

Financializing West African Regional Economy for Currency Stability: A Panel Autoregressive Distributive Lag Analysis

Kolawole Subair*

Department of Economics, Nigerian Army University, Biu, Nigeria

Sodiq O. Jimoh

Department of Economics, Kwara State University, Malete, Nigeria

Abstract

West African currencies have been susceptible to vagaries in the international trading activities of the region and this has continued to distort its growth and development. Most of these economies have been facing the problems of stagflation arising from the vulnerability of their currencies to various shocks in the world market. This therefore makes their exchange rates to be unstable. More worrisome is the inability of most of these countries to meet their needs and hence, resort to massive importations with low foreign exchange earnings. Attempts at ensuring currency stability in the region through formation of common currency area have failed and thus, the perpetual exchange rate instability. Hence, the need to examine the impact of financialization on exchange rate stability that often in turn impacts on domestic currency using Panel Autoregressive Distributive Lag (PARDL) analysis to estimate the dataset from 1996 to 2020. With this estimation, financialization and other control variables positively and significantly impact on exchange rate; hence on currency stability in the region to some extent. This study therefore recommends abrogation of black market so as to avoid round tripping and enhance the region's capital market efficiency among other solutions to achieving currency stability.

Keywords: Currency Stability, Financialization, Exchange Rate Stability, Panel Autoregressive Distributive Lag Model, West Africa.

JEL Classifications: C33, E44, F31, F33

*Corresponding author

E-mail: kolasubair@gmail.com

Address: 1 Gombe Road, Biu/Borno.

1. Introduction

The West African sub-region is one of the five sub-regions in Sub-Saharan Africa. It is considered the second largest in Africa, comprising 16 countries and Saint Helena, a United Kingdom territory (World Atlas, 2019). The sub-region exhibits significant linguistic and colonial diversity, with nine Francophone countries—Senegal, Mali, Guinea, Mauritania, Ivory Coast, Burkina Faso, Togo, Benin, and Niger—adopting French as their official language. The Anglophone countries include Gambia, Sierra Leone, Liberia, Ghana, and Nigeria, while Cape Verde stands as the only Portuguese-speaking nation in the region. The sub-region has a combined gross domestic product (GDP) that varies widely, ranging from US\$452 million in Niger to US\$3,678 million in Cape Verde as of 2018 (AfDB, 2019). Economic growth in the region has been inconsistent, with West Africa's GDP projected to grow by 3.6 percent in 2019, slightly lower than the continent's average growth of 4 percent and East Africa's 5.9 percent. The sluggish growth rate has been largely attributed to Nigeria's economic recession in 2016, given its status as the largest economy in the region.

The macroeconomic and financial dynamics of West Africa can be better understood through the lens of the "impossible trinity" or Mundell-Fleming trilemma, which posits that a country cannot simultaneously achieve all three of the following: a fixed exchange rate, independent monetary policy, and free capital mobility. In the context of West Africa, most countries have historically prioritized exchange rate stability due to their trade structures and inflation concerns. However, this has often come at the expense of monetary policy independence or capital mobility. The eight members of the West African Economic and Monetary Union (WAEMU), for example, operate under a fixed exchange rate system with the CFA franc pegged to the euro, ensuring exchange rate stability but limiting monetary policy autonomy. On the other hand, countries like Nigeria and Ghana have more flexible exchange rate regimes, allowing for some degree of monetary policy independence but facing currency volatility. The extent of financialization in the region plays a crucial role in determining how these trade-offs manifest, as deeper financial markets can enhance the effectiveness of monetary policy and cushion exchange rate fluctuations.

Theoretically, a well-developed financial system fosters economic resilience by improving capital allocation, increasing investment efficiency, and mitigating external shocks. Channels through which financial deepening impacts exchange rate stability include enhanced monetary transmission mechanisms, greater risk diversification, and improved liquidity management. In this study, financialization is examined from a structural perspective, focusing on the institutional and regulatory frameworks that shape financial systems in developing economies rather than purely on market efficiency. This approach is particularly relevant for West Africa, where financial markets remain underdeveloped, and access to credit is limited. Understanding these structural aspects is essential for policymakers aiming to balance exchange rate stability with broader macroeconomic objectives, especially in the context of ongoing discussions on monetary integration in the region.

Accordingly, financialization plays prominent roles in the development and stability of any nation/region. This is due to the fact that a well-coordinated financial sector ensures exchange rate stability; improves effectiveness of monetary policy; reduces the level of asymmetric information; enables a nation to cope with shocks and stabilizes inflation and output fluctuations (Ehigiamusoe, 2017). This is the more reason why the International Monetary Fund (IMF) prioritizes the achievement of financialization, economic growth and macroeconomic stability in the Low-Income Countries (LICs) above other objectives (Dabla-Norris et al., 2015). Buttressing this development is the trend of financialization (measured by broad money supply as a percentage of gross domestic products) in the West African Countries below in figure 1:

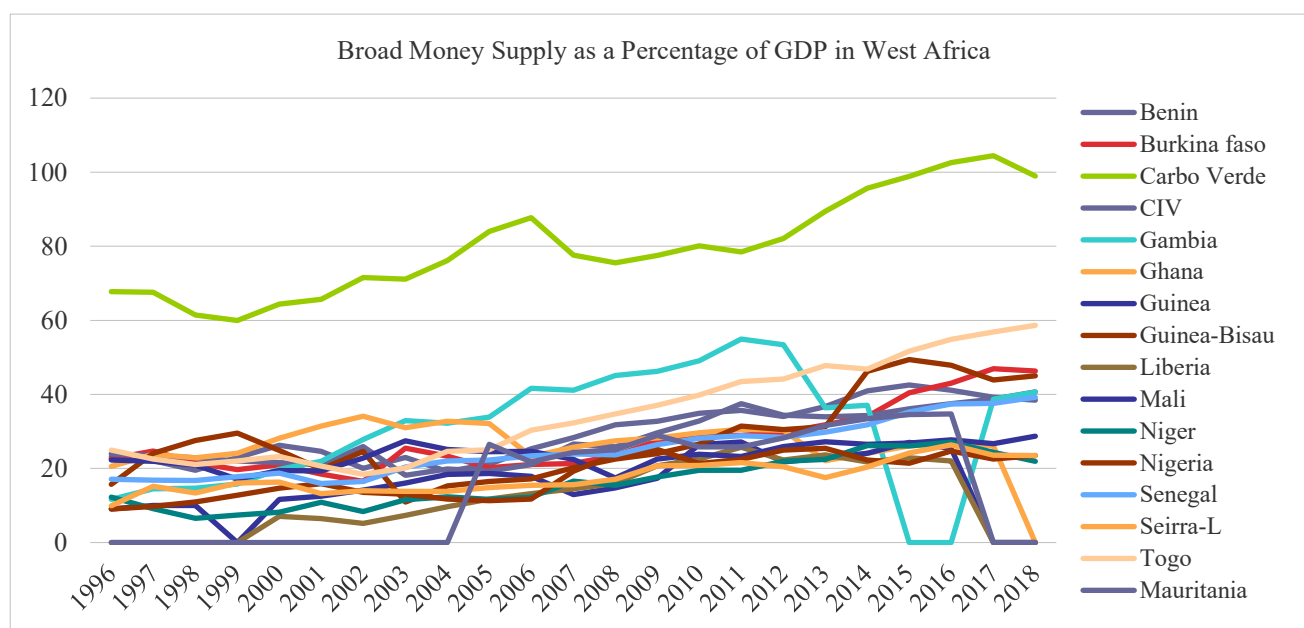


Figure 1. Trend of Financialization in the West African Countries

Source: International Monetary Fund (2019).

Table 1. Credit to Private Sector (% of GDP)

Years	2000	2005	2010	2015
Benin	7.7614	9.0343	15.6475	16.5779
Burkina Faso	10.3363	13.2962	16.6424	27.4216
Cape Verde	40.1315	39.1008	58.5656	55.4240
CIV	9.7619	8.8546	13.6834	19.2505
Gambia	6.7410	5.8522	10.0796	6.0922
Ghana	13.9714	15.5440	18.0717	16.0995
Guinea-Bissau	3.9883	5.6560	5.9185	9.11569
Liberia	4.5991	1.5962	12.9668	12.7480
Mali	1.9918	3.8096	10.0467	16.7523
Mauritania	13.5266	14.8439	19.5580	25.9482
Niger	3.8594	3.9533	9.9708	11.4148
Nigeria	8.2489	8.4350	10.6047	12.8520
Senegal	14.5755	15.6269	24.4324	29.6647
Sierra Leone	2.1080	0.0033	0.0055	0.0051
Togo	10.2678	10.5578	22.5003	29.6025

Source: World Development Indicators.

Figure 1 shows the trend of financialization of the sixteen countries in West Africa between the year 1996 and 2018. On the average, the rate of financial deepening proxy by the broad money supply as a percentage of GDP shows an upward trend in the whole sub-region. The upward trend could be attributed to some of the independent and collective financial development reforms in the late 1980s and the late 1990s. Some of these reforms include the removal of credit ceiling, liberalization of interest rate, restructuring of state-owned banks and the introduction of deposit insurance in some countries. However, despite the financial development reforms, the growth of financialization in the West Africa sub-region is still low when compared to other economies of the Sub-Saharan Africa, Latin America, OECD, East Asia and MENA regions. In addition, despite this upward movement in the trend of financial deepening in the sub-region, no country in the West African sub-region has been ranked among the top 120 countries in the world in terms of GDP per capita (Ehigiamusoe, 2017).

The table 1 presents the percentage of credit to the private sector as a proportion of Gross Domestic Product (GDP) for various West African countries over the years 2000, 2005, 2010, and 2015. This data offers insights into the financial sector's role in these economies and its evolution over the specified time frame. The table demonstrates that credit to the private sector as a percentage of GDP varies across years for each country. Some countries, like Burkina Faso and Cape Verde, have shown significant increases in private sector credit as a percentage of GDP, possibly indicating an expansion of private sector activity and access to credit. There are notable differences in the levels of private sector credit across countries. Cape Verde consistently has a relatively high percentage of credit to the private sector as a share of GDP, while Sierra Leone has relatively low values throughout the years. Trends in private sector credit can also be observed from the table. For example, Senegal experienced a consistent increase in private sector credit from 2000 to 2015, potentially reflecting economic growth and increased financing opportunities.

In a region characterized by diverse economic profiles, linguistic variations, and development challenges, the study's focus on financialization as a means to achieve currency stability carries profound implications. By examining the nexus between financial development, monetary policy effectiveness, and currency stability, the study offers a comprehensive framework for enhancing macroeconomic resilience and sustainable growth. The findings are poised to inform policymakers, economists, and financial institutions in West Africa, providing actionable insights into the strategic alignment of financial systems with broader economic objectives. Moreover, the study contributes to the ongoing discourse on regional economic integration and cooperation in West Africa, shedding light on the role of financialization as a catalyst for stability in the currency markets and, by extension, the broader economic landscape of the region.

This study makes significant contributions to the existing body of research by addressing a notable gap in empirical studies, particularly timely as the West African region contemplates the amalgamation of Anglophone and Francophone countries into a common currency framework, the ECO. An innovation lies in the application of the Panel Autoregressive Distributed Lag (ARDL)

methodology, which allows for a comprehensive examination of the long-term dynamics between financialization and economic stability in a diverse set of West African countries. This approach offers valuable insights into the potential impacts of financialization on currency stability and macroeconomic resilience, essential considerations for the region's ongoing economic integration efforts. As such, the study serves as a timely and relevant resource for policymakers and economists seeking to inform the development and implementation of effective monetary and financial strategies within this evolving regional context.

Apart from the Introduction in Section 1, this paper is structured into Literature and Data Set and Method of the Study in Sections 2 and 3 respectively. Section 4 presents the Empirical Results while Section 5 is the Conclusion of the paper with policy recommendations for achieving currency stability through a well structured and managed financial sector in order to stimulate financial markets and enhance investment, employment, output and income in the West African sub-region.

2. Literature Review

2.1 Currency Stability and Monetary Policy in African Economies

Currency stability is one of the core objectives of monetary authority. This could be through a direct intervention of central banks in fixing the interest rates and moderating the rate of inflation in order to ensure currency stability. African economies have witnessed currency instability over the years. The unstable values of their currencies have proved that the purchasing power parity (PPP) does not hold among these African countries. Most French speaking countries in Africa adopt a unified currency of their colonial master, some countries use their national currencies and some peg their currencies to other nations' currencies. In order to stabilize currencies in Africa, many of its sub-regions formed different monetary unions (common currency areas) at different times. Some of the existing monetary blocs in Africa include Southern African Development Community (SADC); West African Economic Monetary Union (WAEMU); West African Monetary Zone (WAMZ); East African Community (EAC) among others. The Optimum currency area (OCA) theory as pioneered by Mundell (1961) suggests the requirements that must be met by countries of a region intending to form a common currency area. Some of these requirements include high factor integration among countries, similar and low level of inflation rate, similarities in industrial structure and high degree of openness (Harvey & Cushing, 2015). The OCA theory is said to be optimal if the benefits of joining the union is more than the costs. One major demerit that countries may experience for joining a monetary union is the total surrender of their national central banks' autonomy since the regional monetary policy will be coordinated by the regional monetary authority (Debreu, Masson & Pattillo, 2005). A common currency area is expected to maintain law of one price of assets across the region, stabilize prices, enable symmetric shocks among countries and most importantly boosts the level of regional trade and financial transactions (Mckinnon & Schnabl, 2004).

The attainment of OCA criteria have been tested in some parts of Africa. Buigut and Valev (2005) used a Structural Vector Autoregressive Analysis (SVAR) to examine whether the East Africa monetary union is a common currency area. They found that the aggregate demand and supply shocks

of countries in the Eastern part of Africa are asymmetric in nature. By implication, the sub-region is yet to meet the OCA criteria. The studies of Harvey and Cushing (2015) as well as that of Debreu, Masson and Pattillo (2005) analysed the possibility of common currency union in West Africa and showed that the amalgamation of WAEMU and WAMZ to form a common currency union is not feasible due to heterogeneity factors among countries and fiscal obligations of countries like Nigeria. WAEMU as one of the existing common currency unions in Africa is made up of countries colonised by France and thus adopt CFA as their common currency. Prices of commodities and currency have been more stable in WAEMU than their counterparts WAMZ over the years. This is as shown in the trend of consumer price index in both WAMZ and WAEMU in figure 2.

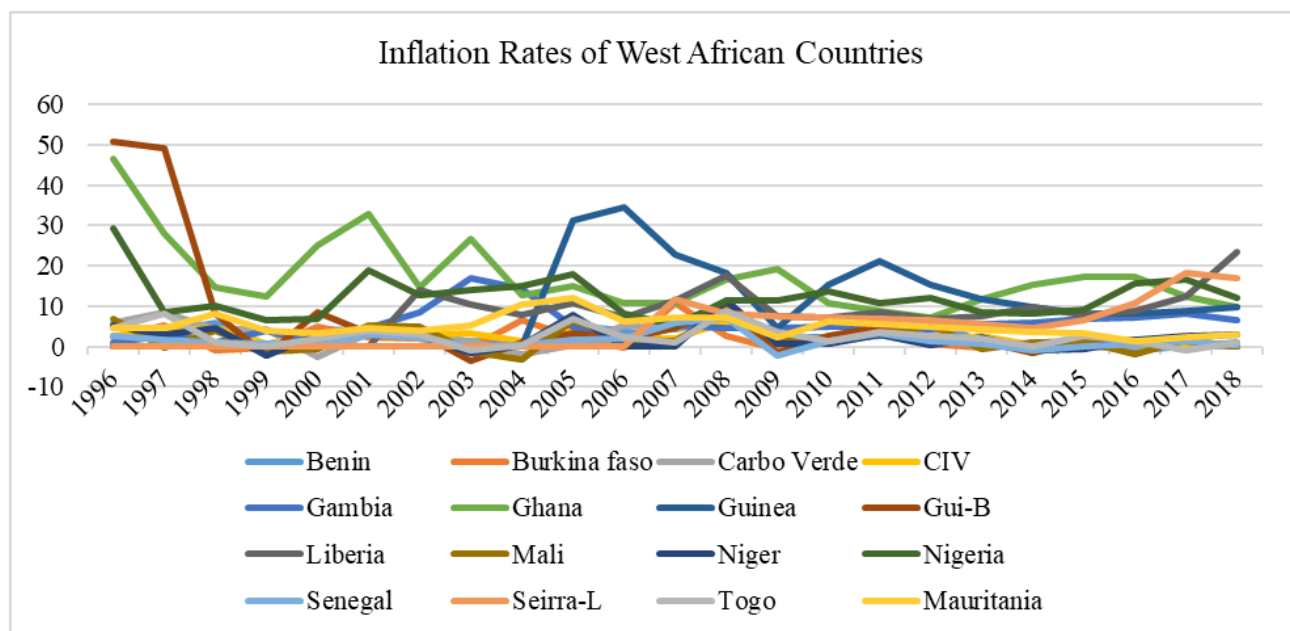


Figure 2. Inflation Rate of West African Countries

Source: International Monetary Fund (2019).

Figure 2 above shows that the inflation rate of countries in the WAEMU sub-region of West Africa is single digit and stable in recent time while most of the inflation rates of countries in WAMZ are double digits and not stable. This can be attributed to "asymmetric and unconventional policies" in dealing with inflation (Rajan, 2023) most especially by increasing interest rates that consequently impact financial markets negatively. For instance, Nigeria and Sierra Leone had 11.4 and 14.8 percent in the year 2019. The above statistics shows that the common currency adopted by the WAEMU plays major role in the stability of prices than the WAMZ countries that still use their national currencies till date. It is also important to note that not all countries in the West African region have met the convergence criteria of adopting ECO currency. The inability to meet the convergence criteria by some West African countries as well as for other reasons have stalled the adoption of ECO currency in the year 2020 as proposed. This therefore, made the citizens to resort to self help in adopting some digital currencies as alternative means of payment in international financial transactions.

However, despite the recent increase in financial deepening (as indicated by the growth of money supply) in West Africa coupled with the global acceptability of Cryptocurrencies as a result of high

returns and its sudden increase of market capitalization, it is observed that financial deepening in West African region is still below that of her counterparts in the developing and emerging economic blocs. Several studies have examined those factors that contributed to these major differences. The difference between West African financial deepening with other emerging and developed economic blocs has been traced to instability in their currencies mostly engendered by "monetary dominance" in which central banks independently set the interest rates without taken cognisance of fiscal policy. Accordingly, Brunnermeier (2023) opines that the financial dominance by central banks is a threat to "interaction between monetary and financial stability". This is due to high private debt, depressed risk premiums on financial assets, distorted price signals and heavy reliance of the private sector on central banks for bail outs during crisis (Brunnermeier, 2023).

2.2 Empirical Review of Financialization and Currency Stability

The empirical effect of financialization on currency stability has been very scanty in the existing literatures. But since the stability of a domestic currency depends on its exchange rate, the more stable the latter, the better for the former. While examining the determinants of exchange rate stability, most of the previous studies had focused on how macroeconomic variables influence exchange rate volatility of individual nations with less emphasis on the role of financial deepening on the stability of currency of a region that adopts common currency such as West Africa. For instance, Staneik (2007) analysed the factors that contribute to euro exchange rate volatility in the EU member countries. The study employed TARCH to measure the exchange rate volatility and regressed it against openness, news factor and the exchange rate regime. The study found a significant news effect on exchange rate volatility and found a negative association between openness and exchange rate volatility. In contrast, Elfaki (2018) examined the determinants of exchange rate stability in Sudan relying on an annual data between 1991 and 2016. The study employed an Autoregressive distributive lag model (ARDL) and found that exchange rate stability is negatively related to gross domestic product but positively related to money supply, inflation rate and trade openness during the year under review.

While Elfaki (2018) study could not captured the role of financial deepening as it affects exchange rate stability, contrariwise and using the time series data from 1989 - 2007 earlier on, Subair and Salihu (2010) rather examined the impact of exchange rate volatility on the stock market returns in Nigeria. With the error correction model however, the result indicated that 81% coefficient of determination with exchange rate had a negative but significant effect on stock market returns with a value of 1.96 (Subair & Salihu, 2010). In another vein, Subair (2018) examined the market capitalization's (CAP) impact of the margin between official exchange rate (OFR) and parallel market exchange rate (PMR) on exchange rate stability in Nigeria. Using the exogenous GARCH (GARCHX) model with the data from 2000 to 2017, market capitalization (CAP) appeared as negative but significant determinant of the overall volatility of exchange rate thus show casing the impact of financial deepening on exchange rate in the economy.

Saeed et al (2012) used ARDL approach to analyse the determinants of exchange rate of Pakistani Rupee to US Dollar using a monthly data between 1982 and 2010. The study reveals that stocks of money, foreign exchange reserve and debt have significant impact on exchange rate while political instability has a negative impact on exchange rate. Similarly in an extended study, Raza (2017) examined the determinants of exchange rate in Pakistan using a time series data between 1972 and 2013. The study employed ARDL with structural breaks and found a negative long-run association between exchange rate and terms of trade, trade openness and economic growth. It also found that money supply and inflation rate have a positive effect on exchange rate in Pakistan. Furthermore, Kilicarslan (2018) examined the determinants of exchange rate volatility in Turkey using data between 1974 and 2016. The study relied on the estimates of the fully modified ordinary least squares (FMOLS) and found that domestic investment, money supply and trade openness have positive association with exchange rate volatility while foreign direct investment, output and government expenditure have negative effect on exchange rate volatility in Turkey. However, Arsanious (2020) investigated the determinants of long and short-run real exchange rate for 30 countries between 1977 and 2017. The study employed the estimates of the pooled mean group (PMG) and found GDP per capita, inflation rate, money supply, claims of government, government expenditure, trade, oil price and school enrolment as the major long-run drivers of exchange rate in those selected countries.

Going by the fact that plethora of previous studies have focused more attention on other macroeconomic factors influencing exchange rate stability by ignoring the very germane role of financialization in exchange rate stability and by extension domestic currency stability particularly in a region with uniform currency, it is expedient for this study to analyze the state of the two major components of the West African financial market.

3. Dataset and Methodology

3.1 Dataset

This study relies on annual secondary data sourced from the World Bank's World Development Indicators' database, CEPI and the International Monetary Fund (IMF). The equilibrium real effective exchange rate is sourced from CEPI, real GDP and trade openness are sourced from the World Development indicators (2020) while the ratio of money supply to GDP and inflation rate are sourced from the IMF data base (2019). The data obtained are from 1996 to 2020. The choice of the period is due to the availability of data needed for this study.

3.2 Methodology of Study

The study relies on the estimates of the Panel Autoregressive Distributive Lag PARDL model in examining the impact of financialization on exchange rate stability and subsequently on domestic currency stability in the West African region. The equation is thus specified below:

$$ERS_{it} = \alpha_{0i} + \sum_{l=1}^p \alpha_{1li} ERS_{i,t-l} + \sum_{l=0}^p \alpha_{2li} FD_{i,t-l} + \sum_{l=0}^p \alpha_{2li} CTPS_{i,t-l} + \sum_{l=0}^p \alpha_{3li} INF_{i,t-l} + \sum_{l=0}^p \alpha_{4li} \log RGDP_{i,t-l} + \sum_{l=0}^p \alpha_{5li} TPN_{i,t-l} + e_{it} \quad (1)$$

From equation 1, ERS_{it} represents exchange rate stability proxy by equilibrium real effective exchange rate, FD_{it} is financialization index which is derived from the PCA of broad money supply as a percentage of GDP, credit to private sector and loan-deposit interest rate spread, INF_{it} is the inflation rate, $\log RGDP_{it}$ is the natural log of the real gross domestic product and TPN_{it} represents trade openness. Also, Δ is a parameter requiring estimation; e is the residual term; l is the lag-order, and subscripts t and i connote time and country, respectively. Re-parameterizing equation 1 by capturing the error correction method (ECM) term and incorporating the long term effect (variables within the parenthesis) and short term effect (variables involving Δ), the study obtained the following equation which explains the short-run and long run impact of the explanatory variables on the dependent variable.

$$\Delta ERS_{it} = \gamma_{0i} + \alpha_i [ERS_{it-1} - \beta_{1i} - \beta_{2i} FD_{it-1} - \beta_{3i} INF_{it-1} - \beta_{4i} \log RGDP_{it-1} - \beta_{5i} TPN_{it-1}] + \sum_{l=1}^{\rho-1} \alpha_{1li} \Delta ERS_{it-1} + \sum_{l=0}^{\rho-1} \alpha_{2li} \Delta FD_{it} + \sum_{l=0}^{\rho-1} \alpha_{3li} \Delta INF_{it} + \sum_{l=0}^{\rho-1} \alpha_{4li} \Delta \log RGDP_{it} + \sum_{l=0}^{\rho-1} \alpha_{5li} \Delta TPN_{it} + \varepsilon_{it} \quad (2)$$

The short-run dynamics are measured by the α_i 's while the long-run effect are captured by the β_i 's. The error correction term (ECT) which indicates the convergence rate towards equilibrium is captured by $(1-\alpha_i)$. Hence, the parameter of ECT must be negative and significant to indicate convergence (Pesaran *et al.*, 2001).

3.3 A priori Expectations

Apart from the coefficient of growth rate of real gross domestic product that is expected to have a negative effect on exchange rate stability ($\alpha_4 < 0$); all the coefficients of inflation rate, trade openness and financialization are expected to have positive effects on exchange rate stability ($\alpha_2, \alpha_3, \alpha_5, \alpha_6 > 0$).

3.4 Justification for the inclusion of Explanatory Variables

Credit to Private Sector as a Percentage of GDP: The level of credit extended to the private sector is a key indicator of financial stability. A high level of credit relative to GDP can indicate potential risks associated with over-leverage, which can lead to currency depreciation in times of economic stress (Zafar *et al.* 2019). Also, excessive private sector credit can exert pressure on an economy's exchange rate. Inclusion of this variable helps in assessing the potential impact of credit expansion on exchange rate stability.

Broad Money Supply as a Percentage of GDP: The proportion of broad money supply in relation to GDP reflects the effectiveness of a country's monetary policy. A significant increase in money supply can lead to inflationary pressures, which, in turn, can affect exchange rates (Mukherjee & Ouattara 2021). A high money supply-to-GDP ratio can also influence a country's ability to maintain foreign exchange reserves, which is crucial for exchange rate stability.

Loan-deposit interest rate spread: is included in the financialization variables because it reflects banking sector efficiency and financial intermediation costs, which influence capital flows and liquidity conditions. A high spread may indicate inefficiencies or risks, potentially leading to

exchange rate volatility due to speculative movements or constrained credit supply.

Inflation Rate: The exchange rate stability model often includes inflation rate, which suggests that in the long run, exchange rates should move in line with relative inflation rates (Aizenman 2011). Inflation affects relative price levels, influences external competitiveness, and plays a role in real exchange rate misalignment across countries. Empirical and theoretical literature, including the Purchasing Power Parity (PPP) theory and the Balassa-Samuelson effect, supports its inclusion, especially in a multi-country context where inflation differentials can drive long-term exchange rate adjustments.

Trade Openness: Trade openness measures the degree of a country's integration with the global economy. High trade openness implies greater susceptibility to external shocks, such as changes in international commodity prices or trade imbalances (Montalbano, 2011). These shocks can affect exchange rate stability.

Economic Growth: Economic growth is a fundamental determinant of exchange rates. Higher economic growth can attract foreign investment, leading to currency appreciation. Inclusion of economic growth helps account for this aspect in the model (Waqas et al. 2015).

4. Empirical Results and Analysis

4.1 Principal Component Analysis

This study employs Principal Component Analysis (PCA) to construct a financialization index using three key indicators: broad money supply as a percentage of GDP loan-deposit interest rate spread and credit to the private sector. PCA is a statistical technique that transforms correlated variables into a set of uncorrelated components, capturing the most significant variance in the data. By extracting the first principal component, which accounts for the highest variation, we derive a composite measure that effectively represents financialization trends.

One of the key rationales for using PCA in this context is to mitigate potential multicollinearity issues that may arise when including highly correlated financial indicators in regression models. Broad money supply loan deposit interest rate spread and credit to the private sector often exhibit strong correlations, which could distort estimation results and reduce the reliability of inferences. By generating a single index through PCA, the study ensures a more robust representation of financialization, enhancing the reliability of empirical analysis.

Table 2. Principal Component Analysis Eigen Values

Component	Eigenvalue	Difference	Proportion	Cumulative
Broad Money Supply (% of GDP)	1.8515	0.9761	0.6172	0.6172
Credit to Private Sector	0.8754	0.6023	0.2918	0.9090
Loan-deposit interest rate spread	0.2731	-	0.0910	1.0000

The PCA results indicate that the broad money supply (% of GDP) is the most influential component, explaining 61.72% of the total variance in financialization. Credit to the private sector follows, contributing 29.18%, while loan-deposit interest rate spread accounts for only 9.10% of the variance. Given that the first two components together explain 90.90% of the total variance, they capture the most significant aspects of financialization. These three indicators are combined using PCA to generate a financialization index, which serves as a comprehensive measure for assessing financial market development while minimizing multicollinearity concerns.

4.2 Descriptive Analysis

Table 3 presents the descriptive statistics which shows that exchange rate stability (ESR) is relatively stable, with low variability. The financialization index (FIN) has a wide range, indicating diverse financial sector developments. Inflation (INF) exhibits high volatility, suggesting significant price fluctuations across West Africa. Real GDP growth (LOGRGDP) and trade openness (TPN) vary across countries, reflecting economic size differences and trade integration levels. Differences in observation counts are due to varying missing observation in the variables used.

Table 3. Descriptive Statistics

Variables	Mean	Std. Dev.	Min.	Max	Observation
ESR	4.645662	0.155137	4.238353	4.958632	N = 384
FIN	2.19e-10	1.000002	-.3655781	10.26656	N = 393
INF	43.2101	34.901	8	52	N = 367
LOGRGDP	22.55162	1.491781	19.30199	26.93014	N = 397
TPN	68.34201	31.13182	20.72252	297.3058	N = 396

4.3 Correlation Analysis

Table 4 presents the correlation matrix which shows that exchange rate stability (ESR) is strongly correlated with financialization (FIN) (0.6978), suggesting that financial sector dynamics significantly influence exchange rate movements. Inflation (INF) has a weak positive correlation with both ESR (0.1576) and FIN (0.3517), indicating a limited direct impact. Trade openness (TPN) and real GDP growth (Log RGDP) show minimal correlations with other variables, suggesting weaker direct relationships with exchange rate stability and financialization.

Table 4. Pair-wise Correlation

	ESR	FIN	INF	TPN	LogRGDP
ESR	1				
FIN	0.6978	1			
INF	0.1576	0.3517	1		
TPN	-0.0667	-0.0345	0.0336	1	
Log RGDP	0.0287	0.0045	-0.0493	0.0568	1

Table 5. Cross-Section Dependence Test

Test	Statistics	Prob. Values
Friedman (1937) test	7.056	0.0000
Pesaran (2004) test	59.504	0.0000

The cross-sectional dependence test result indicated by Friedman's (1937) and Pesaran's (2004) tests in Table 5 reveal compelling evidence of cross-sectional dependence within the dataset under examination. Friedman's test yields a test statistic of 7.056 with a corresponding p-value of 0.0000, while Pesaran's test reports a notably higher test statistic of 59.504, also with a p-value of 0.0000. These extremely low p-values strongly reject the null hypothesis of no cross-sectional dependence, indicating that the observations (units or entities) within the panel dataset are not statistically independent of each other.

4.4 Panel Unit Root Analysis

Table 6 presents the panel unit root tests vis-à-vis the first generation (Im, Pesaran and Shim 2003 & Fisher type unit root based on Phillips Peron) and second generation test (Pesaran 2007). All the variables are found to be stationary at level in at least one of the tests used in this study. Only logRGDP was found to be non-stationary at level in all the tests used in this study. On the other hand, all the variables are stationary at first difference in all the three unit root tests used in this study and this implies the rejection of the null hypothesis (H_0 : unit root) at those critical values. The result shows that all the series have different order of integrations that is I (0) and I (1) series.

Table 6. Unit Root Analysis

Variables	IPS	Fisher	Pesaran
Level			
ESR	-1.6528	-0.7521	-2.294**
FIN	-4.0200**	-3.2631***	-2.719**
INF	-3.4176***	-8.9966***	-1.792**
TPN	-1.8474**	-1.6175**	-0.743
Log RGDP	-0.0729	5.1204	-0.600
First Difference			
ESR	-4.6314***	-14.6378***	-6.874***
FIN	-6.8314***	-13.5701***	-8.291***
INF	-6.5032***	-22.6950***	-9.972***
TPN	-5.1004***	-16.5419***	-5.637***
Log RGDP	-4.2930***	-12.8665***	-3.292***

Notes: ***, **, * denote significance at 1%, 5%, 10% respectively.

4.5 Panel Co-integration Tests

The results of the panel co-integration tests are presented in Tables 7 and 8 below. The probability values of both Westerlund (2008) and Pedroni tests are significant which implies the rejection of the null hypothesis and indicate a long-run relationship among all the variables used in this study.

Table 7. Westerlund Panel Cointegration Test

Cointegration Test	Statistics	ρ -value
Variance Ratio	1.7878	0.0369

Table 8. Pedroni Panel Cointegration Test

Cointegration Test	Statistics	ρ -value
Modified Phillips-Perron Test	3.4243	0.0003
Phillips-Perron Test	-1.4230	0.0774
Augmented Dickey-Fuller Test	-1.1099	0.1335

Table 9. Estimates of the Panel Autoregressive Distributive Lag Result

Variables	Pooled Mean Group		Mean Group		Dynamic Fixed Effect	
	Long Run	Short Run	Long Run	Short Run	Long Run	Short Run
Cointeqn		-.186***		-.404***		-.183***
FIN	.2103***	.0183**	-.0403	.0032	.0031	.3032***
INF	.0032***	-.0021	.0008	-.0010**	.0012	.0003
LOGRGDP	.0782***	.2246***	.0249	.1176***	.0925**	.1260***
TPN	.0017***	.0007	-.0007	.0005**	-.0004	.0003**
OBSERVATIONS	347	347	347			

4.6 Justification of Panel ARDL Model Based on Stationarity, Cointegration, and Endogeneity Considerations

The study employed both first-generation and second-generation panel unit root tests, which revealed that the series are stationary at either level (I(0)I(0)I(0)) or first difference (I(1)I(1)I(1)). Given the mixed order of integration, the Panel ARDL model is an appropriate econometric approach, as it can accommodate both stationary and non-stationary variables without requiring first differencing, thereby preserving long-run relationships. Furthermore, the presence of cointegration, as confirmed by the Westerlund and Pedroni tests, reinforces the validity of the ARDL framework, ensuring that the estimated long-run coefficients are not spurious. These unit root and cointegration findings, therefore, directly inform the choice of the Panel ARDL methodology adopted in the study.

Addressing endogeneity concerns, the inclusion of the lagged dependent variable in the model naturally mitigates endogeneity stemming from autocorrelation (Arellano & Bond, 1991). Additionally, the Pooled Mean Group (PMG) and Mean Group (MG) estimators account for potential

endogeneity by incorporating appropriate lag structures, ensuring that the estimated parameters reflect genuine causal relationships. The Dynamic Fixed Effects (DFE) estimator further corrects for omitted variable bias, enhancing the reliability of the results. Collectively, these methodological choices validate the robustness of the Panel ARDL approach as a superior alternative to GMM in this context

The table 8 above presents the long-run and short-run impact of financialization and other macroeconomic factors on exchange rate stability in the West African region relying on the estimates of the Pesaran Shin and Smith (1999) pooled mean group (PMG), mean group (MG) and the dynamic fixed effect (DFE). The coefficients of cointegration (cointeqn) in the three results are negative and significant as expected. The coefficients are 0.186, 0.404 and 0.183 for PMG, MG and DFE, respectively. This implies that the convergence rates are 18.6%, 40% and 18.3% of the short run disequilibrium is being corrected every year in order to attain equilibrium in the long run for PMG, MG and DFE respectively.

The coefficient of financialization index in table 9 is positive and significant. A unit increase in financialization index increases exchange rate stability by 0.21 units. This result is in line with the theoretical expectation that an increase in financialization is expected to have a positive impact on exchange rate movements. The low value of the coefficient could be as a result of the low level of financial deepening in the West African region as compared to the developed regions. The coefficient of inflation also shows that a positive and significant relationship exists between inflation rate and exchange rate stability. A unit increase in inflation rate stabilizes exchange rate by 0.0032 units. This result is in line with the studies of Raza (2017) and Elfaki (2018) that also found a positive association between inflation rate and exchange rate stability. The coefficient of the log of real GDP has a positive influence on exchange rate stability, a percentage increase in logRGDP enhances exchange rate stability by 0.78 units, on average. This result is in consonance with the findings of Raza (2017) but contradicts the findings of Elfaki (2018) that found a negative association between real GDP and exchange rate stability. The coefficient of trade openness also shows that it has a positive association with the exchange rate stability in the West African region. A unit increase in openness increases exchange rate stability by 0.0017 units. This is in line with the findings of Arsanious (2020) that found a positive association between openness and exchange rate.

5. Conclusions and Policy Recommendations

This study examines the impact of financialization on exchange rate stability in the West African region, with a focus on understanding the extent to which domestic currency stability is influenced by key macroeconomic and financial factors. Utilizing a panel ARDL approach, alongside pooled mean group (PMG), mean group (MG), and dynamic fixed effect (DFE) estimates, the study analyzed an annualized dataset spanning from 1996 to 2020. The findings reveal that the financialization index, inflation rate, real GDP (log-transformed), and trade openness exert a positive and significant influence on exchange rate stability in the region. Despite the low levels of financial deepening across

most West African economies, the results suggest that financialization still plays a moderate yet positive role in promoting currency stability. However, it is important to recognize the heterogeneity among West African economies, as the degree of financialization, institutional capacity, and economic structure varies significantly across member states. While larger economies such as Nigeria, Ghana, and Côte d'Ivoire have relatively deeper financial markets, stronger institutional frameworks, and more diversified sources of capital inflows, smaller economies—such as Guinea-Bissau, Sierra Leone, and The Gambia—face significant financial constraints. These smaller economies typically have less developed capital markets, limited access to international financial instruments, and weaker monetary policy transmission mechanisms. As a result, the impact of financialization on exchange rate stability may not be uniform across all countries in the region. In countries with underdeveloped financial markets, excessive exchange rate volatility may persist due to speculative activities, weak foreign exchange reserves, and dependency on external financing.

Given these disparities, the policy recommendations must be tailored to the specific financial and institutional realities of each country. First, the abrogation of the parallel (black) market is critical for mitigating round-tripping activities and speculative arbitrage, which often exacerbate exchange rate instability. This is particularly relevant in countries where foreign exchange controls and multiple exchange rate regimes encourage informal market activities. However, for this policy to be effective, governments must strengthen the credibility of official exchange rate mechanisms and ensure adequate foreign exchange liquidity in the formal market.

Second, the study underscores the importance of enhancing capital market development through non-traditional financing mechanisms structurally tied to infrastructure projects and long-term investments. Given the limited depth of financial markets in many West African economies, particularly in Francophone countries where financial systems remain bank-dominated, policymakers should explore alternative funding sources, such as sovereign wealth funds, diaspora bonds, and public-private partnerships (PPPs) to support financial deepening.

Furthermore, financial inclusion remains a pressing necessity, particularly considering the dominance of the informal sector, which accounts for a significant share of economic activity in rural areas. Expanding access to financial services—especially through mobile banking, microfinance institutions, and fintech solutions—will not only improve financial participation but also enhance monetary policy effectiveness. Governments must ensure that rural dwellers and small-scale businesses have access to affordable credit, payment systems, and savings instruments.

Additionally, central banks across the region must be adequately capitalized to maintain public trust and financial system stability. In many countries, central banks struggle to compete with well-capitalized private financial institutions, which could lead to policy inefficiencies and reduced effectiveness in stabilizing the exchange rate. Strengthening the autonomy, regulatory oversight, and liquidity buffers of central banks will help bolster confidence in domestic financial institutions.

Finally, as digital financial innovations reshape global financial systems, West African economies must urgently embrace technological advancements to remain competitive. The region needs to scale up investments in digital payment systems, blockchain technology, and central bank digital currencies (CBDCs) to facilitate efficient cross-border transactions and enhance exchange rate stability. Given the rapid growth of fintech firms across Africa, particularly in Nigeria and Ghana, regulatory frameworks should be designed to foster innovation while mitigating risks associated with financial volatility and cyber threats.

This study is limited by data constraints, particularly regarding the availability of high-frequency financialization indicators across all West African economies. Additionally, the model does not fully account for external shocks such as global financial crises, commodity price fluctuations, and geopolitical risks, which can significantly influence exchange rate stability. Future research should incorporate structural breaks and external shock variables to enhance the robustness of findings. Expanding the dataset to include monthly or quarterly observations could provide deeper insights into short-term exchange rate dynamics. Moreover, exploring the role of digital financial services and fintech innovations in shaping financialization and currency stability would be a valuable extension.

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