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Monetary Policy Shocks and Inclusive Growth in Nigeria: A VAR Approach

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Abstract:
The importance of monetary policy to an economy has made its effectiveness very potent in achieving economic growth in both developed and developing countries, this is because, an effective monetary policy is crucial for sustainable development and economic stability. Hence, this study will among other things investigate the relationship between monetary policy shocks and inclusive growth in Nigeria. With many of the macroeconomic models for measuring the effect of monetary policy on an economy lacking the analytical specificity to account for the importance of shocks on aggregate economy. This study, with the introduction of inclusive growth as a new variable, used a developed model with advanced empirical and quantitative methodology to study monetary policy shocks and inclusive growth in Nigerian economy. Usually, VAR is more applicable to analyzing the linkage among monetary policy variables. Hence, while this study will obtain a new evidence for this relationship, it is expected in Nigeria, that an effective monetary policy will encourage inclusive growth; stabilize inflation and maintain macroeconomic stability in the economy.

JEL Classification: E5; A10, B10; C3 and B40
Keyword: Monetary policy, economic growth, inclusive growth, model and VAR.

1. Introduction
Monetary policy is an important key driver of economic growth through its impact on economic variables. Over the years, the growing importance of monetary policy has made its effectiveness in influencing economic growth a priority to both developing and developed economies of the world. Monetary policy can act as growth catalyst by creating an enabling environment with appropriate incentives to empower innovative entrepreneurs to drive inclusive growth. Changes in monetary policy tend to influence aggregate demand, growth, and inflation through various transmission channels and induce changes in employment as a result. Extant economic literature (see Bernanke and Gertler, 1995; Mishkin, 1996; Mordi, 2010) has identified five main monetary transmission channels (interest rates, asset prices, exchange rates, credit and expectations) through which monetary policy can affect real economy and promote inclusive growth. For most economies, the objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, promotion of employment and output growth, and sustainable development. The pursuit of price stability invariably implies the indirect pursuit of other objectives such as economic growth, which can only take place under conditions of price stability and allocative efficiency of the financial markets. Monetary policy aims at ensuring that money supply is at a level that is consistent with the growth target of real income, such that non-inflationary growth will be ensured. Changes in money supply and interest rates influence consumer spending as well as investment decisions. Consequently, aggregate demand changes in response to monetary policy adjustments.

In the Nigerian experience, the renewed interest in the inclusiveness of the economic growth process is not unconnected with the recent growth experiences of several developing countries. Nigeria, for example, has experienced unprecedented rates of GDP growth for nearly a decade, but the rates of poverty, inequality and unemployment have also risen during the period. While the economy had grown by an average of over 6% per annum between 2005 and 2014 (World Bank, 2015), poverty and inequality have actually risen. The Gini coefficient, for instance, had risen from 0.429 in 2005 to 0.504 in 2013, suggesting a significant rise in income inequality , when indeed GNI per capita (2011 PPP prices) had increased by over 43%, from $3,606 in 2005 to $5,165 in 2014 (World Bank, 2015). In addition, the unemployment rate has also increased from about 11.9% in 2005 to about 24% in 2014 (National Bureau of Statistics, 2015). Thus, jobless growth seems prevalent in Nigeria despite the growth recorded in the time past. These statistics clearly suggest that the seemingly impressive growth in output and income over the period had excluded a majority of the population- the

poor. Over this period, a greater majority of the country's poor had been excluded from the economic opportunities associated with economic growth process.

Therefore, inclusive growth had eluded the Nigeria's economic growth process over the recent past. Well-being indicators suggest that the growth experienced by the economy has not led to improving the welfare of the citizens. It has also been suggested in the literature that macroeconomic stability and low inflation rates through a sound monetary policy have positive effects on growth and reduction of inequality (Asongu, 2013). Thus, inclusive growth is important, because it is a necessary condition for sustaining equitable growth. While, effective monetary policy initiatives can contribute to job creation both directly and indirectly by allocating more financial resources to consumers and firms that have limited access to such resources. This analysis indicates that well-fashioned monetary policy initiatives towards inclusive growth have the capacity to provide financial services that cater for the most vulnerable with a view to raising their standard of living.

Though a large body of literature link monetary policy and growth by examining the monetary policy-growth nexus, within both bivariate and multivariate frameworks, but the nexus with inclusive growth (reduction in unemployment, inequality and poverty rates) is not been thoroughly examined. This study intends to contribute to the existing literature by investigating the impact of monetary policy shocks on inclusive growth within a multivariate approach. Therefore, the important issues of concern in this study are: what is the impact of monetary policy shocks on inclusive growth in Nigeria? How has monetary policy initiatives contributed to inclusive growth by expanding and stabilizing employment in Nigeria? How can monetary policy initiatives drive inclusive growth in Nigeria? This study intends to provide answers to these pertinent questions. Because, it is necessary for monetary authority to implement effective monetary policy initiatives that are consistent with achieving higher employment in order to address rising inequality and attain inclusive growth. It is in this regards that this study aims at examining the impact of Nigerian monetary policy shocks on inclusive growth.

2. Literature Review

To date, the relationship between monetary policy and inclusive growth remains inconclusive; many theoretical and empirical studies debate the issues on whether central banks need to include inclusive growth as integral part of their mandates. Two major strands are prominent in the literature. The first strand contend that unemployment is not the legislative function of monetary authorities and that price and financial stability as well as banking supervision are enormous task nonetheless of adding unemployment to these objectives (Bhattacharyya, 2012; Orphanides, 2013; Vinayagathasan, 2013). As a result, they argue that Central banks should not be blamed for every fluctuation in either inflation or unemployment. They further noted that assigning unreasonable blames to monetary policy for unemployment should be reconsidered, that the vital debate on unemployment was wrongly focused (Bojie and Holmberg, 2007). Similarly, Bhattacharyya (2012) noted that despite the success of employment objective documented in Australia, Korea, United State and Japan by monetary policy, it still appears inappropriate for monetary authorities to assume this role.

Orphanisede (2013) further claimed that overburdening monetary policy may eventually weaken and compromise the independence and credibility of the Central Banks, thereby reducing its effectiveness in maintaining price stability and contributing to crisis management.   Advocates of inflation targeting have argued that central banks should embrace just one clear objective of maintaining price stability. Many international organizations appear to also support this view initially, largely before the global financial crisis. For instance, International Monetary Fund (2006) argued that, subject to certain caveats, inflation targeting led to better macroeconomic outcomes than alternative monetary policy regimes. This line of thought is consistent with conventional economic theory that predicts that price and financial stability can generally provide avenue for higher economic growth, which would bring about higher employment and reduction in poverty level and that monetary authorities need not have explicit output or employment target. In other words, once price and financial stability is maintained, economic growth and employment would automatically follow. But, this is not enough reason to justify that achieving price and financial stability will lead to economic growth. Moreover, when not all growth is equally effective in reducing poverty and that increase in growth has not resulted in expected comparable increase in the number of job.

This argument particularly reflects the experiences in many emerging economies, where despite high economic growth rates, unemployment and poverty have been a major policy challenge. Hence, they often argue that price and financial stability do not necessarily imply macroeconomic stability that can lead to growth and generate employment creation (William, 2004; Epstein, 2014; Chang and Jaffar, 2014; Sayeed and Abass, 2014; Adeleke *et al.* 2015). This strand of the literature therefore advocate for central banks to explicitly incorporate employment as part of their main mandates, where monetary policy can primarily be focused on employment creation just like some developed countries in Europe, United States and Australia.

In Nigeria, Fasanya *et al.* (2013) examined the impact of monetary policy on economic growth using time series data covering the period 1975-2010. The effects of stochastic shocks of each of the endogenous variables were explored using Error Correction Model (ECM). Findings of the study reveal a long run relationship among the variables. Also, the core finding of the study shows that inflation rate, exchange rate and external reserve are significant monetary policy instruments that drive growth in the economy. In a related study, Adeoye and Saibu (2014) analysed the effects of monetary policy shocks using changes in various monetary policy instruments on exchange rate volatility in Nigeria. The results from the paper show that both real and nominal exchange rates in Nigeria have been unstable during the period under review. In the short, the variation in the monetary policy variable explains the movement/behaviour of exchange rate through a self-correcting mechanism process with little or no intervention from the monetary authority (CBN). It was concluded that inflation rate, reserves, interest rate and money supply depreciate and cause volatility in nominal exchange rate which further reinforce other findings that monetary policy is crucial to exchange rate management in Nigeria.

Sayeed and Abass (2014) examine the roles of Central Banks on economic growth with specific focus on Pakistan economy. The study shows that macroeconomic performance of Pakistan economy over the last decade had been characterized by stagflation and moderate growth reflecting that unemployment remains a big concern for Pakistan. It further emphasized that the role of Central Banks must be redefined toward job creation, if any significant progress will be made in the country. In a related study, Khou (2014) assesses the role of Central Bank in Cambodia and provide empirical support to development in the context of dollarized economy. It pointed out that rapid development in Cambodia is attributed to export of garment and agricultural products, tourism and construction but unemployment remains a challenge and there is need for the Central bank to intervene and salvage the economy.

Montiel (2014) argues that there appears to be weak and less reliable monetary policy transmission mechanism in low-income countries based on the nature of their policy environment and available financial architecture. Given these reasons, the credit and lending channel is the most likely mechanism through which monetary policy can be transmitted to aggregate demand in low income countries. However, the credit and lending channel could also be less effective as a result of severe credit-market frictions in the forms of both asymmetric information and moral hazard leading to high costs of contract enforcement and oligopolistic behaviour in the banking sector. In the same vein, Arias (2014) examines the roles of Central Bank in Ecuador on economic growth and give support for financial inclusion as well as effectiveness of monetary policy to resolve the recent challenges of unemployment in the economy. The study further call for the Central Bank to provide policy option that integrates financial inclusion, job creation and reduction in poverty while maintaining economic stability.

Chatani (2014) also examines role of Central Banks in Mozambique. It identifies poverty and income inequality as major concern of the Central Banks in Mozambique and that there is need to accelerate diversification of the economy in such a way that would pave way toward employment generation. In general, there appears to be no consensus in the literature on whether monetary policy objectives should be singly focused on price and financial stability or that they should focus on multiple objectives. It however, clearly shows that it may be inappropriate to assess monetary policy objectives based on short and medium-term goals; instead poverty reduction and productive employment generation should rather be a long-term goal that central banks ought to be in close coordination with fiscal authorities. Hence, the issue of refocusing monetary policy toward inclusive growth is recent and as such it has not received considerable attention from both researchers and policy makers alike in this part of the world.

3. Stylized Facts: Monetary Policy and Inclusive Growth in Nigeria
Like every sensitive economy of the world, an important macroeconomic objective of Nigerian economy is to sustain high economic growth that is capable of generating employment and poverty reduction. In spite of the continued policy focus on this objective, high economic growth experienced particularly in the last decade has not been accompanied with significant employment generation and poverty reduction. This is because there is coexistence of both increasing poverty level and higher economic growth in the same period. This evidence run contrary to the conventional economic theory that predicts a direct relationship between economic growth and employment and an inverse relationship with poverty level. This occurrence has been termed non-inclusive growth in the literature. This is explained by the fact that major growth drivers might have occurred in those sectors that require little labour input, therefore, accruing job creation and income therefore goes to small segment of the labour force leaving majority of the people without employment and thus remained in poverty. Inclusive economic growth on the other hand, is expected to include majority of the sectors and provide job opportunity for greater number of the labour force.

Inclusive growth is presumed to deliver equal access to markets, factors of production and provide conducive contractual environment to all economic agents (Mbutor and Uba, 2013). Hence, both fiscal and monetary policymakers are expected to ensure that future economic growth are more participatory and involve many sectors of the economy, by providing strategies to maximize high-productivity jobs among the labour force. Several policy initiatives both at the national and state levels have been suggested and implemented as part of the efforts to combat poverty and unemployment in the country. These initiatives can be broadly categorized into two: fiscal and monetary policies. Fiscal policies includes taxation, expenditure and trade policies of the government while the monetary policies (which is the focus of this study) includes the interest, exchange rates, credits and other financial policy intervention programmes that promote inclusive growth. The effectiveness of these policies and reforms need to be rigorously interrogated in the light of the current call for inclusive growth in Nigeria.

The table below further buttresses this analysis. It shows five-year period average of key macroeconomic variables of interest between monetary policy and inclusive growth in Nigeria, from 1981 to 2014. The Table reveals some interesting results. It clearly shows that increasing economic growth experienced in the country, particularly from the 1990s, appears not to be inclusive, as unemployment rate was rising over this period. Also, depreciating exchange rate, increasing saving to GDP ratio as well as number of bank branches appears not to translate to reduction in unemployment in the periods understudy as expected. Influence of exchange rate depreciation on employment can be justified based on the low productivity level of manufacturing and exportable goods, as the major source of export for the country is crude oil whose price are internationally determined. This trend also suggests that increasing savings and availability of bank branches are not directly transforming to credit and investment, thus not generating required effects of job creation and poverty reduction.

Period Average	Real GDP Growth	Exchange Rate	MPR	Unemployment Rate	Saving to GDP Ratio	Loan to SME(% of total Credit	No of Bank Branches
1981-1985	1.19	0.73	8.40	4.88	8.35	-	1,102.80
1986-1990	5.46	5.20	14.50	5.12	8.27	-	1,661.80
1991-1995	1.43	18.61	17.00	2.60	6.53	18.66	2,285.40
1996-2000	3.18	52.09	14.56	6.18	4.85	11.85	2,275.40
2001-2005	6.40	125.58	15.41	12.88	7.46	5.71	3,086.80
2006-2010	6.68	134.46	8.88	16.14	14.70	0.46	4,726.00
2011-2014	7.10	156.81	11.36	24.28	11.48	0.15	5,545.75

Table 1: Analysis of Key Macroeconomic Variables
Source: Adapted from Adeleke et al. 2015

Point of attraction is the drastic and persistent reduction in proportion of commercial bank loans to small and medium scale enterprises (as a percentage of total credit) under the review period. Economic literature has shown the high potential of SME in generating employment and reducing poverty in an economy. Reduction in commercial bank loan to small and medium scale enterprises may hamper the ability of the entrepreneurs to make investment and create job in the economy. This phenomenon may also explain the observed trend of high saving to GDP and bank branches (proxy for financial inclusion) not having expected influence on employment generation and poverty reduction. This also justifies why the monetary authorities, particularly in developing countries, may have to be involved in easing financial access for the majority, primarily the less privileged member of the society. This drive has been the recent focus of Central Bank of Nigeria (CBN) financial inclusion strategies and its intervention programmes in the real sectors of the economy.

4. Data Source and Research Methodology

Using the annual date set from the Central Bank of Nigeria Statistical Bulletin, covering the sample period of 1980- 2014. This study addresses the research questions by employing the VAR framework to investigate the linkage between monetary policy and inclusive growth in the Nigerian economy. A VAR framework constitutes a convenient framework to assess the interrelationships within a system of variables when the imposition of strong a-priori restrictive assumptions cannot be derived by economic theory. The model is formulated based on reviewed empirical and theoretical studies. This model framework is similar to the one used by Sims (1980). Hence, this framework in the form of VAR is expected to examine the scenario of the relationships among Money Supply to GDP growth (MSGDP), Per Capita Income growth (PCIG), Exchange Rate (EXR) and Unemployment Rate (UEMR) in the Nigerian economy. The model is presented as follows:

$$\Delta Y_t = \tau(L)\Delta Y_t + \epsilon_t \qquad (4.1)$$

Where; vector $Y_{it} = MSGDP_t, PCIG_t, EXR_t, UEMR_t)$, L represents the lag operator, $\tau(L)$ is the matrix of estimated parameters, $t =$ years and ϵ_t *is* the error term assumed to be serially uncorrelated. The variables denoting the vector Y_t are money supply to the percentage of GDP growth (MSGDP), per capita income growth (PCIG), exchange rate (EXR) and unemployment rate (UEMR). The VAR models for individual variables are as follows:

$$MSGDP = c_1 + \sum_{i=1}^{p}\eta_{11}MSGDP_{t-i} + \sum_{i=1}^{p}\eta_{12}EXR_{t-i} + \sum_{i=1}^{p}\eta_{13}PCIG_{t-i} + \sum_{i=1}^{p}\eta_{14}UEMR_{t-i} + \mu_{1,t} \quad (4.2)$$

$$PCIG = c_3 + \sum_{i=1}^{p}\eta_{31}PCIG_{t-i} + \sum_{i=1}^{p}\eta_{32}MSGDP_{t-i} + \sum_{i=1}^{p}\eta_{33}EXR_{t-i} + \sum_{i=1}^{p}\eta_{34}UEMR_{t-i} + \mu_{3,t} \quad (4.3)$$

$$EXR = c_2 + \sum_{i=1}^{p}\eta_{21}EXR_{t-i} + \sum_{i=1}^{p}\eta_{22}MSGDP_{t-i} + \sum_{i=1}^{p}\eta_{23}PCIG_{t-i} + \sum_{i=1}^{p}\eta_{24}UEMR_{t-i} + \mu_{2,t} \quad (4.4)$$

$$UEMR = c_4 + \sum_{i=1}^{p}\eta_{41}UEMR_{t-i} + \sum_{i=1}^{p}\eta_{42}MSGDP_{t-i} + \sum_{i=1}^{p}\eta_{43}EXR_{t-i} + \sum_{i=1}^{p}\eta_{44}PCIG_{t-i} + \mu_{4,t} \quad (4.5)$$

Meanwhile, impulse response function and forecast error variance decomposition (FEVD) are used in analyzing the interrelationships among the variables specified from equations (4.2) to (4.5). The impulse response functions are responses of all variables in the model to a one unit structural shock to one variable in the model. It measures the proportion of movement in a sequence attributed to its own shock, to distinguish it from movements attributable to shocks to another variable.

5. Empirical Result and Discussion

5.1. Unit Root Test

This section reports the results of Augmented Dickey Fuller (ADF) stationarity test.

Variable	Intercept	Order of Integration
MSGDP	-5.210253* [-2.957110]	I(1)
PCIG	-8.357915* [-2.957110]	I(1)
EXR	-5.377029* [-2.957110]	I(1)
UEMR	-6.809714* [-2.957110]	I(1)
Note: * significant at 1%.		
Source: Authors' computation using E-views 8		

Table 2: Unit Root Test Results

The Augmented Dickey Fuller (ADF) stationarity test, confirmed that all the series are stationary at first order i.e. I (1) at 1% significance level. This implies that money supply as a percentage of GDP, per capita income growth, exchange rate and unemployment rate are all stationary after first differencing. While, the lag length is optimally chosen by the Schwarz Information Criterion (SIC)

5.2. Cointegration Test Results
Table 3 presents the cointegration results according to the maximum - eigen statistics. This indicates that there are no cointegration at 5% significance level. Therefore, no long-run equilibrium relationship exists between the variables. This implies that VAR model can be used to estimate the regression.

Hypothesized No. of CE(s)	Eigen value	Max-Eigen Statistic	0.05 Critical Value	Prob.**
None	0.554578	25.87944	27.58434	0.0813
At most 1	0.341325	13.36081	21.13162	0.4196
At most 2	0.075748	2.520655	14.26460	0.9734
At most 3	0.009818	0.315729	3.841466	0.5742

Table 3: Cointegration Result (Maximum Eigen Statistic)
Source: Authors' computation using E-views 8.

5.3. VAR Model Results

Variables	Coefficient	Std. Error	t-Statistic	Prob.
(EXR(-1))	0.186116	0.027294	6.818880	0.0000
(EXR(-2))	-0.146670	0.032755	-4.477774	0.0002
MSGDP(-1))	0.154018	0.073109	2.106687	0.0463
MSGDP(-2))	-0.056258	0.073583	-0.764551	0.4523
PCIG(-1))	-0.087137	0.057318	-1.520240	0.1421
PCIG(-2))	-0.094388	0.058399	-1.616252	0.1197
(UEMR(-1))	0.502562	0.140514	3.576612	0.0016
(UEMR(-2))	0.255598	0.130715	1.955382	0.0628
Constant	-2.288144	1.590879	-1.438290	0.1638
R-squared	0.952592	Mean dependent var		10.25625
Adjusted R-squared	0.936102	S.D. dependent var		7.688783
S.E. of regression	1.943579	Akaike info criterion		4.399197
Sum squared resid	86.88246	Schwarz criterion		4.811436
Log likelihood	-61.38716	Hannan-Quinn criter.		4.535843
F-statistic	57.76827	Durbin-Watson stat		1.819795
Prob(F-statistic)	0.000000			

Table 4: VAR Model Results
Source: Author's Computation

As presented in the table above, the model explains that over 95 percent of the variation in the dependent variable (unemployment), which is the measure of growth inclusiveness is being explained by the independent variables and also significant at 6.8189 and 4.4777 t-statistic values. The value of Durbin-Watson statistics of 1.8 is within the acceptable region. This result explains the importance of using unemployment rate to measure the inclusiveness of economic growth. This is under the assumption that if growth is inclusive, it will increase the job availability and improve welfare of the populace. The table reveals the movement in exchange rate as a critical macroeconomic variable that affects the level of unemployment in Nigeria. With the exchange rate being unstable, this impact has affected all other aggregate variables in the economy. The volatility in exchange rate has affected all other macroeconomic variables in the economy. As a result of this, exchange rate instability, coupled with high unemployment rate could have been partly responsible for lack of achieving inclusive growth in Nigeria.

Furthermore, the monetary policy variable (MSGDP) at 2.106687, is significant to influence unemployment. This is an indication that the monetary policy framework put in operation by the monetary authorities including the CBN, has effect on the inclusiveness of economic growth in Nigeria. This evidence provided by the result explains that the success of monetary policy depends on the operating economic environment and the institutional framework adopted by the CBN. However, the current framework from the CBN is focusing more on price stability among other objectives.

5.4. Variance Decomposition Analysis
Table 5 below present the Variance Decomposition (VD) of inclusive growth proxied by unemployment rate to innovation shocks on the other variables. VD separates the variation in an endogenous variable into the component shocks of the model. Thus, it provides information about the relative importance of each random innovation in affecting the variables in the model. Hence, it is shown on the table that exchange rate and money supply shocks formed the greater proportion of the total variation in unemployment rate. This implies that the volatility in exchange rate as well as the behaviour of the monetary policy determines the growth pattern and the absorptive capacity of the economy. While, fluctuation and instability experienced in the exchange rate over the years may be responsible for the non-inclusion of the GDP growth rate. This because, the growth experienced by the economy over the years has not led to reduction in the unemployment rate in Nigeria. This may largely be due to high volatility in economic aggregate variables.

Period	S.E.	EXR	MSGDP	PCIG	UEMR
1	1.943579	0.914809	0.680681	0.006818	98.39769
2	3.528697	54.61754	5.464909	2.526978	37.39057
3	4.396259	52.42015	10.57892	7.550946	29.44998
4	5.188617	56.66174	12.48520	7.760479	23.09258
5	5.744900	60.49537	12.41046	7.438292	19.65588
6	6.181239	64.12002	11.51192	7.100240	17.26782
7	6.531931	67.18041	10.56524	6.683013	15.57134
8	6.832895	69.77188	9.744793	6.232549	14.25077
9	7.092450	71.85463	9.078898	5.839653	13.22682
10	7.321542	73.54169	8.532423	5.503245	12.42264

Table 5: Variance Decomposition of UEMR in Nigeria
Source: Author's Computation using E-views 8

6. Conclusion and Policy Recommendation
The study has examined the relationship between monetary policy shocks and inclusive growth in Nigeria, using, VAR framework. The results provided evidence that money supply and exchange rate have a significant impact on growth through unemployment. Also, findings from the study revealed that inability of the monetary policy authority to control the instability of the exchange rate are responsible for non – inclusiveness of the growth experienced in the economy over the years.
As a result of these findings, it is recommended that both fiscal and monetary policies from the authorities should accommodate all and sundry in the economy. Uncoordinated expansionary monetary and fiscal policies could have worsen exchange rate in the past. It is therefore, important that monetary and fiscal policies are coordinated and harmonised so as to achieve macroeconomic stability.

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