

IMPACT OF MONETARY POLICY AND BALANCE OF PAYMENT ON PRICE STABILIZATION IN NIGERIA

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Abstract

This paper presents an empirical analysis of the impact of monetary policy and balance of payment on price stabilization in Nigeria over the period 1980 – 2015. Employing variance decomposition test, we found out that growth rate of broad money supply and lending rate causes fluctuation on balance of payment, while growth rate of broad money supply and monetary policy rate causes fluctuation in Inflation. Therefore, this study concludes and recommends that monetary authorities should be strict while using tools like broad money supply, monetary policy rate and lending rate. This is because the monetary policy tools exerted little influence on the target variables.

Keywords: Monetary Policy, Balance of Payment, Variance Decomposition, Nigeria.

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INTRODUCTION

Monetary policy is one of the macroeconomic instruments with which monetary authority of a country employ in the management of their economy to attain desired objectives. It entails those actions initiated by the Central Bank which aim at influencing the cost and availability of credits (Horwitz, 1969; Nwankwo, 1991 and Wrightsman 1976). For most economies, the fundamental objectives of monetary policy include price stability, maintenance of balance of payments equilibrium, and promotion of employment, output growth and sustainable development. These objectives are necessary for the attainment of internal and external balance of value of money and promotion of long run economic growth

The Keynesian theory postulated that changes in the money supply affect aggregate expenditure, output and balance of payment through the changes in the interest rate and this mechanism works indirectly. Monetarism concludes that monetary expansions influence the real variables such as output and employment in the short-run, while the nominal variables such as nominal national income, interest rates and prices are influenced in the long-run.

Fasanya, Onakoya and Agboluaje (2013) asserted that since the establishment of the Central Bank of Nigeria (CBN) in 1959, the Bank has continued to play the traditional role expected of a central bank, which is the regulation of the stock of money in such a way as to promote the social welfare. This role is anchored on the use of monetary policy that is usually targeted towards the achievement of full-employment equilibrium, rapid economic growth, price stability, and balance of payment equilibrium.

One of the major macroeconomic goals of stabilization policy in any country of the world is to maintain a healthy balance of payment position in order to safe guard the external value of a Nation's currency. Many developing countries like Nigeria have experienced chronic deficit on their balance of payment account and face many difficulties in monetary actions. Most research studies are centered on monetary approach to balance of payments. Therefore this study will contribute to literature by examining the impact Monetary Policy and BOP on Price stabilization.

LITERATURE REVIEW

Monetary policy as a technique of economic management to bring about Sustainable economic growth and development has been the pursuit of nations and formal articulation of how money affects economic aggregates dates back to the time of Adams Smith and later championed by the monetary economists (Loto,2012). Since the expositions of the role of monetary policy in influencing macroeconomic objectives like economic growth, price stability, equilibrium in balance of payments and host of other objectives, monetary authorities are saddled with the responsibility of using monetary policy to grow their economies. According to central Bank of Nigeria (CBN) excess supply of money will result in an excess demand for goods and services which in turn raises prices and reduces balance of payment. On the other hand, inadequate supply of money retarding growth and development. Nneka (2012) argues that for monetary policy to be efficacious, the economics system must be highly interested and highly monetized corresponding with regular information network system. She also said that Nigeria lacks the fundamental flexibilities which could have aided a more effective use of monetary policy. Obviously, the empirical studies on monetary policy and balance of payment stability in Nigeria are still scanty.

The balance of payment is defined as a systematic record of economic and financial transactions for a given period of time, say one year, between residents of an economy and non-residents and the rest of the world (Sloman, 2004). These transactions involves the provision and receipt of real resources, goods, services and income, changes in claims on and liabilities to the rest of the world. The balance of payment records transaction of goods, services and income, changes in ownership and other changes in an economy's holding of monetary gold, Special Drawing Rights (SDRs) and claims on and liabilities to the rest of the world. A negative balance of payments means that more money is flowing out of the country than coming in, and vice-versa. Balance Of Payments (BOP) may be used as an indicator of economic growth and political stability. For example if a country has consistently positive BOP, this could mean that there is significant foreign investment within that country. It may also mean that the country does not export much of its currency. Adamu and Itsede (2010) categories disequilibrium in the balance of payments to be either temporary or fundamental while Temporary disequilibrium is caused by random

variations in trade, seasonal fluctuations, and the effects of unfavorable weather on agricultural production, which tend to be self-equilibrating within a short time.

Danjuma (2013) determine whether excess money supply has played a significant role in the disequilibrium of balance of payment in Nigeria during the period 1986-2010. Using Johansen Cointegration, Vector Error Correction Mechanism and the Impulse Response Function and Variance Decomposition the results confirm that balance of payment in Nigeria is not a purely monetary phenomenon and the monetary authority in the country should seriously monitor budget deficit because this also cause domestic credit increase. Imoisi (2012) examined the trends in Nigeria's Balance of Payments position from 1970-2010 using an econometric analysis and found that exchange rate and interest rate as monetary variable has a significant impact on Nigeria Balance of Payments and inflation rate was not significant.

Tijani (2013) empirical Analyzed Balance of Payment Adjustment Mechanisms using Monetary Channel in Nigeria from 1970– 2010. The regression analysis found a positive relationship between the BOP and Domestic Credit, Exchange Rate and Balance of Trade while Inflation Rate and Gross Domestic product have a negative effect and he concluded that monetary measures constitute immensely to the position of BOP, cause disturbances and also serve as adjustment mechanism to bring BOP to equilibrium depending on it application and policy mix by monetary authority.

Imoisi, Olatunji and Ekpenyong (2013) study the efficacy of monetary policy in achieving Balance of Payments stability in Nigeria from 1980 to 2010 using an Ordinary Least Squares (OLS), regression technique. The estimated result shows a positive relationship between the BOP and the monetary variables of Money Supply, Exchange Rate and Interest Rate. Specifically, Money Supply and Interest Rate had significant relationship with BOP, whereas Exchange Rate was not statistically significant. They concluded that the government should promote the exportation of Nigerian products especially the Non oil products, as this will bring in more foreign exchange earning into the country, boost productive activities and improve the balance of payments position of the country.

Ajayi (2014) examined the determinants of balance of payments in Nigeria between 1970-2010. The study employed the co-integration method to assess the long run impact of macroeconomic variables and found a negative significant relationship between monetary policy instruments (i.e. monetary policy rate and money supply) and balance of payment. The study concluded that a larger exchange rate and a lesser monetary policy rate will raise the balance of payments of the Nigerian economy.

Furthermore, Umer, et al., (2010) in their study which examines the monetary approach to Pakistan's balance of payments for the period 1980-2008 using Co- integration test and error correction modeling, The empirical results revealed that monetary variable does not play an overwhelming role in determining Pakistan's balance of payments and concludes that the balance of payments is not a purely monetary phenomenon.

Model Specification

The methodology employed in this study is that of vector autoregressive (VAR) analysis developed by Sims (1980)

The General basic model of VAR (p) has the following form

$$y_t = \mu + \psi dD_t + A_1 y_{t-1} + \dots + A_p y_{t-p} + \mu_t \dots \dots (1)$$

Where y_t is the set of K time series variables $y_t = (y_{t1} \dots y_{kt})$ A_t 's are $(K \times K)$ coefficient matrices, μ_t is a vector of the deterministic term, D_t is a vector of non-stochastic variables and $\mu_t = (u_{t1} \dots u_{kt})'$ is an unobservable error term. Equation (1) is general enough to accommodate variables with stochastic trends, it is not the most suitable type of model if interest centers on the cointegration relations is the vector error correction model (VECM) .

$$\Delta y_t = \Psi D_t + \Gamma_1 \Delta y_{t-1} + \dots + \Gamma_{p-1} \Delta y_{t-p+1} + \alpha u_{t-1} + u_t \dots \dots (2)$$

Where $\alpha = (\alpha_1, \alpha_2, \dots, \alpha_k)$

In the VEC model, (attention focuses on the $(k \times 1)$ matrix of cointegrating vector β) u_{t-1} which quantify the long-run relationships between variables in the system, and the $(k \times 1)$ matrix of error - correction adjustment coefficients α , which denotes deviations from equilibrium (αu_{t-1}) to Δy_t for correction. The Γ_j ($j = 1, \dots, p - 1$) coefficients in (equation 2) estimates the short - run effects of shocks on Δy_t and therefor allow the short-run and long run

responses to differ. The term αu_{t-1} is the only one that includes I (1) variables. Hence, αu_{t-1} must also be I (0). Thus, it contains the cointegrating relations.

Sims's seminar work introduces unrestricted vector autoregression (VAR) that allows feedback and dynamic interrelationship across all the variables in the system and appears to be highly competitive with the large-scale macro-econometric models in forecasting and policy analysis (Sims, 1980). To provide an empirical insight into the impact of monetary policy and balance of payment on price stabilization in Nigeria, a modified work of Imoisi A. I, Olatunji L. M. and Ekpenyong B. I (2013) is used. We estimate five-variable in our VAR model using GRM2_t, MPR_t, LR_t, INF_t, BOP_t. Our basic model of VAR (p) has the following form

$$y_t = \mu + A_1 y_{t-1} + \dots + A_p y_{t-p} + \mu_t \dots \dots \dots (3)$$

Where $y_t = (\text{GRM2}_t, \text{MPR}_t, \text{LR}_t, \text{INF}_t, \text{BOP}_t)'$ is the set of 5 time series variables, A_j are (5×5) coefficient matrices, μ is vector of deterministic terms and $\mu_t = (\mu_{1t}, \dots, \mu_{5t})'$ is an unobservable error term. The corresponding vector error correction model (VECM) for equation (3) is:

$$\Delta y_t = \Gamma_1 \Delta y_{t-1} + \dots + \Gamma_{p-1} \Delta y_{t-p+1} + \alpha u_{t-1} + u_t \dots \dots \dots (4)$$

Where $\alpha = (\alpha_1, \alpha_2, \dots, \alpha_5)$

GRM2 is growth rate of broad money supply, MPR is monetary policy rate, LR is lending rate, INF is inflation rate and BOP is balance of payment.

Forecast error Variance Decomposition

Forecast error variance decomposition of the variables gives information about shocks that can forecast variables better. In practice, forecast error variance decompositions are popular tools for interpreting VAR models.

The h-step forecast error for the y_t variables in terms of structural innovations $\varepsilon_t = (\varepsilon_{1t}, \dots, \varepsilon_{kt})' = B_{et}^{-1}$ can be represented as $\psi_{0\varepsilon_{t+h}} + \psi_{1\varepsilon_{t+h-1}} + \dots + \psi_{h-1\varepsilon_{t+1}}$

Where ψ_{ij} , denotes the ij^{th} element of ψ_n .

Estimation Procedure

The estimation begins with Augmented –Dickey fuller (ADF) unit root test to confirm the Stationarity states of the variables, after that The Johansen Tests for Cointegration is conducted to see if there is a long-run relationship between the variables, then the variance decomposition is used to see the effect of innovations to the system model.

Sources of Data

The data for this study was be extracted from World Bank Publications. Annual data that spanned from 1990 to 2015 was used for the estimation.

EMPIRICAL RESULTS AND ANALYSIS

Unit root test

Table 1. Unit Root Test

SERIES	CRITICAL VALUE @ 5%	ADF T-STATISTIC	ORDER of INTEGRATION
GRM2	-2.957110	-4.583393	I(1)
LR	-2.954021	-5.131433	I(1)
MPR	-2.954021	-6.361046	I (1)
BOP	-2.957110	-5.779673	I (1)
INF	--2.951125	--5.515111	I (1)

Table one presents the result of stationarity test using the Augmented Dickey-Fuller test of stationarity. The result indicated all the variables GRM2, LR, MPR, BOP and INF were stationary after the first difference that is I(1).

Forecast Error Variance Decomposition

Using VAR model for the forecast error variance decomposition of the variables, the forecast error variances of the variables gives information about shocks that can forecast variables better. The most important source of variations in each forecast error is its own innovations. (see Appendix)

In the short run, BOP's own shock accounts for 76.2% variation to BOP, while the influence BOP has on price stabilization is 0.86%. It is interesting to know that two monetary policy variables namely growth rate of broad money supply (GRM2) and lending rate (LR) causes 16.44% and 6.2% fluctuation in BOP. In the long run, BOP's own shock dropped to 69.33% while shock on GRM2 and LR increased to 19.40 and 7.91% respectively.

It was also observed that self-innovation or shock on inflation in the short run accounted for 65.28% variation of the fluctuation in inflation. Monetary policy shocks, that is growth rate on broad money supply (GRM2) and monetary policy rate (MPR) accounted for 31.46% and 2.25% variation in inflation respectively. In the long run, a self-shock on inflation stood at 56.34%, while shocks on monetary policy variables GRM2 and MPR causes a 36.28% and 4.38% variation in inflation respectively.

Conclusion and Policy Implications

This paper attempts to investigate the impact of monetary policy and balance of payment on price stabilization in Nigeria, over the period 1980 – 2015.

From the variance decomposition we found out that BOP has no impact on price stabilization both in the short and long run, growth rate of broad money supply and lending rate causes fluctuation on balance of payment, while growth rate of broad money supply and monetary policy rate causes fluctuation in Inflation.

Therefore, this study recommends that monetary authorities should be strict while using tools like broad money supply, monetary policy rate and lending rate. This is because the monetary policy tools exerted little influence on the target variables.

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