

# Response of self-owned businesses to monetary policy in a developing economy

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## Abstract

There is a wide consensus about the role of economic policy in attaining macroeconomic goals of high employment, price stability, and rapid economic growth. It is not clear, however, to what extent the monetary instruments can contribute to the development of self-owned enterprises. Monetary policy is one of the major policy tools for promoting business and investment once it is geared towards reducing unemployment. This study aims to assess the effect of monetary policy on self-owned enterprises in a developing economy, such as Nigeria. Based on the modern monetary theory which offers an alternative way of reaching full employment and price stability, the authors employ Toda-Yamamoto-Dolado-Lutkepohl causality test to carry out an empirical analysis of the quarterly data for the period between 1991 and 2022. The effects of changes in the broad money and lending rates are similar. A unit broad money-related shock leads to little or no change in self-employment and there is a quick convergence to equilibrium. The paper provides robust empirical evidence revealing the effects of the two key monetary policy variables on self-owned business in a developing economy. For policy purposes it is important to point out that monetary policy does not directly affect self-owned businesses in Nigeria. It is concluded that monetary policy will be more effective in promoting self-owned businesses if there are special funds and lending rates for the small-scale businesses.

**Keywords**

broad money supply, Lending rates, self-owned Enterprises, Nigeria, Structural equation model, causality

**Аннотация**

Существует широкий консенсус относительно сущности экономической политики в достижении макроэкономических целей - высокой занятости, стабильности цен и быстрого экономического роста. При этом нет убедительных данных, показывающих, в какой степени денежно-кредитные инструменты могут способствовать развитию индивидуальных предприятий. Денежно-кредитная политика является одним из основных инструментов стимулирования бизнеса и инвестиций, если она направлена на снижение уровня безработицы. Цель данного исследования - оценить влияние денежно-кредитной политики на индивидуальные предприятия в развивающейся экономике, такой как Нигерия. Основываясь на современной монетарной теории, которая предлагает альтернативный способ достижения полной занятости и ценовой стабильности, авторы использовали подход теста причинности Тода-Ямамото-Доладо-Люткеполя для проведения эмпирического анализа с использованием квартальных данных за период с 1991 по 2022 год. Реакция на шок широкой денежной массы и кредитных ставок примерно одинакова. Единичный шок широкой денежной массы приводит к незначительным изменениям в самозанятости или вообще не приводит к ним, и происходит быстрое возвращение к равновесию. В работе представлены надежные эмпирические данные, раскрывающие влияние двух ключевых переменных денежно-кредитной политики на самозанятость в развивающейся экономике. Для целей политики важно отметить, что денежно-кредитная политика не оказывает прямого влияния на самозанятый бизнес в Нигерии. Поэтому можно сделать вывод, что денежно-кредитная политика будет более эффективной для развития собственного бизнеса, если для малого бизнеса будут существовать специальные фонды и ставки кредитования.

**Ключевые слова**

широкая денежная масса, ставки кредитования, самостоятельные предприятия, Нигерия, модель структурных уравнений, причинность

**JEL:** E52, M13, J54, R11.

**1. Introduction**

The transmission mechanism through which variation in monetary policy affects self-owned businesses and self-employment is not fully understood. Previous research has been mostly based on the analysis of time series aggregate data on unemployment, investment spending, interest rates and monetary policy. However, the small business that can drive rapid job growth and innovation in the developed economy has received little attention in the developing economies. According to Veselinović (2020), there is a short-run causality from the major monetary policy rate and inflation rate to unemployment rate. Could this causality be the same for self-employment?

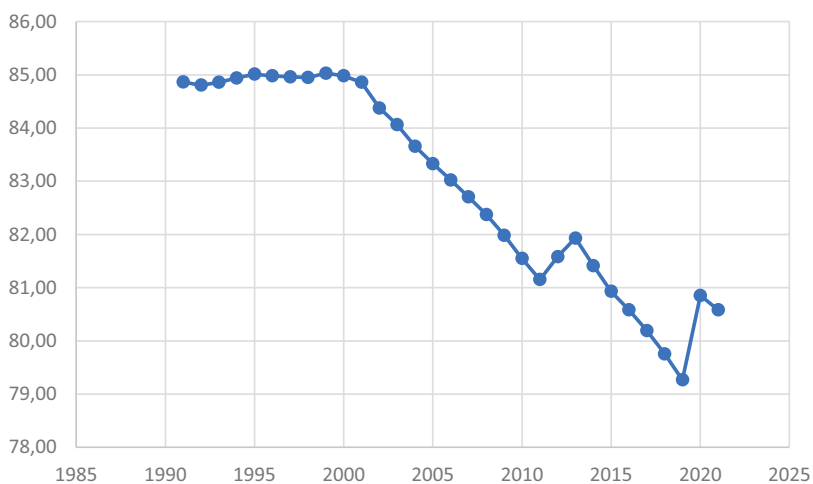
This present study addresses the responses of self-employed entrepreneurs and small businesses to unexpected changes in monetary policy. If liquidity preference is anything

to hinge on, the monetary authorities, as Keynes posits, would not reduce interest rates during the period of unemployment. This implies that monetary policy may have little or no effect in curtailing unemployment. Hence the need to understand and articulate how small-businesses or self-employed entrepreneurs as a channel for economic growth can be influenced through monetary policy of the apex bank. The objective of this study is therefore to examine the effects of monetary policy on small self-owned businesses, proxied by self-employment, in Nigeria. The first section provides background factual data; Section Two gives an overview of the extant literature on the subject; Sections Three and Four focus on the methodology and discussion of results respectively. In the final part, the paper presents the conclusions and outlines policy implications.

## 1.2. Brief Stylized Facts

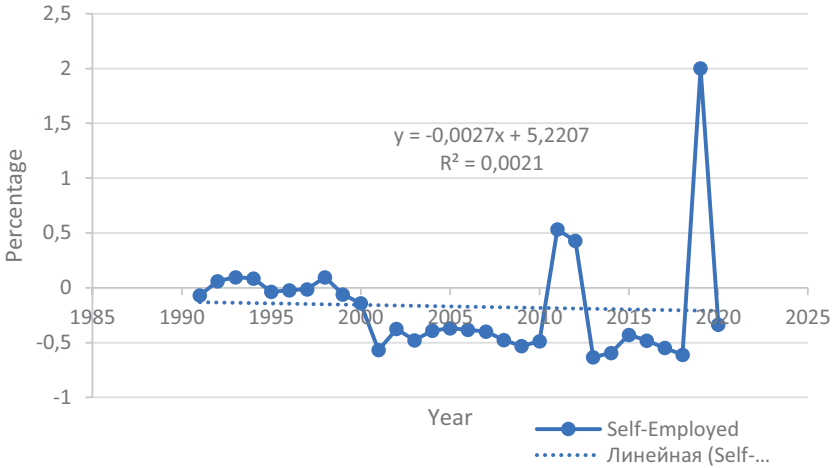
Millennial Development Goal 8.3, emphasizes the need for promoting inclusive and sustained economic growth through availability of productive employment and decent work for all. This requires policies that support job creation and foster enterprise growth. Monetary policy can be used to promote innovation and entrepreneurship leading to increased self-employment. Innovative business development and employment expansion will in turn boost economic activity and contribute to sustained economic growth.

Figure 1 shows the percentage of self-employed persons of the working population in Nigeria between 1991 and 2022. One can see that the proportion of the self-employed nosedived in 2000-2011 and then rose slightly, but the rise was short-lived and the proportion continued to fall till 2019, just before the COVID-19 pandemic broke out in 2020 leading to another decrease in business activity by individuals.



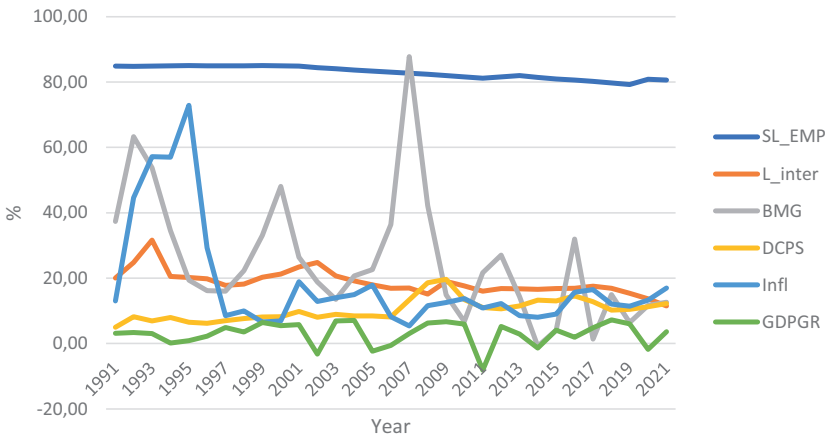
**Figure 1.** Number of self-employed people in working population in Nigeria. *Source:* World Development Indicators (WDI), by World Bank (2022).

Figure 2 depicts a negative growth rate for the larger part of the period under consideration. The regression equation suggests an inverse relationship; the regression line was negative throughout the period.



**Figure 2.** Self-employment growth rate in Nigeria. *Source:* Authors’ computation using the data from WDI by the World Bank (2022).

The timelines of the variables are shown in Figure 3. The GDP growth rate (GDPGR) was under 5% throughout the period. The inflation rate went up steeply in 1991 and 1993 before falling and fluctuated afterwards. Domestic credit to private sector ( DCPS) rose marginally and the lending rate (L\_inter) fell negligibly and remained stable on average. The broad money growth (BMG) largely fluctuated and remained unstable throughout the period. Inflation rate (Infl) generally followed the trend in BMG over the period



**Figure 3.** Timelines of the key variables. *Source:* Authors’ computation of data from WDI by World Bank (2022).

except for the years of 2003-2013 when their trajectories diverged. The percentage of self employed in total employment (SL\_EMP) was flat in 1991-2001 and then decreased gently and gradually.

## 2. Literature Review

Two strands of the literature were examined; in the first one, the publications explore the relationship between the monetary policy and unemployment; in the second, employment and self-employment responses to changes in monetary policy, including the impact of monetary policy on unemployment rates. In both strands, the authors agree about the non-neutrality of money influence in the short run (Alejandro & Cortez, 2012; Benigno & Nisticò, 2020; Maevsky, 2021). Monetary policy can be an effective tool of stimulating economic output, achieving consumer price stability and creating job opportunities. Increases in money supply and credit facilities encourage demand for investment, which, in turn, leads to greater demand for labor. As a result, more people find jobs and unemployment decreases (Zhou, 2021).

Veselinović (2020), aimed to find out if monetary policy can affect the unemployment rate through the major policy rate and explore their linkages with inflation in the Republic of Serbia. The Vector error correction model used by the author suggests that there was no long-run equilibrium between the monetary policy rate and the unemployment rate between 2009M1-2019M6; this means that monetary policy rate did not necessarily lead to increased unemployment rate in the period considered. At the same time the study revealed a statistically significant positive effect of the inflation rate on the unemployment rate in the long run.

It is well-known that the relationship between monetary policy and unemployment in the United States positively affects the Federal interest rate. This suggests that adoption of an expansionary stance with an extended version of Taylor's rule can stimulate the domestic economy and raise employment (Zhou, 2021). According to the Granger Causality analysis, economic development has a lagged impact on employment. When the unemployment rate was high, the domestic economy development was relatively slow. This may indicate that the Fed Rate can be decreased aiming to ease monetary policy. Mahadika & Wibowo (2021) state that unemployment is a fundamental problem in any economy which can be managed with monetary policy. Considering the influence of monetary policy on the unemployment rate in Indonesia, the study employs data for the years between 1975 and 2016 and uses the Autoregressive Distributed Lag method. The results of the Autoregressive Distributed Lag model show that, in the long run, economic growth has a negative and significant effect on the unemployment rate. This suggests that monetary policy can have a long-term effect of on the unemployment rate.

Alege, Ayobami & Ejemeyovwi (2021) underscore the role of fiscal and monetary policy for quality employment in Nigeria, emphasizing the tendency of failing to achieve the SDG goal 8 of decent work and economic growth as a result of increasing level

of unemployment. The study investigates the nexus between macroeconomic policies and unemployment using the Autoregressive Distributed Lag (ARDL) estimation technique. The authors found that increase in both money supply and real GDP reduced unemployment in Nigeria both in the short and long run. However, they recommend that a regulation of money supply should keep inflation in check. Other studies, like Udoh *et al* (2018), on the effect of monetary policy on growth of small and medium enterprises in Nigeria find that there is only a slight negative significant effect between interest rate (INR) and growth of SMEs in Nigeria, but no significant effect between both exchange rate and inflation on the growth of SMEs. On the contrary, Isola & Mesagan (2019) report a positive and significant effect of interest rate on the SMEs' output. Adekunle (2023) maintains that the money supply and interest rates, respectively, have significant positive and negative impact on the SME outputs, but Ilo *et al* (2023) argue that monetary policy variables, such as money supply and interest rate, do not have significant effect on the performance of SMEs.

The heterogeneous effects of monetary policy on different levels of employment were explored by Bergman, *et al* (2022). The results obtained by the application of the New Keynesian model with heterogeneous workers show that expansionary monetary shocks resulted in increases in the employment of the less attached workers when the central bank pursued an average inflation targeting rule. These findings mean that inflation targeting framework benefits workers with lower labor force attachment. Koimburi (2021) investigated the relationship between self-employment, monetary policy, and other outcome variables for Kenya between 2004 and 2018 using Auto Regressive Distributive Lag (ARDL) and Granger Causality method. Broad money supply was found to contribute mainly to the variance of self-employment. Significant correlations exist between monetary policy, interest rate, savings and outcome variables.

In a related study for the UK, Bahaj, *et al* (2022) posit that collateral shocks drive the employment response to monetary policy; this implies that the younger, levered firms are often exposed to collateral shocks which affect employment. A micro-data set covering both the private and public UK firms helps in documenting the heterogeneous responses of employment to monetary policy. It means that firms' exposure to collateral fluctuations is a driving force behind employment response and points to the collateral channel in the transmission of monetary policy to firms and its effects on the level of employment.

A study of employment effects on Federal Reserve's decisions to use quantitative easing (QE) policies via bank lending was carried out by Luck & Zimmermann (2020). The study found that banks with higher mortgage-backed securities holdings were able to re-finance more mortgages after the first round of QE, which helped improve both consumption and employment in the non-tradable goods sector. Further, banks increased lending to firms and, with home mortgages, it led to an appreciable increase in aggregate employment. These findings supported the idea that banks' lending could lead to increased capital investment and employment after the government implemented quantitative easing policies.

Bodenstein & Zhao (2019) argue in 'Employment, wages and optimal monetary policy' that optimal monetary policy requires a thorough data-gathering for the search and matching model when policymakers choose to stabilize wage inflation at the expense of price inflation. Otherwise, policymakers will remain uncertain whether the cyclical characteristics of employment and wages are necessitated by sticky nominal wages or by search and matching in the labor market. This means that the desired impact of monetary policy on employment depends on reliable classification of employment.

According to Svensson (2020), high employment and price stability are rarely separate and independent targets. When the monetary authority is regulating the money supply to maintain price stability, it simultaneously influences the employment situation. Average-inflation targeting has good prospects of handling the challenge of a flatter Phillips curve. Jedruczyk (2021) studied the determinants of self-employment among the self-employed in Poland. The researcher used micro-data obtained from a survey of a representative sample of 400 Polish self-employed persons from specific trades, processed with machine learning classification algorithms reflecting different tax-optimization attitudes among the self-employed. One of the major factors that influenced the decision to become either self-employed or employee was tax optimization, which implied the need for the tax rules that would encourage entrepreneurship. However, the risk of tax avoidance via employees turning into self-employed or registering as self-employed in order to avoid tax payment has to be minimized.

Dunkelberg & Scott (2009) studied small business owners' responses to changes in monetary policy. In their research, the small business sector of the economy accounts for half of private domestic product and well over half of private sector employment. Little is known about how small firms and the banks that serve them are affected by changes in monetary policy. Changes in owner expectations, as well as spending and hiring plans, are shown to be translated into subsequent changes in actual spending and hiring that are often the opposite of what is suggested by conventional economic theory. Firms that do not use debt respond in the same way as those regularly active in credit markets. The results provide additional insight and richness to the understanding of the transmission channels through which monetary policy impacts the real economy.

According to Junankar (2019), monetary policy influences economic growth and employment in developing countries; its impact on business activities and employment is generally small and its effectiveness varies across contexts. The study points out that the relationship between the monetary policy variables on the one hand and growth and employment on the other has been complex, and there is limited evidence that economic growth necessarily leads to an increase in quality self-employment opportunities. Madeira & Salazar (2023) hold a similar view. Their study, based on evidence from Chile, underscores the position that monetary policy shocks may result in little impact on employment, least of all on the primary sector labour market. Mehar & Al-Faryan (2022). These researchers, however, support the idea based on empirical evidence that interest rates and credit availability can play a crucial

roles in business creation and trade activities. For small and medium enterprises (SMEs) in Ghana, monetary policy, particularly lending rates, has a stronger effect on employment growth compared to fiscal policy measures like taxation (Augustine & Asiedu, 2017).

It is evident that the focus of the reviewed studies was on unemployment. There is apparently a weak consensus about the impact of monetary policy on small and micro-enterprise performance, employment and self-employment in developing economies. Most previous studies concern the developed economies, hence the need to study the experience of developing countries.

### 3. Method, Data, and Analysis

The new Keynesian model has been used to analyze the effects of monetary policies on macroeconomic variables (Zhou, 2021). The study is based on the modern monetary theory (MMT) which offers an alternative theory of reaching full employment and price stability (Vergnhanini & Martarello, 2018). The present study employs the Toda-Yamamoto-Dolado-Lutkepohl (TYDL) causality test approach. The T-Y test uses an augmented SVAR  $K+d_{\max}$  which generates symptomatic statistic in the form of chi-square distribution.

'K' is the optimal lag length and  $d_{\max}$  is the maximum order of integration. There is Granger causality of Y if the future value of Y can be better predicted using the past values of both X and Y, than it can be by using the past value of Y alone.

Granger non-causality can be estimated by the following the VAR model.

$$Y_t = \alpha_0 + \alpha_1 y_{t-1} + \dots + \alpha_p y_{t-p} + \theta_1 x_{t-1} + \dots + \theta_p x_{t-p} + \varepsilon_t \quad (1)$$

$$X_t = \beta_0 + \beta_1 x_{t-1} + \dots + \beta_p x_{t-p} + \gamma_1 y_{t-1} + \dots + \gamma_p y_{t-p} + v_t \quad (2)$$

Testing the null hypothesis;

$$H_0 : \theta_1 = \theta_2 = \dots \theta_p = 0 \quad (3a)$$

Against;

$$H_0 : \theta_1 \neq \theta_2 \neq \dots \theta_p \neq 0 \quad (3b)$$

This implies that X does not Granger-cause Y.

$$H_A : \gamma_1 = \gamma_2 = \dots \gamma_p = 0 \quad (4a)$$

Against;

$$H_A : \gamma_1 \neq \gamma_2 \neq \dots \gamma_p \neq 0 \quad (4b)$$

Equation 4a and 4b suggest that Y does not Granger cause X.



The first procedure was to determine the maximum order of integration using both the ADP and KPSS to test for unit roots of the series. A VAR in the levels of the data regardless of the orders of integration of the various time series was developed to decide the optimal lag length for the variables using the AIC or SIC criteria. A test was conducted to make sure there is no serial correlation in the residuals.

The Toda-Yamamoto model employed is therefore specified in equations 5-7.

$$sl\_emp_t = \alpha_0 + \sum_{i=1}^{k-d_{max}} \alpha_1 sl\_emp_{t-i} + \sum_{i=1}^{k-d_{max}} \alpha_2 bmg_{t-i} + \sum_{i=1}^{k-d_{max}} \alpha_3 l\_inter_{t-i} + \epsilon_t \quad (5)$$

$$bmg_t = \beta_0 + \sum_{i=1}^{k-d_{max}} \beta_1 bmg_{t-i} + \sum_{i=1}^{k-d_{max}} \beta_2 l\_inter_{t-i} + \sum_{i=1}^{k-d_{max}} \beta_3 sl\_emp_{t-i} + \epsilon_t \quad (6)$$

$$l\_inter_{t-i} = \delta_0 + \sum_{i=1}^{k+d_{max}} \delta_1 l\_inter_{t-i} + \sum_{i=1}^{k+d_{max}} \delta_2 sl\_emp_{t-i} + \sum_{i=1}^{k+d_{max}} \delta_3 bmg_{t-i} + \epsilon_t \quad (7)$$

Where  $sl\_empl$  relates to self-employment as proxy for self-owned business,  $bmg$  is the growth rate of broad money supply and  $l\_inter$  is the lending rate.  $K$  denotes the optimal lag length.  $d$ -max is the maximum order of integration. The data employed were sourced from the World Bank data, 2022. The data range from 1991Q1 to 2021Q4

## 4. Results and Discussion

This section discusses the results of the analysis. The descriptive statistics are presented in Table 1. Self-employment, as a percentage of total employment average is 82.9. The average rate for both broad money growth and lending interest is 25 percent and 18 percent respectively. The standard deviation of the variables is small, indicating that the spread of the data is minimal, except for the broad money supply. A total of 121 observations were employed covering the period between 1991 quarter 1 and 2021 quarter 4.

**Table 1.** Descriptive Statistics

	Self-employment	Broad money supply growth rate	Leading interest
Mean	82.89	25.14	18.81
Median	83.02	20.71	17.89
Maximum	85.03	87.76	31.65
Minimum	79.26	-0.79	11.48
Std. Dev.	1.87	17.46	3.48
Skewness	-0.24	1.20	1.12
Kurtosis	1.59	4.23	4.85
Sum	10030.08	3042.24	2276.32
Sum Sq. Dev.	422.18	36587.64	1460.01
Observations	121	121	121

Source: Authors' computation, 2023.

In order to test for the stationarity of the dataset, the unit root test was conducted using Augmented Dickey-Fuller test statistic and Kwiatkowski-Phillips-Schmidt-Shin test statistic. While the former Null Hypothesis holds that the variable has a unit root, the latter Null Hypothesis posits that the variable is stationary.

The variables, i.e. self-employed, broad money, and leading interest rate, are stationary at level, first and second differencing, with Self-employed being I(2) (see Table 2).

A further component of the pre-test analysis is the covariance and correlation test. The tests have shown (see Table 3) that, while there is a weak relationship between broad money growth rate and self-employed, Leading interest has a strong and positive relationship with self-employed. A positive, but weak relationship may suggest that both the broad money and self-employment increase over time, but the former grows faster and may not necessarily lead to association with self-employment.

**Table 2.** Unit Root Test

Variables	ADF Critical value	Status	KPSS Critical value	Status	Comments
SL_EMP	-9.64***	I (2)	0.146**	I (1)	Stationary
BMG	-4.185*	I (0)	0.029**	I (1)	Stationary
L_INTER	-4.488**	I (1)	0.079**	I (1)	Stationary

*Note:* Augmented Dickey-Fuller test statistic (ADF). Kwiatkowski-Phillips-Schmidt-Shin test statistic. *Source:* Authors' computation.

**Table 3.** Covariance Analysis

Covariance/ Correlation			
	SL_EMP	BMG	L_INTER
SL_EMP	3.48		
	1.00		
BMG	14.80	302.37	
	0.45	1.00	
L_INTER	4.60	25.48	12.06
	0.70	0.42	1.00

*Note:* Sample: 1991Q1 2021Q1. *Source:* Authors' computation.

The unit root test with I (2) variable suggests that the most appropriate model for evaluating the relationship between self-employment and monetary policy is the Toda-Yamamoto (T-Y) model. The VAR model was estimated and the lag order selection determined. Testing at 5% level of significance, the VAR Lag Order Selection

Criteria suggests lag 6. This was based on the criterion sequential modified LR test statistic, Final prediction error (FPE) and Akaike information criterion (AIC) which indicates lag 6 as against lag 2 identified by the Schwarz information and Hannan-Quinn information criterion (see Table 4).

**Table 4.** VAR Lag Order Selection Criteria

Lag	LogL	LR	FPE	AIC	SC	HQ
0	-944.40	NA	3845.22	16.76	16.84	16.79
1	-340.20	1165.61	0.10	6.23	6.52	6.35
2	-202.70	257.97	0.01	3.95	4.46*	4.16*
3	-200.83	3.40	0.01	4.08	4.80	4.37
4	-197.35	6.16	0.01	4.18	5.12	4.56
5	-188.86	14.59	0.01	4.19	5.35	4.66
6	-160.41	47.32*	0.009*	3.84*	5.22	4.40
7	-159.01	2.26	0.01	3.98	5.57	4.62
8	-156.48	3.93	0.01	4.09	5.90	4.83

*Note:* \* indicates lag order selected by the criterion. LR: sequential modified LR test statistic (each test at 5% level). FPE: Final prediction error. AIC: Akaike information criterion. SC: Schwarz information criterion. HQ: Hannan-Quinn information criterion. Sample: 1991Q1 2021Q4. Included observations: 113. *Source:* Author's computation.

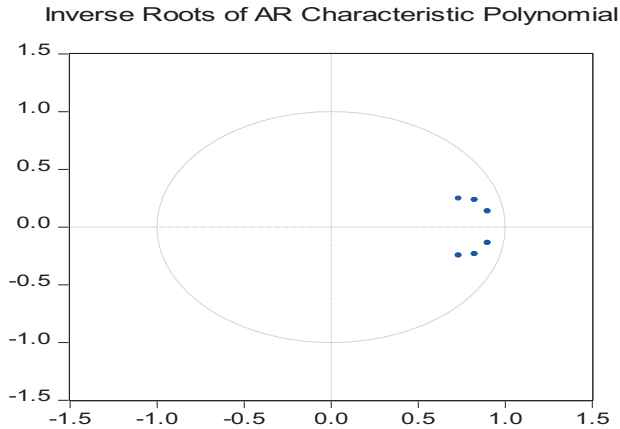
It is important to make sure that the model does not suffer from autocorrelation and is stable over time. Table 5 depicts the residual serial correlation test. All the probabilities for the three lags were statistically insignificant at 5%. The null hypothesis of no serial correlation is not rejected, implying that the residual is not serially correlated.

**Table 5.** VAR Residual Serial Correlation LM Tests

Lag	LRE* stat	Df	Prob.	Rao F-stat	df	Prob.
1	4.91	9	0.84	0.54	(9, 238.7)	0.84
2	3.08	9	0.96	0.33	(9, 238.7)	0.96
3	4.26	9	0.89	0.47	(9, 238.7)	0.89

*Note:* Null hypothesis: No serial correlation at lag h. Sample: 1991Q1 2021Q4. Included observations 113. *Source:* Author's computation.

To test for the model stability, the inverse roots polynomial test was conducted. Figure 4 presents the stability Wald test. All the variables are within the circle as expected, suggesting that the model is stable over time.



**Figure 4.** Stability Wald test. *Source:* Authors' computation

The results of the Toda Yamamoto test are presented in Table 6. The block exogeneity Wald tests show the VAR Granger causality between the dependent variable and the independent variables. When self-employment is the dependent variable, the broad money as a monetary policy does not Granger cause self-employment since the probability is greater than 0.05. An increase or decrease in money supply M2 does not effectively influence self-employment. These results differ from those of Koimburi (2021), Alege *et al*(2021) where monetary policy variables were found to influence employment in Kenya and Nigeria. The results of the present study suggest that self-employment is largely determined by factors other than monetary policy, e.g. by rising unemployment in the economy that may induce the need for self-engagement in productive ventures.

An increase in money supply implies greater availability of money in the banking sector, but when access to loans for individuals is limited, it will have no direct effect on self-employment. It is possible that changes in the policies other than those involving broad money could lead to a positive response from self-employment. This is in line with Bahaj, *et al* (2022) who posit that collateral shocks drive employment response to monetary policy. Luck & Zimmermann (2020) support the idea that the desired impact of monetary policy on employment requires real data on employment classification. Koimburi (2021), however, suggests that the relationship between self-employment, monetary policy, and other variables for Kenya shows that the broad money supply contributes to the variance of self-employment.

Besides, the lending rate was also statistically non-significant, which means that the lending rate does not Granger cause self-employment. Again, a rising lending rate may discourage individuals from borrowing from the banking sector. Besides, a bank can request collateral for loans, which many individuals may not be able to provide. The interest rates may not determine an increase or decrease in self-employment if people have other sources of funds. The scale of the self-owned business is also important. Small, non-scalable businesses may not require huge capital to start

operation. All these are possible reasons why the broad money and lending rates do not affect self-employment.

Table 6 also shows that there is no directional effect from self-employment to lending rate and broad money. Similarly, the lending rate was not Granger caused by self-employment or broad money. This shows no uni-directional or bi-directional relationship among the variables.

**Table 6.** VAR Granger Causality/Block Exogeneity Wald Tests

A. Dependent variable: SL_EMP			
Excluded	Chi-sq	df	Prob.
BMG	0.26	2	0.87
L_INTER	0.07	2	0.96
All	0.38	4	0.98
B. Dependent variable: BMG			
Excluded	Chi-sq	df	Prob.
SL_EMP	0.60	2	0.74
L_INTER	0.92	2	0.63
All	1.44	4	0.83
C. Dependent variable: L_INTER			
Excluded	Chi-sq	df	Prob.
SL_EMP	0.40	2	0.81
BMG	1.79	2	0.40
All	2.13	4	0.71

Note: Sample: 1991Q1 2021Q4. Included observations 113. Source: Authors' computation.

**Table 7.** OLS Regression Result (Dependent variable sl\_emp)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BMG	-0.0193	0.0112	-1.7318	0.0858
L_INTER	-0.0944	0.0810	-1.1657	0.2460
C	85.0916	1.6501	51.5675	0.0000

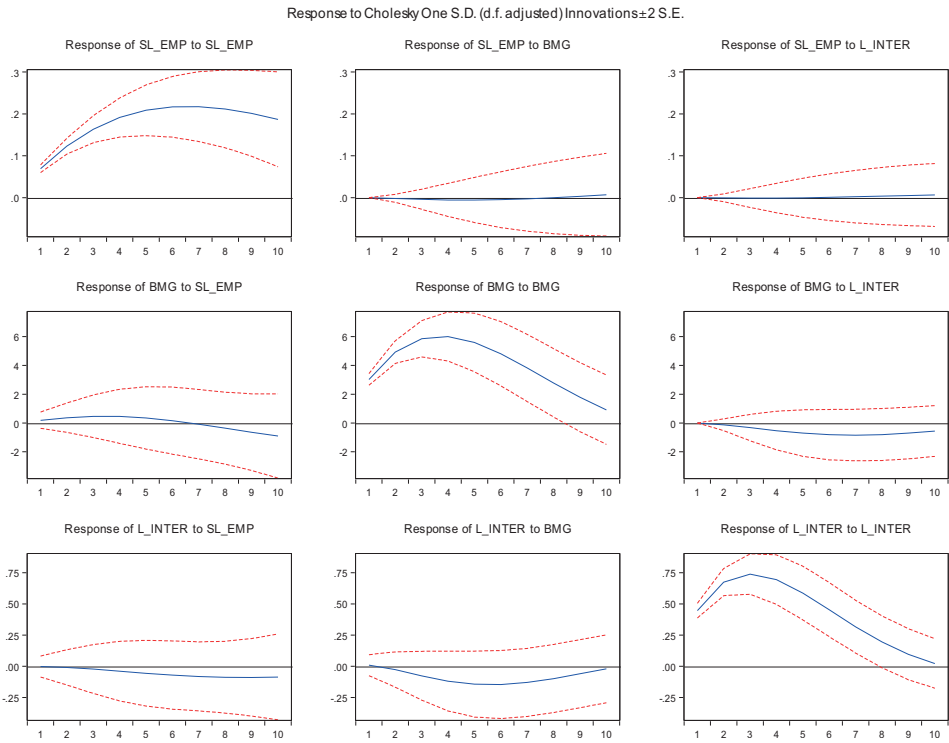
R-squared--0.164 Adjusted R-squared---0.151

F-statistic--12.037 Prob. (Fstatistic)--0.000017 Durbin-Watson stat--0.011900

Sources: Authors' computation. Notes: covariance method used: HAC standard errors & covariance (Bartlett kernel, Newey-West fixed bandwidth = 5.0000. Dependent Variable: sl\_emp. Included observations: 125 after adjustments. Sample (adjusted): 1991Q1 2022Q1.

The result of the OLS regression shown in Table 7 is generally in tandem with that obtained in the causality analysis. The monetary policy variables (bmg and l\_inter) do not have statistically significant relationship with self-employment as a proxy for self-owned enterprises.

The result of the impulse responses is presented in Figure 5. The effects of shocks on the broad money and lending rates are very similar. A unit shock on the broad money leads to little or no change in self-employment and there is a quick convergence to equilibrium. A similar result was obtained for the response of self-employment to the lending rate. However, the effect of a shock in self-employment on the broad money supply is quite different. A positive response of broad money to a change in self-employment was observed in the first graph. Then (#7) there was a convergence which led to a negative impact without convergence to equilibrium in the long run. The response of the broad money to the lending rate was negative; there was a divergence from equilibrium. This is similar to the response of lending rate to self-employment.



**Figure 5.** Impulse Responses. Source: Authors' computation

Finally, the variance decomposition results are reported in Tables 8, 9, and 10 respectively. These indicate the extent of the effects of the variables on the endogenous variable over time. Table 8 shows that in the first quarter, the broad money growth and lending rates do not affect self-employment. This is the reason for the 100 % of the variance decomposition of self-employment. Subsequent effects of broad money and interest rates were negligible. We may conclude that these monetary instruments had little or no effects on self-owned businesses.

**Table 8.** Variance Decomposition of SL\_EMP

Period	S. E.	SL_EMP	BMG	L_INTER
1	0.06	100.00	0.00	0.00
2	0.14	99.98	0.01	0.002
3	0.21	99.95	0.04	0.003
4	0.28	99.93	0.06	0.003
5	0.35	99.92	0.06	0.002
6	0.41	99.93	0.06	0.002
7	0.47	99.94	0.05	0.003
8	0.51	99.94	0.04	0.008
9	0.55	99.94	0.04	0.02
10	0.58	99.92	0.05	0.02

Source: Authors' computation.

**Table 9.** Variance Decomposition of BMG

Period	S. E.	SL_EMP	BMG	L_INTER
1	3.02	0.39	99.60	0.00
2	5.79	0.50	99.44	0.04
3	8.25	0.56	99.26	0.17
4	10.23	0.56	99.04	0.38
5	11.68	0.52	98.81	0.65
6	12.66	0.46	98.56	0.97
7	13.25	0.42	98.27	1.29
8	13.57	0.47	97.93	1.58
9	13.72	0.68	97.49	1.81
10	13.79	1.10	96.93	1.96

Source: Authors' computation.

**Table 10.** Variance Decomposition of L\_INTER

Period	S. E.	SL_EMP	BMG	L_INTER
1	0.44	0.001	0.03	99.95
2	0.80	0.01	0.12	99.86
3	1.09	0.04	0.55	99.40
4	1.30	0.12	1.22	98.65
5	1.43	0.25	2.00	97.74
6	1.51	0.44	2.72	96.82
7	1.55	0.70	3.28	96.01
8	1.57	0.99	3.60	95.39
9	1.58	1.30	3.71	94.97
10	1.58	1.59	3.72	94.68

Source: Authors' computation.

## 5. Conclusion

This study examines the relationship between self-employment and monetary instruments in Nigeria. The study has found that the broad money and lending rates do not affect self-owned businesses; at least, there are no direct effects observed. This implies that increasing the money supply (broad money) may not necessarily lead to an increase in self-owned businesses.

It is possible that factors such as the scale of the business, collateral security requirements by the banks, location, and environmental concerns have direct effects on self-employment, but the monetary policy does not directly influence self-owned businesses in Nigeria. To make it effective in promoting self-owned businesses, it is recommended to create a special fund and establish the lending rates that would contribute to the development of small-scale businesses. This is where the recent policy of the government on 'traderMoni' empowerment scheme (Ayogu *et al*, 2019) becomes a veritable means of promoting self-reliance through self-owned businesses, especially in rural areas.

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