

The Impact of Monetary and Fiscal Policies in Management of Cyclical Fluctuations in Nigeria: 1990-2018

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Abstract

The research investigated on the impact of monetary and fiscal policies in management of cyclical fluctuation in Nigerian economy between 1990Q1 and 2018Q2. Quarterly data were sourced from the CBN online data bank. Cyclical fluctuation was measured by real growth rate using real gross domestic product as proxy and two instruments each from monetary policy (broad money supply and monetary policy rate) and fiscal policy (capital expenditure and recurrent expenditure). While real growth rate was made the dependent variable, monetary and fiscal policies were the explanatory variables employing ARDL technique to analyse the data. We found out that real growth rate had instantaneous negative response to the monetary policy rate and positive response to recurrent expenditure. In the short run, both monetary policy rate and recurrent expenditure were counter-cyclical and significant while in the long run, only monetary policy rate was counter-cyclical and significant. The speed of adjustment was very high. The study recommends that the best and most efficient single instrument to manage cyclical fluctuation in Nigerian in the short run is recurrent expenditure. In the long run, monetary policy rate is the best and most effective. However, both policies will manage the economy at its best.

Keywords: Cyclical Fluctuation, Monetary policy, fiscal policy, ARDL

1.0 Introduction

The Nigerian economy has been perceiving cyclical fluctuation and recession flying around the globe from one particular time to another and reaching the 2007/08 global financial crisis which had a partial effect on the economy. Not quite a decade after this, was the period the economy was hit with pronounced economic recession in 2016 which lasted for more than two quarters. Though analyst talked about it as been caused by fall in oil prices in the international market, economists and policy makers sprang into action to know what could be the contribution of the two major policies. Thus, economies are looking at circumstances in which counter-cyclical monetary and fiscal policies could be used as policies of choice. Cyclical fluctuation is a relative concept, there is immense debate among economists as to what influences the cycle and what is the contribution of these entwined policies in managing this cycle.

According to IMF (2008), there is no official definition of recession, but there is general recognition that the term refers to a period of decline in economic activities. Very short periods of decline are not considered recessions. Most commentators and analysts use, as a practical definition of recession, two consecutive quarters of decline in a country's real GDP- the value of all goods and services a country can produce. Although this definition is a useful rule of thumb, critiques say focus on GDP or real GDP alone is narrow and it is often better to consider a wider set of measures of economic activities to determine whether a country is indeed in the realms of recession or expansion. However, employing other indices can provide a more reboot and timely gauge of the state of the economy. Nevertheless, for reason of parsimony, GDP is a single variable measure used to ascertain the emergence of recession.

National Bureau of Economic Research (NBER) uses a wider meaning and gives much consideration to a number of measures of activities to decide the dates of recessions. In this regards, the NBER's business cycle dating committee defines a recession as "a significant decline in economic activity spread across the economy, lasting more than a few months, normally visible in not only real GDP, but also employment, real income and other indicators. All over, recession commences when the economy hits the highest point of activity and ends when the economy gets its trough" (IMF, 2009).

According to World Economic Outlook (2002), recessions are conspicuously shallower, briefer and less recurrent than expansion. In a recession, GDP falls by about 2.5% in a quarter. During an expansion, GDP usually rises by almost 20%. This shows mainly the importance of trend growth. Though this definition may not be a yardstick to measure recession and expansion in economies generally, the bottom-line is that, recession is marked by reduction in GDP in a quarter or more and expansion is rise in GDP. The higher the long run growth rate of an economy, the shallower the recession and the greater the amplitude of expansions. Some recessions,

however, are severe, with peak-to-trough declines in real output exceeding 10% which are usually called depression.

Most analysts consider a depression to be an extremely severe recession in which the decline in real GDP exceeds 10%. There has been few experience of the world in advanced countries since 1960. The most recent was in the early 1990s in Finland, which registered a decline in GDP of about 14%. This economic situation coincided with breakup of the Soviet Union, a large trading partner of Finland and then recession in the 2007/08 global financial crisis which had effect on most economies since the world is a global world.

While certain effects produce favourable consequences and certain others produce adverse effects. During revival and expansion, demand increases, selling prices rise more rapidly than cost. Profit increases and individual manufacturers and marketers generally feel happy with increased employment. Nevertheless, revival stage and the beginning of expansion generate a few ill-effects. Gradually there is increase in prices of raw material, labour cost and rent. The rate of interest also goes up. Later on, when the situation gathers momentum and becomes more difficult, the evil of conciliation develops. The manufacturer realises that his customers are refusing to take goods which they have ordered for and that there is a decline in the volume of orders.

As far as the later stages of expansion are concerned, business concerns are confronted by much more severe competition. Prices are maintained with difficulty. Collections are slow while at the same time banks and trade creditors press for the settlement of their claims. The decline in prices which is characteristics of the period of recession unusually finds merchants and producers with large inventories that depreciate materially in value with time. Thus, excessive inventories are usually made up of finished goods rather than raw materials. As this period is characterized by liquidation, the individual firm is compelled to sell his goods at a loss in order to meet his financial obligations. This may result to either bankruptcy, shutting down or operation at a reduced capacity, all involving at least a sacrifice of profit and possibly necessitating the carrying on of the business at an actual loss. During contraction, these difficulties are likely to continue. One of the most important reasons for financial loss during such period is found in the continuation of fixed charges of all kinds despite low demand and prices. As such counter-cyclical monetary and fiscal policies are required to give a boost to these situations by making expansionary monetary and fiscal regulations to manage the cyclical fluctuations (IMF 2005).

Why this Study?

The problems faced by the U.S.A. economy in the second half of 2007, which intensified in 2008 and its spillover effects were felt in most economies, Nigeria inclusive, and most recent, the recession that hit the Nigerian economy between the third quarter of 2016 and first quarter of 2017, have once again asked economic scientists, and even more so, economic policy makers questions relating to business cycles – the characteristics of cyclical fluctuations, the reasons for business cycles and basically economic policy measures that can be implemented to alleviate, manage and overcome an economic recession within the shortest possible time period. Many questions need to be asked: What needs to be managed and how? To what extent are cyclical fluctuations acceptable? What are effective management tools? These questions have been debated by economists and without surprise, the answers provided have changed considerably over time and over economic districts. In the late 1960s, the Keynesian view became increasingly challenged by Monetarism. The debate between Keynesians and monetarists often focused on the effectiveness of policy instruments with monetarists arguing for the ineffectiveness of fiscal stabilization policy (Edward 1971).

Owing to the developing nature of Nigeria's monetary and fiscal sectors obvious and prominent from loss of confidence, illiteracy/ignorance of many people to zero-orientation about the sectors to poor attitudinal practice of people, money diversion, poor transmission mechanism among others, will policies from these sectors have any impact in managing cyclical fluctuations in Nigeria? Will cyclical fluctuations be responsive like did in the developed world? Which of the policy tools will impact more on cyclical fluctuations? Could there be any long-run significant impact of these policies on cyclical fluctuations in Nigeria? What could be the speed of adjustment of using these policies if there is disequilibrium in the system? Do past policies have any managerial impact on cyclical fluctuations? Since Nigeria is one of the oil exporting countries (OECs), does oil price influence fluctuations in economic activities as obtainable in many OECs?

Objectives of the Study

Owing to these problems, the broad objective of this study is to investigate whether monetary and fiscal policies have significant impact in the management of cyclical fluctuations in Nigeria within the period 1990-2018 most specifically, to determine which of the two policies is more effective in managing fluctuations in economic activities in Nigeria in both the short and long run periods. The study also attempts to determine how fast these policies in adjusting cyclical fluctuations back to equilibrium are.

1.1 Stylised Facts about Cyclical Fluctuations and Policies in Nigeria

The performance of Nigeria's economy before the Structural Adjustment Programme (SAP) was diverse. The domestic economy recorded declined GDP of about 3.29% growth in 1985 due to poor performance of the crude oil market and the real sector generally. Since at this period, the monetary policy was determined solely by

regulations from the government. Monetary aggregates were in sliding trend. Immediately after SAP in 1986, economic activities picked up by approximately 1.2% as a result of improvement in supply of raw materials and some other activities. This started the period of deregulation in the economy.

As could be seen in figure 1, domestic output in real terms grew by 4.4 % in 1990 with a sharp decline in consumer price index (year-on-year) from 50.5% in 1989 to 7.5% in 1990. This improved the real output aside from enhanced domestic supply in the real sector. The monetary policy thrust was tightening. Though there was growth in nominal terms in 1991, the real growth rate was -1.8% which means a drop in the nation's economy compared to the previous year. All through 1992 to 1999, the economy recorded a less than unit real growth rate with the highest being 0.9% in 1996. These could be attributed to the guided deregulation stance of the then military administration and political tension which had adverse effect on interest rate and exchange rates in the economy and most especially, the restrained in monetary and fiscal policies employed and it also marked the period of frequent power outages, scarcity in petroleum products, decaying infrastructure and equipment among others (CBN 1994-1998).

At the dawn of second democratic era from 1999, the real GDP recorded an incremental growth from 1.1% in 2000 up to 2.1% in 2003 and then got to the highest to 4.0%, after 1990. Other years experienced an insignificant growth up to 2009 which marked the end of the use of 33 point activities as components of GDP. Afterwards, 13 activities have been added to the calculation of Nigeria's GDP. This made a sharp difference in 2010 as could be seen on figure 1.

Nigeria's Annual Growth Rate

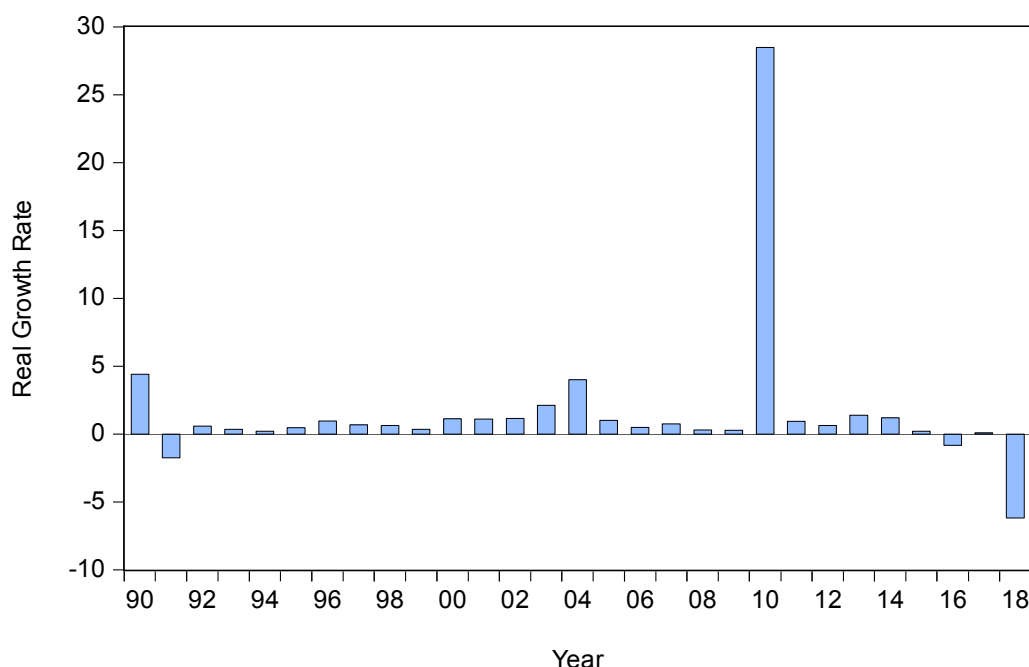


Figure 1: Source: CBN online data base assessed in September 2018

The conduct of monetary policy by the Central Bank of Nigeria since 2008 through 2011 has been designed to influence the growth of money supply consistent with the required aggregate Gross Domestic Product (GDP) growth rate (output increase and employment), ensure financial stability, maintain a stable and competitive exchange rate of the naira. This period was largely influenced by the global financial crisis which started in late 2007 in the U.S. and extend to many regions including Nigeria. The meltdown created liquidity crisis in the banking system, large quantum of non-performing credits, large capital outflows and pressure on the exchange rate, decline in oil prices and falling external reserves, sharp decrease in revenue, massive fiscal injections and fall down of the capital market. As a result, in the wake of the global financial crisis, the Bank largely adopted the policy of monetary easing to address the problem of liquidity shortages in the banking system from September 2008 to September 2010. The effect of global recession was visible in our domestic output in that real GDP was nearly zero.

The nation could maintain a non-zero growth rate all through up to 2018 except for the recession that crumbled the country in the third and fourth quarters of 2016 and a negative growth in the first quarter of 2018. In 2016, the National Bureau of Statistics (NBS) announced appearance of recession in the Nigerian economy using negative GDP experienced in the economy for two consecutive quarters. In the second quarter of 2017, the bureau announced its end since economic growth of the economy, as measured by GDP, has been on the positive from 0.72%, 1.17% ,and 2.11% in the second third and fourth quarters of 2017 and then 1.95% in the

first quarter of 2018 (NBS 2018). The country has since recovered from the economic turbulence according to reports from the National Bureau of Statistics.

Cyclical Fluctuations in Nigeria's Real Growth Rate

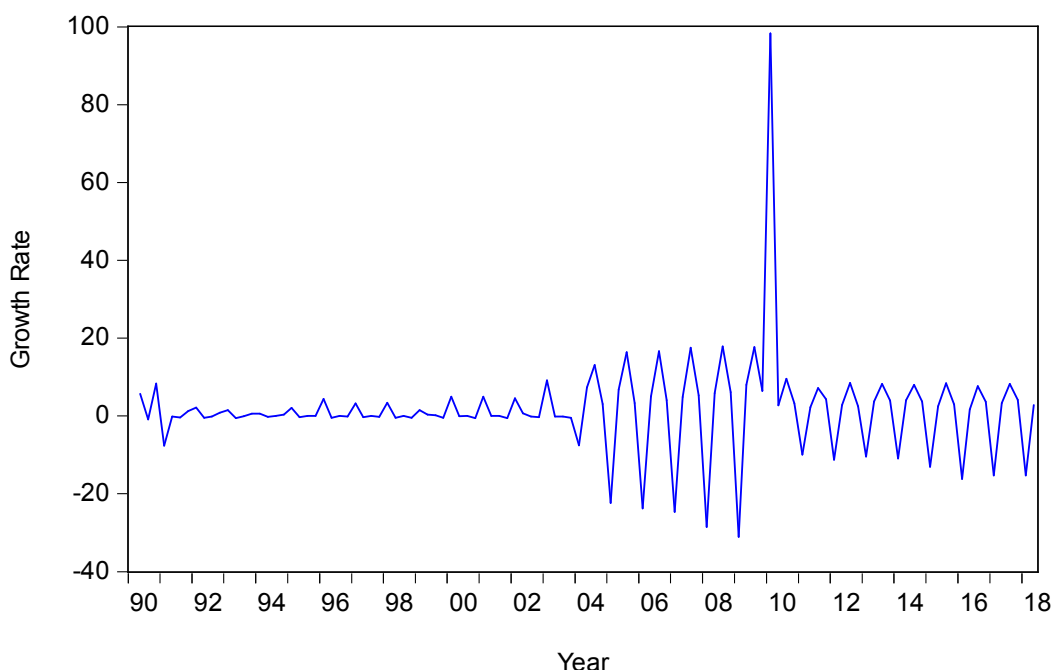


Figure 2: Cyclical Fluctuations in Nigeria's Real Growth Rate.

Source: CBN online data base assessed in September 2018.

Figure 2 Shows the cyclicity of the real growth rate in quarterly frequency which shows the different stages in business cycle: From peak/boom to downturn and then recession/slump/trough and finally recovery/expansion.

2.0 Literature Review in Brief

2.1 Theoretical Review

The Classical economists ascertained that money is neutral and cannot have any impact on the production level in an economy. Keynesians believe that the government can manage the impact of these fluctuations by adjusting taxes and spending. Monetarists disagree with the notion of business cycle altogether and prefer to look at changes in the economy as irregular fluctuation (non-cyclical). In many cases, they believe that declines in business activity are the result of monetary phenomenon. The Real Business Cycle (RBC) proposition rests on the assumption that all markets are taken as competitive and efficient (continuous equilibrium) in the economy. This assumption is not consistent with models of the Keynesian paradigm, since they incorporate market imperfections and/or failure of the economy to achieve long-run equilibrium instantly after a demand shock. In these models, shifts in aggregate demand, whether through shifts in investment and other private sector variables or in monetary and fiscal policy can produce changes in output and be a source of fluctuations. Conversely, the appropriate monetary policy can reduce the severity of cyclical fluctuations due to aggregate demand shocks coming from the private sector of the economy, or contribute to the continuation of cyclical fluctuations. There are several other alternative theories on the business cycle and its causes/influences.

More specifically, on monetary policy, market imperfections can create non-neutrality of money, so that fluctuations in the money supply can add to output sector. Therefore the core of the debate especially to the RBC is whether shocks to aggregate demand can cause such fluctuations and whether monetary policy can manage them. Though, RBC and the modern Classical deny this fact, Keynesians assert that they can do so. This issue is easily testable by the appropriate causality tests. The consensus on the empirical evidence seems to be that the major part of the fluctuations in output can be attributed to productivity shocks (Handa, 2000). This is attestation to the success of RBC theory, as compared with Keynesian ideas. However, the empirical evidence leaves a very significant part of the fluctuations in output that cannot be explained by shifts in technology and preference. Overall, the empirical evidence as well as intuition, seems to indicate fluctuations in output and employment and that money supply growth is positively related to output growth. Therefore, RBC theory is not strictly valid, and monetary policy can be pursued in appropriate cases to reduce output fluctuations (Handa, 2009).

2.2 Empirical Review

The empirical evidence on the impact of changes in aggregate demand on output is often on the impact of money supply changes which change aggregate demand on output. The influential study by Friedman and Schwartz (1963) used evidence from over hundred years of U.S. data to show clear evidence that money supply changes, lead, and therefore Granger causes, changes in real economic activities. However, inside money (deposits in banks) is the largest component of money. Subsequent contributions by other authors showed that deposits respond to macroeconomics disturbances, so that money is more highly correlated with lagged output than with future output. Nevertheless, monetary aggregates such as broad money (M_2) still lead output. Furthermore, if the Central Bank uses the interest rate as its operating monetary policy target and money supply responds endogenously to it, then it shows that changes in interest rates lead output.

Romer and Romer (1994) have argued that monetary policy has been the key variable to end recessions. Ball (1999) focuses on the role of monetary policy in recessions when explaining structural unemployment. First, Ball analysed the effect of monetary policy on the recessions of the early 1980s using descriptive statistics based on quarterly data for the Group of Seven (G7) countries and by means of regression analysis for 17 OECD countries (using annual data). Second, to account for differences in the decrease in unemployment rates, he discussed monetary policy and labour market policies in four successful countries and six countries with disappointing performance. Ball (1999) concludes that monetary policy and other determinants of aggregate demand have long-run effects on unemployment. From European countries, a number of studies have confirmed that fiscal policy measures implemented in European countries from the mid 1970s to mid 1990s have performed poorly in stabilizing their economies (Antonio et al, 2003). During some periods, fiscal policies have even exacerbated economic fluctuations rather than managing them. Often, fiscal contractions took place in periods of low growth, whereas, fiscal expansions occurred during economic booms. This, discretionary fiscal policies have frequently been pro-cyclical overriding automatic stabilizers and possibly contributing to economic fluctuations. In a research by IMF (2008), Greenlaw et al (2008), and Brunnermeier (2009) assessed the impact of fiscal and monetary policies in recessions and recoveries in 21 advanced economies, they found out that monetary policy seems to have played an important role in ending recessions and strengthening recoveries. Its effectiveness, however, is weakened in the aftermath of a financial crisis. Also in their findings, fiscal stimulus appears to be particularly helpful during recessions associated with financial crises. Stimulus, according to them, is also associated with stronger recoveries, however, the impact of fiscal policy on the strength of the recovery is found to be smaller for economies that have higher level of public debts. This suggests that in order to reduce or manage the severity of cyclical fluctuations (recessions), aggressive monetary and particularly fiscal measures are needed to support aggregate demand in the short run. However, the government should be careful in making some spendings that will have crowding-out effect on private investment.

For Malaysia, Sohrab and Zeufack (2012) explored the stabilization properties of fiscal policy using a model incorporating nonlinearities into the dynamic relationship between fiscal policy and real economic activity over the growth cycle. It investigated how output multipliers for government purchases may alter for different components of government spending. They found out that fiscal policy in Malaysia has become increasingly pro-cyclical over the last 27 years and established that the size of fiscal multipliers tends to change over the growth cycle. From their findings, the rise in government investment spending in Malaysian Ringgit, led to a maximum output multiplier of around 2.7 during growth recessions and around 2.0 in normal times. Fernald et al (2013) went into a deep research on monetary and fiscal policy effectiveness in China using the country's monthly data between January 2000 and September 2013, employing Factor-Augmented Vector Auto-Regression (FAVAR) to estimate broad economic activity. Factors such as industrial enterprise, trade balance, foreign reserve, fixed asset investment, real estate climate index among others were employed. For narrow economic activity, they used exports, electricity production and commodity building while their policy variables were government expenditure, government surplus/deficit, money supply (M_2), required reserved ratio and interest rate (lending rate). They found out that interest rate changes in China have substantive impact on economic activity and prices while measures of changes in credit conditions such as shocks to M_2 or lending levels, do not. They also found out that government expenditure as proxy for fiscal policy failed to have a significant impact on the economic activity series.

Cyclical fluctuation analysis across country groups reveals the existence of important regularities. Benczur and Ratfai (2005) found out that fluctuations in Central Eastern Europe countries are larger than those in industrial countries, but overall cyclical patterns are homogenous and similar. The findings of Benczur and Ratfai emphasize that economic fluctuation in Commonwealth of Independent States (CIS) are more volatile and less persistent than elsewhere.

Researching GCC (Gulf Cooperation Council) countries, Rafiq (2011) showed that the terms of trade shock explain significant but relatively smaller degree of output fluctuations. He concluded that the business cycle of those oil exporting countries (OECs) are not driven by output shocks of industrialized countries and did not demonstrate similar patterns. Using a structural VAR approach, Mehrara and Oskoui (2007) studied the sources

of cyclical fluctuations in OECs. They found out that oil price shocks are the main sources of output fluctuations in Saudi Arabia and Iran, but not in Kuwait and Indonesia. In a more recent and comprehensive research, Mehrara and Mohaghegh (2011) showed that most oil producing countries in the sample isolate real sectors of their economies from the effects of oil prices. Nevertheless, oil shocks still remain the main source of macroeconomic fluctuation in OECs. Korhonen and Mehrotra (2009) found out that oil price shocks are important source of output fluctuations in Russia and Venezuela. However, in Kazakhstan and Iran, they did not appear to be as significant as others were. Generally in the case of OECs (like Nigeria), the analysis of cyclical fluctuations literature and empirical research provide heterogeneous results and equivocal evidence. In some OECs, the role of oil shocks in explaining cyclical fluctuations does not appear to be significantly important while in some other countries, it is. Huseynov and Ahmadov (2014) asserted that the quality of institutions and impartial legal systems insulate oil rich economies from oil price volatility. Mostly, fiscal expenditure is the most important channel that transmits oil price shocks to the rest of the economies (Husain, Tazhibayeva and Martirosyan, 2008). Thus, a more disciplined fiscal authority, transparent spending mechanism and strictly followed expenditure rules can be considered of vital importance for smoothing fluctuations due to oil price shocks. To support this assertion, Huseynov and Ahmadov (2013) showed that fiscal discipline is an important ingredient of fiscal policy aiming to smoothing fluctuations in OECs.

A study of fiscal and monetary policy and its effects on the growth of Nigerian economy by Ogar et al (2013), covering the period between 1986-2010, made use of secondary data from the CBN and employed ordinary Least Squares (OLS) method. They found out that government revenue and expenditure had a positive impact and statistical significance on GDP. Also the model depicted that money supply had a positive impact on GDP. Though their finding is in line with theory, however, the researchers did not tell us whether the variables used were stationary before employing the OLS method to analyse it. Their finding did not tell us about the comparative impact of the two policies on growth of Nigerian economy.

Kareem et al (2013) made a research on analysis of fiscal and monetary policies on economic growth: Evidence from Nigerian Democracy. They used data from CBN covering a period of 1999-2008, employing descriptive statistics, regression and correlation. Real GDP was modeled as the dependent variable and fiscal and monetary variable (inflation, interest rates, narrow money, broad money, government recurrent and capital expenditures) as explanatory variables. They found out that broad money and recurrent expenditure have positive relationship with RGDP. Recurrent expenditure was significant but broad money was not. Also, their finding revealed that narrow money, inflation, interest rate, capital expenditure have negative impact on RGDP, with interest rate being significant. The method used in their research was not robust as they did not tell us whether their variables were tested for the presence of unit root. Thus, the results could be spurious. Also their research is different from this work as we are employing ARDL method and using real growth rate and not real GDP. Nicholas (2011) studied the effect of monetary policy on real growth cycles. He conducted his research on five (5) advanced countries namely Canada, Denmark, Japan, U.S.A and Korea using polynomial distributed lag (PDL) and VAR models for his analysis. He made real growth in GDP and unemployment rates the models dependent variables. The independent monetary variables were interest rate, money supply and inflation rate. He found out that monetary policy variables most especially interest rate has the most significantly effect on change in unemployment rate in Canada, Japan and the U.S.A.

2.3 Causes of Cyclical Fluctuations

There is variety of reasons why boom-bust cycle happens. While some are associated with sharp changes in the price of inputs used in producing goods and services for example a sharp change in oil prices can be a harbinger of cyclical fluctuations (recession or expansion). As energy becomes dearer/cheaper, it changes the overall price level, leading to a decline/rise in aggregate demand. Fluctuations according to Stijn and Ayhan (2009) could also be triggered by a country's decision to reduce inflation by employing contractionary monetary or fiscal policies. When used excessively, such policy can lead to a change in demand for goods and services, eventually resulting in cyclical fluctuations. Thus, counter-cyclical monetary and fiscal policies are needed to manage such fluctuations.

Some recessions, including those of 2008/09, are rooted from financial market problems like sharp increases in asset prices. Fluctuations can be the result of a change in external demand/prices of export goods, especially in countries with strong export sectors like Nigeria.

3.0 Methodology

The methodology is one of the main sources of difference in results. Methodology is the science of methods used. A critique on methods employed in analyzing data in research work. Different methods have been used by researchers on this topic. Fernald *at al* (2013) employed the FAVAR method to analyse monetary and fiscal policy effectiveness in China using the country's monthly data between January 2000 and September 2013. The method is applauded but there was no report of stationarity of the data used and the results are hence liable to be

spurious. Same thing applied to Kareem et al (2010). Ogar *et al* (2013) employed ordinary Least Squares (OLS) method to analyse fiscal and monetary policy and its effects on the growth of Nigerian economy covering the period between 1986 and 2010. The data set was small and they did not compare the two policies with an adequate method like standardization of variables.

3.1 Source of Data

Secondary data will be employed in this work from the Central Bank of Nigeria online data bank assessed in September 2018. The data set are quarterly time series from 1990Q1-2018Q2. Thus, there are 114 observations in the study.

3.2 The Techniques of Analysis: The techniques employed in this work is the Auto Regressive Distributed Lag (ARDL) Standardized Multiple Regression (scale coefficient); Cointegration; and the Error Correction Model (ECM)

3.3 Model Specification: To capture the impact of monetary and fiscal policies in managing cyclical fluctuations in Nigeria, the research uses real GDP growth rate (Gr) to serve as a measure of cyclical fluctuations Nicholas (2011) and Fernald *et al* (2013) among others. Monetary policy tools are majorly money supply and interest rates (Jhingan, 2010). For this study, we use the broad money (M₂) and monetary policy rate (MPR) as representing monetary policy. Fiscal policy instrument in this study is government expenditure (Ge) which is disaggregated into capital expenditure (Ce) and recurrent expenditure (Re). These are the endogenous shocks that affect cyclical fluctuations.

Two variables represent each policy under the endogenous shock. The model adapts the theoretical models of Monetarists and Keynesians and precisely adapts the model of Nicholas (2011).

The basic model is

$$Gr = f(Ce, Re, M_2, MPR) \dots\dots\dots(1)$$

Where Gr (Ψ) is real gross domestic product growth rate (proxy of cyclical fluctuations), M₂ is broad money supply, MPR is anchor interest rate, and C_e represents government capital expenditure and Re is recurrent expenditure.

It translates to an econometric model as

$$\Psi = \theta + \alpha_1 C_e + \alpha_2 R_e + \beta_1 M_2 + \beta_2 Mpr + u_t \dots\dots\dots (2)$$

In order to make the data set equal for reasons of statistics, we take the logarithm of equation 2 as

$$\Psi = \ln\theta + \alpha_1 \ln C_e + \alpha_2 \ln R_e + \beta_1 \ln M_2 + \beta_2 \ln Mpr + u_t \dots\dots\dots (3)$$

Equation 3 will be our first equation for estimation. The θ, α, β and δ are the parameters for estimation using the Auto-Regressive Distributive Lag (ARDL), u_t is the error disturbance variable.

In order to investigate quantitatively which of the two policies has more impact in managing cyclical fluctuations in Nigeria and also to ascertain which tool within the shocks is more countercyclical, we standardize our variables and run a multiple regression again using scale coefficient (Asterious and Hall, 2007 and Gujarati, 2009). Thus, we transform equation 3 into this equation:

$$\psi = \lambda_1 c_e + \lambda_2 r_e + \beta_1 m_2 + \beta_2 mpr_t + v_t u_t \dots\dots\dots (4)$$

where $\psi, m_2, mpr, c_e, r_e,$ and u_t are the standardized variables of Ψ, M_2, MPR, R_e, C_e and u_t . The parameters of β, λ, ρ and v are the beta coefficients, which gives room for impact comparison among variables (Gujarati, 2009).

We shall capture the impact of previous changes in monetary and fiscal policies on cyclical fluctuations using the dynamic econometric model i.e. autoregressive distributed lag (ARDL) model with lagged-periods depending on the selection order criteria. Hence the equation that will capture this dynamic model is

$$y_t = \alpha + \sum_{i=1}^p \gamma_i y_{t-i} + \sum_{j=1}^k \sum_{i=0}^{q_j} X_{j,t-i} \beta_{j,i} + \epsilon_t$$

Other specification for this study shall be that of ascertaining the long run relationship that exists among cyclical fluctuations and monetary and fiscal policies using the ARDL model. If the ARDL bound test signifies long run relationship in the model, we shall proceed to the ECM expressing the relationship between cyclical fluctuations (Ψ_t) and Monetary (M₂ or L_t) and Fiscal (G_t or G_e) policies as follow:

$$\Delta y_t = - \sum_{i=1}^{p-1} \gamma_i^* \Delta y_{t-1} + \sum_{j=1}^k \sum_{i=0}^{q_j-1} \Delta X_{j,t-i}' \beta_{j,i}^* - \hat{\phi} EC_{t-1} + \epsilon_t$$

where

$$EC_t = y_t - \alpha - \sum_{j=1}^k X_{j,t}' \hat{\theta}_j$$

$$\hat{\phi} = 1 - \sum_{i=1}^p \hat{\gamma}_i$$

$$\gamma_i^* = \sum_{m=i+1}^p \hat{\gamma}_m$$

$$\beta_{j,i}^* = \sum_{m=1}^{q_j} \beta_{j,m}$$

The Y represents the dependent variable which is real growth rate as proxy for cyclical fluctuation and the X is the explanatory variables of monetary and fiscal policies in the model.

ECM in this study has important implications. Once the model has significant long run relationship using the ARDL bound test, it implies that there is an adjustment process which prevents the errors in the long-run relationship from becoming larger and larger.

4.0 Empirical Results

4.1 Pair-wise Correlation Matrix

Table 1 shows the relationship between paired variables within the variables in our model. Being particular about the relationship between G_r and other variables, C_e and M_{pr} have negative relationship with G_r while M_2 , R_e show a positive relationship with G_r . These are all in line with theory except for C_e .

Table 1 Pair wise Correlation

| Variable | C_e | G_r | M_2 | M_{pr} | R_e |
|----------|-----------|-----------|-----------|-----------|----------|
| C_e | 1.000000 | | | | |
| G_r | -0.005234 | 1.000000 | | | |
| M_2 | 0.742766 | 0.016438 | 1.000000 | | |
| M_{pr} | -0.401492 | -0.166647 | -0.449090 | 1.000000 | |
| R_e | 0.716786 | 0.074098 | 0.920760 | -0.584263 | 1.000000 |

Source: Author's Extract gotten from E-Views 9 analysis.

4.2 Lag Selection Criteria

Using the Akaike information criteria in selecting from the first twenty models, ARDL (2, 1, 1, 1, 0) is selected for this study as depicted in figure 3

Akaike Information Criteria (top 20 models)

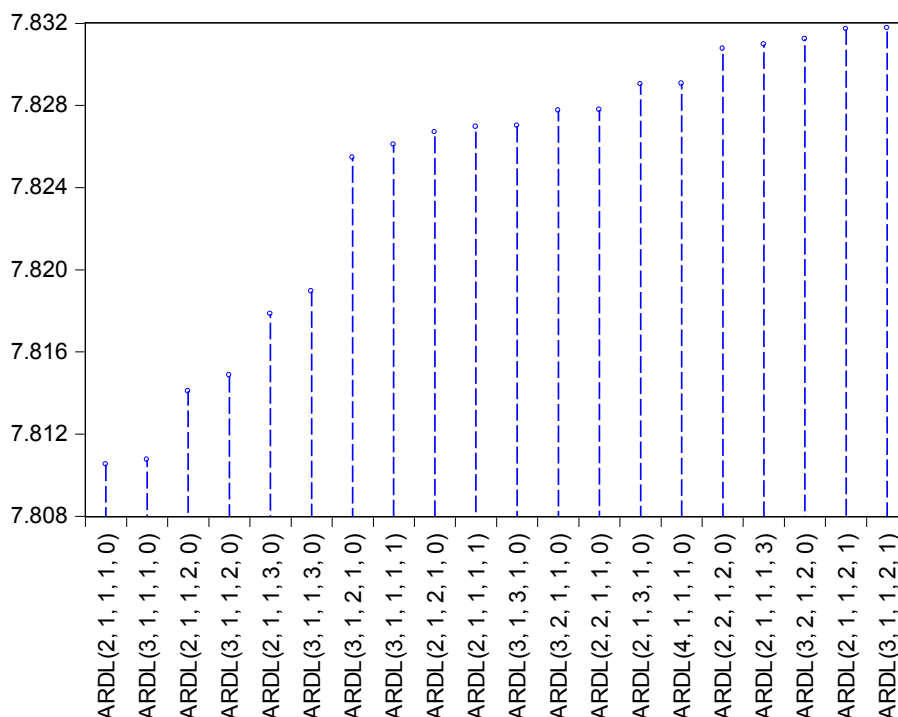


Figure 3: AIC Selection of top 20 models: ARDL.

4.3 ARDL Result

Table 3 presents the result of autoregressive distributed lag of the model as specified by AIK criteria. From the result, Gr responds instantly to changes in M_2 in the negative and the response is significant as the t-value (-2.4) and p-value (0.022) show, but since the negative sign is not in line with theory, we would not reckon with it. At first quarter (1 lag), M_2 shows the expected sign of positive impact on Gr and the impact is significant at 5% level. This means that a 1% increase in M_2 , on the average, leads to about 0.42 unit increase in Gr.

Table 3 ARDL

| Variable | Coefficient | Std. Error | t-Statistic | Prob.* |
|---------------------------|--------------|------------|-------------|--------|
| GR(-1) | -0.093756 | 0.090702 | -1.033668 | 0.3038 |
| GR(-2) | -0.260282*** | 0.090759 | -2.867845 | 0.0050 |
| LCE | -10.05734*** | 3.795274 | -2.649965 | 0.0093 |
| LCE(-1) | 9.144802** | 3.810614 | 2.399824 | 0.0182 |
| LRE | 25.10881*** | 8.211911 | 3.057608 | 0.0029 |
| LRE(-1) | -21.95671*** | 8.223320 | -2.670054 | 0.0088 |
| LM2 | -45.64744** | 19.65253 | -2.322726 | 0.0222 |
| LM2(-1) | 42.43484** | 19.16134 | 2.214607 | 0.0290 |
| LMPR | -16.99643*** | 4.736199 | -3.588623 | 0.0005 |
| C | 77.55674 | 40.04105 | 1.936931 | 0.0555 |
| R-squared | 0.230179 | | | |
| Adjusted R-squared | 0.161581 | | | |
| F-statistic | 3.355484 | | | |
| Prob(F-statistic) | 0.001243 | | | |
| Durbin-Watson stat | 2.0307 | | | |

*** and ** indicate significance at 1% and 5% level

Source: Author's Extract gotten from E-Views 9 analysis.

The growth rate (Gr) instant response to interest rate (Mpr) is expected as it shows that Mpr has a significant negative impact on Gr meaning that a 1% reduction in the anchor interest rate (Mpr), on the average, will lead to 0.16 unit rise in real growth rate (Gr). Therefore monetary policy has significant impact on real growth rate at instance and at one-lag period. The Gr response to capital expenditure (Ce) at instant is not expected but it indicates the correct positive impact and significant at 5% level at one-lagged period. As such, 1% increase in Ce, on the average, leads to a 0.09 unit increase in Gr meaning that it takes a quarter before the

impact on Gr is felt. More so, Gr responded positively to changes in Re as expected and the response is significant as the t-statistics (3.05) and p-value (0.0029) show. However, after a quarter, changes in Re show an unexpected negative sign. The R^2 , which shows overall fitness of the model, indicates an approximate value of 23% meaning that about 23% of the variation in real growth rate in Nigeria is explained by changes in monetary and fiscal policies. This is actually low due to the peculiarity of Nigeria being an oil-exporting country that depends majorly on oil price/exportation. The F-statistics is appreciably 3.36 value with its probability being 0.001 which signifies significance at 1% level. Therefore the impact of monetary and fiscal policies on cyclicity of the Nigerian economy is significant. The model is free of serial correlation as pointed out by the Durbin Watson statistics (2.03).

Table 4 Scale Coefficient

| Variable | Coefficient | Standardized Coefficient | Elasticity at Means |
|----------|-------------|--------------------------|---------------------|
| GR(-1) | -0.093756 | -0.093769 | -0.091859 |
| GR(-2) | -0.260282 | -0.258271 | -0.284827 |
| LCE | -10.05734 | -0.911501 | -162.1781 |
| LCE(-1) | 9.144802 | 0.836787 | 147.2243 |
| LRE | 25.10881 | 2.936573 | 415.4980 |
| LRE(-1) | -21.95671 | -2.601394 | -362.7888 |
| LM2 | -45.64744 | -6.577967 | -785.9924 |
| LM2(-1) | 42.43484 | 6.173713 | 729.2638 |
| LMPR | -16.99643 | -0.410942 | -26.65824 |
| C | 77.55674 | NA | 47.00811 |

Source: Author's Extract gotten from E-Views 9 analysis.

Table 4 show cases result the scale coefficient to compare variable in absolute terms. From the table, being most particular about column of the standardized coefficient and reckoning with those variables that are in line with theory, broad money supply (M2) has the highest comparative impact among all four variables employed with 6.17 as its coefficient. Alongside is recurrent expenditure of the government with 2.94.

In order to examine whether fiscal policy has the ability to impact on unemployment in the long run, we tested the ARDL model for existence of any long run relationship using ARDL Bound Test. The result is given in Table 5.

Table 5: ARDL Bound Test Result

| Test Statistic | Value | K |
|-----------------------|----------|----------|
| F-statistic | 20.73624 | 4 |
| Critical Value Bounds | | |
| Significance | I0 Bound | I1 Bound |
| 10% | 2.45 | 3.52 |
| 5% | 2.86 | 4.01 |
| 2.5% | 3.25 | 4.49 |
| 1% | 3.74 | 5.06 |

Source: Author's Extract gotten from E-Views 9 analysis.

From table 5, the F-statistics (20.73624) is greater than the critical value bound at 1% (3.75 – 5.06), and as such, we reject the null hypothesis of no long run relationship between monetary/fiscal policy and real growth rate and then accept the alternative hypothesis that there exists long run connection. Therefore we employed the error correction mechanism to investigate the short, long and speed of adjustment abilities of the model. The result is presented on table 6.

Table 6 Cointegrating Form

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|--|-------------|------------|-------------|--------|
| D(GR(-1)) | 0.260282 | 0.090759 | 2.867845 | 0.0050 |
| D(LCE) | -10.057344 | 3.795274 | -2.649965 | 0.0093 |
| D(LRE) | 25.108806 | 8.211911 | 3.057608 | 0.0029 |
| D(LM2) | -45.647440 | 19.652531 | -2.322726 | 0.0222 |
| D(LMPR) | -16.996429 | 4.736199 | -3.588623 | 0.0005 |
| CointEq(-1) | -1.354038 | 0.132490 | -10.219914 | 0.0000 |
| Cointeq = GR - (-0.6739*LCE + 2.3279*LRE - .3726*LM2 -12.552 | | | | |

Source: Author's Extract gotten from E-Views 9 analysis.

From table 6, in the short run, Ce, M2 and Mpr have negative impact on Gr while only Mpr has the correct sign, they are all significant at 1% and 5% level. Re is correctly signed and significant at 1% level. The ECM

shows a high value of -1.354038 which has the expected sign and means that about 135% of the disequilibrium in growth rate is corrected in a quarter by model. There is high speed of adjustment between the short and long run period.

Table 7 Long Run

| Variable | Coefficient | Std. Error | t-Statistic | Prob. |
|----------|-------------|-------------|-------------|--------|
| LCE | -0.673941 | 1.591884 | -0.423361 | 0.6729 |
| LRE | 2.327927 | 3.290885 | 0.707386 | 0.4810 |
| LM2 | -2.372609 | 2.577586 | -0.920477 | 0.3595 |
| LMPR | -12.552406 | 3.316266*** | -3.785102 | 0.0003 |
| C | 57.278132 | 29.399261 | 1.948285 | 0.0542 |

*** and ** indicate significance at 1% and 5% level

Source: Author's Extract gotten from E-Views 9 analysis.

Table 7 presents the result of long run impact analysis of the model. In the long run, only Re has positive impact on real growth rate but the impact is not significant as its t-statistics and p-value indicate, even at 10% level. Ce, M2 and Mpr show a negative sign in which only Mpr is significant as *p-value* is 0.0003 at 1% level. Therefore, in the long run, a 1% reduction in interest rate (Mpr), on the average, leads to 0.12 unit rise in the real growth rate.

5. Discussion of Result

The study found out that both monetary and fiscal policies have significant impact on real growth rate though at different time period. At static regression, at policy instance, only recurrent expenditure and monetary policy rate were having the correct sign and significant at 1% level meaning that they are the only instruments that indicated counter-cyclical policies. This result is in line with the studies of Romer and Romer (1994), Greenlaw et al (2008), Brunnermeier (2009), Kareem et al (2013) and Fernald et al (2013). Capital expenditure and money supply showed pro-cyclical as static regressors which are line with the findings of Antonio et al (2003). Result of the dynamic regressors (one lagged period) showed that only capital expenditure and broad money supply are counter-cyclical. At this period, broad money supply exhibited the most counter-cyclical among the policy instruments employed which is also in line with the finding of Nicholas (2011). Our findings in the short run indicated that recurrent expenditure is the most effective instrument followed by monetary policy rate. In the long run, all variables were not significant with the expected counter-cyclical signs except monetary policy rate (anchor interest rate). The counter-cyclical of interest rate in the long run is in line with the study of Ball (1999) and Nicholas (2011).

6. Policy Implication

The policy implication is that when there is recession in the Nigerian economy, policies should be counter-cyclical, such as monetary policy, by reducing the anchor interest rate and buying treasury bills in the open market to increase broad money supply, and fiscal policy, by increasing government expenditure as opined by Keynes (1936). This study implies that fiscal policy (capital and recurrent expenditure) has impact in managing cyclical fluctuation. Recurrent expenditure has an instant impact on real growth rate while the impact of capital expenditure is correctly felt at after quarter. The study implies that recurrent expenditure had more comparative impact than capital expenditure in Nigeria. This could be due to the bottle-necks involved in winning and implementing contract (capital expenditure) in Nigeria. Also comparatively, monetary policy (broad money supply) had a greater impact on real growth rate than fiscal policy within the period under review. In the short run, only recurrent expenditure and monetary policy rate had the correct impact on real growth rate. Recurrent expenditure (fiscal policy) had the greatest impact while in the long run, monetary policy rate (anchor interest rate) had the greatest significant impact. This could be due to the fact that anchor interest rate has proportionate and direct impact on three rates: prime lending rate; treasury rate; and the interbank rate. The impact will also have an asset effect to affect the financial sector with strong impact on the economy. We can recall that during the global financial crisis of 2007, most advanced economies cut down their interest rate to near zero as central banks are aware of its ability to salvage the economy from such recession. However, both policies are entwined as effective policy tools for managing cyclicity in the economy.

7. Conclusion and Policy Recommendations

The research investigated on the impact of monetary and fiscal policies in management of cyclical fluctuation in Nigerian economy between 1990Q1 and 2018Q2. Quarterly data were sourced from the CBN online data bank. Cyclical fluctuation was measured by real growth rate using real gross domestic product as proxy and two instruments each from monetary policy (broad money supply and monetary policy rate) and fiscal policy (capital expenditure and recurrent expenditure). While real growth rate was made the dependent variable, monetary and fiscal policies were the explanatory variables. The study employed ARDL technique to analyse data.

The study found out that real growth rate had instantaneous response to the anchor interest rate (monetary policy rate). Recurrent expenditure had a positive impact which is usual that when people have more pay through increase in recurrent expenditure of the government, they will demand for more consumer goods and buy financial assets with their surplus money. This will make aggregate demand to increase, employment will go up and hence the growth rate will appreciate.

Thus, the study recommends that the best single instrument to use in order to manage cyclical fluctuation in the Nigerian economy in the short run is recurrent expenditure under the fiscal policy. In the long run, monetary policy rate is the best and most effective

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