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Interest Rate Volatility, Monetary Policy and Financial Sector in Developing Countries

David Umoru[1], Fabius Oshiotse Imimole[2], Benjamin O. Abere[3]

Abstract: The study investigated the effects of interest rate volatility and changes in money supply policy on the financial sector of selected African countries. The dynamic panel model and GARCH model were used for estimation. A secondary data collection instrument was used. A sample of ten countries in the African Union was used for analysis. In terms of policy findings, the results revealed that interest volatility and money supply were stationary, and co-integrated with long-run equilibrium relationships among African Union member countries within the study periods. Interest rate volatility negatively impacted the financial sector stability in African Union countries. A percentage increase in the volatility in interest rate accounted for 0.19 percent instability in the financial system of the African Union economies while a similar proportion of variation in money growth stabilized the financial sector by 0.18 percent. Negative spikes or trends of interest rate variability in the financial sector were found for all the African Union member states considered in this study. Specifically, the financial sectors of developing nations are at risk in the presence of volatility in the interest rate. With the fixed effect model, financial sector stability had its impact at lag 1 and it was extensively significant. The originality of the research derives from the fact that the methodologies of the dynamic panel model and GARCH model were deployed in evaluating the effects of variations in interest rate and money growth on the financial sectors of African countries. Interest rate volatility had a Granger causality effect on the financial sector stability of African Union member states in the short run. The study accordingly recommends the need for the governments of the countries covered by the study to intensify efforts to enhance robust financial sector stability by implementing a friendly interest rate policy. Policymakers of the African Union should be guided by the sensitivity of the financial sector of the AU economies to variations in interest rates. Taken together, a stable monetary system is a considerable tool for sustaining the stability of the financial system.

Keywords: African union; financial sector stability; money supply; interest rate volatility, dynamic panel model

[1]   Department of Economics, Edo State University Uzairue, Iyamho, Nigeria, david.umoru@yahoo.com/david.umoru@edouniversity.edu.ng
[2] Department of Economics, Edo State University Uzairue, Iyamho, Nigeria, Edo State University, Uzairue, Nigeria.
[3] Department of Economics, Edo State University Uzairue, Iyamho, Nigeria, Edo State University, Uzairue, Nigeria.

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1. Introduction

Most central banks throughout the world are currently focused on financial stability. Through its influence on economic variables, monetary policy is fundamental in macroeconomic administration. The intermediate variables most often targeted by monetary policymakers include short-term rate of interest, money supply, and exchange rate (Alavinasab, 2016; Anowor & Okorie, 2016). Monetary policy is a weapon used by a country's central monetary authority to affect the country's intended economic objectives. Monetary policy and interest rates are currently used in many African countries, but most of them are designed in such a way that they do not reflect the developing nature of their financial markets, resulting in a lot of inconsistencies in their operations due to the challenges that the financial markets face. Monetary policy measures, which include interest rates as well, have been implemented at various times in an attempt to address some of the financial sector's chronic issues. Several African governments have implemented economic restructuring initiatives. In general, when monetary policy and interest rates are not critically built to expand the financial sector, the financial industry's growth and development could be roasted. To avoid such occurrences, an analysis of the impact of monetary policy and interest rates on the financial sector to date is required, so that areas where better restructuring and reforms are required to achieve a flourishing financial sector can be identified; this is the motivation for this paper.

Considering the research problem the following research questions are stated as follows: Do monetary policy and interest rate volatility have an impacting influence on the African financial sectors? Our objective is to measure how monetary policy influences Africa's financial sector and also, to evaluate the dynamic relationship between interest rate volatility, and the financial sector development of African countries. The study hypothesizes that, monetary policy does not influence Africa's financial sector, and that there is no dynamic relationship between interest rate volatility and financial sector development of African countries. In this paper, we shall be referring to six AU countries for the analysis within the scope of the study which is from 2010 to 2022. The literature review is next. Theoretical framework and data transformation are covered in section 3. Section 4 presented and discussed the estimation results. The fifth section provides a summary as well as policy suggestions and a conclusion.

2. Survey of Relevant Literature

An interest rate theory is a statement that attempts to account for the monetary policy instrument while also providing an ordered explanatory knowledge of microeconomic stability. Many theories exist that attempt to explain interest rate behavior. These include the following: Classical theory of interest rate, Keynesian theory, general equilibrium approach (modern), and liquidity theory for bank operations. The classical theory establishes an automatic relationship between the key variables of savings and borrowings (dependent variables) and interest rates (independent variables). It ensures the amount of savings and profitability is equal to the volume of investments and borrowings, except for transitory volatility. As a result, as long as monetary policymakers follow a balanced interest rate policy, the volume of growth can only deviate by a small amount from the volume of savings and investments. The classical theory's core premise is that only changes in interest rates drive changes in investments, savings, and profitability. In particular, an upsurge in interest rate, economic performance, and profitability decreases; savings increase. Hence, borrowings, savings, or investments would not change a bit once the interest rate remains unchanged. As the rate of interest rises, the amount of borrowing and investment decreases, severely impacting commercial banks' profitability and overall performance.

The key distinction between Keynesian and classical theories is that in classical theory, incomes vary to equalize savings and investments, but in Keynesian theory, the rate of interest achieves the same. One of the most significant processes for modifying savings, borrowings, and investments is thought to be in reaction to changes and oscillations in interest rate schedules, according to Keynes's theory. The contemporary interest rate theory outperforms classical and Keynesian interest rates. This is because it successfully interacted with rates of interest on demand for money, supply of money, savings, and investment one-to-one. Modern interest rate theory upholds equality between savings (S) and investment (I), money demand (Md), and money supply (Ms). These are reported in equations (1) and (2) respectively.

$$I = S \tag{1}$$

$$Md = Ms \tag{2}$$

Consequently, money income and interest rates will fluctuate until the amount of money income and the interest rate are restored to a point where both sectors of the economy are in balance. Liquidity theory for bank operations states that banks' failure to satisfy urgent client withdrawal demands leads to a drop in deposits, credit, and, as a result, bank runs. Banks that are prone to bank runs pose a danger to the financial system's stability in this situation. As a result, central banks should constantly take steps to ensure that banks can fulfill depositor withdrawal requests. Nassredine, Sessi, & Anis (2013) conducted a similar analysis and identified the size

of commercial banks, commercialization capital, liquidity, and credit control. They were able to utilize a cognitive mapping approach to evaluate the influence of each determinant by using data from prior studies. However, the interest rate was a constant element that was an obvious predictor of financial performance.

Nduati (2012) investigated the influence of interest rate spreads on commercial bank performance. The study discovered that financial institutions affected interest rate spreads. Low spreads were viewed as providing strong foundations for financial organizations looking to gain a competitive advantage. The study revealed that the interest rate spread is the most important element in predicting the financial performance of commercial banks. Apir (2015) explored the impact of interest risk on commercial bank performance in Nigeria, focusing on the link between interest rate and overall performance. The research employed descriptive analysis of selected Nigerian commercial banks. The study concluded that the existence of uniform interest rates led to stiff competition among commercial banks.

The study by Ozili (2023) reported that the rising monetary policy rate had a negative influence on all indicators of financial enclosure. Liu et al. (2022) found a considerable positive effect of net interest rate boundaries on bank loans in South Asian countries. In addition, the study found a significant positive association between variability in the interest rates and the broad money in circulation. The research by Gulcay & Hamed (2021) reported that interest rate volatility and indicators of banking sector development are negatively and significantly related. However, the volatility in interest rates stimulates instability in the financial system. This connection between high volatility in the interest rates and banking sector development is concave. There are empirical researches that reported a significant positive impact of money supply on returns of the banking system, money supply on stock liquidity, money growth, and inflation. These studies include Butt et al. (2022); Molyneux et al (2022), Shabbir (2022), Gharehgozli & Lee (2022), Zeqiraj et al. (2022), Ozili (2023c), Said, et al. (2021), McMillan (2021), Ramos et al. (2021), Shahzadi et al. (2021), Ehsan et al.(2021), Shabbir & Wisdom (2020).

Some copious researchers extended their research to financial inclusion and policy-related factors other than variation in money supply and interest rates that could improve the performance of the financial sectors in developing economies. Amongst such studies, we have Gronbach (2023) for SSA, Khan et al. (2023) for Pakistan, Ozili (2023a), Ozili (2023b) for 48 LMICs, Ozili (2023e), Shaikh et al. (2023) for the Ghanaian economy, Gupta et al. (2022), Lee et al (2022) for 21 emerging countries, Zeqiraj et al (2022) for 23 emerging countries, Kumar & Pathak (2022) for India, Lu et al (2021), Ozili (2021), Zeqiraj et al (2020), Koomson et al. (2020), Barajas et al. (2020), Yetman (2018), and Nelson et al (2018).

3. Econometric Methodology

Our methodology is rooted in the equality of savings and investment theory of Keynes. The Keynesian theory held that borrowers' speculative activity stabilized the interest rate. Borrowers have a concept of the usual rate of interest, and they will stop borrowing if current savings and investments cause even minor changes in the price or cost of borrowings, keeping the real rate of interest from fluctuating much below the normal rate. When there is a shift in savings, investments, borrowings, and profitability, the equilibrium restoring mechanism in the Keynesian theory is income fluctuations assuming interest rates are neither volatile nor prone to fluctuations. In what follows, this study employs Miyajima, Omi & Saito (2010) modified version of the econometric model as used by Kyereboah & Nicholas-Biekpe (2006) in conducting a panel or cross-sectional study. Miyajima, Omi & Saito (2010) econometric model is given as follows:

$$Q_{it} = \alpha_0 + \alpha_1 X_{it} + e_t \tag{3}$$

where:

Q_{it} = denotes explanatory variables

α_o = panel regression constant

α_i = coefficient of regressors

X_{it} = vector of GDP and includes: institution and governance

e_t = error or disturbance term that influences Q but is not included in the model

This model is therefore expanded to provide the dynamic panel regression model equations that model the research hypotheses earlier stated. These are stated as follows:

Model 1: Pooled Model

$$FD_{it} = \alpha_0 + \delta FD_{it-1} + \alpha_1 IT_{it} + \alpha_2 MS_{it} + \varepsilon_{it} \tag{4}$$

Model 2: Fixed Effect Model

$$FD_{it} = \beta_0 + \delta FD_{it-1} + \beta_1 IT_{it} + \beta_2 MS_{it} + u_{it} \tag{5}$$

Model 3: Generalized Moment Method model

$$FD_{it} = \delta FD_{it-1} + \gamma_1 IT_{it-1} + \gamma_2 MS_{it-1} + v_{it} \tag{6}$$

Where: FD is financial sector stability (dependent variable)

IT is an interest volatility rate

MS is the money supply

α_0, β_0 is intercept estimates

$\alpha_i, \beta_j, \gamma_k$ are coefficients of the independent variables in pooled, fixed effect, and generalized moment method models

FD_{it-1} is dependent variable at lag 1

$it-1$ are independent variables at lag 1

$\varepsilon_{it}, u_{it}, v_{it}$ are the error terms for cross-section i at period t.

The adapted model for this study is transformed in the logarithmic form to make the variables unit of measurement dimensionless and also take care of non-linearity problems of estimation and the model is expressed as follows:

$$LnFD_{it} = \alpha_0 + \delta LnFD_{it-1} + \alpha_1 LnIT_{it} + \alpha_2 LnMS_{it} + \varepsilon_{it} \qquad (7)$$

$$LnFD_{it} = \beta_0 + \delta LnFD_{it-1} + \beta_1 LnIT_{it} + \beta_2 LnMS_{it} + u_{it} \qquad (8)$$

$$LnFD_{it} = \delta LnFD_{it-1} + \gamma_1 LnIT_{it-1} + \gamma_2 LnMS_{it-1} + v_{it} \qquad (9)$$

The model for prediction will be expressed as in the equation

$$Zscore\_c\,FD_{it} = \delta LnFD_{it-1} + \gamma_1 LnIT_{it-1} + \gamma_2 LnMSI_{it-1} + V_{it} \qquad (10)$$

Where Zscore is a measure of bank financial sector health and our proxy for performance), α_0, β_0 is intercept estimates, $\alpha_i, \beta_j, \gamma_k$ are coefficients, c represents countries (Ten African Union countries, namely, Nigeria, Benin, Angola, Chad, Botswana, Congo Republic, Equatorial Guinea, Algeria, and Cape Verde). Interest volatility was estimated using GARCH techniques while data on the money supply of African countries were sourced from the World Bank Database for 2010 to 2022. Data analysis was extended to trend analysis of financial sector stability and interest rate volatility, while the dynamic panel model and GARCH model were used for estimation.

4. Results and Discussion

The financial sector stability of African Union countries (LnFD) follows an unstable pattern. There is great evidence of significant spikes in African Union member countries' financial sector stability-LnFD countries between 2016 and 2018 in Central Africa

Republic and 2011 in Lesotho, Uganda in 2014, and Zambia in 2016. Spikes in financial sector stability were seen within the periods of 2010 through to 2019 in eight (8) African Union experienced negative trends. The most significant negative countries' financial sector stability were Congo-CON in 2016, Ghana-GHA in 2012, Lesotho in 2017, and Uganda in 2011. The findings suggest an unstable pattern of financial sector stability in the African Union countries with prolonged periods of positive financial sector stability in 10 African Union countries.

Table 1. Summary of Descriptive Statistics

Mean	2.675572	1.642013	4.572067
Median	2.988123	1.737390	4.603221
Maximum	4.399930	2.821278	4.875828
Minimum	-1.742193	0.101352	4.169261
Std. Dev.	1.246043	0.669425	0.151744
Skewness	-1.678333	-0.120665	-0.456066
Kurtosis	5.956167	1.960575	2.987674
Jarque-Bera	83.35887	4.744349	3.467238
Probability	0.000000	0.093278	0.176644
Sum	267.5572	164.2013	457.2067
Sum Sq. Dev.	153.7096	44.36490	2.279611
Observations	100	100	100

Source: Authors' results estimated with Eviews 10
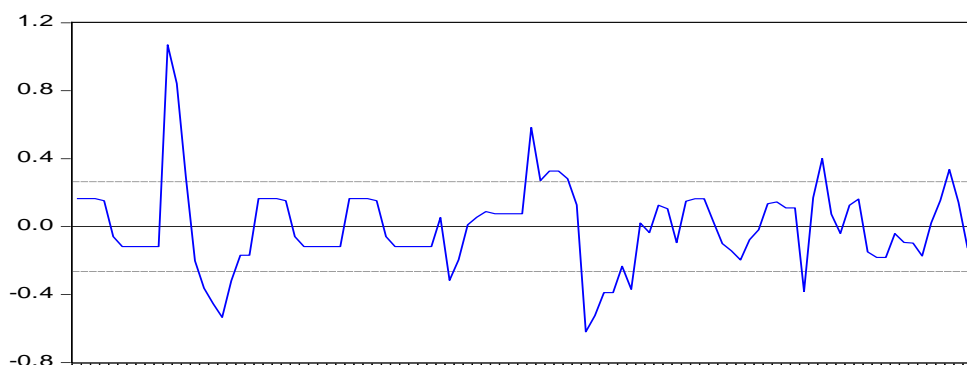
Figure 1. Trend Analysis of Interest Rate Volatility in Ten Countries of the African Union
Authors' Plot with Eviews 10

The trend analysis of interest volatility rates among the ten AU countries revealed a stochastic pattern of unstable performance across the countries. Significant positive spikes of interest volatility rates were present in AU countries and correspondence negative interest rate volatility among the ten AU countries within the years 2010 to 2022. The findings suggest evidence of an unstable pattern of interest volatility rates in the African Union countries with prolonged periods of positive interest rates in the

African Union. The stationarity status of the log of interest rate-LnIT, log of money supply-LnMS on the log of financial development-LnFD of selected Africa Union member countries was investigated using the Fisher-Phillips Perron-Choi Z-stat test, and the results presented in Table 2. Interest volatility-LnIT and money supply-LnMS were stationary at order 1, 1(1). However, financial sector stability-LnFD was stationary at level, I(0) as the Phillip Perron- Choi Z-stat value exceeded 5% CV with a p-value lower than 0.05 as shown in Table 2.

Table 2. Unit Root Test Results

Variables	Order	Fisher- PP Test	P-value
LnFD	I(0)	-2.4046	0.0081
LnIT	I(1)	-3.7515	0.0001
LnMS	I(1)	-4.8567	0.0000

Source: Authors' results estimated with Eviews 10

Lag selection criteria were adopted on several selection criteria at lag 6 (see Table 3).

Table 3. Lag length selection

Lag	LogL	LR	FPE	AIC	SC	HQ
0	3732.061	NA	3.34e-8	-186.31*	-185.496	-185.82
1	3527.05	-338.26*	1.49e-8*	-175.31	-174.416*	-174.98*
2	3468.600	-87.67733	4.45e-79	-171.9300	-170.6633	-171.4720
3	3434.895	-45.50118	3.92e-78	-169.7948	-168.1481	-169.1994
4	3406.839	-33.66754	2.68e-77	-167.9420	-165.9153	-167.2092
5	3390.119	-17.55632	1.08e-76	-166.6559	-164.2493	-165.7858
6	3337.284	-47.55107	2.79e-75	-163.5642	-160.7776	-162.5567

* indicates lag order selected by the criterion
Source: Authors' results estimated with Eviews 10

Table 4 reveals co-integration among the variables of interest volatility-LnIT and money supply-LnMS on financial sector stability-LnFD in African Union countries, hence long-run equilibrium relationship holds among the variables of interest rate volatility, money supply, and financial sector stability in African Union member countries within the study periods.

Table 4. Co-integrating Results

Test method	Statistic	Prob.	W. Statistic	Prob.
v-Statistic	-0.687531	0.7541	-0.709295	0.7609
rho-Statistic	0.589940	0.7224	0.389890	0.6517
PP-Statistic	-1.453406	0.0731	-2.600481	0.0047
ADF-Statistic	-3.203095	0.0007	-1.881659	0.0299

Source: Authors' results

Table 5 reports the pooled, fixed effect, and GMM panel model estimates respectively. In the pooled model of interest rate volatility-LnIT and money supply-LnMS on financial sector stability-LnFD of AU member countries which does not allow the heterogeneity of variables shows that the coefficients of interest rate volatility (LnIT) and changes in money supply (LnMS) have contrasting impacts on financial sector stability-LnFD in African Union countries. A percentage increase in interest (LnIT) and money supply (LnMS) accounted for 0.8 percent instability and 0.32 percent stability in the financial sector-LnFD of the African Union respectively. Non-increase in interest volatility (LnIT) and money supply (LnMS) impact on financial sector stability-LnFD variables in African Union countries by 2.25. All the variables of domestic credit-interest rate volatility (LnIT) and money supply (LnMS) are significant in the determination of financial sector stability in African Union countries. Financial sector stability-LnFD(-1) has its impact at lag 1 at 0.77 and is statistically significant.

The fixed effect model of panel data analysis of domestic credit measures- interest volatility (LnIT) and money supply (LnMS) in AU African countries on financial sector stability-LnFD tends to investigate the difference in the model intercept by allowing heterogeneity in time-variant indicated that interest volatility (LnIT) had adverse effect while money supply (LnMS) had considerable favorable impact on financial sector stability-LnFD in African Union countries. A percent increase in the volatility in interest rate accounted for a 0.51 percent instability in the financial sector-LnFD whereas a change in money growth of a similar proportion resulted in 0.66 percent stability in the financial sector-LnFD of African Union countries respectively. Non-increase in the interest volatility (LnIT) and money supply (LnMS) variables in African Union countries account for 5.10 financial sector stability-LnFD in African Union countries. All the variables of interest volatility (LnIT) and money supply (LnMS) indicate no significant relationship with financial sector stability-LnFD at a 5% level. At the fixed effect model, financial sector stability-LnFD(-1) has its impact at lag 1 at 0.53 and is statistically significant.

The finding of this study collaborated with Maddalin & Peydro (2013) and Nassredine, Sessi, & Anis (2013) that monetary policy rate influences bank stability to enhance financial stability using generalized least squares and GMM panel regression models. Waseem & Sattar (2014) and Apir (2015) have a direct link to the position of the findings of this study that interest rate volatility influenced profit earned by four commercial banks in Pakistan between 2008 and 2012 and on commercial bank performance in Nigeria. The findings disagreed with the assertion of Nduati (2012) that interest rate spread indicated a significant impact on the financial sector stability of African Union member countries within the years 2010-2022.

Table 5. Model Estimates

Pooled Panel Estimate Model			
Variable	Coefficient	t-Statistic	Prob.
LNFD(-1)	0.770	16.214	0.000*
LNIT	-0.811	-10.090	0.000*
LNMS	0.320	10.821	0.000*
C	2.129	1.236	0.220
Fixed Effect Panel Estimate Model			
Variable	Coefficient	t-Statistic	Prob.
LNFD(-1)	0.573	6.799	0.000*
LNIT	-0.512	-11.704	0.000*
LNMS	0.661	14.896	0.000*
C	5.103	1.440	0.154
First Difference GMM Panel Model			
Variable	Coefficient	t-Statistic	Prob.
LNFD(-1)	0.608	7.238	0.000*
LNIT(-1)	-0.187	-11.700	0.000*
LNMS(-1)	0.179	10.799	0.000*
C	1.190	67.234	0.000*

Source: Authors' results estimated with Eviews 10

The generalized moment method-GMM model of panel data analysis investigates the domestic credit measures of financial sector stability that, the ten (10) sampled African Union countries for the study have a common mean value for intercept. Interest rate volatility (LnIT) had a negative impact on financial sector stability-LnFD in African Union countries while changes in money supply (LnMS) had a significant positive influence on financial sector stability-LnFD in African Union countries. An increase in interest rate volatility (LnIT) and money supply (LnMS) accounted for 0.19 and 0.18 decrease and increase in financial sector stability-LnFD of AU member countries respectively. In the fixed effect model, financial sector stability-LnFD had a significant 0.573 impact at lag 1. Table 6 shows the role played by financial inclusion in the financial development and performance of the financial sector of African Union countries

Table 6. Financial Inclusion and Performance of Financial Institutions

Statistic	Pooled	Fixed Effect	GMM	
R-squared	0.778	0.800	Mean dependent var	0.085
Ad. R-squared	0.770	0.769	S.E. of regression	0.615
S.E. of regression	0.544	0.545	J-statistic	1.901
Sum squared resid	25.481	22.893	Prob(J-statistic)	0.168
Log-likelihood	-70.920	-66.100	S.D. dependent var	0.578

			Sum squared resid	29.127
F-statistic	100.333	25.723	Sum squared resid	29.127
Prob(F-statistic)	0.000	0.000	Instrument rank	4
Mean dependent var	2.755	2.755	-	-
S.D. dependent var	1.135	1.135	-	-
Akaike info criterion	1.665	1.758	-	-
Schwarz criterion	1.776	2.119	-	-
Hannan-Quinn criteria.	1.710	1.903	-	-
Durbin-Watson stat	1.995	1.789	-	-

Source: Authors' results estimated with Eviews 10

In comparing the three-stage dynamic panel models used in the evaluation of domestic credit measures- interest volatility (LnIT) and money supply (LnMS) on financial sector stability-LnFD of African Union countries, the results of pooled, fixed and GMM models have different coefficient values and test of significance of individual variables. This justifies the essence of analyzing dynamic panel data of cross-section and time series components. To find out the degree of the model's fit based on the R^2 values, the pooled model has 0.778 (77.8%); the fixed effect has 0.8000 (80.0%) and the GMM model has no R-square (R^2) value. However, about 23% and 23.1% total variation in financial sector stability-LnFD of African Union countries based on the selected proxies of domestic credit-interest volatility (LnIT) and money supply (LnMS) variables of African Union countries for the study did not explain variation in the financial sector stability-LnFD of African Union countries due to some factors such as some member countries government inefficiency, policy issue, insecurity challenges, international trade, fail in bilateral relations and political instability. As shown by Table 7, variables of financial sector stability-LnFD and domestic credit measures (money supply-LnMS and interest volatility-LnIT) were not normally distributed at a 5% level. The results advocate no serial correlation

In selecting the best model for estimation, we conducted the Hausman test under the guided hypothesis that, Ho: random effect model is suitable against H1: fixed effect model is suitable. The test follows the decision rule; if the associated probability value of the Chi-square statistic is less than 0.05 at 5%, Ho is accepted otherwise do not reject H1 which is p>0.05 at 5%. From Table 7, the result of the Hausman test for interest volatility and money supply on financial sector stability of AU member states are shown. The Hausman test suggested that the best model for estimating the impact of interest volatility and money supply on the financial sector stability of AU member states is the GMM model as the associated probability value of the Chi-square statistic is less than 0.05 at a 5% level of significance. In addition, the coefficient of financial sector stability-LnFD is lower than the pooled mean panel regression and fixed effect model estimates. Therefore, there is a downward bias hence, the GMM model is appropriate to estimate

interest volatility and money supply on the financial sector stability of AU member states.

Table 7. Hausman Test of Best Model Selection

Variable	Chi-Sq. Statistic	Chi-Sq. d.f.	Prob.
Model	27.548910	5	0.0000

Source: Authors' results estimated with Eviews 10

Engle Kao Granger's causality effect of interest volatility and money supply on the financial sector stability of AU member states are reported in Table 8. Financial sector stability Granger causes Interest volatility but Interest volatility does not Granger cause financial sector stability of AU member states as the probability value is 0.0095<0.05 at 5%. However, financial sector stability does not granger money supply, and money supply does Granger cause financial sector stability as it has a probability value of 0.6600>0.05 at a 5% significance level. The findings confirmed that money supply on financial sector stability of AU member states has no directional causal effects. However, there is strong evidence of a unidirectional causal effect of interest volatility on the financial sector stability of AU member states. This implies that in the short run, interest volatility influences the financial sector stability of AU member states.

Table 8. Engle Kao Granger Causality Results

Null Hypothesis:	F-Statistic	Prob.	Remark
LNFD does not Granger cause LNIT	2.72515	0.0393	Unidirectional causality
LNIT does not Granger cause LNFD	0.70480	0.5923	
LNMS does not Granger cause LNFD	11.18734	0.006	Uni-causality
LNFD does not Granger cause LNMS	0.26080	0.0007	

Source: Authors' results estimated with Eviews 10

Table 9. Garch-Estimates

Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	2.738202	0.043001	63.67833	0.0000
Variance Equation				
C	0.746772	3.440360	0.217062	0.8282
ARCH(1)	1.531128	0.306648	4.993110	0.0000
GARCH(1)	-0.010356	0.021416	-0.483548	0.6287
LNIT	-0.160355	0.046898	-3.419248	0.0006
LNMS	0.063685	0.750301	0.084880	0.9324
R-squared	-0.002552	Mean dependent var	2.675572	
Adjusted R-squared	-0.055879	S.D. dependent var	1.246043	
Variable	Coefficient	Std. Error	z-Statistic	Prob.
C	1.765061	0.018342	96.22880	0.0000
Variance Equation				

C	0.054056	0.018299	2.954075	0.0031
ARCH(1)	0.970444	0.074764	12.98013	0.0000
GARCH(1)	-0.032849	0.009870	-3.328067	0.0009
R-squared	-0.034128	Mean dependent var	1.642013	
Adjusted R-squared	-0.066444	S.D. dependent var	0.669425	
Convergence achieved after 16 iterations				
Bollerslev-Wooldridge robust standard errors & covariance				

Source: Authors' results estimated with Eviews 10

5. Conclusion

This study examined the impact of interest volatility and money supply on the financial sector in African Union member countries from 2010 to 2022. The findings revealed negative spikes or trends of interest rate variability in the financial sector of all the African Union member states considered in the study. Interest volatility rate had a Granger causality effect on the financial sector stability of AU member states in the short run. The summary of the findings is as follows:

1. The findings suggest evidence of an unstable pattern of interest rate volatility in the African Union countries with prolonged periods of rising interest rates. Besides, interest rate volatility and money supply have opposing effects on financial sector stability in African Union countries. An increase in interest volatility stimulated 0.19 percent instability of the financial sector of AU member countries while it resulted in 0.18 percent stability of the financial system of AU nations. In sum, the financial sectors of developing nations are at risk in the presence of volatility in the interest rate. An empirical finding that corroborates the research findings of Gulcay & Hamed (2021). The findings suggest an unstable pattern of financial sector stability in the African Union countries for a prolonged period.

2. The financial sector stability of African Union countries based on the selected proxies of domestic credit-interest volatility and money supply variables significantly explain variation in the financial sector stability of African Union countries. The findings confirmed that money supply on financial sector stability of AU member states has no directional causal effects. However, there is strong evidence of a uni-directional causal effect of interest volatility on the financial sector stability of AU member states. The coefficient of financial sector stability is lower than the pooled mean panel regression and fixed effect model estimates. Therefore, there is a downward bias hence, the GMM model is appropriate to estimate interest volatility and money supply on the financial sector stability of AU member states.

There should be an effort by the governments of AU member countries to implement all the instruments of the institutional index to enhance robust financial sector stability. Strong and sustainable monetary policy measures must be executed and imbibed by all AU member countries to drive meaningful financial sector stability

in the African region. By and large, policymakers of the African Union should be guided by the sensitivity of the financial sector of emerging countries of the African Union to variations in interest rates. In all, a stable monetary system is a considerable tool for sustaining the stability of the financial system/institutions.

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