monetary policy of any economy (Stephen and Sanmi, 2011).

Despite of the plethora of studies on the impact of exchange rate volatility on economic growth (Adeoye and Atanda, 2010;Aliyu, 2011; Stephen and Sanmi, 2011; Ajao and Igbokoyi, 2013; Bala and Asemota, 2013), existing studies failed to identify the determinants of economic growth during the period of recession. The objectives of this paper are to; determine the trend and pattern of the exchange rate in Nigeria, examine the trend and pattern of economic growth during the periods of exchange deregulation and regulation in Nigeria, examine the volatility of exchange rate, identify factors that impact exchange rate volatility and proffer policy prescriptions of managing recession and exchange crisis in Nigeria.

The paper is divided into six sections. The next section provides the review of literature on the impact of exchange rate volatility on economic growth. Section three presents the trends in GDP, Exchange Exchange Rates and Exchange Rate Volatility while section four consists of the Exchange Rate Palaver and the Structure of Exchange Market. Section five contains the management of recession and foreign exchange crisis while the last section presents the conclusion and policy options.

II.   Literature Review

There is a vast number of empirical studies on the impact of exchange rate volatility on economic growth. Wang and Barrett (2007) examined the effect of exchange rate volatility on international trade flows between Taiwan and United States from 1989-1999. The study used monthly data and Generalised Autoregressive Conditional Variance (GARCV) estimator with corrections for leptokurtic errors. The study reported that change in importing country's industrial production and change in the exchange rate jointly drive the trade volumes. Interestingly, they also found that monthly exchange rate volatility affects agricultural trade flows, but not the trade flows in other sectors.

Ruiz (2005) investigated the effects of inflation and exchange rate volatility on the real economic activity in Columbia, using a generalised autoregressive conditional variance (GARCV) model of inflation and exchange rates. The conditional variances of the model's forecast errors were extracted as measures of uncertainty. The study showed that higher levels of inflation could cause uncertainty and vice versa for the Colombian economy. The study also emphasised that only inflation is important for output.

Aikaeli (2007) investigated money and inflation dynamics response in Tanzania using monthly data for the period 1994-2006. The study used the Generalised Autoregressive Conditional Heteroscedasticity (GARCH) model. The result showed that a current change in money supply would affect inflation rate significantly in the succeeding seventh month. All the studies further showed that the impact of money supply on inflation was a persistent phenomenon.

Hooper and Kohlhagen (1976) examined the effect of exchange rate uncertainty on the prices and volume of international trade for the U.S. and German trade flows between 1965 and 1975 in which an equilibrium model was developed for the study. The study discovered that if traders were risk- averse, an increase in exchange risk would unambiguously reduce the volume of trade whether the risk was born by importers or exporters. The study also established a bi-directional relationship between exchange risk and the price of traded goods.

Mordi (2003) used GARCH model which showed that failure to properly manage exchange rates could induce distortions in consumption and production patterns and that excessive currency volatility created risks with destabilizing effects on the economy. Danmola (2013) investigated the impact of exchange rate volatility on macroeconomic variables using Correlation Matrix, Ordinary Least Square (OLS) and Granger Causality test. The study revealed that exchange rate volatility has a positive impact on Foreign Direct Investment, Trade Openness and economic growth, but has a negative impact on the inflation rate.

Chen (2004) examined exchange rate volatility and analyzed the speed of convergence towards purchasing power parity(PPP). The study found a positive significant coefficient for exchange rate volatility, which indicates that the higher the fluctuations in exchange rate, the stickier the prices are which further reinforces the theory of upward stickiness or biasedness of prices. Edwards and Levy Yeyati (2003) conducted a panel study for over 180 countries and reported that countries with flexible exchange rate grow faster.

Bakare (2011) studied the consequences of the foreign exchange rate reforms on the performance of private domestic investment in Nigeria. The study found a significant, but negative relationship between floating foreign exchange rate and private domestic investment in Nigeria. The study suggested the need for the government to dump the floating exchange regime and adopt purchasing power parity which has been considered by researchers to be more appropriate in determining a realistic exchange rate for naira and contribute positively to macroeconomic performance in Nigeria.

Fapetu and Oloyede (2014) investigated the foreign exchange management and economic growth in Nigeria from 1970 to 2012. The study adopted the ordinary least square estimation techniques within the error correction model (ECM) framework. The study found that foreign exchange rate affects economic variables, which in turn affect economic growth. Eze and Okpala (2014) studied the impact of exchange rate policies on economic growth in Nigeria. The Chow test procedure was used to determine the structural stability of the relationship between exchange rate and output of goods and services. Their study showed that exchange rate and money supply are highly significant in determining economic growth in the country. The study noted that the type of exchange rate regime is not important, what is important is the effectiveness of the management.

Adelowokan, Adesoye and Balogun (2015) examined the effect of exchange rate volatility on investment and growth in Nigeria. The study adopted the vector error correction method. The study revealed that exchange rate volatility has a negative effect on investment and growth, while exchange rate volatility has a positive relationship with inflation and interest rate in Nigeria.Hamilton (1983) reported a negative relationship between oil price increase and economic growth for the period 1948-1972 and state that the correlation between oil price and evolution of economic output was not a mere historical coincidence. Hooker (1996) investigated the robustness of oil price/macroeconomic relationship using granger causality test and Vector Autoregressive (VAR) system with structural stability. The study reported a break down in the relationship and attributed the situation to mis-specification of model.

Narayan and Narayan (2007) also modeled the volatility of daily oil prices using Exponential Generalized Autoregressive Conditional Heteroscedasticity (EGARCH) model. The study showed that asymmetric effects are evident, persistent, and permanent in the oil price movements.

Adeniyi (2011) adopted Multivariate Threshold Autoregressive Model (MTAM) to established the relationship between oil price shock and the movement of macroeconomic variables. The study showed that oil price shock did not significantly affect movement of macroeconomic aggregates in Nigeria. Olowe (2009) examined the weekly oil price volatility. The study adopted EGARCH and covered the period 1997-2009 in which it reported that oil price series showed high persistence of volatility, volatility clustering and asymmetric properties. Taiwo, Abayomi and Damilare (2012) investigated the impact of oil price on economic growth in Nigeria. Their study used Johasen Cointegration Test and Error Correction Model showing that crude oil price, stock price and exchange rate have significant influence on economic growth. Oriakhi and Osaze (2013)

examined the impact of oil price volatility on economic growth in Nigeria where the study covered the period 1970-2010 using the VAR model. The study showed that GDP was indirectly influenced by oil price volatility.

Apere and Ijomah (2013) examined the macroeconomic impact of oil price and volatility in Nigeria during the period 1970-2009. The study employed EGARCH model, Impulse Response Function and Lag-Augmented VAR and reported a significant impact of oil price on economic growth.

III.   Trends in GDP, Exchange Rate and Exchange Volatility (1981-2016)

These trends are disaggregated into three separate discussions. The growth rate of the GDP was computed using the continuous compounded growth rate formula given as $GRGDP = log \, (RGDPt \, /RGDPt-1)$. The values were then used in the trend analysis to uncover the periods of recession in Nigeria from 1981-2016 as shown in the Figure 1 below

Figure 1: Trend of GDP Growth in Nigeria (1981-2016)
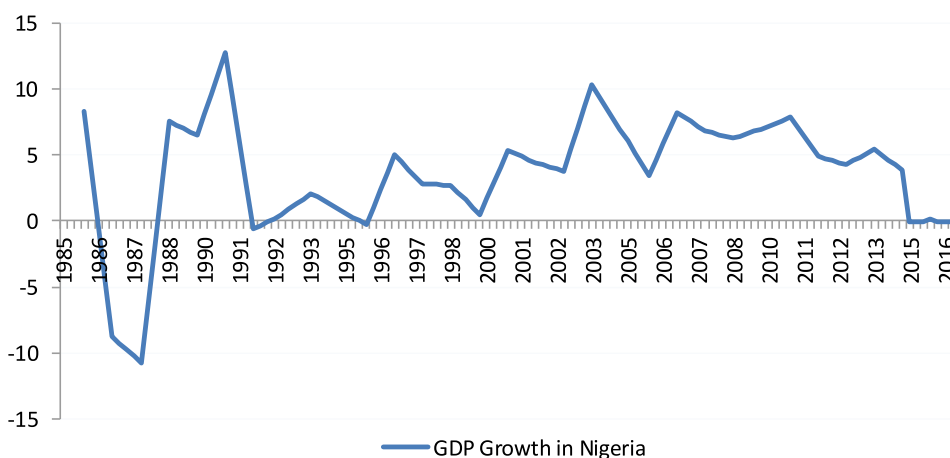
Source: Data sourced from CBN Statistical Bulletins (various issues)

Similarly, the graphical illustration below depicts the trend of exchange rate movement in Nigeria during the period 1981-2015. From the graph, the evidence and persistence of exchange rate crisis is also noticeable. The exchange rate increased to N135/US$ in 2004 and it hovered between N120 and N125 to the US$ during the five-year period 2002-2007. It later dropped to N117/US$ in 2008. In 2009, it increased sharply to N150/US$ after which it remained stable between N149/US$ and N158/US$ during the period 2009-2014. And from 2015 to date, it has remained consistently high although the volatility has minimised significantly in 2017. However, what the observation was that, exchange rate in Nigeria witnessed unstable movements over the period 1981-2016.

Figure 2 Trends in Nigerian Exchange Rate Movement in Nigeria
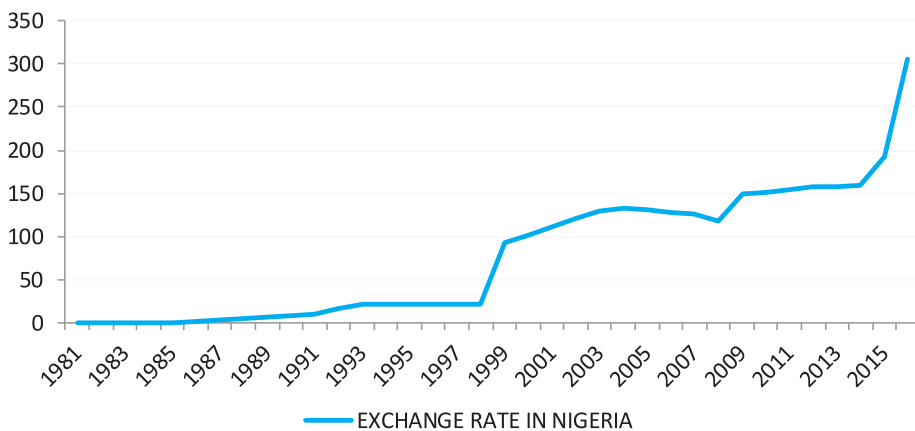
Source: Data sourced from CBN Statistical Bulletin (various issues)

Figure 3 below illustrates the dynamics of exchange rate volatility in Nigeria. The behaviour of exchange rate volatility from 1981 to 2016 follows an unsteady pattern and this suggests an evidence of volatility clustering which is to say that persistently high volatility were followed by periods of relatively low volatility.

Figure 3 Exchange Rate Volatility Dynamics in Nigeria
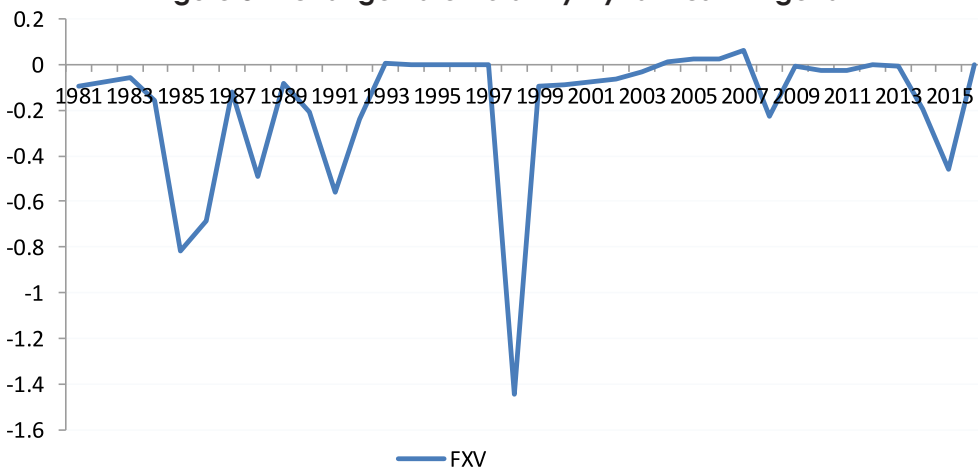
Source: Data sourced from CBN Statistical Bulletin (various issues)

IV.   The Exchange Rate Palaver

We must search for the paradigms that explain why monetary, fiscal and trade policies in Nigeria often fail to deliver what they promise. Briefly, there are, inter alia, four main factors:

IV.1   Factors affecting Nigerian Economic Policies

IV.1.1   Legacy Factors

- Oil Dependency (undiversified revenue base, undiversified foreign exchange earnings base, etc.);
- Low Sovereign Savings (especially during the periods of high crude oil prices);
- Security/Country Risks (Discouraging Effects on FDI, domestic investment/production, GDP, etc.); and
- Fiscal Indiscipline (Very expansionary budget, Leakages, Cronyism, Rent-seeking, Corruption, Regulatory arbitrage, Special dispensations, etc.)

IV.1.2   Policy Factors

- Governance Issues (Lack of appropriate technocrats in the right places, executive/legislative logjam, "Tug of War" exercise, etc.)
- Challenging Policy Choices (In economics, every variable depends on every other variable, as such monetary, fiscal and trade policies must be in sync and not disparately opposed i.e. they must be managed). This seems to be the most important of all the factors in that Institutions were built but deliberately weakened and disabled to function synergistically).

IV.1.3   Political Factors

- Any monetary pill normally takes some time to become efficacious, therefore, the autonomy of the CBN must be protected so as to minimise the pressure from the executive and the legislature. In this way, policy somersaults would be minimised. So far in 2016/17, we have not had much of policy somersaults, however, as far as exchange dilemma is concerned, regulatory arbitrage is still largely present in the system.

IV.1.4   External Factors:

- It is always better when economic policies of a nation are formulated and domesticated within the country. Indeed, no nation is a "stand-alone" and globalisation has further reinforced this notion. But it is also true that the Bretton Woods Institutions cannot know the domestic and socio-economic problems more than the residents/citizens of the country.

The immediate genetralised challenges facing the country's exchange rate dilemma, however, can be grouped into two - external and internal. The external challenges include the low oil and commodity prices in the global market; the sluggish growth in the economies of Nigeria's trade partners; the strings attached to the various grants and external low-interest loans; and the foreign direct investment which emphasises portfolio or near-liquid rather than real and long-gestation investment. The immediate internal challenges include: the government's love for quick fixes; the government's propensity to finance its budget through borrowing; the country's high propensity to consume imported final goods, especially food items; the huge infrastructural deficits; and security threats to both domestic and foreign investors.

IV.2   Structure of the Nigerian Foreign Exchange Market

The structure and operating relationship amongst the players in any market or sector can have a phenomenal effect on the structure and stability of not only the sector, but other sectors as well. In this regard, we agree with Olofin (2017) that the severe criticisms of the CBN on the snubbing of the market forces to determine the value of the naira were misplaced and in deed based, inter alia, on four wrong premises that:the foreign exchange market was designed to operate as a perfectly competitive market structure and that the CBN was merely introducing distortions by intervention; the existence of black market was a consequence of CBN's induced distortions; that foreign exchange should be commoditised like all other tradable goods in the market place; and the general misplaced recognition of the black market as a true reflector of the real market price of the domestic currency.

It is arguably true in the Nigerian context, that the foreign exhchange market can only operate as an imperfectly competitive market in particular as an oligopsony and/or oligopoly. Since CBN is legally (by law of the land), the major intermediation agent in the foreign exchange market, the type of market structure for foreign exchange could be best described as oligopsonistic or oligopolistic with the CBN being the price giver or leader and BDCs and other fringe firms being the price takers. The law of the land recognises one lawful market i.e. the autonomous foreign exchange market (AFEM) which later transformed into the inter-bank market. The apostles of free market for foreign exchange fail to realise that market determined exchange rate cannot be achieved in a non-competitive environment largely distorted by scarce supply against an insatiably elastic demand for foreign exchange.

IV.3   On Identifying Foreign Exchange Crisis

On the identification of foreign exchange (FX) crisis, the basic policy issue has to do with foreign exchanger (in)stability and volatility. Menus of (in)stability could arise from three sources:

- instability involving frequent fluctuations;
- instability resulting from large swings; and
- the instability fueled from arbitrage amongst various submarkets ostensibly because there is full communication and transaction between the markets.

In stabilising the foreign exchange market, the policy goal usually encounters the famous "Mundell-Flemming Trilemma" which states that only two of three goals (i.e. interest rate, inflation and foreign exchange) can be attained in the long-run. But a further inquiry shows that our policy thrust should be targeting four variables i.e. the objectives of low interest rate, low exchange rate, low inflation rate and high/stable non-inflationary output level. In essence, playing the devil's advocate, we could be looking at a quadlemma variable logjam whereby "control theory" can be employed to achieve a satisficing objective of the four goals. Although one does not have an immediate model specification because of time constraint, but it is possible to get around the problem by employing a "Goal Programming Model" which would just attempt to "minimise the deviations from the targets set for each of the four goals". It might in the end boil down to the achievement of same "two or three out of four variables", but that would have been arrived at through a goal-programming analysis proof of concept.

V.   Managing Recession and Foreign Exchange Crisis

The first step towards the management of recession and exchange crisis situations is the recognition that they exist. Many times, government agents and institutions find it difficult to pronounce bad news on the economy because of political repercussions. In this regard, the independence of institutions expected to make such pronouncements is sacrosanct. Economic recession can be described as a condition where the economy shrinks consecutively over two quarters. A more modern definition is provided by the National Bureau of Economic Research (NBER), which views recession as "a significant decline in economic activity spread across the economy and lasting more than a few months". Against the background of these definitions, everybody must love "low inflation and non-inflationary growth (output stabilisation) and hate economic recession". On the other hand, foreign exchange management happens to be one of the menu of tools used by the central bank of any country to enforce price

stability, low inflation and defend the domestic currency.   Due to the interconnectedness of economic recession and foreign exchange, the CBN must take a long-term posture of stabilising the foreign exchange market to grow and stabilise aggregate production. And since imported raw materials, intermediate goods and plants/machinery form a large proportion of the production process in Nigeria, stabilising the foreign exchange market in the long-run will help in stabilising the national output and minimising the advent of recession.

VI.   Conclusion and Policy Options

From the results of various studies as discussed in section two of this paper, we saw that in the long-run, the real gross domestic product, interest rate, oil revenue, inflation rate and recession have no significant effect on exchange rate volatility. However, foreign direct investment, money supply, trade openness and total government expenditure significantly affect exchange rate volatility. Furthermore, many of the studies showed that exchange rate volatility, labor supply, money supply, trade openness and total government expenditure have significant effect on gross domestic product in Nigeria. To manage the two variables such that there is synergy, the following policy options should be considered:

I.   As a country, we must determine and synergise our monetary, fiscal and trade policies and the three should be in sync with one another;

ii.   Rationalise the current multiple exchange rate markets by a combination of legislation and regulation. For legislation, there is the need to outlaw foreign exchange black market through the bill in the national assembly.   For regulation side, the CBN should raise the requirements (both capital and prudential) that would substantially reduce the number of Bureau-de-Change. The CBN should stand firm and not be goaded by political heavyweights who would want to muscle their way through;

iii.   Foreign exchange should not be commoditised as in the black market, rather it should be seen as just a store of value and medium of exchange;

iv.   There is the need to amend the 2007 CBN Act to correct the provisions in the 1995 Foreign Exchange Act;

v.   The CBN should take full responsibility through the Monetary Policy Committee to map out the long-run strategies to stabilise exchange rate movement since it has been reported to have a significant impact on economic growth in Nigeria;

vi.   It is dangerous to follow the argument of quantitatively easing the economy on ground that such would move the economy out of recession because experience has shown that such a policy direction only heightens capital flight, increases rent-seeking behaviour, among others;

vii.   Although it has been shown through various studies in other geographies that trade openness significantly affects foreign exchange, experience has shown that for Nigeria such trade openness has to be guided to prevent dumping and adverse terms of trade;

viii.   Government at all the three tiers should maintain a high level of fiscal discipline. And proper accountability with sanctions for defaulters and reward to those that follow the rules should be introduced. This will ensure that resources are channeled towards the real sectors in Nigeria and not diverted nor converted to buy foreign exchange for keeps;

ix.   The economy should be diversified away from oil revenue into other revenue generating sectors such as agriculture, MSME's, among others. The current credit intervention by the CBN should go only to the command sectors of agriculture, infrastructure and Micro, Small & Medium Scale Enterprises. In this regard, the sector with the most potent linkage effects should be given the top priority;

x.   The CBN should continue to be the price giver and leader in the oligopsonistic and oligopolistic markets where it is the legal and known leader; and

xi.   Above all, the current monetary stance on interest rates should continue while in the case of foreign exchange, the activities in the black market should be outlawed because it is not legal. For the BDC's, more should be done to prune down the number, albeit through indirect control.

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Management of Recession and Exchange Rate Crisis: Policy Options

*Phillip O. Alege**

I.   Introduction

It is my pleasure to be invited this year's Annual Economic Summit of the Central Bank of Nigeria. It has become a tradition for CBN to hold such stakeholders forum, where it plays host to very distinguished Nigerians from all spectrum of profession to assess the state of our economy with a view to identifying a steady growth path for our nation. I am, therefore, deeply humbled to be listed among eminent discussant of today.

The title of the Seminar is "Recession and Exchange Rate Crisis: The Role of Monetary Policy". I am privileged to talk on Management of Recession and Exchange Rate Crisis: Policy Options. Talking about recession is very apt at this moment of our history. In placing this discussion in its proper perspective, let me recall that recessionwas first metioned after the Second World War. That period was preceded by the Great Depression of the 1930s which was marked by unprecedented rate of unemployment in Europe and America, distorted the world trade and international finance, as well as political tension between countries struggling for position of world leader.

In this presentation, I intend to propose two approaches: the atheoretical method to enable us understand the sources and drivers of Nigeria's business cycle; and the quantitative approach from which we can derive policy advice.

The Global economic and financial crisis of 2007-2009 reminds us, once again, the importance of exogenous shocks in the study of business cycle phenomenon. In effect, the sublime rate that emerged in the USA was rapidly propagated in all the economies of the world, with dire consequences on production, employment, government expenditure and foreign trade. Central banks, across the globe, then exploited both conventional and unconventional monetary policy, including quantitative easing. The Nigerian economy that was growing at over 7.0 per cent dropped to about 2.0 per cent, following World Bank estimates. The seed of recession was being sown and with the volatility in global oil market since 2014, the current parlous state of the economy was already in the making.

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The Nigerian economy slid into recession after it contracted by 0.67 per cent and 1.49 per cent in 2016Q1 and 2016Q2, respectively. The economy also protracted further by -2.34 per cent in the third quarter of 2016 (National Bureau of Statistics, 2016). The economic downturn was triggered by the plunge in oil prices at the international market and the Niger Delta militant attacks on pipelines that dipped Nigeria's oil production. This situation was facilitated by structural imbalances, which consequently depleted her foreign exchange reserves. This led to an acute dollar shortage that invariably resulted in the exchange rate crisis of 2016. The resulting naira-dollar crisis hiked the cost of imported raw materials which raised the level of inflation and eroded the purchasing power of consumers, thereby stalling local production.

In addressing the recession and exchange rate crises, fiscal and monetary authorities responded with diverse measures. The Central Bank of Nigeria (CBN), for instance, raised the policy rate from 11.0 to 12.0 per cent in March 2016 and then to 14.0 per cent in July 2016, to curtail the accompanied rise in the inflationary trend. The CBN also created a two-tiered foreign exchange market with a pegged regime in the official inter-bank segment while at the same time, adopting a liberalised regime in the parallel market, coupled with other administrative measures such as the allocation of foreign exchange to priority sectors.

On the one hand, the Federal government pursued an accommodative fiscal stance, occasioned by an unprecedented increase in its budgeted fiscal deficits. On the other, it adopted a range of medium to long-term fiscal measures, which include project for diversifying the economic base of the nation and, ultimately, the adoption of the Economic Recovery and Growth Plan (2017-2020).

II.   Analytical Framework

Since the advent of the seminar paper by Kyland and Prescott (1982) on Real Business Cycle, there has been a large literature extending the RBC model framework to the New Keynesian based Dynamic Stochastic General Equilibrium (DSGE)model.Many of these models have become the workhorse of macroeconomic models of central banks. Notable actors in this respect are Gali (2008), Woodford (2003), Monacelli (2000), Adebiyi and Mordi (2010), Gupta and Steinbatch (2013) and Smets and Wouters (2003), to mention but a few.

The New Keynesian DSGE model according to Adebiyi and Mordi grew from an earlier rational expectation models of Lucas (1972) and Sargent and Wallace (1975); the inclusion of microeconomic foundations by building expectations into

the optimising behaviour of households and firms; later the policy implications of the NK model was due to Clarida et. al.(1999); open-economy extension of it was traced to Rogoff (1995) and finally Gertler and Gilchrist (1999) introduced balance sheet channel of monetary transmission.

III.   The Nigerian Environment

III.1   Behaviour of Key Macroeconomic Variables

Table 1 is the outcome of the activities of CBN deemed at stabilising the economy. Further, the ratio of budget deficit to GDP over the period was indicative of an economy under stress. Thus, with the fall in oil prices, the CBN, just as other central bankers across the globe, adopted several measures to mitigate the adverse impact of the crisis on the domestic financial market. Several measures were taken to boost foreign currency inflows, including the arrangement of special funding lines with other countries, promoting investments in government securities, among others.

Table 1: Some Basic Statistics

	2011	2012	2013	2014	2015
Total GDP Rate (per cent)	5.31	4.21	5.49	6.22	2.79
Oil GDP Growth Rate (per cent)	2.33	-4.95	-13.07	-1.32	5.45
Non-Oil GDP Growth Rate (per cent)	5.85	5.81	8.42	7.18	3.75
Agriculture GDP Growth Rate (per cent)	7.58	12.67	6.33	7.15	8.98
Industry GDP Growth Rate (per cent)	29.86	8.63	3.76	4.47	-18.09
Services GDP Growth Rate (per cent)	11.17	18.05	17.65	15.19	12.46
Manufacturing GDP Growth Rate (per cent)	26.51	23.44	29.42	20.08	3.32
Inflation Rate (per cent)	10.30	11.20	12.30	8.00	9.60
Budget Deficit (per cent of GDP)	-1.80	-1.30	-1.40	-0.90	-1.60
External Reserves Stock (US$ million)	32339	32640	43830	34242	28285
Average Exchange Rate (N/US$)	153.86	157.5	157.31	158.55	195.52
M_1: Growth rate of Narrow Money	21.54	9.59	-5.23	-11.10	-1.82
M_2: Growth rate of Broad Money	15.43	16.39	1.32	20.55	5.90
Monetary Policy Rate	12	12	12	13	11
Prime Lending Rate	16.75	16.54	17.01	15.88	16.95
Average Term Deposit	5.94	8.99	6.69	8.66	6.12

Source: CBN, Annual Economic Report 2016

III.2   Stylised Facts

This Sub-section provided the summary of the main findings as follows:

      I.   Total output (RGDP) was highly volatile in Nigeria and the volatility was about four times that of the world output (WGDP);

      ii.   There was a degree of persistence in terms of volatility for the macroeconomic variables in Nigeria, as the relative volatility for all the series was greater than one;

iii. World output had a pro-cyclical relationship with total output in Nigeria. Furthermore, the World GDP led the cycle of RGDP in Nigeria, indicating that as the world output expanded and grew, total output tended to grow;

iv. Consumption was seen to have a counter-cyclical relationship with RGDP, which was contrary to the business cycle literature. However, when observed with annual data, we observed that consumption was pro-cyclical;

v. The behaviour of the monetary policy rate (MPR) was counter-cyclical, reflecting the typical behaviour of the central bank towards ensuring price stability and growth of output in the country;

vi. Inflation had a counter-cyclical relationship with RGDP, which reflected the current economic situation in the economy;

vii. Imported inflation (IPV) and the commodity terms of trade (TOT) both had a pro-cyclical relationship with RGDP; and

viii. The real effective exchange rate and world interest rate both had a countercyclical relationship with RGDP in Nigeria.

Table 2: Cyclical Behaviour of RGDP and Selected Variables

Variable	Vol.	Relative Vol.	Com. Correlation	Decision	Phase Shift
RGDP	4.02 per cent	-	**-**	-	-
WGDP	1.06 per cent	0.26	**0.26**	Pro-cyclical	Leading
CONS	9.51 per cent	2.36	**-0.07**	Countercyclical	Lagging
MPR	18.17 per cent	4.51	**-0.02**	Countercyclical	Lagging
INF	82.57 per cent	20.5	**-0.52**	Countercyclical	Lagging
IPV	16.49 per cent	4.09	**0.26**	Pro-cyclical	Leading
RER	4.26 per cent	1.06	**-0.18**	Countercyclical	Leading
TOT	13.26 per cent	3.29	**0.25**	Pro-cyclical	Leading
WINTR	27.25 per cent	6.77	**-0.12**	Countercyclical	Leading

Source: Researchers' Compilation, using EViews 8.0

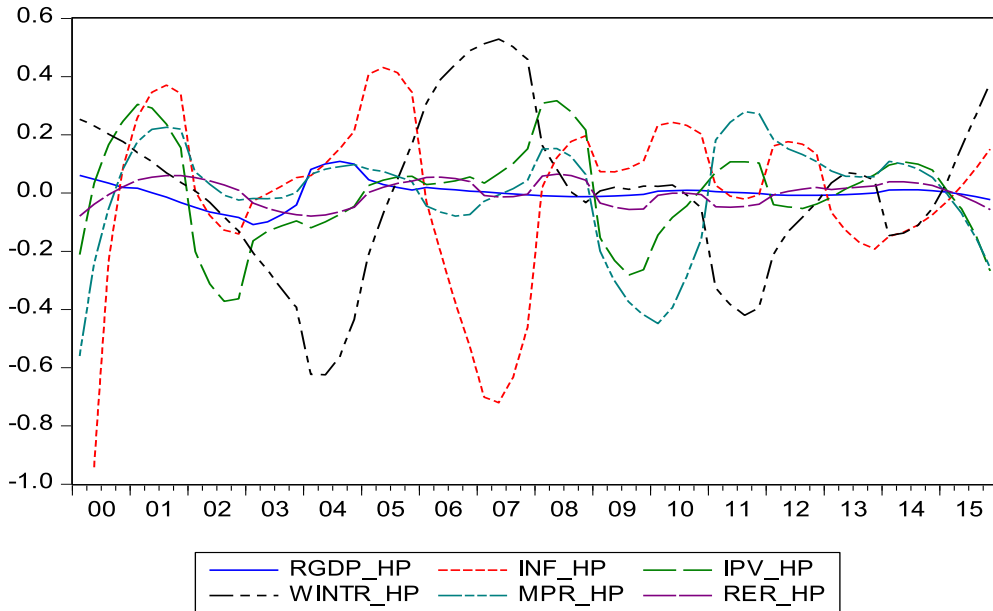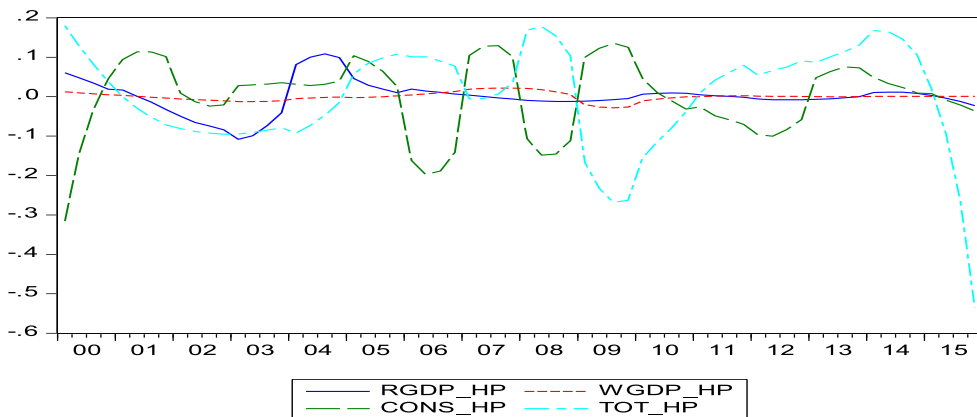**Figure 1: Cyclical Components of Nominal Variables with RGDP**

Figure 2: Cyclical Components of Real Variables with RGDP

Source: Researchers' Compilation, using EViews 8.0

III.3   Isolating the Manufacturing Sector

This auth further took an overview of the Nigerian economy, with emphasis on the manufacturing sector. This involved the analysis of the performance of various manufacturing sector macroeconomic performances.

**Table 3: Aggregate Performance of Manufacturing Sector: 2011 to 2015**

Year	Manufacturing Capacity Utilisation (percent)	GDP growth Rate (percent)	Manufacturing Sector GDP Growth Rate (percent)	Manufacturing Sector Contribution to GDP (percent)
2011	48.98	4.88	7.63	7.33
2012	46.45	4.20	7.63	7.98
2013	49.50	5.40	21.80	9.22
2014	53.08	6.31	14.70	9.95
2015	50.17	2.65	-1.47	9.54

Source: Researchers' compilation using data from Manufacturers Association of Nigeria (MAN); National Bureau of Statistics (NBS) and World Bank, World Development Indicators (2015).

Table 4: Average Growth Rates (per cent) of the Value of Major Imports Groups (N' Billion)

Class Width (Years)	Other Groups (percent Average Growth Rates)	Manufacturing group (percent Average Growth Rates)
1981-1985	-5.86	-16.90
1986-1990	50.68	64.11
1991-1995	123.30	103.46
1996-2000	6.63	9.56
2001-2005	24.72	24.70
2006-2010	12.96	30.27
2010-2012	63.39	3.72

Source: Researchers' Calculation using data from Central Bank of Nigeria (CBN), CBN Statistical Bulletin (2015)

Figure 3.4: Sectoral Contribution to GDP in Nigeria from 1981-2015 (N' Billion)
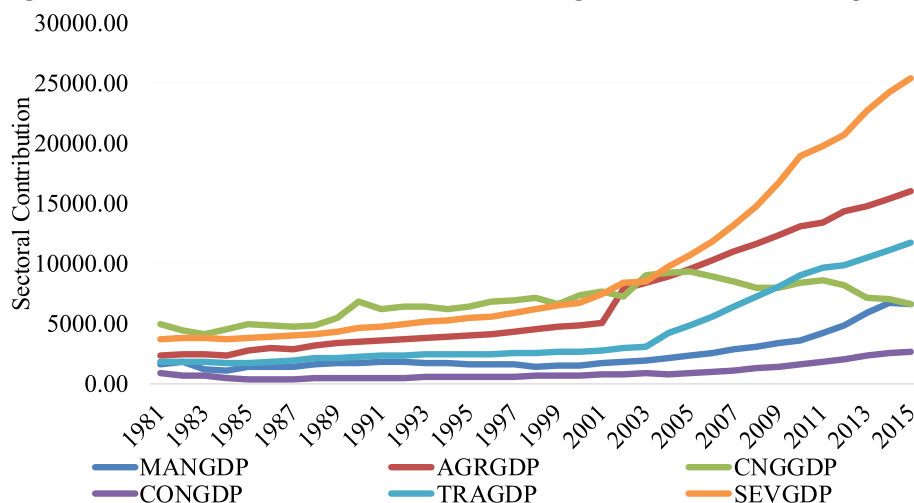
Source: Researcher's Compilation using data from Central Bank of Nigeria (CBN), CBN Statistical Bulletin (2015)

From the stylised facts presented, it was obvious that the manufacturing sector had a relatively low response, despite the several efforts that had been put in place. This would be attributable to some factors, such as inadequate and unstable power supply, poor road networks, inconsistent government policies, the high importation of manufactured machineries and goods, high lending interest rate, the acute shortage and depreciation of exchange rate, which made these imports more costly.

III.4   Moderating Economic Recession

The present economic conditions have the potential to be replicated in the future, if appropriate policies were not designed and implemented. The truth is that the necessary and sufficient conditions to ensure stable economic growth and development, as well as achieving a sustainable social welfare status for the largest number of the citizenry, have not been met. There are a number challenges facing this economy, as I mentioned elsewhere in this paper. However, my concern is that we have not even started in all sincerity on the path towards sustainable development with "moderate" fluctuations. The Great Depression of the 1930s led to the Second World War (WW2). The latter led to rebirth of ideas in all areas of human endeavours. The reconstruction of the ruined economies was facilitated by the past accumulated experiences, thereby provoking the reconstructions of roads, bridges, railway lines, industries, all kinds of physical structures, culminated into a modern industrial world. These were possible because the primary industry, that is the iron and steel industry, necessary for sustaining the economic impetus was in place.

I, therefore, opine that without genuine commitment to functional iron and steel industry in Nigeria, the desired growth may be a mirage. We need this industry to produce most of the intermediate goods for real economic growth. A situation where we need to import every item needed to run the economy is an aberration. Nigeria is faced with a serious economic problem as a result of the absence of this vital industry. There is no sector of the economic or any industry, which will not require substantial input of products of iron and steel industry.

In addition, to export any goods produce locally, all intermediate inputs, required to produce these goods, are imported. The production of competitive exports goods, to a large extent, has little or no value addition. It is more of value addition that is required to successfully bring our economy from the recession now and in the future. We cannot depend on the rest of the world for all inputs and think we can successfully run our economy. Implementations of scientific and technological innovation rely essentially on the strength of iron and steel industry. How do we diversify the economy or embark on aggressive non-oil export

strategy without the sector? It is in this direction that I belief the government should review prospects, in this sector, so that Nigeria can move towards becoming an economic giant of Africa. In this respect, public-private partnership is paramount.

III.5   Results from the Quantitative Analysis

There are many approaches to macro policies in the context of business cycle (Recession). A general equilibrium approach is much desired. The use of small open economy Dynamic Stochastic General Equilibrium (SOE-DSGE) model approach with the new Keynesian underpinnings in line with researchers in this field of macroeconomic modelling, including Monacelli (2000), Gali and Monacelli (2005), Smets and Wouters (2003), Gali (2008), and Adebiyi and Mordi (2010) is adopted across CBs world-wide.

In this exercise I adopted the expanded form of the Taylor Rule or Monetary Policy Reaction Function. The results were as presented in Table 6. Two model specifications were employed: contemporaneous and backward-looking monetary policy reaction function. Only the former model is discussed. Table 6 showed that the coefficient of inflation gap was negative and statistically insignificant, while output gap was positive and significant. The coefficient of inflation was lower than the coefficient of the output gap and the long-run coefficient of inflation (0.4318) was less than unity, indicating that the Taylor principle is not feasible. However, the coefficient of the output gap was above unity. The exchange rate variable was found to be significant, although the coefficient was small. The inclusion of the lag of MPR or short-term interest rate was to capture the past behaviour of the monetary policy of the monetary authority.

The coefficient of lagged interest rate was large and significant implying a relatively high degree of interest rate smoothening. This indicated that the CBN generally changes its policy interest rate gradually in response to macroeconomic developments.

The higher coefficient of the output gap may reflected a higher preference towards output stabilisation, but also reflected a lower sensitivity of output to the interest rate. Hence, the need for a strong response of monetary policy towards output stabilisation. The long-run coefficient of output gap was larger than the coefficient of inflation, indicating that monetary policy seemed to react more strongly to fluctuations in output than to deviations in inflation.

Table 6: Contemporaneous Monetary Policy Reaction Function

Variable	Coefficient	Std. Error	t-Statistic	Prob.
IGAP	0.041406	0.031673	1.307292	0.1964
YGAP	1.043229	0.311090	3.353465***	0.0014
EXR	-0.048413	0.014177	-3.415013***	0.0012
MPR(-1)	0.655985	0.105286	6.230494***	0.0000
Adjusted R-squared	0.966208			
Durbin-Watson stat	2.059008			

Source: Researchers' Compilation using EViews 9.0
Note: Output gap measure by Hodrick-Prescott filter
**significant at 5 per cent, ***significant at 1 per cent

IV.   Policy Options

There is uncertainty over the course of policy actions that economists and policy makers can recommend in tackling macroeconomic crises such as a recession (Mankiw, 2010). This stems primarily from the fact that, policy makers have access to a myriad of measures that they can be adopted and implemented in the macroeconomic management of a country, both in normal times and in periods of crisis. These measures range from macroeconomic policies that include fiscal, monetary and exchange rate measures to structural policies. The policy measures can also be short or long-term oriented in their macroeconomic effects.

However, it has been argued that the appropriate policy options in addressing adverse economic phenomena should be promptly implemented, sufficient in magnitude, well coordinated, able to restore investor's confidence and be tailored to suit each individual crisis. Industrialisation strategy is necessary and sufficient to avoid recession. In this respect, iron and steel industry is a must. This is the "big one" in all respect.

The model indicates the existence of a relatively high degree of interest rate smoothening. The results also indicate that the Taylor Rule is not satisfied. The paper is not in favour of inflation targeting, since the coefficient of the variable was not significant.

It is expected that monetary policy will react more strongly to movements in the exchange rate in developing countries, such as Nigeria. The results corroborated this finding. However, the nation should generate more foreign exchange in order to keep the naira under check.

V.   Conclusions and Policy Recommendation

In this paper, I endeavoured to examine the sources and drivers of the business cycle/recession in Nigeria, as well as policy options using both a theoretical and empirical methods. Initial analysis of key macroeconomic variables indicated an economy under stress. The paper suggested two sources: nominal and real factors. The stylised facts support the idea of business cycle in Nigeria and most variables were volatile. Further analysis indicated that the manufacturing sector appeared to be affected in the downward trend. Empirical analysis showed that the Taylor Rule indicated the absence of inflation targeting. It also showed that there was interest rate smoothening, and that output reacted more strongly to fluctuations than to deviations in inflation. The exchange rate variable responded as expected.

The paper recommended a comprehensive review of policy to encourage the manufacturing sector as a short-term strategy. In the long-run, Nigeria should envisage to revive the Iron and Steel Industry, which would encourage innovation, technological breakthroughs, increase in rate of employment, boost foreign exchange earnings and stabilise naira exchange rate. More studies required to access the way to go between inflation targeting and interest rate targeting.

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Management of Recession and Exchange Rate Crisis: Policy Options

Patience Oniha[*]

I.   Recession and Exchange Rates

Recession is consistent with economic cycles. It occurs in all countries (advanced and otherwise).Due to the negative outcomes associated with recession, most countries will take pro-active steps to moderate the impact of recession or exit recession. The negatives include: unemployment, business failures/closures, loss of revenues, down grade in sovereign rating, among others.

Recession in most cases results in a loss in the value of a country's currency. For currencies, such as the USD, Euro and GBP, which are freely traded/convertible, the loss in value occurs, due to lower demand for the currency by traders and investors.For "supported" or "managed" currencies, the loss in value occurs as a result of the inability of that country to support the currency (from Reserves or External Borrowing). For other traded currencies, such as the Rand or the Russian Rubble, the country may allow the currency to depreciate under market forces.Instances of loss in the value of a currency triggered by recession or economic downturn, includes the Euro and GBP due to the recession, induced by the sub-prime credit crisis in 2008; the UK, following the Brexit Vote in 2016 and the Rand and the Russian Rubble, due to a collapse of commodity prices.

II.   Triggers of Recession (or Economic Downturns)

Several factors,are responsible for recession including induction from external developments, such as major financial crisis and internal developments, such as natural disasters (floods), strife, major strikes, among others. For commodity-based countries dependent on exports for revenue and foreign exchange earnings, the impact of adverse external developments on the economy can be severe. Nigeria and Angola are some examples.

III.   Management of Recession and Exchange Rate Crisis: Tools for Exiting Recession

III.1   Policy tools include:
- Fiscal Policy which include an increase in government spending usually in infrastructure to create jobs and stimulate production;

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- Monetary Policy to ease liquidity and lower interest rates; and
- Foreign Exchange Policy to devalue the local currency (or allow market forces to determine the exchange rate) to make exports competitive, attract FDIs and increase the local currency, equivalent of revenues for government.

III.2   Specific interventions could include bail-outs and government intervention in critical sectors like agriculture, power among others.

III.3   Outcomes expected are GDP growth, reduction in unemployment, capital inflows, stronger current account balance and appreciation of the local currency.

IV.   Exchange Rate Crisis: Some Facts and Policy Measures

The naira is not a freely convertible currency. Historically, there were three (3) markets: Central Bank of Nigeria (CBN), interbank and parallel market. There are now multiple windows for various user categories. Nigeria is in a unique position, where the CBN is the main supplier of foreign exchange.

The current exchange rate crisis, which started in Q4 2014, was induced by the crash in crude oil prices and lower production levels. The impact on government revenues and foreign exchange earnings resulted in pressure on the naira exchange and inevitably, devaluation and recession.

The policy measures adopted by Nigeria to manage the naira through exchange rate were:

Demand Management through the ban on 41 Items, tightening of liquidity, raise MPR and phased devaluation.

Supply Management including interventions in the official and parallel markets and multiple foreign exchange windows, to cater for different users.

Outcomes: Naira has appreciated and stabilised; demand for foreign exchange is still strong; high domestic interest rates; an inverted Yield Curve; and lower liquidity for lending and investment.

V.   Possible Policy Options

Overall, the crisis has been subdued in terms of the exchange rate and the level of external reserves and inflation, but under the CBN's policy measures, which are expensive and probably unsustainable in the medium to long-term without sustained economic growth and diversification. The undesirable outcomes of the

current policies are the inverted Yield Curve, which has attracted investors to the short end of the market and the absence of certainty, particularly in the investor community about the future of the FX markets and policies.

Fiscal Policy including diversification, increase revenues, strategically pursue import substitution, attract large FDIs (enable the business environment) and encourage the consumption of local products.

Monetary and Foreign Exchange Policy covering liquidity, collapse of FX Windows and allow markets to operate but intervene in markets only when absolutely necessary.

The expected outcomes are stronger economy, increased FX inflow from exports, FDIs and foreign portfolio investors, reduced pressure on the naira exchange rate, amongst others.

If these outcomes are achieved, the risk of a further devaluation and volatility of the naira exchange rate, as well as rise in the inflation rate, are low and if they occur, it would be short-term.

SUBMISSION OF MANUSCRIPT TO CBN ECONOMIC AND FINANCIAL REVIEW

1. Three (3) hardcopies and a softcopy of the original manuscript should be addressed to the:
   The Editor
   CBN Economic and Financial Review
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   Central Bank of Nigeria
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2. Papers may be accepted or returned for specified revisions. A paper is expected to be published approximately six months from the date of acceptance.

3. *Comments on published article/notes* and *reviews* of up to 2,000 words will also be considered for publication. Notes deal with relevant topics not meeting full length articles. Reviews may be about articles published recently by this journal or elsewhere. A copy of the review/comments should be sent to the articles' author for clarification of any points or misunderstandings.

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5. The purpose and scope of the article should be clearly stated in an abstract summarising the article's essential points. The abstract should be typed on a separate page and should be between 80-100 words in length. In addition, the JEL classification code (s) as well as keywords should be clearly indicated on the abstract page.

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