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Financial inclusion and monetary policy targets: Evidence from the ECOWAS countries

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Abstract: The study examines the impact of financial inclusion on monetary policy targets in the Economic Community of West African States for the period between 2004 and 2020. To capture how a shock to financial inclusion affects monetary policy targets in the ECOWAS sub-region, the study employs panel vector autoregression via the Generalized Method of Moments framework and uses the impulse response functions. The results show that in all ECOWAS countries, financial inclusion leads to an appreciation of the local currency, thereby improving the value of the exchange rate. However, it reduces the effectiveness of monetary policy. In particular, financial inclusion increases consumer prices and interest rates. Based on the findings, the study recommends, among others, the need for a single monetary policy in the ECOWAS sub-region to properly integrate its monetary policy framework in line with the economic and monetary integration policy of the West African Monetary Zone.

Keywords: Financial inclusion, monetary policy target, ECOWAS, panel vector autoregression, monetary transmission

1. Introduction

The formulation and implementation of monetary policy, as the primary responsibility of central banks around the world, is aimed at achieving the primary objectives of price and economic stability, as well as employment creation and balance of payments equilibrium. The effectiveness of the monetary policy toward achieving the targets is however, dependent on a proper understanding of the transmission mechanisms through which changes in a central bank's policy actions impact the economy (Goshit et al., 2022; Iorember et al., 2021). The identified channels of monetary policy transmission in the literature include interest rate; exchange rate; other asset prices including bonds, stock market, and real prices; and credit and inflation expectations. These channels of monetary transmission mechanism work efficiently in an environment where the financial sector is well developed, with financial services, products, and resources being accessible and affordable to the people including those at the lower rung of the income ladder. In effect, the new thinking toward the effectiveness of monetary policy is not only how well money supply and interest rates engender economic growth and price stability but also involves financial inclusiveness in terms of accessibility to financial products and services (Iorember et al., 2022; Gbaka et al., 2021; Alade, 2015).

According to Ozili et al. (2023a), financial inclusion involves enhancing individuals' and firms' access to formal financial products and services including insurance credit, and savings opportunities. Grohmann and Menkhoff (2018) demonstrate the relationship between monetary policy and financial inclusion by contending that increasing financial inclusion is likely to provide a strong poll of deposits, and thus, affording increased resilience to commercial banks regarding financial shocks. They came to the simple

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conclusion that financial inclusion affects commercial banks' lending rates when such institutions want to stimulate monetary policy. Access to financial products and services hence increases aggregate demand and investment, which through the increased lending rate elasticity becomes sensitive to monetary policy.

The ECOWAS countries are committed to promoting financial inclusiveness, and there is great promise that financial inclusion will bring the excluded population into the formal financial sector to give them access to formal financial products and services (Allen et al., 2016). This implies promoting efficiency in the transmission of monetary policy, and this is achieved using "agent banking", an initiative that leverages technology to enable rural areas to have access to financial services. Most of these countries in ECOWAS countries have made tremendous efforts (legal, financial, and policy) to attain high levels of financial inclusion by ensuring that the financially excluded persons have access to formal financial services for the growth of the economies and to improve the living standard of their people. Moreover, Ozili et al. (2023b) opined that improvements in the quality of the legal system, size of central bank assets, banking sector cost efficiency, and bank insolvency risk go hand in hand with improvements in the level of financial inclusion and economic growth.

Many of these countries' efforts have yielded results and success stories of flourishing financial inclusion in literature. According to the World Bank (2019), Ghana is recognized as the fastest-growing mobile money market in Africa. In Nigeria, the Nigerian government, in collaboration with the Central Bank of Nigeria, launched a financial inclusion strategy in 2012 to improve the financial inclusion of its citizens. This strategy has enabled the excluded segment to have greater access to formal financial services and products. This has created the financial stability necessary for sustainable development (Ozili & Iorember, 2023).

Given the benefits of financial inclusion and the desire of the Central Banks of the ECOWAS countries to advance financial inclusion with the overall objective of improving its monetary policy effectiveness, the financial inclusion debate is broadened to ensure that more people have access to financial services for the effectiveness of monetary transmission. According to Khan (2011), the pursuit of financial inclusion is not just a policy option but it is compulsory; it is about the various workable strategies to accelerate its rate of reach and deepen the acceptability of such policies and strategies. Another argument central to financial inclusion is that the number of people brought under the formal umbrella will make aggregate demand and investment more sensitive to monetary policy rates through increased elasticity due to the lending rate. Put differently, apart from safety and security, it is appreciable for the public to deposit their money with banks as they give interest on the principle and provide borrowing facilities, hence the liquidity of the rural population can be controlled by the monetary policy decisions of the central bank.

Financial inclusion might lower the cost of managing cash or liquid assets and protect local currencies from outside shocks while fostering a stable financial system. It is also possible to make the case that greater financial inclusion may result in a more affordable and reliable pool of deposits, particularly savings, which will increase banks' resilience to financial shocks and decrease their reliance on foreign credit lines for making loans and other investments. This helps to relieve pressure on the foreign currency market and stabilize local currencies as a result.

One of the major challenges facing the effectiveness of monetary policy in the ECOWAS countries is the low level of financial inclusiveness, consequent on low financial literacy rate, lack of access to formal financial services and products, and high level of cash in circulation particularly among the rural dwellers. Studies by Demirgüç-Kunt et al. (2018) and Naceur et al. (2017) show that about 1.7 billion adults remain unbanked worldwide and the majority of those without bank accounts reside in developing countries with the ECOWAS countries inclusive. According to the data, half of the unbanked individuals are from the lowest 40% of households, and women make up 56%

of the unbanked population. Likewise, a disproportionate amount of the world's population is financially excluded, including those who are less educated, unemployed, young adults, and people who live in rural areas.

Interestingly, data from the World Bank financial inclusion of 2017 has shown that ECOWAS countries like Ghana, Nigeria, and Cote D'lvoire are leading in providing access to financial services and products to their citizenry in the ECOWAS countries. These countries have over the years embarked and deliberately brought the large part of their population who are financially excluded into having access to different products and services available in the financial space to their people. Similarly, countries such as Senegal, Mali, Cape Verde, Benin Republic, and Togo are below average in providing financial services, which implies that a large chunk of the adult population cannot still access financial services, particularly the women gender. Furthermore, countries like Niger, Liberia, Sierra Leone, Guinea Bissau, Burkina Faso, and the Gambia are operating at the lowest level of providing and making financial services available to their people based on the selected indicators of most vulnerable to financial exclusion. The low level of financial participation and inclusion in these countries implies that most transactions take place in cash and cannot be regulated, making monetary policy less effective.

Given the need to enhance financial inclusion with the overall objective of improving its monetary policy effectiveness by the Central Banks, the financial inclusion debate is broadened to ensure that more people have access to financial services for the effectiveness of monetary transmission (Ozili, 2022). This is important at a time such as this when the major targets of monetary policy (price stability, economic growth, unemployment control, and exchange rate stability) in ECOWAS seem to be underperforming (Goshit et al., 2020). A few studies (Iorember et al. 2022; Marwa, 2019; and Lenka et al., 2016) have considered the role of financial inclusion and its effectiveness in monetary policy transmission. The results from these studies indicate that growing financial inclusion improves monetary policy effectiveness.

However, these studies are country-specific and do not represent the entire ECOWAS Sub-region which is the context of this current study. Also, most of the studies relied on a single indicator of monetary policy effectiveness (either inflation rate or economic growth) which does not capture the broader goals of monetary policy. This study, therefore, seeks to investigate the effect of financial inclusion (using comprehensive indicators from the World Bank Global Findex Database) on the effectiveness of monetary policy in the ECOWAS countries.

The motivation for this study is based on the fact that the previous studies on the subject matter did not account for all the basic monetary policy targets in assessing the effect of financial inclusion. Most of the studies relied on only one or two indicators of monetary policy leaving out the other indicators. Furthermore, most of the studies in the literature did not employ a comprehensive and broad-based indicator of financial inclusion developed by the World Bank but rather relied on own their construction using different methods. This study departs from the existing studies by testing the effectiveness of financial inclusion on all four targets of monetary policy (economic growth, price stability, unemployment control, and exchange rate) and evaluating the effectiveness of financial inclusion on monetary policy on a regional basis consistent with the goal of the Central Banks of the ECOWAS countries.

Our results show that in all ECOWAS countries, financial inclusion leads to an appreciation of the local currency, thereby improving the value of the exchange rate. However, it negatively alters the effectiveness of monetary policy including consumer prices, interest rates, employment rates and growth. Our findings add to the body of knowledge in the fields of development economics, financial inclusion, and monetary economics. It expands the understanding of the relationship between the expansion of the financial sector and macroeconomic results in emerging market economies.

The findings of the study also reveal the potential policy implications for regulatory bodies and central banks in West African countries. This offers suggestions on how to

improve the efficacy of financial inclusion initiatives by coordinating them with more general monetary policy goals.

The rest of the study is organized as follows; section two focuses on the theoretical and empirical literature, section three presents the methodology and data, section four deals with the results and discussions, and section five presents the conclusion and policy recommendations.

2. Literature Review

The theoretical underpinning for this study is Keynes's Theory of Monetary Policy provided by the Keynesian school of thought on monetary policy. The Keynesian theory of monetary policy suggests zero direct connection between the supply of money and price level, which stems from the classical money quantity theory. The Keynesian school of thought believes in the nonexistence of a direct relationship between money supply and real GDP. Kriesler and Lavoie (2016) argue that Keynesians are of the thought that economists deploy expansionary monetary policy to boost the supply of loanable money through the formal banking systems, thereby leading to lowered interest rates. With reduced interest rates, interest-sensitive consumables, and aggregate demand on investments experience a resultant increase, further spurring increments in gross domestic product (GDP). The significance of this theory in the study is in the portrayal of how financial inclusion develops aggregate expenditure on investments by designing appropriate monetary policies such as expansionary monetary policies. However, Kriesler and Lavoie (2016) remain unconvinced by the little emphasis by Keynesians pertaining to the adeptness of monetary policy in the attainment of primary objectives of financial inclusion such as increasing GDP and lowering unemployment. This now creates further arguments by post-Keynesian theories by Lucas and other scholars who advanced the marginal cost from the supply perspective.

Recent empirical studies have shown that the research about the effect of financial inclusion on monetary policy is still active. For instance, Elsherif (2019) explored the relationship between Egypt's financial inclusion and monetary policy transmission from 2000 to 2017, using the VECM Granger causality test and basic trend analysis. The study found that financial inclusion, money supply, and exchange rate shocks significantly explain the variations in monetary policy effectiveness, with financial inclusion contributing about 21% of the variations in monetary policy effectiveness. Similarly, Jungo et al. (2021) conducted a comparative study to investigate the relationship between financial inclusion and monetary policy in Latin America, Sub-Saharan (SSA) Africa, and the Caribbean using the Panel VAR approach. Their findings show an inverse relationship between financial inclusion and monetary in both SSA and Latin American countries. The study by Iorember et al (2022) also establishes the moderating role of financial inclusion in boosting economic activities via the monetary policy framework.

Another study by Evans (2016) using the Panel Vector Error Correction Model approach and annual data obtained from 2005 to 2014 established a long-term relationship between financial inclusion and monetary effectiveness in Africa. Conversely, Evans (2016) recognizes the value of monetary policy's role in driving financial inclusion forward.

In examining the effects of financial inclusion on monetary policy in Nigeria, Mbutor and Uba (2013) contend that the sensitivity of aggregate demand is amplified by financial inclusion, thereby shaping the success of monetary policy. The study also showed that financial inclusion in Nigeria is a strategy aimed at improving the effectiveness of monetary policy.

Lapukeni (2015) in the case study of Malawi argues that financial inclusion is fundamental as it improves the efficacy and spread of monetary policy. The author used the VAR model to conduct empirical analysis. The study established an inverse correlation between money supply and monetary policy target (inflation).

Lahcen and Gomis-Porquera (2021) in a study on the impact of financial inclusion on inequality and welfare using a monetary model with endogenous credit market participation established that consumption inequality results from differences in agents' decision to access financial services. Similarly, Chima et al., (2012) in a study on financial inclusiveness and economic growth in 48 SSA revealed that there is a complimentary correlation between the present degree of inclusiveness of finance and economic advancement in SSA. Anthony-Orji, (2019) used a VAR model to empirically study the impact of monetary policy shocks on Nigeria's financial inclusion. The results of the study show that the impact of the lowest rediscount rate, interest rates, broad money supply, and bank deposit interest rates has had a significant impact on Nigeria's financial inclusion levels.

Lenka et al. (2016) examined the impact of financial inclusion on the monetary policy of the South Asian Association for Regional Cooperation (SAARC) from 2004 to 2013. The results indicate that financial inclusion, exchange rates, and interest rates are negatively correlated with inflation in SAARC countries. Yin et al. (2019) used a vector autoregression model to examine the sustainable development of financial inclusion on how monetary policy and economic fundamentals interact effectively. Their findings show that monetary policy has a short-term positive effect on financial inclusion factors, while the economic fundamental has the opposite, this implies that the positive monetary policy promotes the development of financial inclusion in the short term and the sudden change of the economic situation will make it harder. Based on their findings, two implications were drawn: first, the sustainable development of financial inclusion needs a suitable circumstance; second, the appropriate coordination and mutual facilitation of economic fundamentals and finance is conducive to the sustainable development of financial inclusion.

Oleschak (2021) analyzed financial inclusion, technology, and its impacts on monetary and fiscal policy. The paper shows theoretically that economies with inefficient financial technologies exhibit low levels of financial inclusion and tax revenue that using an inflation tax as an additional source of income improves welfare. The data showed a robust negative link between financial inclusion and inflation and a positive connection between financial inclusion and tax revenue for developing countries. Ganti and Acharya (2017) argued that financial inclusion boosts growth compared with demand following approach. Likewise, the study by Demirguc and Klapper (2012) concluded that in the countries where bank branches as well as deposits are high the income level also increased rapidly. This indicates that higher financial inclusion in each country boosts a high-growth economy. Ghosh (2011) evaluated the role of financial access in economic growth with the data from the Indian subnational level which proves the positive impact of access to financial services and use of financial services on economic growth in India. More so, Ozili (2021b) in a study on has financial inclusion made the financial sector riskier shows that the combined use of digital financial products with increased formal account ownership improves the efficiency of the financial sector in developing countries, while the combined use of credit cards with increased formal account ownership reduces the risk of insolvency and improves the efficiency of the financial sector in developing countries.

2. Data and Methods

2.1. Data and Measurement of Variables

The data used in this study were sourced from the World Bank Global Findex Database, the World Development Indicators (WDI), the Global Economy database[1], and the Bank of Ghana. The data were collected from 2004:Q1 to 2020:Q4 for all 15 ECOWAS countries and arranged in a panel format for analysis. The ECOWAS countries used for

[1] Note that interest rate data for Ghana was sourced from the Bank of Ghana via https://www.gov.gh/economic-data/interest-rates/.

the study are; Benin, Burkina Faso, Cape Verde, Gambia, Ghana, Guinea, Guinea-Bissau, Ivory Coast, Liberia, Mali, Niger, Nigeria, Senegal, Sierra Leone, and Togo. Table 1 provides the summary of the data used for this study and their measurements and sources:

Table 1: Variable, Measurement, and Source

Variable	Measurement	Source
Financial Inclusion (FIN_INC)	Index of financial services by gender, income group, education level, employment status, location, age group, among others	Global Findex database
Interest Rate ($INTR$)	Bank Interest Rate, which measures the annual percentage rate of consumer loans	WDI
Output growth (GDP)	Gross Domestic Product (GDP) (Constant 2010 USD)	WDI
Exchange Rate (EXC)	Official exchange rate of domestic currency to US dollar	WDI
Consumer Price Index (CPI)	Prices of a weighted average market basket of consumer goods and services purchased by households.	WDI
Unemploy-ment Rate ($UNEMP$)	The percentage of the number of unemployed individuals divided by the individuals currently employed in the labor force	WDI

Source: Author's computation

2.2. Model Specification

Following the works of Oleschak (2021) and Kumar and Kumar (2016), the functional relationships between financial inclusion and monetary policy effectiveness in terms of economic growth, price stability, unemployment, and exchange rate are specified as:

$$CPI = f(\text{FIN}\_INC, \text{INTR}, GDP, EXC, UNEMP) \quad (1)$$
$$GDP = f(\text{FIN}\_INC, INTR, EXC, CPI, UNEMP) \quad (2)$$
$$UNEMP = f(\text{FIN\_INC}, INTR, GDP, EXC, CPI,) \quad (3)$$
$$EXC = f(GDP, \text{FIN\_INC}, CPI, UNEMP, INTR) \quad (4)$$
$$INTR = f(GDP, \text{FIN\_INC}, CPI, UNEMP, EXC) \quad (5)$$
$$FIN\_INC = f(GDP, \text{INTR}, CPI, UNEMP, EXC) \quad (6)$$

All the variables are defined in Table 1.

To achieve the objectives of the study, we employ the Panel Vector Autoregressive Model (PVAR) within the frame of the GMM advanced by Bun and Carree (2005). The VAR models are a powerful tool for analyzing the dynamic behavior of endogenous variables and interdependent macroeconomic variables (exogenous) (Lennman, 2016). Recently, an increase in the availability of internationally standardized datasets and the gradual increase of global economic interdependencies have led to the use of a panel dimension in a VAR framework (Lennman, 2016). The general form of the PVAR model is specified as shown in equation (7).

$$y_{it} = A_1 y_{it-1} + A_2 y_{it-2} + \cdots + A_{p-1} y_{it-p+1} + A_p y_{it-p} + \beta x_{it} + c_i + \varepsilon_{i,t} \quad (7)$$

Following Lennman (2016), the dynamic specification of the model is expressed in equation (8).

$$y_{it} = p y_{it-1} + \beta x_{it} + c_i + \varepsilon_{i,t} \quad (8)$$

Equation (8) shows the dependent variable on the left side of the equation, and it is also included on the right side with a lag. The exogenous variables x_i , c_i and ε_{it} represent the panel's fixed effects and error term, respectively.

2.3. GMM Estimation of Panel Vector Autoregressive (P-VAR) model

To avoid the cross-country fixed effects in the relationship between financial inclusion and all monetary policy indicators used for this study, we applied the PVAR model via the framework of the GMM advanced by Bun and Carree (2005). This method, like the PVAR approach allows the variables in the system to be treated as endogenous so that it can solve the problem of endogeneity and improve the efficiency of the estimation as shown in Bonga-Bonga (2019). Moreover, given the dynamic nature of the panel VAR equation, it implies that the first difference transformation of the interested variables which is also known as forward orthogonal deviation as shown by Arellano and Bover (1995) would solve the endogeneity problem in the panel (Usman et al. 2022; Musa et al. 2021). Therefore, the mean of the future observations in the sample size is taken from each observation so that the transformations of the variables and their error terms are expressed as follows:

$$Y_{it-s}^{*} = w_t[Y_{it-} \ -(Y_{it-s+} \ + \cdots + Y_{iT-s})/(T-t)] \qquad (s = 0,1,\ldots,p) \qquad (9)$$

$$\mu_{it}^{*} = w_t[\mu_{it} - (\mu_{it+1} + \cdots + \mu_{iT})/(T-t)] \quad with \ w^2(T-t)/(T-t+1) \qquad (10)$$

Therefore, from equations 9 and 10, Y_{it}^{*} represents the transformation vector of the endogenous variables, μ_{it}^{*} is the transformation error term, which is invariably assumed to be independently and identically distributed (i.i.d.). T represents the year period for a given ECOWAS country (T = 2004:Q1,…, 2020:Q4), i categorically denotes ECOWAS countries (i=1,…15) s is the lag order of the P-VAR while w_t is the non-singular weighting matrix. According to Usman et al. (2022), Hayakawa (2016), this differenced transformation has the enviable advantage of inheriting the properties of the original error term.

2.4. Impulse Response Functions (IRFs)

As suggested by Lennman (2016), the impulse response function (IRF) is simply the illustrative procedure to show how a stable model in equilibrium reacts to shocks on any of the included regressors. Specifically, the impulse, be it temporary or permanent dissipates through the model and shows how the response variable returns to equilibrium after the disturbance. This is simply a method of making the output of the regressions intuitively understandable and enabling the researcher to calculate the long-run multiplier effect (Lennman, 2016). This study utilizes the orthogonalized Impulse Response Function test i.e. the responses of the variable

3. Results and Discussions

3.1. Descriptive Statistics

It is necessary to examine the descriptive characteristics of the variables used in this study. The descriptive statistics of the variables are presented below in Table 2. The descriptive statistics are conducted on the panel data for the 15 ECOWAS countries. It can be observed that the mean scores of the variables are moderate with real GDP having the largest mean score of 22.83258, followed by the mean score of the interest rate, which is 6.196649. The variable with the smallest mean score is financial inclusion with 1.446466. Similarly, the real GDP has the largest median in the panel with about 22.81942. This is followed by an exchange rate with a value of about 6.215440. The smallest median among the variables in the panel is owned by financial inclusion with a low value of 0.082287. For

maximum and minimum values of the variables, it is clear from Table 2 that the interest rate has the maximum value of about 38.52120, followed by real GDP at about 26.94521, unemployment rate of 14.22750, the exchange rate with 9.212974, CPI with 5.747131, and 5.516010. In absolute terms, the minimum value of the interest rate is larger among the variables in the panel i.e. 33.88341. This is followed by the minimum value of real GDP which is 20.38964. The lowest minimum value is owned by the unemployment rate with 0.086250. Furthermore, the values of the standard deviation of the variables reveal that the interest rate has the highest value at 7.518995, followed by the unemployment rate at 3.020267. The standard deviation of financial inclusion is 2.542828 while real GDP and exchange rate have 1.524616 and 1.892276. The lowest standard deviation is owned by CPI which is 0.886645. These values suggest that CPI is relatively stable with less volatility while the interest rate has the highest volatility and fluctuation. In addition, the skewness of the CPI, financial inclusion, and the exchange rate is negative with CPI having the largest skewness i.e. 3.073204, which greatly violates the normal value of zero. The skewness of interest rate, GDP, and the unemployment rate is positive and the values fall within the zero bound for a normal distribution. For kurtosis, the values are positive with evidence of excess kurtosis found for CPI, interest rate, real GDP, and exchange rate, while kurtosis for financial inclusion and unemployment falls approximately within three. This suggests that financial inclusion and unemployment rates have a normal kurtosis. Overall, the Jarque-Bera statistics are high, rejecting the null hypothesis of the normal distribution as evident in the probability values.

Table 2: Descriptive Statistics

	LNCPI	INTR	FIN_INC	LNGDP	LNEXC	UNEMP
Mean	4.4646	6.1966	1.4465	22.8326	5.7269	5.1648
Median	4.6510	4.6897	0.0823	22.8194	6.2154	4.3797
Maximum	5.7471	38.521	5.5160	26.9452	9.2130	14.228
Minimum	-0.6753	-33.883	-4.9674	20.3896	-0.1162	0.0863
Std. Dev.	0.8866	7.5189	2.5428	1.5246	1.8943	3.0203
Skewness	-3.0732	0.2414	-0.4937	0.81165	-0.9514	0.6692
Kurtosis	13.619	6.2501	3.0094	3.5775	4.5587	2.5281
Jarque-Bera	6398.25	458.84	41.4312	126.140	257.13	85.594
Probability	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000
# countries	15	15	15	15	15	15

Notes: The variables such as CPI, GDP, and Exchange rate are in their natural logarithms. The Short-term interest rate and Unemployment are already in their growth rate since they are measured in their percentages.

3.2 Panel Unit Root Analysis

One prerequisite for panel data analysis is the test of stationarity of variables within the panel which is conducted to test the presence of unit root and stationarity process of the variables employed in this study. If the variables employed in a model are not stationary, then the results and analyses based on such variables and models tend to be misleading (see Levin et al., 2002; Im et al., 2003). To test the stationarity properties of the series, a second-generation unit root test is applied through the CIPS unit root test proposed by Pesaran (2007). This test accounts for cross-sectional dependence which the first-generation unit root tests failed to account for and the results are presented in Table 3. The results show that all the variables are nonstationary in their levels apart from the exchange rate which is weakly significant at a 10% level. However, after taking their first differences, the results showed that all the variables are integrated into order one i.e. I(1).

Table 3: CIPS Panel Unit Root Test

Variable	At Levels		First Difference	
	Constant	**Constant & Trend**	**Constant**	**Constant & Trend**
lnCPI	-1.966	-1.533	-4.244***	-4.438***
INTR	-1.317	-1.952	-4.634***	-4.667***
FIN_INC	-1.655	-1.292	-6.101***	-6.316***
lnGDP	-0.762	-0.851	-3.101***	-3.517***
lnEXC	-2.034	-2.190*	-6.013***	-6.150***
UNEMP	-0.695	-1.165	-2.899***	-3.009***
Critical Value				
1%	-2.43		-2.96	
5%	-2.25		-2.76	
10%	-2.15		-2.66	

Note: *** and * indicates rejection of the null hypotheses at the 1% and 10% significant levels.

3.3. P-VAR via GMM Estimation

Given the stability of the P-VAR model, the improved version of the P-VAR is estimated based on the Bayes Information Criterion (BIC) which suggests lag (1). The empirical results, as shown in Table 4, provide that the shock to CPI has a negative and insignificant impact on its variable. The effect of a shock to financial inclusion has a negative and significant impact on CPI while a shock in interest rate, exchange rate, and unemployment rate exerts a positive and significant impact on CPI over the study period in ECOWAS countries. Moreover, the effect of a shock in financial inclusion on own variable is positive and statistically significant while the effect on other variables displays positive and negative effects but they are not statistically significant. Particularly, while the effects of a shock in CPI, interest rate, and real GDP are negative, those of exchange rate and employment rate divulge a positive effect. The results further display that the shocks to all the variables in the P-VAR system do not have a significant effect on interest rates in the countries captured including the own variable. This situation could be due to an inherent problem of the VAR estimation as extensively discussed in the literature.

Furthermore, the results show that a shock to CPI is positive but insignificant to real GDP while a shock in employment rate is negatively but insignificantly related to real GDP. Conversely, the shocks to financial inclusion, interest rate, and exchange rate have a significant effect on real GDP. Particularly, while the shocks to financial inclusion and exchange rate have negative and significant effects, the shocks to interest rate and real GDP itself have a positive effect on real GDP. In addition, apart from the shock to exchange rate (own variable) which has a significant effect on the exchange rate, the rest of the variables do not display a significant effect on exchange rate. Also, the shocks to all the variables exert a positive effect on the exchange rate except a shock in CPI which negatively affects the exchange rate. In the case of the unemployment rate, it is clear that only the shocks in CPI and exchange rate have no significant effects on unemployment – although their effects are positive. The shocks in financial inclusion, interest rate, real GDP, and own variable (i.e. unemployment rate) have a significant effect on the unemployment rate with the effect of interest rate which is perhaps negative.

3.4 Impulse response functions (IRFs) analysis for the full sample size

As discussed in the literature, the coefficients of the PVAR may not give a reliable and insightful interpretation. However, the IRF provides more useful interpretations. The results of the impulse response with a 95% confidence interval are provided in Figure 1 to Figure 6. In results as shown in Figure 1 respond CPI, financial inclusion, interest rate,

real GDP, exchange rate, and unemployment rate shocks to 1 standard deviation shock in the captured variables in the ECOWAS region. The responses are calculated for eight quarters, which is enough to assess the effect of financial inclusion on monetary policy indicators in the study area.

Table 4: The Results of P-VAR via GMM Model

	Equations					
Variables	**lnCPI$_t$**	**FIN_INC$_t$**	**INTR$_t$**	**lnGDP$_t$**	**lnEXC$_t$**	UNEMP$_t$
lnCPI$_{t-1}$	0.6898***	-0.0768	0.2452	0.0022	-0.0392	0.0076
	(0.1099)	(0.0852)	(0.9703)	(0.0044)	(0.0399)	(0.0464)
FIN_INC$_{t-1}$	-0.0606***	1.0247***	-0.0031	-0.0134***	0.0096	0.0449**
	(0.0247)	(0.0499)	(0.2559)	(0.0026)	(0.0219)	(0.0228)
INTR$_{t-1}$	0.0088***	-0.0068	0.8799	0.0004**	.00014	-0.0046***
	(0.0022)	(0.0056)	(0.0545)	(0.0002)	(0.0008)	(0.0011)
lnGDP$_{t-1}$	-0.0682	-0.0100	0.7204	0.9912***	0.0098	.1158***
	(0.0568)	(.06706)	(0.6084)	(0.0038)	(0.0415)	(0.0377)
lnEXC$_{t-1}$	0.0605	0.0659	-0.5011	-.0110***	1.0188***	0.0482
	(0.0895)	(0.0865)	(0.7439)	(0.0043)	(0.0204)	(0.0457)
UNEMP$_{t-1}$	0.1149***	0.0136	0.4239	-0.0002	0.0142	0.9942***
	(0.0380)	(0.0238)	(0.3899)	(0.0020)	(0.0226)	(0.0202)

Note: *** and ** denote significance levels at 1% and 5%. The standard errors are in their parentheses. The first difference of the variables is used for estimation.

From Figure 1, the response of financial inclusion, interest rate, real GDP, exchange rate, and the unemployment rate to the shock in CPI. The response of CPI to own shock is positive and statistically significant. This means that a 1 standard deviation change in CPI causes a large positive change in CPI. Also, the responses of real GDP, exchange rate, and the unemployment rate to a change in CPI are positive. These responses are only significant in the case of the exchange rate and the mid-unemployment rate. However, the response of financial inclusion is negative in the first period but crosses to the positive region. Similarly, a trend is detected for interest rate wherein the lower horizons i.e. from zero to 4th horizons the response is negative and insignificant while from 4th onwards, the effect is positive. The results imply that a shock to CPI causes the exchange rate to depreciate and unemployment to rise while stimulating real output growth. This result is consistent with Mehrotra and Nadhanael (2016) and Hung (2017). The positive effect of financial inclusion and interest rate suggests inflationary period increases not only financial inclusiveness and interest rate. The rising interest rate may cripple output in the long run thereby rendering monetary policy ineffective. The positive effect of CPI and financial inclusion is consistent with Mbutor and Uba (2013) and Borio and Zhu (2008) where an increase in financial inclusion is said to have stimulated monetary policy effectiveness.

Figure 1: Shock to lnCPI

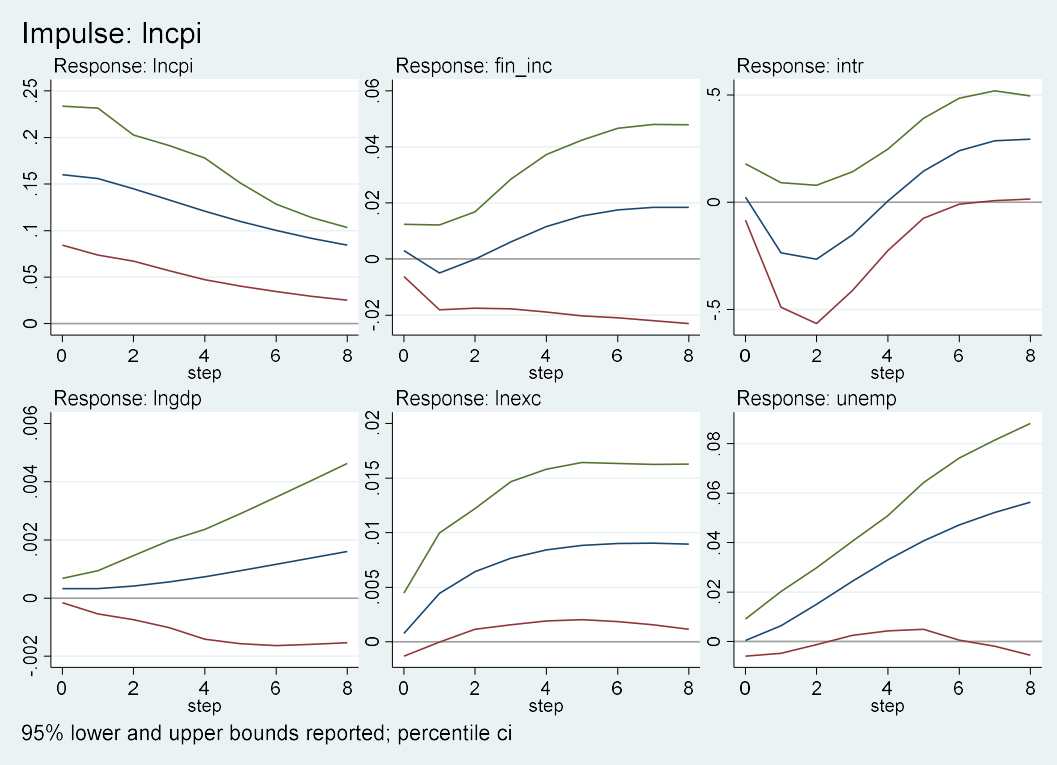


Figure 2 presents the responses of CPI, financial inclusion (own shock), interest rate, exchange rate, and the unemployment rate to a 1 standard deviation shock in financial inclusion. The response of CPI is positive and becomes negative between the 2nd and 3rd horizons. This response is statistically insignificant all through the horizons apart from the response of own shock (financial inclusion), which is positive and statistically significant. This suggests that a shock to financial inclusion exerts a negative effect on the exchange rate, which implies an appreciation of the exchange rate. The financial inclusion responds negatively and insignificantly to real GDP growth while the response of unemployment is positive but insignificant. This suggests that financial inclusion dampens growth and increases the rate of unemployment. This is not consistent with Khan (2011) and Mehrotra and Yetman (2015) who found financial inclusion to depreciate the exchange rate. However, the result is consistent with Sanusi (2011) who found that financial inclusion leads to economic stability through an increase in the exchange rate. The response of the interest rate is positive and significant up to the fifth period. This suggests that the shock in financial inclusion encourages investors to provide funds for productive activities in the economy because of a high rate of interest. However, the response of real GDP to a shock in financial inclusion displays a negative and insignificant. This suggests that a larger number of individuals in the ECOWAS sub-region of African Continents are yet to get access to the financial system. Therefore, this result is not theoretically plausible but consistent with the finding provided by Naceur and Ghazounai (2007) that financial development is negatively related to the growth of 11 countries in the Middle East and North Africa countries. This is also consistent with Khan (2011) who provides that financial inclusion is negatively influenced by growth. On the other hand, this result is not in agreement with Andrianaivo and Kpodar (2011) who found a positive effect of financial inclusion on the growth of 44 African countries.

Figure 2: Shock to financial inclusion

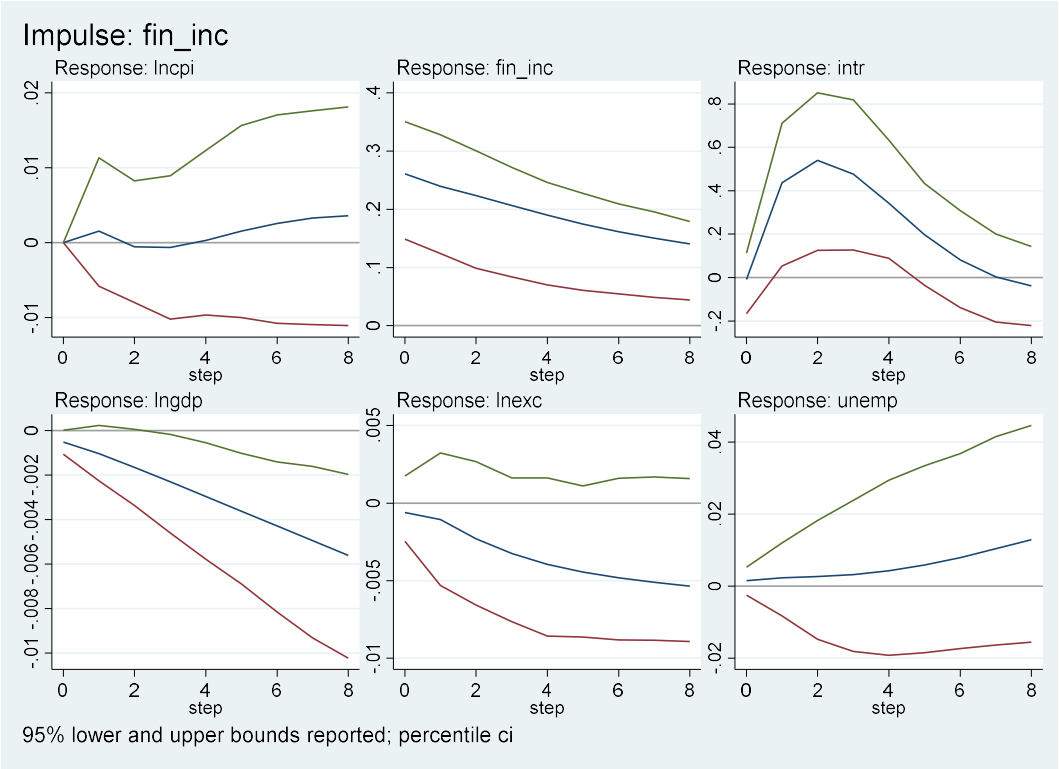


Figure 3 presents the responses of CPI, financial inclusion, real GDP, own shock i.e. interest rate, exchange rate, and the unemployment rate to a 1 standard deviation shock in interest rate. The response of CPI is negative and significant only up to the second period. However, between the second period and fourth period, the response is still negative but crosses to the positive region after the fifth period. This means that a shock to the interest rate exerts downward pressure on inflation, making monetary policy more effective. The response to financial inclusion is negative and statistically significant from the third period. This implies that a shock to the interest rate dampens the inclusiveness of the financial sector. Therefore, the result is consistent with Khan (2011) and Mehrotra and Yetman (2015) who find that financial inclusion destabilizes financial stability possibly through the interest rate. The response of interest rate to own shock is positive and statistically significant to the sixth horizon. Furthermore, the shock to interest rate exerts a negative and significant impact on real GDP in the first two quarters. This, however, switches to a positive region after the fifth horizon with evidence of statistical insignificance. The response of the exchange rate is positive and insignificant, suggesting that a shock to the interest rate leads to the depreciation of the domestic currency. Lastly, the shock in the interest rate reduces the unemployment rate. This means that the shock in interest rate strengthens the monetary policy objective of reducing unemployment.

Figure 4 reports the impact of the shock in real GDP on all the variables in the model. Specifically, the real GDP growth is related positively and significantly to own shock. The responses of CPI and financial inclusion to a change in real GDP are positive. This suggests that a shock in real GDP exerts not only inflationary pressure but also promotes financial inclusion. This finding is congenial with Kim et al. (2018) that financial inclusion has a positive effect on growth. Similarly, studies like Pradhan et al. (2016), Pradhan et al. (2016), Raza et al. (2019), and Raza et al. (2019) also show a significant and positive effect of financial inclusion on GDP growth. Furthermore, the effects of both the exchange rate and the unemployment rate are negative. This implies that a shock in real GDP causes the exchange rate to increase and unemployment to decline. Hence, the finding agrees with Frankel et al. (2019) who found the monetary policy to be influenced by the exchange rate.

The exchange rate effect is not statistically significant while that of unemployment is statistically significant. Moreover, the shock to real GDP is related negatively to interest rate, which suggests that interest rate responds negatively to the shock to real GDP.

Figure 3: Shock to INTR

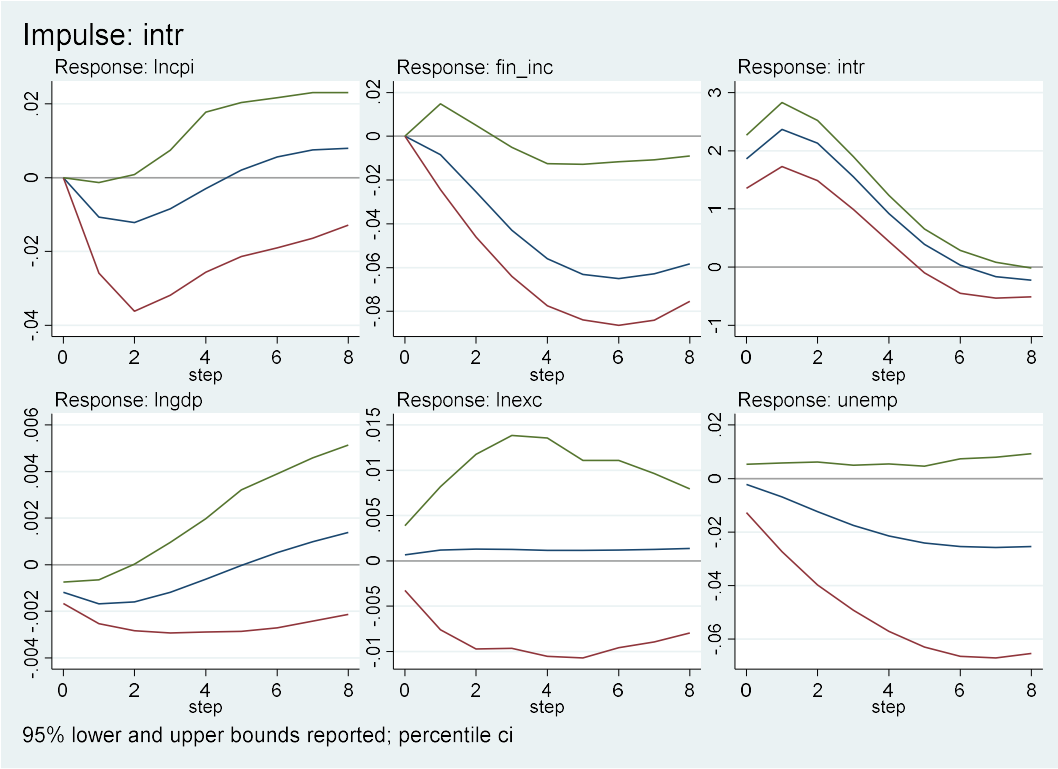
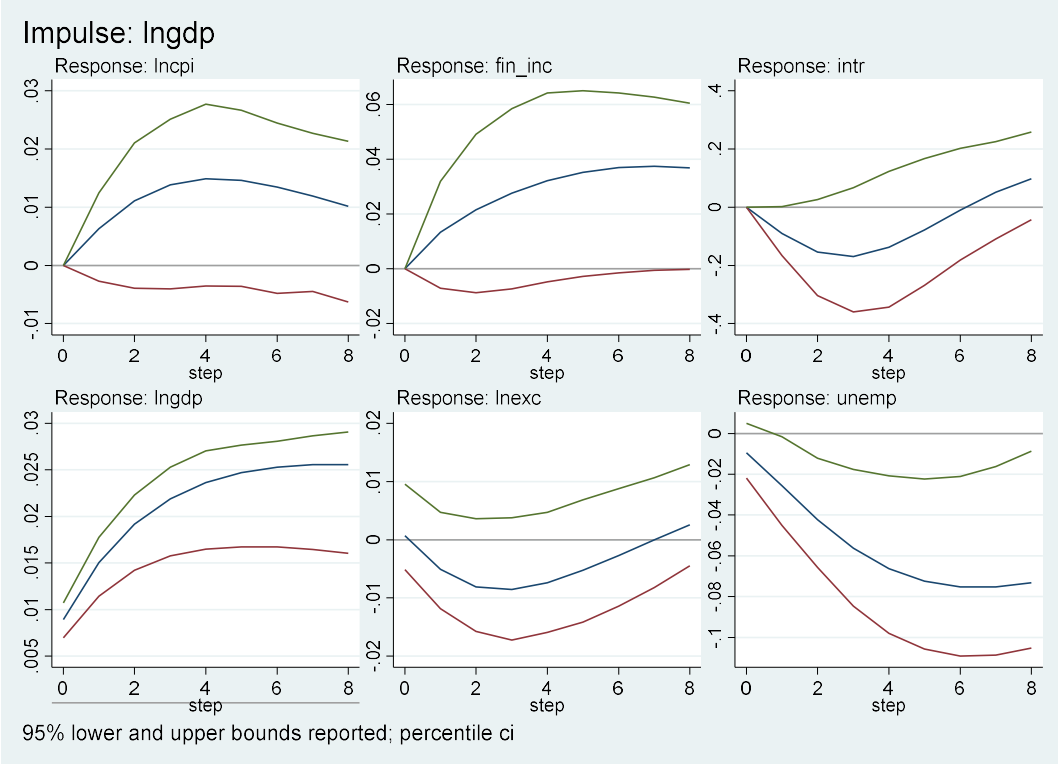
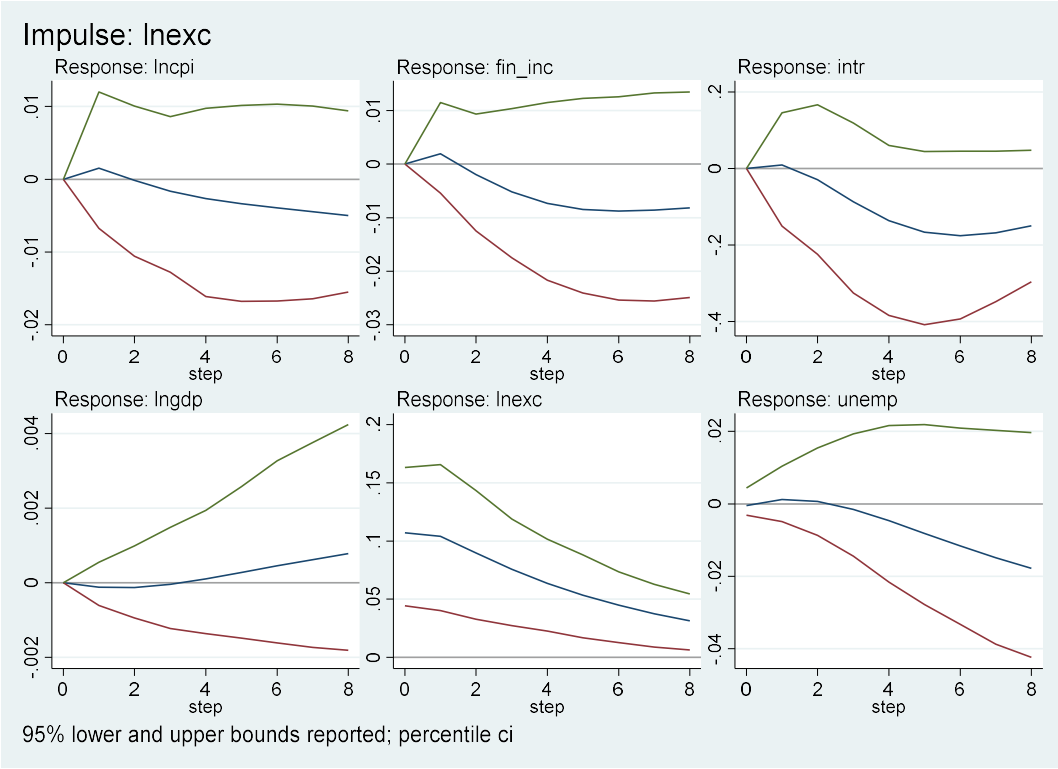


Figure 4: Shock to GDP



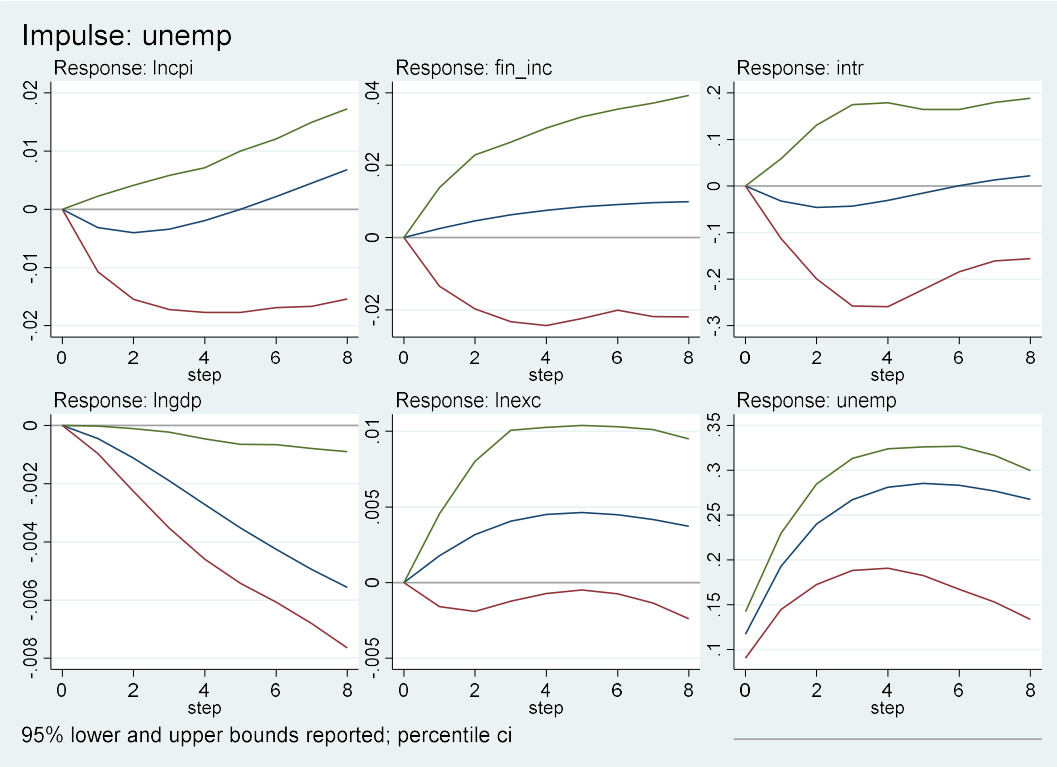
The responses of CPI, financial inclusion, interest rate, real GDP, exchange rate and unemployment rate are reported in Figure 5. Specifically, the responses of CPI and financial inclusion to a shock in exchange rate are positive up to the second period, after which it begins to decline and consequently turns negative; although these effects are insignificant. Also, the response of interest rate to a shock in the exchange rate is negative and statistically insignificant. The response of real GDP to a change in exchange rate is negative and crosses to the positive region in the 3rd horizon, suggesting that real GDP responds positively and negatively to a change in exchange rate. The response of own shock is positive and statistically significant while the response of the unemployment rate is negative and insignificant. This means that the shock to the exchange rate improves monetary policy effectiveness.

Figure 5: Shock to lnEXC



The report of the responses of CPI, financial inclusion, interest rate, real GDP, exchange rate, and unemployment rate is presented in Figure 6. The response of CPI to a change in the unemployment rate is negative and insignificant up to the 5th period and consequently crosses to the positive region. The response of financial inclusion to the unemployment rate is positive, suggesting that a shock to the unemployment rate promotes financial inclusion. The response of interest rate to a shock in the unemployment rate is negative. This effect remains negative up to the 6th horizon and hence crosses to the positive region. Therefore, the finding is closely related to Huong (2018), and Adeola and Evans (2017). Furthermore, a shock to the unemployment rate causes real GDP to shrink, and this impact is statistically significant. Also, the shock to the unemployment rate causes the exchange rate to depreciate and the unemployment rate (i.e. own shock) to rise. This suggests that the shock to unemployment hampers the monetary policy's effectiveness. Therefore, the result is consistent with Bonga-Bonga, (2018) who found a negative connection between unemployment and monetary policy effectiveness.

Figure 6: Shock to UNEMP



4. Conclusion and Policy Recommendations

Given the fact that financial inclusion has been the core policy directive of the recent monetary policy framework in the African continent in recent times, it is expected that to achieve monetary policy targets of price stability and boosting output growth, financial inclusion ought to be deepened. Hence, the current study focuses on examining the impact of financial inclusion on monetary policy targets in the ECOWAS sub-region. To achieve this objective, the study employs the P-VAR via GMM framework in the estimation of the panel data on the 15 ECOWAS countries. The findings reveal that financial inclusion renders monetary policy less effective in the entire ECOWAS countries. Specifically, financial inclusion reduces output growth and increases consumer prices, interest rates, and employment rates. Although financial inclusion improves the value of the exchange rate leading to an appreciation of domestic currencies.

Based on the findings of this study, the following policy recommendations are carefully and adroitly made to trigger monetary policy effectiveness in the ECOWAS member countries.

There is a need for a sub-region to integrate its monetary policy so that a single monetary policy framework exists in the entire ECOWAS sub-region. This integration implies that there will be a single currency and at the same time free movement of goods and services within the sub-region. This suggestion is consistent with the economic and monetary integration policy of the West African Monetary Zone. In addition, Central banks should look at alternate monetary policy measures since financial inclusion lessens the impact of traditional monetary policy tools. This could entail influencing economic variables outside of interest rate changes by utilizing unorthodox methods like quantitative easing, forward guidance, or targeted lending programs.

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References

Adeola, O., & Evans, O. (2017). Financial inclusion, financial development, and economic diversification in Nigeria. *Journal of Developing Areas*, 51(3), 1-15. https://doi.org/10.1353/jda.2017.0057

Alade, S. O. (2015). Determination of an optimal threshold for the Central Bank of Nigeria's Monetary Policy Rate (pp. 1-32). CBN Working Paper Series-CBN/WPS/01/2015/01.

Andrianaivo, M., & Kpodar, K. R. (2011). ICT, financial inclusion, and growth: Evidence from African countries. IMF Working Papers, 2011(073).

Anthony-Orji, O. I., Orji, A., Ogbuabor, J. E., & Onoh, J. E. (2019). Financial Inclusion and Monetary Policy Shocks Nexus in Nigeria: A New Empirical Evidence. *Journal of Academic Research in Economics*, 11(2), 364-388.

Bonga-Bonga, L. (2019). Fiscal policy, monetary policy, and external imbalances: Cross-country evidence from Africa's three largest economies. *The Journal of International Trade & Economic Development*, 28(2), 123-136. https://doi.org/10.1080/09638199.2018.1507045

Bun, M. J. G., and Carree, M.A (2005). Bias-corrected Estimation in Dynamic Panel Data Models. *Journal of Business and Economics Statistics*, 23, 200-210. https://doi.org/10.1198/073500104000000532

Chima, M. M., Babajide, A. A., Adegboye, A., Kehinde S. and Fasheyitan, O. (2021). The Relevance of Financial Inclusion on Sustainable Economic Growth in Sub-Saharan African Nations. *Sustainability*, 13, 5581. https://doi.org/10.3390/su13105581

Demirgüç-Kunt, A., and Klapper, L. F. (2012). Measuring financial inclusion: The global Findex database. World Bank Policy Research Working Paper (6025). https://doi.org/10.1596/1813-9450-6025

Demirguc-Kunt, A.; Klapper, L.; Singer, D. And Van Oudheusden, P. (2015). The Global Findex Database 2014: Measuring Financial Inclusion around the World, Policy Research Working Paper 7255, April 2015, World Bank Group, 5. https://doi.org/10.1596/1813-9450-7255

Elsherif, M. (2019). The Relationship between Financial Inclusion and Monetary Policy Transmission: THE case of Egypt. IISES International Academic Conference, London ISBN 978-80-87927-46-5, IISES. https://doi.org/10.20472/IAC.2019.045.014

Evans, O. (2016). The Effectiveness of Monetary Policy in Africa: Modeling the Impact of Financial Inclusion. *Iranian Economic Review*, 20(3), 327- 337.

Ganti, S., & Acharya, D. (2017). Financial inclusion fosters growth: Simple multiplier and" AK" Growth Model Analysis. *Universal Journal of Accounting and Finance*, 5(3), 55-9. https://doi.org/10.13189/ujaf.2017.050301

Gbaka, S., Iorember, P. T., Abachi, P. T., & Obute, C. O. (2021). Simulating the macroeconomic impact of expansion in total government expenditure on the economy of Nigeria. *International Social Science Journal*, 71(241-242), 283-300. https://doi.org/10.1111/issj.12289

Ghosh, S. (2011). Does financial outreach engender economic growth? Evidence from Indian states. *Journal of Indian Business Research*, 3(2), 74-99. https://doi.org/10.1108/17554191111132206

GLOBAL FINDEX (2017), The World Bank, http://datatopics. worldbank.org/financial inclusion/.

Goshit, G. G., & Iorember, P. T. (2020). Measuring the asymmetric pass-through of monetary policy rate to unemployment in Nigeria. *Nigerian Journal of Economic and Social Studies*, 62(3), 369-387.

Goshit, G. G., Jelilov, G., Iorember, P. T., Celik, B., & Davd-Wayas, O. M. (2022). Asymmetric effects of monetary policy shocks on output growth in Nigeria: Evidence from nonlinear ARDL and Hatemi-J causality tests. *Journal of Public Affairs*, 22(2), e2449.

Hayakawa, K. (2016). Improved GMM estimation of panel VAR models. *Computational Statistics* & Data Analysis 100, 240-264. https://doi.org/10.1016/j.csda.2015.05.004

Huong, N. T T. (2018). The impact of financial inclusion on monetary policy. A case study in Vietnam. *Journal of Economics and Development*, 20 (2), 5-22. https://doi.org/10.33301/JED-P-2018-20-02-01

Im, K. S., Pesaran, M. H., & Shin, Y. (2003). Testing for unit roots in heterogeneous panels. *Journal of Econometrics*, 115(1), 53-74. https://doi.org/10.1016/S0304-4076(03)00092-7

Iorember, P. T., Jelilov, G., Alymkulova, N., & Gbaka, S. (2021). Analysis of the impact of monetary policy shocks on domestic output growth in Nigeria: evidence from dynamic ARDL and VECM tests. *International Journal of Public Policy*, 16(1), 13-25. https://doi.org/10.1504/IJPP.2021.121955

Iorember, P. T., Jelilov, G., Alymkulova, N., & Yua, P. M (2022). Reconsidering the nexus between monetary policy and economic growth in Nigeria: The role of interest rate, money supply, and financial inclusion. *International Social Science Journal*, 72(224), 339-351. https://doi.org/10.1111/issj.12324

Jungo, J., Madaleno, M., & Botelho, A. (2021). The relationship between financial inclusion and monetary policy: A comparative study of countries in sub-Saharan Africa and Latin America and the Caribbean. *Journal of African Business*, 1-22. https://doi.org/10.1080/15228916.2021.1930810

Kriesler, P. and Lavoie, M. (2016). A critique of the New consensus view of monetary policy. In post-Keynessian essays from down under volume 11. *Essay on political and applied Economics* (pp.61-68). Palgrave Macmillan, London. https://doi.org/10.1057/9781137475350_5

Kumar, L. S. and Kumar, B. A. (2016). Does financial inclusion affect monetary policy in SAARC countries? *Cogent Economics & Finance*, 4: 1127011. https://doi.org/10.1080/23322039.2015.1127011

Lahcen M. A. and Gomis-Porquera, P. (2021). A Model of Endogenous Financial Inclusion: Implications for Inequality and Monetary Policy. University of Zurich Department of Economics: Working Paper

Lapukeni, A. F. (2015). The impact of financial inclusion on monetary policy effectiveness: the case of Malawi. *International Journal of Monetary Economics and Finance*, 8(4), 360-384. https://doi.org/10.1504/IJMEF.2015.073229

Lenka, S. K., & Bairwa, A. K. (2016). Does financial inclusion affect monetary policy in SAARC countries? *Cogent Economics & Finan*ce, 4(1), 1127011. https://doi.org/10.1080/23322039.2015.1127011

Lennman, O. (2016). The Fiscal Spending Multiplier in a Panel of OECD Countries (Dissertation). Retrieved from http://urn.kb.se/resolve?urn=urn:nbn:se:umu:diva-129233.

Levin, A., Lin, C. F., & Chu, C. S. J. (2002). Unit root tests in panel data: asymptotic and finite-sample properties. Journal of *Econometrics*, 108(1), 1-24. https://doi.org/10.1016/S0304-4076(01)00098-7

Mbutor, M. O. and Uba, I. A. (2013). The Impact of Financial Inclusion on Monetary Policy in Nigeria. *Journal of Economics and International Finance*, 5(8), 318-326. https://doi.org/10.5897/JEIF2013.0541

Mehrotra, A., & Nadhanael, G. V. (2016). Financial inclusion and monetary policy in emerging Asia. In *Financial Inclusion in Asia* (pp. 93-127). Palgrave Macmillan, London. https://doi.org/10.1057/978-1-137-58337-6_4

Mehrotra, A.N. and Yetman, J. (2015). Financial Inclusion-Issues for central banks. BIS Quarterly Review, pp. 43-57.

Merhotra, N., Puhazhendhi, V., Gopakumaran, G.N. and Sahoo, B.B. (2009). Financial Inclusion - An Overview, Department of Economic Analysis and Research - National Bank for Agriculture and Rural Development, Mumbai.

Musa, M. S., Jelilov, G., Iorember, P. T., & Usman, O. (2021). Effects of tourism, financial development, and renewable energy on environmental performance in EU-28: does institutional quality matter? *Environmental Science and Pollution Research*, 28(38), 53328-53339. https://doi.org/10.1007/s11356-021-14450-z

Nsiah, A. Y., Yusif, H., Tweneboah, G., Agyei, K., & Baidoo, S. T. (2021). The effect of financial inclusion on poverty reduction in Sub-Sahara Africa: Does threshold matter? *Cogent Social Sciences*, 7(1), 1903138. https://doi.org/10.1080/23311886.2021.1903138

Oleschak, R. (2021). Financial inclusion, technology and their impacts on monetary and fiscal policy: Theory and evidence (No. 2021-04). Swiss National Bank.

Ozili, P. K. (2021). Has financial inclusion made the financial sector riskier? *Journal of Financial Regulation and Compliance*, 29(3), 237-255. https://doi.org/10.1108/JFRC-08-2020-0074

Ozili, P. K. (2022). Financial inclusion and sustainable development: an empirical association. *Journal of Money and Business*, 2(2), 186-198. https://doi.org/10.1108/JMB-03-2022-0019

Ozili, P. K., & Iorember, P. T. (2023). Financial stability and sustainable development. International Journal of Finance & Economics. https://doi.org/10.1002/ijfe.2803Pesaran, M. H. (2007). A simple panel unit root test in the presence of cross-section dependence. *Journal of Applied Econometrics*, 22(2), 265-312. https://doi.org/10.1002/jae.951

Ozili, P. K., Ademiju, A., & Rachid, S. (2023a). Impact of financial inclusion on economic growth: review of existing literature and directions for future research. *International Journal of Social Economics*, 50(8), 1105-1122. https://doi.org/10.1108/IJSE-05-2022-0339

Ozili, P. K., Oladipo, O., & Iorember, P. T. (2023b). Effect of abnormal increase in credit supply on economic growth in Nigeria. *African Journal of Economic and Management Studies*, 14(4), 583-599. https://doi.org/10.1108/AJEMS-02-2022-0036

Usman, O., Alola, A. A., & Saint Akadiri, S. (2022). Effects of domestic material consumption, renewable energy, and financial development on environmental sustainability in the EU-28: Evidence from a GMM panel-VAR. *Renewable Energy*, 184, 239-251. https://doi.org/10.1016/j.renene.2021.11.086

Westerlund, J., & Edgerton, D. L. (2007). A panel bootstrap cointegration test. *Economics Letters*, 97(3), 185-190. https://doi.org/10.1016/j.econlet.2007.03.003

World Bank, (2016). Financial development. Washington, DC, World Bank http://www.worldbank.org/en/publication/gfdr/gfdr-2016/background/financial-development

Yin, X., Xu, X., Chen, Q., & Peng, J. (2019). The sustainable development of financial inclusion: how can monetary policy and economic fundamentals interact with it effectively? *Sustainability*, 11(9), 2524. https://doi.org/10.3390/su11092524