Responsiveness of Headline Inflation to the Dynamics of Monetary Aggregates in Nigeria: A Structural Vector Autoregressive (SVAR) Approach

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ABSTRACT

This paper contributes to the literature on the monetary transmission mechanism by using monthly data (January 2001 to December 2022) from the Central Bank of Nigeria (CBN) Statistical Bulletin to investigate how headline inflation responds to changes in monetary aggregates in Nigeria. The structural vector auto regression (SVAR) method by which the impulse response functions (IRF) and variance decomposition were used to examine the response of inflation to changes in narrow money (M1), M2, M3, and the interbank call rate In deviation from economic theory, the study found that positive shocks to M1 and M2 caused inflation to decline insignificantly. Positive shocks to M3 had an insignificant positive impact on inflation both in the short- and long run. This finding highlights that shocks to M3 are not a significant source of inflation pressure, and its control may not be a useful tool for the CBN to tame inflation in Nigeria. The study found that inflation declined insignificantly in response to positive shocks to the interbank call rate. This finding suggests that hiking interest rates have not been effective in addressing the problem of inflation in Nigeria. Overall, the results showed that using M1, M2, and M3 and interbank call rates is less potent in controlling inflation in Nigeria. Hence, this paper recommends reducing the number of financially excluded Nigerians by encouraging banking habits among Nigerians, especially those in un served and underserved rural areas.

Keywords: Inflation, Monetary aggregates, Near money, M2, M3, Interbank call rate and Structural VAR

INTRODUCTION

The recent trend in global inflation caused by the twin crises of COVID-19 and the Russia-Ukraine war has revived interest in inflation and its control. Central banks across the globe are racing to tame inflation and ensure the mandate of price stability is realised using the monetary tools at their disposal. Inflation, when left unchecked or allowed to gallop, could have severe consequences on the economy and other social indices. Though Nguyen, Phan, and Tran (2022) noted that moderate inflation could be growth-stimulating, the empirical work of Jha and Dang (2012) suggested that inflation rising above 10% in developing countries will cause a decline in economic growth. Inferring from this is that a lower price increase could stimulate economic growth.

In Nigeria, there has been an upsurge in prices with inflation in double digits since June 2008, generating public outcry. Inflation rose from 12% in June 2008 to 15.6% in February 2010. The pace of price increase slowed down, with inflation dropping from 15.6% in February 2010 to 11.8% in December 2010 (NBS, 2022). The decline in price level continued as inflation dropped to single digits of 9.3% in August 2011. The pace of inflation picked up, as there was an elevated price level from the single digit of 9.3% in August 2011 to 12.3% in November 2012. Inflation pressures slowed down afterwards as prices fell to a single digit of 7.9% in November 2014 (NBS, 2022). By 2015, the price level reverted to its upward trend, increasing from 8.2% in January 2015 to 18.72% in January 2017. Significant gains were made in ramping down inflation pressures and improving the purchasing power of Nigerians as inflation fell consistently from

18.72% in January 2017 to 11.02% in August 2019. This protracted gain in curbing inflation was reversed as skyrocketing price levels were observed in the recent four years beginning in 2019. The price level rose from 11.24% in September 2019 to 18.17% in March 2021, declining to 15.4% in November 2021 (NBS, 2022). The elevation in price level continued as inflation increased from 15.4% in November 2021 to21.47% in November 2022, the highest price level since 2001 (NBS, 2023).

An important argument in the literature is whether inflation is a monetary phenomenon or is driven by fiscal activity. The monetarists, as conveyed by Fisher's equation and the revised quantity of money theory, argued that inflation is solely due to monetary activities, as price levels rise in proportion to changes in money supply (Friedman and Schwartz, 2008). The fiscal theory of price level (FTPL) pushed by the Keynesians posit that public debt and primary fiscal surpluses are the main determinants of price level in the long run, hence fiscal policy causes variation in price level (Tule, Nuruddeen, Ogundele and Martins, 2019; ?ahin, 2019).

Questions have been posed in the literature as to whether inflation dynamics should inform monetary intervention in curbing rising prices and achieving price stability. oki (2015) and Alper, Hobdari, and Uppal (2017) argued that the increase in price level is caused largely by supply-side shocks, and monetary intervention may not produce the desired low inflation result. Pourroy, Carton, and Coulibaly (2016) argued that demand-side factors like income drive up price levels and that intervention by monetary policymakers in adjusting the income and credit needs of economic agents could prove effective in curbing inflation. This study tests the validity of the increase in price level been a monetary phenomenon in the Nigerian context, employing four monetary aggregates (narrow money, M2, M3 and interbank call rate). Given the introduction above, section 2 focused on the review of the theoretical and empirical literature which is followed by the methodology as outlined in Section 3. Section 4 dealt with the presentation of results and discussion of findings, while section 5 focused on the concluding remarks.

LITERATURE REVIEW

Theoretical Framework

The theoretical literature on inflation has largely focused on whether monetary or fiscal activities are the source of inflationary pressure in an economy, which implicitly shows the appropriate tool for curbing rising prices of goods and services. The theoretical argument that monetary policy or monetary aggregates can affect the prices of goods and services is embedded in the quantity theory of money. According to Gwartney, Stroup, Sobel, and Macpherson (2021), Fisher's equation of exchange conveys the relationship between money supply and inflation, arguing that changes in money supply are proportionally linked with the price level. The relationship between money supply and price level is captured using the Fisher's equation below:

$$MV = PT \qquad (1)$$

where M represents the money supply, V is the velocity of money, P denotes the price level, and T represents the transaction performed by money (see Stiglitz and Walsh, 2006; Baumol and Blinder, 2015). According to Amaning and Seidu (2020), the velocity of money and transactions performed by money are constant, with the money supply determined exogenously by central banks. This suggests that changes in the prices of goods and services respond proportionately and are triggered by variations in the volume of money in circulation, making inflation a monetary phenomenon (Henry and Sabo, 2020).

Empirical Literature

Using the vector autoregressive method and data in annual frequency from 1985 to 2019, Henry and Sabo (2020) found an insignificant increase in the inflation rate when the monetary policy rate increased. The

study, which focused on Nigeria, also noted that the response of inflation to the broad money supply is positive and insignificant. More so, the authors showed that the depreciation of the naira against the United States dollar is associated with an insignificant reduction in inflation, suggesting a negative relationship between exchange rate and inflation. Iddrisu and Alagidede (2020) studied how food prices respond to changes in monetary policy in South Africa using the quantile regression method. The variables included in the model include food inflation, the repo rate (to proxy monetary policy), transportation costs, output, the exchange rate, and the world food price index. They showed that restrictive monetary policy had a destabilising effect on food inflation as it led to soaring prices. The theoretical controversy of whether inflation is the result of fiscal or monetary activity was investigated by Nguyen, Phan, and Tran (2022) as they applied the vector auto regression (VAR) model to study the impact of fiscal and monetary policy on inflation in Vietnam. The authors which used data from 1997 to 2020 reported that inflation in Vietnam is positively influenced by money supply, fiscal deficit, interest rate and government expenditure. Between the fiscal and monetary variables chosen, the fiscal deficit fueled inflationary pressures more than the money supply. Overall, government expenditure had the most positive impact on inflation.

Amaning and Seidu (2020) employed the autoregressive distributed lag (ARDL) and Granger causality methods to examine how responsive inflation is to changes in the monetary policy rate while controlling for the money supply, interest rate, trade openness, foreign direct investment, and domestic investment in Ghana from 1985 to 2017. They established an insignificant negative relationship between the monetary policy rate and inflation in the long and short runs. Long- and short-run soaring prices were caused by an increased interest rate, money supply, and domestic investment. A causal relationship between the monetary policy rate and the money supply was found. Mohammadi Khyareh (2020) used the instantaneous reaction functions and structural VAR econometric models to show that elevated inflation in Iran was due to increases in the money supply. In the short run, real output was found to have the lowest contribution to inflation pressures, noting that short- and long-run inflation is sensitive to money shocks.

In Nigeria, Inim, Samuel, and Prince (2020) used quarterly frequency data from January 1999 to December 2018 and the autoregressive distributed lag (ARDL) method. They studied the determinants of inflation in Nigeria. According to their findings, inflation is driven by political instability, the exchange rate, poor infrastructural development, double taxation, and money supply. Olayiwola (2019), while studying Nigeria, used quarterly frequency data from 1986Q1 to 2016Q4 and the non-linear autoregressive distributed lag (NARDL) method to analyse the asymmetric response of prices and output to monetary policy shocks. The results showed that positive and negative monetary policy shocks insignificantly affected price level in the short run. In the long run, the fall in price level due to both positive and negative monetary shocks was greater following positive shocks to monetary policy. Olasunkanmi and Oladipo's (2020) study, based on estimation using the vector error correction model (VECM) and monthly data from January 2010 to December 2019, finds inflation in Nigeria driven not by money supply but by non-monetary variables such as corruption, poor basic infrastructure, and political instability

George-Anokwuru and Ekpenyong (2020), who employed the autoregressive distributed lag (ARDL) method and data from 1990 to 2019, found increasing government expenditure to be non-inflationary in the long run while indicating that long-run inflation in Nigeria could be caused by increasing the money supply. Both government expenditure and money supply insignificantly determined inflation in the short run, as they showed that increases in exchange rates led to increases in price levels in the short run. Eita, Manuel, Naimhwaka, and Nakusera (2021), using quarterly data for the period 2002–2017 and the autoregressive distributed lag (ARDL) method, indicated that long-run inflation in Namibia is caused by an increased fiscal deficit. This finding was supported by the Granger causality result, as they found unidirectional causality running from the fiscal deficit to inflation. In Nigeria, Fasanya, Fajobi, and Adetokunbo's (2021) results also

supported this claim, as they employed the linear autoregressive distributed lag (ARDL) method and annual frequency data from 1980 to 2016, establishing that rising inflation, in the long run, was the result of

growing fiscal deficits..

METHODOLOGY

Data Description

The data used for this study is in monthly frequency covering from January 2001 to December 2022. In the model, three monetary aggregates such as narrow money (M1), money supply (M2) and money supply (M3) were included, as the study controlled for conditions in the loanable fund market using the interbank call rate. The inflation variable used was the headline inflation. The study obtained the data on narrow money, broad money, and interbank call rate (ICR) from the Central Bank of Nigeria (CBN) Statistical Bulletin and that of headline inflation from the National Bureau of Statistics (NBS) Monthly Consumer Price Index report.

Model Specification and Estimation Method

The study employed the structural vector autoregression (SVAR) method based on the identificatn approach in analysing the response of inflation (inf_t) to shocks in monetary policy aggregates. The baseline model consists of five variables such as inflation, narrow money ($M1_t$) ,$M2_t$,$M3_t$, and interbank call rate(icr_t).

The structural model adopted for this study is expressed in the compact form below.

$$AF_t = Y_0 + YF_{t-i} + \varepsilon_t \qquad (2)$$

Where:

F_t =n×1 vector of variables included in the SVAR;

A denote an n×n matrix of contemporaneous relationship among the variables;

Y_0= n×1 vector of constant terms;

Y=n×n matrix of coefficient of predetermined endogenous variables;

ε_t= n×1 vector of structural shocks (that is M1, M2, M3, ICR and INF shocks).

Inflation and interbank call rate are in percentages, while $M1_t$,$M2_t$, and $M3_t$ are captured in logarithm form.

Equation (1) is transformed into a reduced form VAR by pre-multiplying it, A^{-1} the inverse of matrix A, due to correlation between contemporaneous effects and the structural shocks ,(ε_t ‘s) negating the use of the ordinary least square (OLS) method for estimation purpose.

$$A^{-1}AF_t = A^{-1}\gamma_0 + A^{-1}\gamma F_{t-i} + A^{-1}\varepsilon_t \qquad (3)$$

Defining $H_0 = A^{-1}\gamma_0$, $H_1 = A^{-1}\gamma$ and $\mu_t = A^{-1}\varepsilon_t$, yields the equation below:

$$Z_t = H_0 + H_1 Z_{t-i} + \mu_t \qquad (4)$$

From equation (4), the relationship between the structural shocks ε_t and reduced form errors (μ_t) is expressed as:

$$\mu_t = A^{-1}\varepsilon_t$$

The structural shocks ($\varepsilon_t^{INF}, \varepsilon_t^{M1}, \varepsilon_t^{M2}, \varepsilon_t^{M3}, and\ \varepsilon_t^{ICR}$) was recovered ($n^2$-$n$)/2 by imposing restrictions on matrix A. The study followed a non-recursive approach in identifying the structural shocks.

In the vector autoregression (VAR) model, inflation $M1_t$,$M2_t$, and $M3_t$ are included in that order. The assumption made in identifying the monetary policy shocks is that monetary policy aggregates does not affect inflation within the same month, while inflation does affect monetary aggregates within the same month. This implies that monetary aggregates depend on lagged inflation. The study ordered interbank call rate last, assuming that it is contemporaneous by inflation $M1_t$, $M2_t$, and $M3_t$ reflecting the interest rate transmission channel of monetary policy. The restriction placed gave rise the relationship between the reduced form errors μ_t and (ε_t) the structural shocks expressed below:

$$\begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ \alpha_{21} & 1 & 0 & 0 & 0 \\ \alpha_{31} & \alpha_{32} & 1 & 0 & 0 \\ \alpha_{41} & \alpha_{42} & \alpha_{43} & 1 & 0 \\ \alpha_{51} & \alpha_{52} & \alpha_{53} & \alpha_{54} & 1 \end{bmatrix} \begin{bmatrix} \mu_t^{INF} \\ \mu_t^{M1} \\ \mu_t^{M2} \\ \mu_t^{M3} \\ \mu_t^{ICR} \end{bmatrix} = \begin{bmatrix} 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix} \begin{bmatrix} \varepsilon_t^{INF} \\ \varepsilon_t^{M1} \\ \varepsilon_t^{M2} \\ \varepsilon_t^{M3} \\ \varepsilon_t^{ICR} \end{bmatrix} \qquad (5)$$

Stationarity of the series was tested using the augmented Dickey-Fuller (ADF) method. The lag length for the VAR model was also determined using the Alkaike information criterion (AIC). The study employed the impulse response function (IRF) to trace the response of inflation to shocks to the endogenous variables in the SVAR system.

RESULT AND DISCUSSION

Descriptive Statistics

Table 1 shows the descriptive statistics for inflation, narrow money (M1), M2, M3, and interbank call rate from January 2001 to December 2022.

Table 1: Descriptive Statistics of Variables

	INF	M1	M2	M3	ICR
Mean	12.9147	6768896	15596170	17212951	12.7518
Median	12.2900	6257350	13212381	14379812	11.2200
Maximum	28.2000	21503412	51784486	52140943	64.5800
Minimum	3.0000	642852.0	1092754	1092754	0.7700
Std. Dev.	4.4931	5186293	12923002	13975221	8.0093
Skewness	0.4880	0.9269	0.9166	0.6166	1.8109
Kurtosis	3.1766	3.3450	3.1574	2.2894	9.8724
Jarque-Bera	10.8219	39.1145	37.2409	22.2859	663.8237
Prob.	0.0044	0.0000	0.0000	0.0000	0.0000
Observation	264	264	264	264	264

Source: Author's Computation (2023) from EViews 12

From January 2001 to December 2022, inflation in Nigeria averaged 12.9147%. Inflation in Nigeria fluctuated strongly as price level elevated from 3.00% to 28.20%. The volume of narrow money (M1) in the economy averaged NGN6,768,896 million. The averaged volumes of M2 and M3 were approximately NGN 15,596,170 and NGN 17,212,951 million, respectively. Within the period, M2 fluctuated upward, increasing from NGN 1,092,754 to NGN 51,784,486. The study also observed a strong upward fluctuation in M3 during the period, as M3 ranged between NGN1,092,754 million and NGN52,140,943 million. Borrowing between banks, or the interbank call rate, stood at an average of 12.75%. Credit within the period was obtained at the lowest level of 0.77% among banks and skyrocketed to 64.58%, signalling an aggressive measure to curb inflation by the Central Bank of Nigeria. The skewness statistics revealed that none of the variables had a value of zero, although the values for inflation, narrow money, and M3 were close to zero. The skewness statistics showed that all the variables were positively skewed, indicating a rising trend in the distribution of the series. The kurtosis statistics, with a threshold of three, revealed that inflation, narrow money, M2, and the interbank call rate are highly peaked, except for M3. The information on the distribution of the series was obtained using the Jarque-Bera test. The null hypothesis of normal distribution was rejected for all the variables since their respective Jarque-Bera probability value was less than 5%.

Unit Root

To test the integration process of the variables, the augmented Dickey-Fuller method was used and the result presented in Table 2.

Table 2: Unit Root Test Result

Variable	Augmented Dickey-Fuller (ADF)			I(d)
	Level	1st Diff	5% Critical Value	
INF_t	-3.4646***	–	-2.8723	I(0)
$lnM1_t$	-1.3753	-15.0380***	-2.8724	I(1)
$lnM2_t$	-1.5947	-19.8356***	-2.8723	I(1)
$lnM3_t$	-1.9320	-19.1162***	-2.8724	I(1)
ICR_t	-5.6993***	–	-2.8723	I(0)

Note: *, **, and *** denote significance at 10%, 5% and 1%, respectively

Source: Author's Computation (2023) from E Views 12

The unit root test was conducted with intercept only. The augmented Dickey-Fuller (ADF) test indicates that inflation and the interbank call rate are stationary in their current forms. Monetary policy aggregates such as narrow money (M1), M2), and M3, on the other hand, are non-stationary in level form but at the first difference. This is because the ADF statistics for narrow money (M1), M2), and M3 were greater than the corresponding 5% critical values, in absolute terms.

Determination of Optimal Lag

The study estimated a vector autoregression (VAR) model with two lags based on the Alkaike information criterion as reported in Table 3.

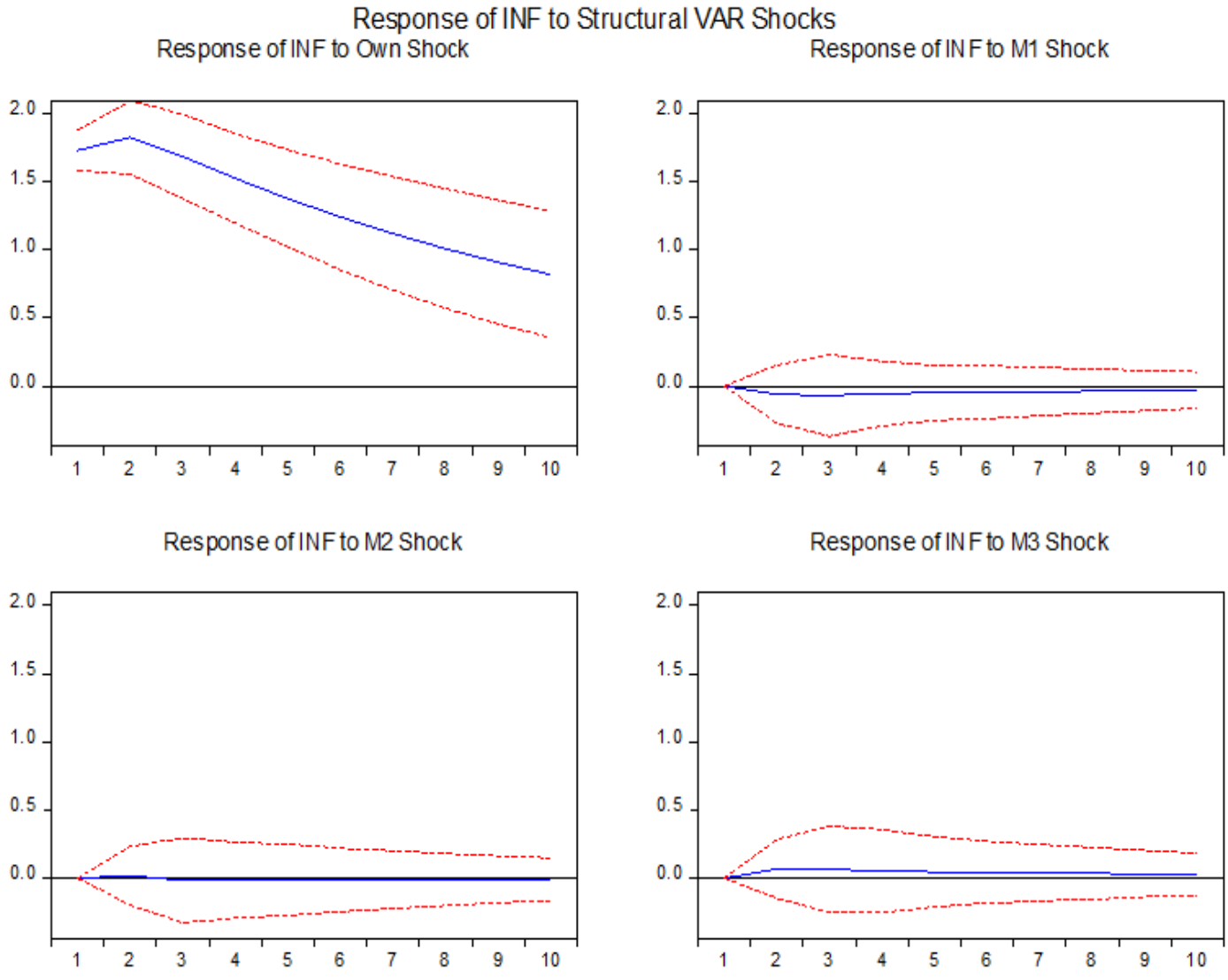
Table 3: Lag Selection

Lag	Log L	LR	FPE	AIC	SC	HQ
0	-3.6360	NA	7.36E-07	0.0677	0.1371	0.0956
1	296.5945	586.3326	8.50E-08	-2.0909	-1.6743*	-1.9233*
2	330.2143	64.339	7.95e-08*	-2.1585*	-1.3947	-1.8513
3	343.3729	24.666	8.73E-08	-2.0656	-0.9546	-1.6187
4	361.2752	32.8558	9.24E-08	-2.01	-0.5518	-1.4234
5	369.1368	14.1201	1.06E-07	-1.8755	-0.0702	-1.1493
6	391.4729	39.2414	1.08E-07	-1.8546	0.2978	-0.9888
7	405.3311	23.8036	1.19E-07	-1.7673	0.7324	-0.7618
8	427.8138	37.7355*	1.22E-07	-1.7475	1.0993	-0.6024

Note: * lag selected by criterion

Source: Author's Computation (2023) from E Views 12 Impulse Response Functions (IRFs)

The impulse response function (IRF) was used to trace the effect of $M1_t$, $M2_t$, $M3_t$ and ICR_t shocks on inflation. The response of inflation to own shocks, narrow money (M1) shocks, M2 shocks, M3 shocks and interbank call rate shocks are presented in Figure 1.



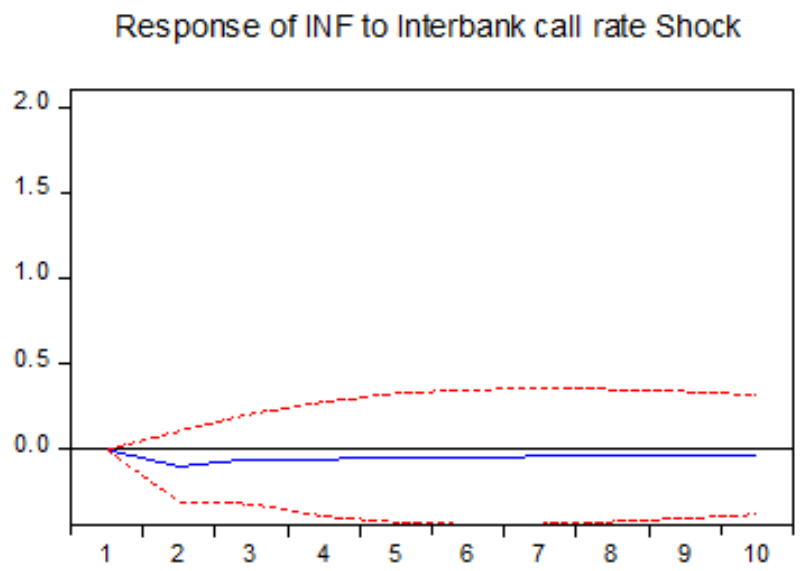


Figure 1: Response of Inflation to Structural Shocks

A positive shock to M1, suggesting an expansionary monetary policy, would quell inflation pressures in Nigeria, causing the price level to decline from month 1 to month 2. Inflation stabilizes from the 2nd month up to the 10th month. This indicates that inflation responds negatively to positive shocks to M1 in the short and long run and that M1 could be a veritable monetary instrument in curbing runaway inflation in Nigeria. However, the M1 shock had an insignificant impact on inflation. Inflation in Nigeria rose from month 1 to month 2 in response to positive shocks to M2. There was a decline in the price level from month 2 up to the 3rd month, afterwards inflation achieved stability from the 3rd month to the 10th month. This result showed that M2 generated an insignificant negative response from inflation. This negative response of inflation to positive shocks to M1 and M2 is consistent with the findings of Amaning and Seidu (2020) but contradicts the finding of Nguyen, Phan and Tran (2022) who showed that monetary policy had a positive and significant impact on inflation in Vietnam.

In consonance with economic theory, the study observed a positive response of inflation to unanticipated expansion in monetary policy following an increase in M3. As inferred from the graph, inflation rose from month 1 to the 2nd month. The positive response of inflation to positive shocks to M3 stabilises from the 2nd month up to the 10th month. This paper showed that, while a positive shock to M3 causes soaring inflation both in the short- and long run, the response of inflation to endogenous shock to M3 is statistically insignificant. This result indicates that shocks to this monetary aggregate are not a source of inflation pressure in Nigeria and thus cannot be employed as a monetary instrument by the CBN to tame inflation. This result failed to corroborate earlier studies of Tule, Onipede and Ebuh (2020) who reported that inflation responded positively and significantly to money supply shocks in Nigeria.

Positive shocks to the interbank call rate generate a negative response in inflation in both the short and long runs. Though the theoretical foundational relationship between the interbank call rate and inflation was established, the impact of the interbank call rate remained insignificant. The price level effect of the interbank call rate, which appears to be negative and insignificant, implies that hiking interest rates have not been effective in bringing down inflation. Overall, the structural VAR result indicates that inflation in Nigeria may not be a monetary phenomenon, as suggested by the monetarist, but rather may be due to structural rigidities, post-harvest losses, unavailability of goods and services, and exchange rate volatility, among others.

Forecast Error Variance Decomposition (FEVD)

The result of the variance decomposition for inflation is summarized in Table 4.

Month	S.E.	INF Shock	M1 Shock	M2 Shock	M3 Shock	ICR Shock
1	1.7325	100.0000	0.0000	0.0000	0.0000	0.0000
2	2.5212	99.7140	0.0563	0.0056	0.0724	0.1514
3	3.0355	99.6717	0.0891	0.0064	0.0972	0.1353
4	3.3991	99.6609	0.0972	0.0068	0.1006	0.1342
5	3.6686	99.6568	0.1011	0.0070	0.1031	0.1318
6	3.8739	99.6525	0.1039	0.0073	0.1054	0.1306
7	4.0331	99.6499	0.1060	0.0074	0.1070	0.1295
8	4.1580	99.6481	0.1074	0.0075	0.108	0.1287
9	4.2569	99.6469	0.1084	0.0076	0.1088	0.1281
10	4.3356	99.6459	0.1092	0.0076	0.1094	0.1277

Source: Author's Computation (2023) from E Views 12

The study observed that the impulse of M1, M2, M3 and interbank call rate account for 0.0561%, 0.0056%, 0.0724%, and 0.1514% variation in inflation in the second month. Impulses to inflation (own shock) account for 99.71% of innovations in inflation. In the third month, there was marginal improvement in impulses from M1, M2 and M3 while the contribution of impulse from interbank call rate to variation in inflation declined further into the forecast months. Variations in inflation were predominantly caused by its own which accounted for over about 99 per cent.

CONCLUSION REMARKS

This study examined the effect of monetary aggregates shock on price level using the structural VAR method on monthly data of Nigeria from January 2001 to December 2022. An attempt was made by the study to examine the response of price level to shocks to narrow money (M1), M2, M3 and interbank call rates. The impulse response function indicated an insignificant negative response of price level to positive shocks to M1, M2 and interbank call rate. Based on the impulse response function, the study also found that M3 shocks had a positive and insignificant impact on inflation, despite its consistency with the arguments of Fisher's equation. Overall, the result revealed that monetary policy instruments such as variation in M1, M2, M3 and interbank call rates are not effective tools in controlling inflation in Nigeria. The study, therefore, recommends strengthening the degree of financial inclusion in Nigeria by reducing the number of Nigerians that are financially excluded. This would help increase the effectiveness of monetary policy in inflation control.

REFERENCES

1. Adegbite, T. A. (2019). An evaluation of the effect of taxation policy on inflation in Nigeria. *Copernican Journal of Finance & Accounting*, *8*(2), 7-23. https://doi.org/10.12775/CJFA.2019.006
2. Alper, M. E., Hobdari, M. N. A., & Uppal, A. (2017). *Food inflation in sub-Saharan Africa: causes and policy implications*. International Monetary Fund.

3. Amaning, E. O., & Seidu, A. N. (2020). A Monetary Analysis of Ghana: Examining the Impact and the Causal Relationship Between Monetary Policy and Inflation in Ghana. *American Journal of Economics*, *4*(1), 1-14.
4. Asandului, M., Lupu, D., Maha, L. G., & Vioric?, D. (2021). The asymmetric effects of fiscal policy on inflation and economic activity in post-communist European countries. *Post-Communist Economies* . https:// doi.org/ 10.1080/14631377.2020.1867430
5. Baumol, W. J., & Blinder, A. S. (2015). *Microeconomics: Principles and policy*. Cengage Learning.
6. Eita, J. H., Manuel, V., Naimhwaka, E., & Nakusera, F. (2021). The impact of fiscal deficit on inflation in Namibia. *Journal of central banking theory and practice*, *10*(1), 141-164. https://doi.org/10.2478/jcbtp-2021-0007
7. Emmanuel, U., Udoh, B. E., Prince, A. I., Okoh, J., & Ndu, O. M. (2019). Money supply and inflation rate in Nigeria: The missing link. *Humanities*, *7*(3), 156-166.
8. Fasanya, I. O., Fajobi, A., & Adetokunbo, A. (2021). Are fiscal deficits inflationary in Nigeria? New evidence from bounds testing to co integration with structural breaks. *Economic Annals*, *66*(228), 123-147.
9. Friedman, M., & Schwartz, A. J. (2008). *A monetary history of the United States, 1867-1960* (Vol. 14). Princeton University Press.
10. George-Anokwuru, C. C., & Ekpenyong, B. I. (2020). Government expenditure and inflation in Nigeria. *Journal of Economics and Management Sciences, 3*(2), p29-p29. https://doi.org/10.30560/jems.v3n2p29
11. Gwartney, J. D., Stroup, R. L., Sobel, R. S., & Macpherson, D. A. (2021). *Economics: private & public choice*. Cengage Learning.
12. Henry, E. A., & Sabo, A. M. (2020). Impact of monetary policy on inflation rate in Nigeria: Vector Autoregressive Analysis. *Bullion*, *44*(4), 6.
13. Iddrisu, A. A., & Alagidede, I. P. (2020). Monetary policy and food inflation in South Africa: A quantile regression analysis. *Food Policy*, *91*, 101816. https://doi.org/10.1016/j.foodpol.2019.101816
14. Inim, V., Samuel, U. E., & Prince, A. I. (2020). Other determinants of inflation in Nigeria. *European Journal of Sustainable Development*, *9*(2), 338-338.
15. Jha, R., & Dang, T. N. (2012). Inflation variability and the relationship between inflation and growth. *Macroeconomics and Finance in Emerging Market Economies*, *5*(1), 3-17.
16. Mohammadi Khyareh, M. (2020). Monetary policy and inflation dynamics in Iran: New evidences. *Journal of Development and Capital*, *5*(1), 111-130.
17. Munir, K., & Riaz, N. (2020). Fiscal Policy, Macroeconomic Flux and Inflation Volatility in Pakistan. *Journal of Applied Economics and Business Research*, *10*(4), 194-206.
18. Nguyen, T. D. (2019). Impact of government spending on inflation in asian emerging economies: Evidence from india, china, and indonesia. *The Singapore Economic Review, 64*(05), 1171-1200. https:// doi.org/ 10.1142/ S0217590816500338
19. Nguyen, T. T., Phan, T. D., & Tran, N. A. (2022). Impact of fiscal and monetary policy on inflation in Vietnam. *Investment Management and Financial Innovations*, *19*(1), 201-209.
20. Obaretin, O., & Akhor, S. O. (2019). Taxation and inflation in Nigeria: An empirical analysis. *Research Journal of Finance and Accounting*, *10*(4), 91-98.
21. Olasunkanmi, O. R., & Oladipo, O. S. (2020). Factors affecting inflation in Nigeria. *International Journal of Monetary Economics and Finance*, *13*(6), 545-568.
22. Olayiwola, A. S. (2019). Asymmetric effect of monetary policy shocks on output and prices in Nigeria. *African Journal of Economic Review*, *7*(1), 238-248.
23. Pourroy, M., Carton, B., & Coulibaly, D. (2016). Food prices and inflation targeting in emerging economies. *International Economics*, *146*, 108-140.
24. Şahin, B. E. (2019). Analysis of the relationship between inflation, budget deficit and money supply in Turkey by ARDL approach: 1980-2017. *Journal of Life Economics*, *6*(3), 297-306.
25. Šoškić, D. (2015). Inflation impact of food prices: Case of Serbia. *Економика пољопривреде*, *62*(1), 41-51.
26. Stiglitz, J. E., & Walsh, C. E. (2006). *Economics*. 4th W. W. Norton & Company.

27. Tule, M. K., Nuruddeen, U., Ogundele, O. S., & Martins, A. O. (2019). A test of the fiscal theory of price level: Case study of Nigeria. *International Journal of Economics and Financial Issues*, *9*(6), 67-76.
28. Tule, M. K., Onipede, S. F., & Ebuh, G. U. (2020). Monetary and fiscal policy mix in a small open economy: Evidence from Nigeria. *Scientific African*, *8*, e00346.