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FINANCIAL STRUCTURE AND DYNAMIC INEQUALITY IN WAMZ COUNTRIES: AN EMPIRICAL ASSESSMENT USING THE P-VAR MODEL

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ABSTRACT
Dynamic inequality has been recognized as a significant barrier to the growth of developing countries, particularly in Africa. The disparities in economic outcomes among African nations are largely attributed to the varying levels of development and maturity in their financial systems. A robust financial system can foster financial inclusion and help reduce inequality and poverty. Over the years, the West African Monetary Zone (WAMZ) countries—Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone—have experienced persistent dynamic inequality, leading to widespread multidimensional poverty.This study aims to investigate how different aspects of financial structure impact dynamic inequality in these WAMZ countries. It will examine three key dimensions of financial systems: bank-based structures, market-based structures, and overall financial stability. By analyzing annual data from 1993 to 2022 using the P-VAR methodology, the research will explore the relationship between financial development and dynamic inequality, guided by theoretical models that suggest financial development can mitigate inequality and promote growth, especially in the presence of financial frictions.
Keywords: dynamic inequality, WAMZ countries, panel auto-regression, financial structure, market-based structure
JEL: B16, B23, C31, D53, E44

INTRODUCTION
The persistence of inequality in Africa, particularly within the West African Monetary Zone (WAMZ), is deeply concerning. This issue is exacerbated by the fact that seven of the ten most economically unequal countries globally are located on the continent (World Bank, 2019). Africa ranks second worldwide, after Latin America, in terms of high dynamic inequality. This widespread social and economic disparity has only worsened the continent's already severe poverty conditions. Despite experiencing rapid and dynamic economic growth, WAMZ countries continue to face significant dynamic inequality, leading to multi-dimensional poverty (Asongu & le Roux, 2019). Dynamic inequality describes the situation where social and economic disparities persist or even worsen over time, often due to structural issues such as discrimination, unequal access to resources and opportunities, and biased institutions.

In the WAMZ region, one major contributor to this persistent inequality is the underdeveloped financial system. The financial structure in these countries is marked by severe instability, hindering effective financial transactions and capital allocation. Enhancing capital allocation could

be significantly influenced by improving financial inclusion, which remains inadequate in the region. Key factors influencing financial inclusion include: (a) access to financial services, (b) affordability of financial services, (c) usage patterns, (d) the quality of financial service providers, (e) financial stability, and (f) the inclusion of vulnerable groups. These interconnected elements are crucial for achieving comprehensive financial inclusion, which in turn can positively impact economic growth, poverty reduction, and overall well-being. Despite two decades of growth and revival across the African continent, the gap between the rich and the poor, especially in terms of financial services, continues to widen (Asongu et al., 2018; Kusi & Opoku-Mensah, 2018).

Although the underlying reasons may vary, a lot of politicians consider equal income distribution to be a desirable aim. As a result, reducing income inequality is frequently seen as crucial to achieving greater equality of opportunity to access political, social, and economic resources. Concerns over the economic and social ramifications of growing income and wealth disparities have been voiced, particularly within large advanced nations (Atkinson, 2015).

Financial development happens when markets, intermediaries, and financial instruments reduce the impact of information, enforcement, and transaction costs on the distribution of resources. By resolving such market frictions, financial systems inadvertently affect resource allocation, which may have significant effects on economic growth.

Alternative theoretical theories have helped us understand the relationship between inequality and finance in more developed and financially sophisticated societies. According to Stiglitz (2015), the recent rise in inequality seen in certain industrialized financial systems may have been primarily caused by the exorbitant compensation of managers and the rent extraction practices of lenders.

Socioeconomic problems arise in rising nations as a result of inequality. The majority of research has concentrated on financial depth, ignoring other aspects like as stability, efficiency, and accessibility to finance. Macroeconomic stability depends on the stability of the financial sector. Careless credit extension might increase financial depth and financing availability, but a lack of attention in loan approval processes could endanger the stability of the industry. Thus, resolving these problems requires a knowledge of the connection between inequality and money (Dabla-Norris et al., 2015; Rewilak, 2017; Bittencourt et al., 2019; Čihák et al., 2012).

By generating jobs, finance-induced growth can assist the underprivileged, but it may also be advantageous to company owners and their profit margins. Due to lower mean earnings and distribution in rural regions, urbanization is thought to worsen inequality, according to the Kuznets curve, which illustrates the relationship between inequality and development. However, as they move to cities, younger people from rural regions can take advantage of urban opportunities, which will raise lower class earnings and reduce overall inequality. Regardless of their familial wealth, Kuznets contends that financial growth is essential for urban prospects in order to allow formerly impoverished migrants to finance their studies and launch enterprises. Comprehending and resolving economic differences requires an awareness of the connection between development and inequality. It therefore suggested that a country's financial structure indicates how much of its financial system is based on markets or intermediaries, such as banks. As a result, it is anticipated that financial structure would alter as national economies expand.

Various theoretical frameworks suggest that financial development can boost economic growth and reduce inequality in the presence of financial frictions. However, those who are impoverished, lacking credit histories and collateral, may be more adversely affected by information and transaction costs. Research indicates that unequal opportunities can be exacerbated by unequal access to political power, which often translates into unequal access to financing. While empirical evidence highlights a significant impact of financial development on income inequality, the theoretical understanding of the causal relationship between financial development and income disparity remains unclear. This study aims to investigate the relationship between financial structure and dynamic inequality in the WAMZ countries (Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone) by focusing on three financial dimensions: bank-based financial structure, market-based financial structure, and financial system stability. There is a notable lack of research on how these financial structures relate to dynamic inequality within the WAMZ region, creating a gap this study seeks to address. Understanding this relationship is essential for crafting effective policies to tackle and reduce persistent social and economic disparities

LITERATURE REVIEW

The foundational theories linking the growth of the financial sector to income inequality were established by Banerjee and Newman (1993), Greenwood and Jovanovic (1996), Zingales and Rajan (2003), Tan and Law (2012), and Galor and Zeira (1993). Mbona and Major (2023) highlight that in some developing countries, individuals without cell phones, limited education, or low incomes are often excluded from formal financial employment opportunities. Greenwood and Jovanovic (1996) identified an inverted U-shaped nonlinear relationship between the depth of the financial sector and income inequality. However, Tan and Law (2012) observed a new U-shaped curve in this relationship. These hypotheses regarding the impact of financial growth on income inequality are currently being tested by a growing body of empirical research.

The finance-narrowing inequality hypothesis suggests that as financial access improves, income inequality decreases. For example, in 22 African nations, better access to loans and financial services has been found to reduce income disparity (Kapingura, 2017; Batuo et al., 2010). In India, economic disparity is mitigated when there are more bank branches in rural areas compared to urban areas. Other research indicates that an effective financial system can reduce inequality by distributing financial resources more equitably without imposing excessive costs (Banerjee & Newman, 1993). Evidence from stable economies, particularly in industrialized nations, supports the notion that financial development can narrow income inequality.

Conversely, the finance-widening inequality hypothesis posits that an inefficient credit market restricts low-income households from accessing financial opportunities, thereby exacerbating income inequality (Chiu & Lee, 2019; Seven & Coskun, 2016; Jaumotte et al., 2013).
Greenwood and Jovanovic (1996) proposed the Kuznets curve, an inverted U-shaped relationship, to describe this dynamic. This concept aligns with the findings of recent studies that validate the nonlinear U-shaped association between financial sector depth and income inequality (Sahay et al., 2015; Mbona, 2022). Research indicates that when domestic lending as a percentage of GDP is relatively low, financial institutions tend to minimize income inequality. However, as domestic credit levels increase beyond a certain threshold, the impact of rising credit on income inequality becomes more pronounced. This threshold typically aligns with the mean of the financial development sample (Claessens & Perotti, 2007).

Despite this, some studies (Jaumotte et al., 2013; Jauch & Watzka, 2016; de Haan & Sturm, 2017) find that increased financial sector development can lead to greater income inequality, especially when more recent data from advanced economies are considered. For instance, rising executive compensation may contribute to greater inequality (Kay, 2016). Prior to the global financial crisis, Rajan (2010) noted that increasing income inequality and wage stagnation in the US forced lower- and middle-class households to take on more debt, which led to greater income transfers from poorer to wealthier households, exacerbating inequality.

Exploring additional theoretical frameworks provides further insight into the relationship between finance and inequality in developed and financially sophisticated economies. Stiglitz (2015) argues that high compensation for managers and lenders who extract economic rents may be a significant driver of inequality in advanced financial systems. In economies with larger modern sectors—such as industry and services—income inequality tends to be higher, and access to financing can contribute to this disparity. Highly skilled individuals may secure better access to funding, further widening income inequality. Countries with more developed industries and deeper financial reserves often exhibit higher levels of inequality (Kuznets, 1955).

Social theorists often emphasize the concept of inequality, which can be interpreted in various ways. Milanovic (2016) asserts that, regardless of its origins, inequality denotes a lack of equality. Osberg (2015) distinguishes between social and income inequality, defining income inequality as the uneven distribution of money and opportunities among different groups within a community. This issue affects nearly every country, with many individuals unable to escape poverty or advance socially.

Neves, Afonso, and Silva (2016) defined income inequality as the uneven distribution of income and assets within a population. Gerschenkron (1962) categorized financial systems into bank-based and market-based structures, suggesting that each has a distinct impact on economic growth. He argued that banks are a more effective source of funding for economic development compared to emerging market exchanges. Michael (2001) supported this view, noting that bank-based systems are better suited to addressing issues like information asymmetries, agency problems, and moral hazard. An economy is considered bank-based when banks provide the majority of financial services, which is a key indicator of effective resource allocation for economic growth (Onwumere et al., 2013; Padawassou, 2013).

In contrast, the market-based financial structure posits that large, liquid, and efficiently functioning markets enhance corporate governance, stimulate development and profit incentives, and facilitate risk management (Levine, 2002). Augustine et al. (2012) observed that as countries progress through various stages of development, their financial systems tend to shift towards a more market-based model. An economy is deemed market-based when the market sector dominates the provision of financial services.

Levine (1997) and Merton and Bodie (1995) advocated for an approach focused on enhancing the performance of both banks and markets, rather than favoring one over the other. They suggested that banks and markets complement each other, rather than compete, to reduce transaction and information costs in the financial system (Demirguc-Kunt & Levine, 2001). The total financial structure is defined by the balance between bank-based and market-based systems. Bank-based

systems are seen to reduce the drawbacks of market-based systems by mitigating information asymmetry through monitoring and fostering long-term business relationships, thus potentially improving corporate governance and resource allocation (Stiglitz, 1995).

Conversely, market-based perspectives argue that markets are better suited than banks for funding high-risk and innovative ventures (Rajan, 1998). They emphasize the importance of market liquidity and risk-taking, which are essential for promoting growth and enhancing profitability through improved governance and risk management (Hellwig, 1998). Critics of bank-based systems argue that banks, with their access to exclusive company data, can exert significant influence over businesses, potentially stifling innovation and reducing efficiency. Banks' ability to capture a larger share of future profits from new investments and debt renegotiations can also limit the incentive for businesses to innovate (Rajan, 1998).

An alternative hypothesis suggests that both bank-based and market-based financial systems are essential and complementary for economic growth, rather than being interchangeable. According to this view, the effectiveness of financial services is more crucial than the mode of financial delivery (World Bank, 2001). Instead of focusing on whether a financial system is bank-based or market-based, the emphasis should be on developing a robust and efficient financial system (Demirguc-Kunt & Levine, 2001; Boyd & South, 1998).

Empirical research on the impact of bank-based versus market-based financial systems on economic growth has largely been based on established economies, serving as a reference for policy in developing countries. Wenger and Waserer (1998) found that market-based systems are more conducive to effective corporate control compared to bank-based systems. However, other scholars, such as Singh (1997) and Stiglitz (1985), argue that bank-based systems may better explain growth dynamics.

The World Bank (2001) provides a comprehensive analysis of available data, concluding that advancements in market finance and banking contribute to economic growth. Recent studies on economic inequality have revealed three key findings: wealth and income inequality are strongly correlated, wealth inequality tends to be more pronounced than income inequality, and wealth inequality is highly concentrated (De Nardi and Fella, 2017; Chancel et al., 2021; Davies and Shorrocks, 2021). However, most empirical research on economic inequality has focused primarily on income inequality rather than wealth inequality. Additionally, these studies often overlook the potential role of income inequality in exacerbating wealth inequality, despite current theories highlighting the importance of income disparities in explaining wealth inequality (Benhabib et al., 2017). Notably, Shin (2020) and Fouejieu et al. (2020) are among the few exceptions, but their work did not explore the relationship between wealth and income disparities

Additional research utilizing calibrated models reveals a skewed and thick tail in wealth distribution, suggesting that factors beyond income differences significantly contribute to wealth inequality. To reduce inequality, it is essential to advance the financial sector through innovations and effective policies. Financial services must remain both financially and economically viable, and consumers must utilize these services responsibly and effectively. The extent to which financial stability can reduce inequality is closely linked to the development rate of the financial sector.

Most empirical research has focused on the size of the financial industry (e.g., Čihák and Sahay, 2020; IMF, 2020; Makhlouf et al., 2020; Bittencourt et al., 2019; Benhabib & Bisin, 2018; De Nardi & Fella, 2017; Benhabib et al., 2017; Sahay et al., 2015; Demirgüç-Kunt & Levine, 2009; Hendricks, 2007), while studies examining the impact of financial stability, efficiency, and access on inequality have been less common. Even among countries with similar financial depths, variations in financial stability, accessibility, and efficiency can occur. Financial depth and access are distinct; if low-income individuals cannot access financial products and services, financial sector growth alone may not effectively reduce inequality.

The relationship between inclusive finance and inequality is complex: financial development initially increases income disparities but ultimately helps close them as the economy matures (Magwedere et al., 2021; Zhang & Naceur, 2019; Rewilak, 2017; Singh and Huang, 2015; Asongu & Tchamyou, 2014). This is supported by both the extensive and intensive margin theories. The intensive margin theory posits that finance affects inequality both directly and indirectly by improving the financial services available to the wealthy and established businesses (Chipote et al., 2014).

Conversely, the extensive margin theory suggests that financial development can operate on the extensive margin by making financial services more accessible to previously underserved groups (Chiwira et al., 2016; Orji et al., 2015; Odhiambo, 2014). This approach may reduce the persistence of income inequality across generations by providing less privileged groups with greater access to economic opportunities. This perspective aligns with the liquidity constraints theory, which argues that low liquidity hampers the ability of disadvantaged individuals to conduct business, thereby exacerbating income disparities (Batabyal & Chowdhury, 2015; Bae et al., 2012)

METHODOLOGY.

The World Bank and International Monetary Fund (IMF) databases provided the annual frequency data for the WAMZ countries (Gambia, Ghana, Guinea, Liberia, Nigeria, and Sierra Leone) used in this analysis, covering the period from 1993 to 2022. This time frame was selected based on the availability of data.

The study employs a four-variable panel vector autoregressive (PVAR) model to examine the impact of financial structure on dynamic inequality within these countries. The PVAR technique was chosen for two main reasons: (1) The PVAR model integrates panel data with the traditional VAR approach, enhancing analytical power and efficiency while capturing both contemporaneous and temporal correlations between variables., (2) The PVAR approach employs variance decompositions and impulse response functions to explore complex relationships and assess how variables respond to exogenous shocks. This method allows for a systematic recording of the dynamic interactions and simultaneous movements of variables over time (Kandil et al., 2015).

The vector autoregressive model is commonly used to forecast systems of related time series and to analyze the dynamic effects of random disturbances on a set of variables. The panel VAR model in its standard form can be represented as follows:

$$y_t = \alpha_0 + \sum_{k=1}^{j} \alpha_i y_{t-k} + u_t$$

Where: y_t is an (n×1) vector of endogenous variables, α_0 is an (nx1) vector of constants, α_i is an ($n \times n$) matrix of regression coefficients the study seeks to estimate. The error term, u_t, with the usual assumption that it is independent and identically distributed, having a zero mean and constant variance. In the structural VAR model, the error term captures the shocks affecting the endogenous variables. According to Riman, Akpan, and Offiong (2013), the strength of the VAR model lies in its ability to incorporate interactions among all endogenous variables. This feature enables the model to capture the complex dynamics of the economy and evaluate both the short-term and long-term effects of shocks on each variable as well as their impact on other variables. Assuming that the variables are integrated of the first order, meaning they are I(1), the VAR representation of the vector error correction model (VECM) can be specified as follows:

$$\Delta Y_t = \alpha_0 + \alpha_1 \Delta Y_{t-1} + ... + \alpha\rho \Delta Y_{t-\rho} + \beta_0 \Delta X_t + \beta_1 \Delta X_{t-1} + ... + \beta\rho \Delta X_{t-\rho} + \theta e_{t-1} + U_t$$

Where p is the number of lags and $et-1$ is the lagged value of the error correction term (ECT) from the regression $Yt=a+bXt+et$. A VECM is made up of the lagged first differences of the endogenous variables, Xt and Yt, and one period-lagged cointegrating equation, $et-1$. One way to think of the VECM is as an adjustment mechanism that modifies Yt in response to departures from the equilibrium relationship in the preceding period, as shown by $et-1$. This specification permits a variety of short-run dynamics while guaranteeing that the endogenous variable's long-term behaviour converges to the cointegrating relationship.

Given the scenario, the panel VEC model is as specified below:

$$\boldsymbol{Zit} = A\,(L)Zit\text{-}1 + eit$$

Where ***Zit*** is a matrix of endogenous variables (*A(L)* is a matrix polynomial in the lag operator, L, with country I = 1…….4. Thus, the equation in its econometric linear form can be specified as follows;

$$\Delta DIEN_t = \alpha_{i0} + \sum_{i=1}^{j} \alpha_{i1}\, \Delta DIEN_{t-i} + \alpha_{i2} \Delta BBFS_t + \sum_{i=1}^{j} \alpha_{i3}\, \Delta BBFS_{t-i} + \alpha_{i4} \Delta MBFS_t +$$

$$\sum_{i=1}^{j} \alpha_{i5}\, \Delta MBFS_{t-i} + \alpha_{i6} \Delta FSS_t + \sum_{i=1}^{j} \alpha_{i7}\, \Delta FSS_{t-i} + \varphi ECM_{t-1} + U_1$$

Where dynamic inequality is DIEN, bank-based financial structure is BBFS, market-based financial structure is MBFS, and financial system stability represented by FSS.

RESULTS AND DISCUSSION

Based on the condensed group unit root test results presented in Table 1, it was found that not all variables in the group were jointly integrated across all methods. Specifically, not all variables were jointly stationary at the 1%, 5%, and 10% significance levels. The study accepted the null hypothesis for variables (DIEN, BBFS, MBFS, and FSS) at these significance levels, indicating that these variables exhibited unit roots at their levels. However, when these variables were tested at their first differences, they were found to be stationary at the 1%, 5%, and 10% significance levels, as shown in Table 1. Consequently, the null hypothesis of having unit roots was rejected for these variables. Given that the stationarity of the variables has been confirmed, they are deemed suitable for further analysis.

Before estimating the VAR model, it is necessary to determine the appropriate lag length for the endogenous variables. The study utilized the VAR lag length criteria, with results in Table 2 indicating that a lag order of three (3) is optimal for the VAR model. Following this, the model's stability was examined using the root reciprocal of the AR feature modes, as illustrated by the encircled modes in Figure 1

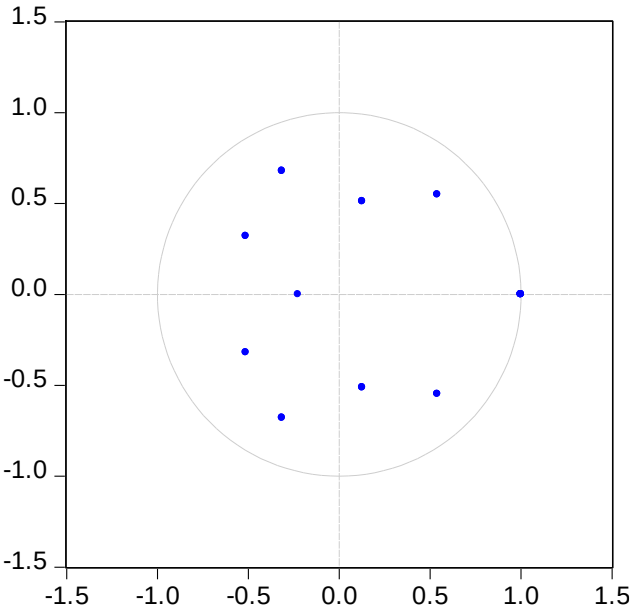

Figure 1: mod of AR characteristics root reciprocal

The Johansen cointegration test was employed to investigate the long-term relationships among the variables in the VAR model. The trace and maximum eigenvalue tests, as detailed in Tables 3 and 4, supported the null hypothesis of two (2) cointegrating equations (positive relationships) at the 5% significance level. These findings indicate the presence of a stable long-run equilibrium relationship among the variables, suggesting that further analysis using the VECM approach is warranted.

The analysis of the cointegration relationships among the parameters (dynamic inequality, bank-based financial structure, market-based financial structure, and financial stability) revealed a long-run equilibrium and short-run disequilibrium, consistent with theoretical expectations for the VECM model. Given a lag order of three (3), the dynamic structure and short-term imbalances of the VECM should be examined with a lag order of two (2). Therefore, the following equation represents the cointegration equation of the VEC model:

$$\mathbf{DIEN_{t-1} = 2.19BBFS_{t-1} - 0.93MBF_{t-1} - 0.07FSS_{t-1} + 3.5}$$

Based on the values in the equation, ceteris paribus, a positive change in the bank-based financial structure will lead to a 2.19 percent increase in dynamic inequality among the selected WAMZ countries in the long run. Conversely, a positive change in the market-based financial structure will result in a 0.93 percent decrease in dynamic inequality in the long run. Additionally, a positive change in financial stability will lead to a 0.07 percent decrease in dynamic inequality among these countries in the long run.

The model estimation is considered appropriate and robust, as evidenced by the relatively low values of the AIC and SC criteria, and each cointegration equation has an R-squared value greater than 0.5 ($R^2 > 0.5$). This suggests a good fit for the VECM's cointegration equations, as shown in Matrix 1.

In Figure 2, the VECM cointegration relation graph for each WAMZ country shows a zero average line, indicating a steady, long-term equilibrium relationship. However, significant variation within the parameters suggests a notable divergence from this equilibrium due to fluctuations in short-term signals. This short-term variance may be influenced by member states' preferences for different financial structures (bank-based or market-based) depending on the current economic conditions (stability or instability)

Matrix 1: Vector error correction model result

$$\begin{bmatrix} DIEN_t \\ BBFS_t \\ MBFS_t \\ FSS_t \end{bmatrix} = \begin{bmatrix} 0.0077 \\ 0.0078 \\ 0.0023 \\ 0.1102 \end{bmatrix} + \begin{bmatrix} 0.3440 & -0.0184 & 0.0291 & 1.1537 \\ 1.9998 & -0.3886 & -0.0950 & -1.0000 \\ 1.1235 & -0.2362 & -0.4020 & 4.2563 \\ -0.0150 & 0.0177 & -0.0113 & -0.5321 \end{bmatrix} \begin{bmatrix} DIEN_{t-1} \\ BBFS_{t-1} \\ MBFS_{t-1} \\ FSS_{t-1} \end{bmatrix} +$$

$$\begin{bmatrix} 0.3325 & 0.0146 & 0.0165 & 0.4417 \\ 0.9639 & 0.1658 & -0.1918 & -12.723 \\ 0.4490 & 0.0307 & -0.3067 & 2.9098 \\ -0.1390 & 0.0039 & 0.0070 & -0.0368 \end{bmatrix} \begin{bmatrix} DIEN_{t-2} \\ BBFS_{t-2} \\ MBFS_{t-2} \\ FSS_{t-2} \end{bmatrix} +$$

$$\begin{bmatrix} 0.2453 & 0.0535 & 0.0245 & -0.5227 \\ -0.4365 & -0.2009 & -0.1862 & -5.0651 \\ 0.3010 & -0.1395 & 0.1214 & -2.7377 \\ -0.0796 & 0.0076 & 0.0246 & 0.3028 \end{bmatrix} \begin{bmatrix} DIEN_{t-3} \\ BBFS_{t-3} \\ MBFS_{t-3} \\ FSS_{t-3} \end{bmatrix}$$

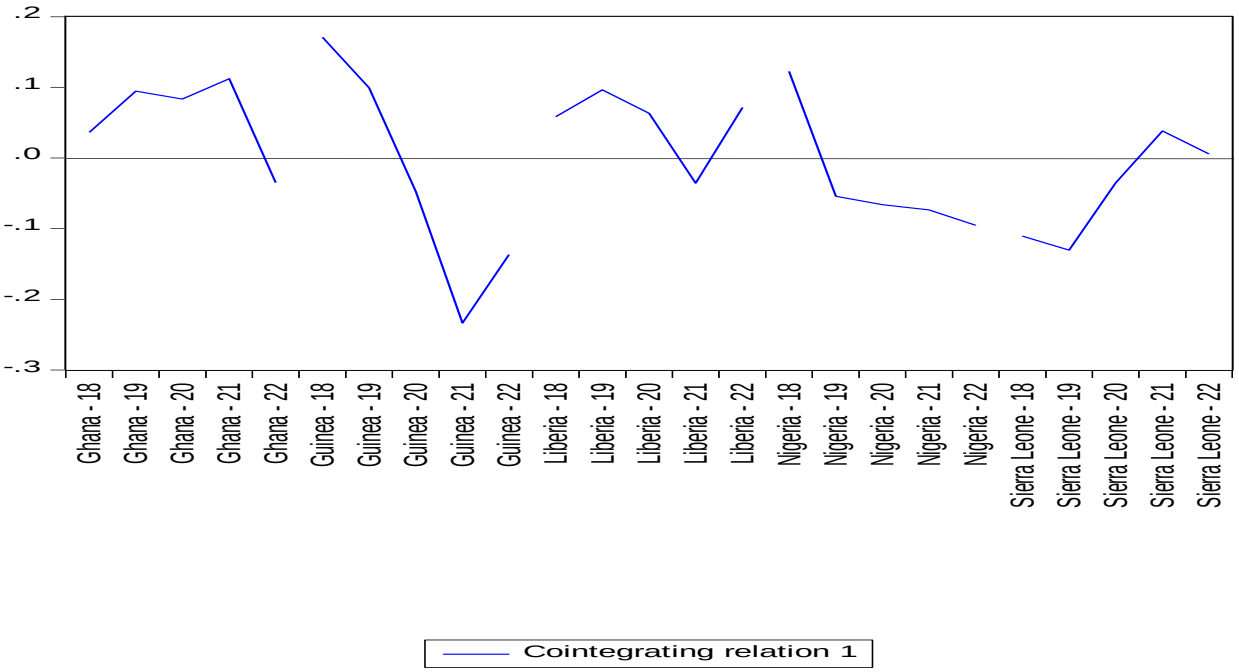

Figure 2: VECM cointegration relation graph

After completing the VEC matrix analysis, a stability test was conducted using the inverse roots of the AR characteristic polynomial. For the VECM to be deemed stable, all AR roots must lie within the unit circle. Figure 3 shows that all modulus values are less than one and fall inside the unit circle. This confirms that all AR roots are within the circle, demonstrating that the VECM meets the stability criteria.

Additionally, there is no evidence of autocorrelation in any of the relevant variables, indicating that the VECM model is effective and stable. This is shown by the VECM autocorrelation graphs in figures 4a [cor(DIEN,DIEN(-1)]; 4b [cor(BBFS,BBFS(-1)]; 4c [cor(MBFS,MBFS(-1)]; and 4d [cor(FSS,FSS(-1)].

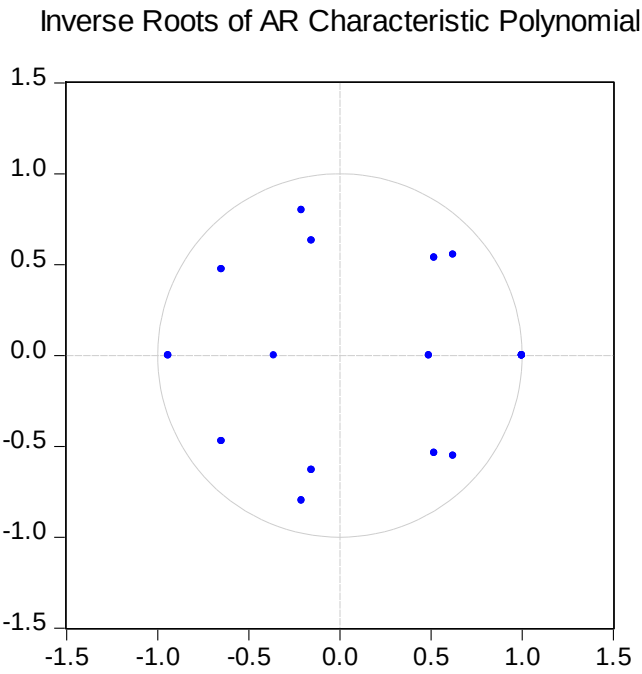

Figure 3: inverse roots of AR Characteristic Polynomial stability test

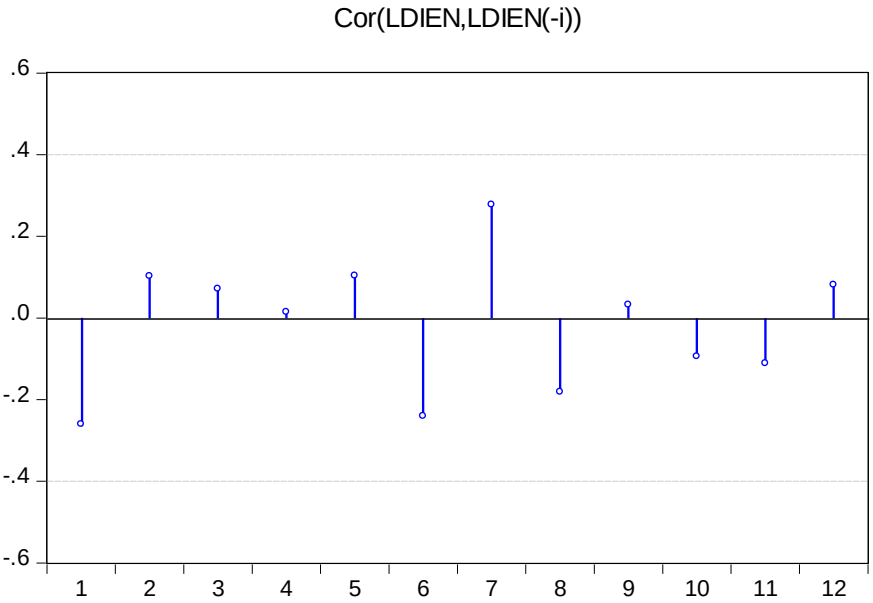

Figure 4a: VECM autocorrelation graph (DIEN)

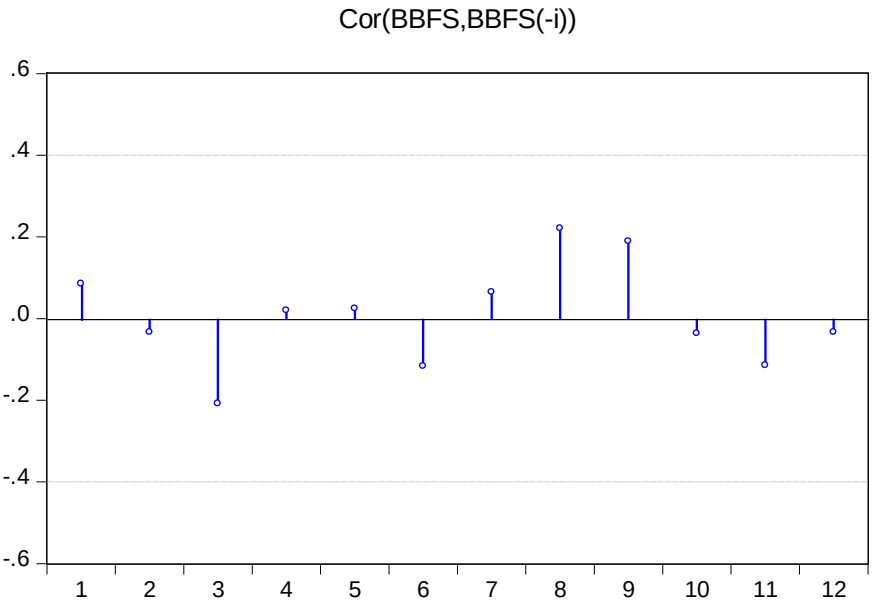

Figure 4b: VECM autocorrelation graph (BBFS)

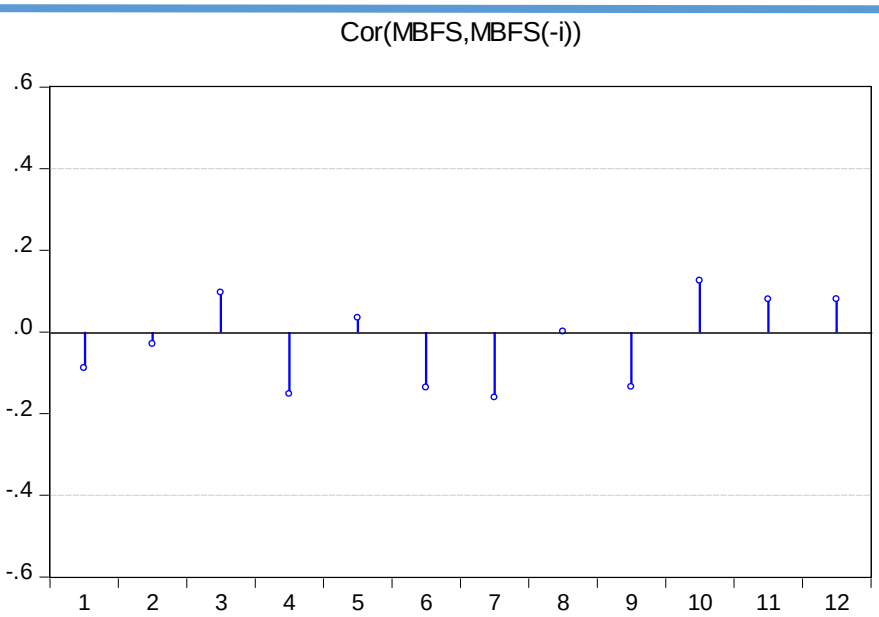

Figure 4c: VECM autocorrelation graph (MBFS)

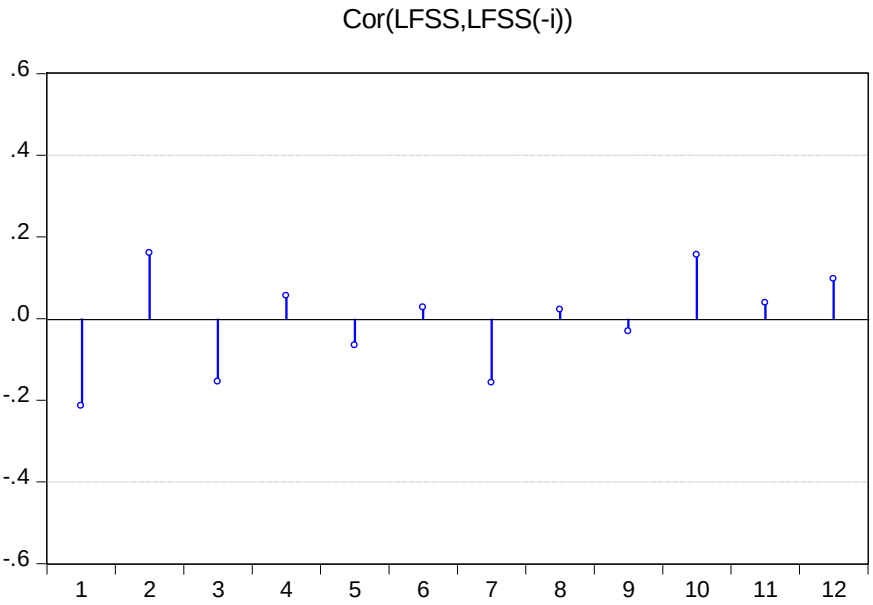

Figure 4d: VECM autocorrelation graph (FSS)

Using the VECM, data for ten periods were analyzed to assess the dynamic effects of the dependent variable, dynamic inequality (DIEN), in response to specific shocks from the independent variables (bank-based financial structure, market-based financial structure, and financial stability).

Figure 6 illustrates that when DIEN experienced a positive or negative shock of one standard deviation, it remained positive in Years 1, 2, 8, 9, and 10. In contrast, it declined in Years 3, 4, 5, 6, and 7. The response of DIEN varied between its lowest value of -0.016 in the fourth year and its highest value of 0.034 in the first year. According to DIEN's response to BBFS, DIEN showed a good response in the first year and continued to do so in all subsequent years selected.

The reaction increased from its lowest point in the third year, which was 0.065, to its highest point in the first year, which was 0.00. Additional examination of DIEN's response to MBFS showed that, only in the first and second year, did DIEN react favourably, whereas in the other years selected for the future, DIEN reacted unfavourably. The reaction increased from its lowest point in the fifth year, which was -0.031, to its highest point in the second year, which was 0.005.

Finally, the response from DIEN to FSS showed that DIEN reacted negatively in the remaining years (second, third, fourth, and tenth) selected in the future, but positively in the first, fifth, sixth, seventh, eighth, and ninth years. The response values ranged from -0.022 in the third year to 0.009 in the seventh year, which was the highest value.

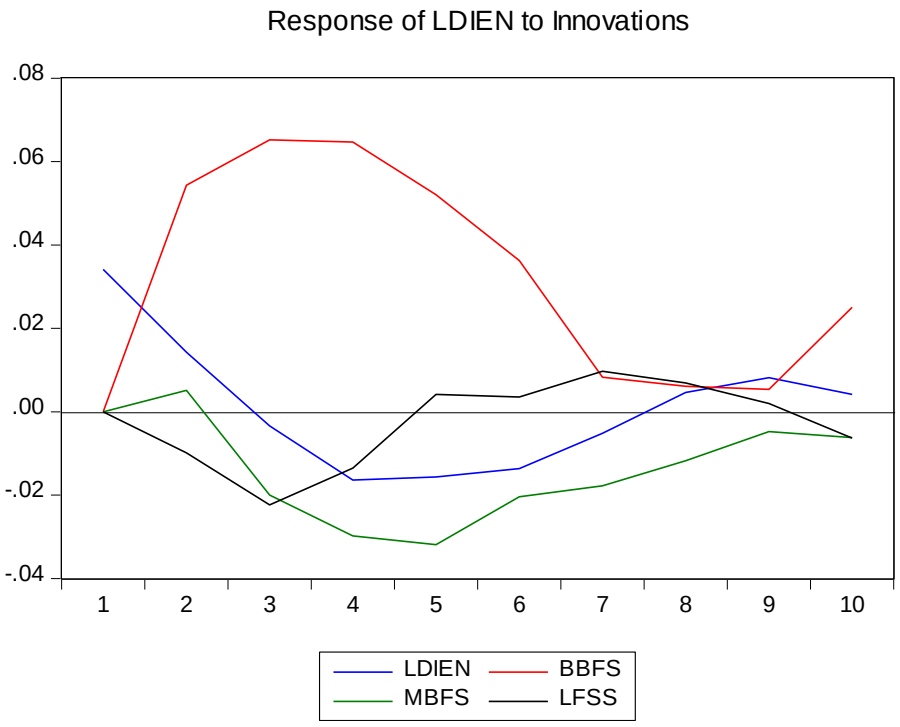

Figure 5: Impulse response function combined graph

In the short run, particularly in the first period, 100 percent of the forecast variance error in DIEN is explained by the variable itself, implying that no other variable in the model has a strong influence on DIEN in the first period, as such, BBFS, MBFS and FSS has strong exogenous impact on DIEN. However, DIEN exhibited a weak influence on itself (that is weakly endogenous), specifically, in the long-run, DIEN revealed very weak influence of 9.76 percent of forecast variance error by itself right from the short-run periods into the future.

With regards to the influences of BBFS, MBFS and FSS on DIEN, BBSF exhibited a strong influence (least exogenous) up to 75.27 percent of forecast variance error on DIEN from the short run periods into the future; while MBFS and FSS both exhibited weak influence (strongly exogenous) up to 41.41 percent and 4.39 percent respectively of forecast variance error on DIEN from the short run periods into the future, ceteris paribus.

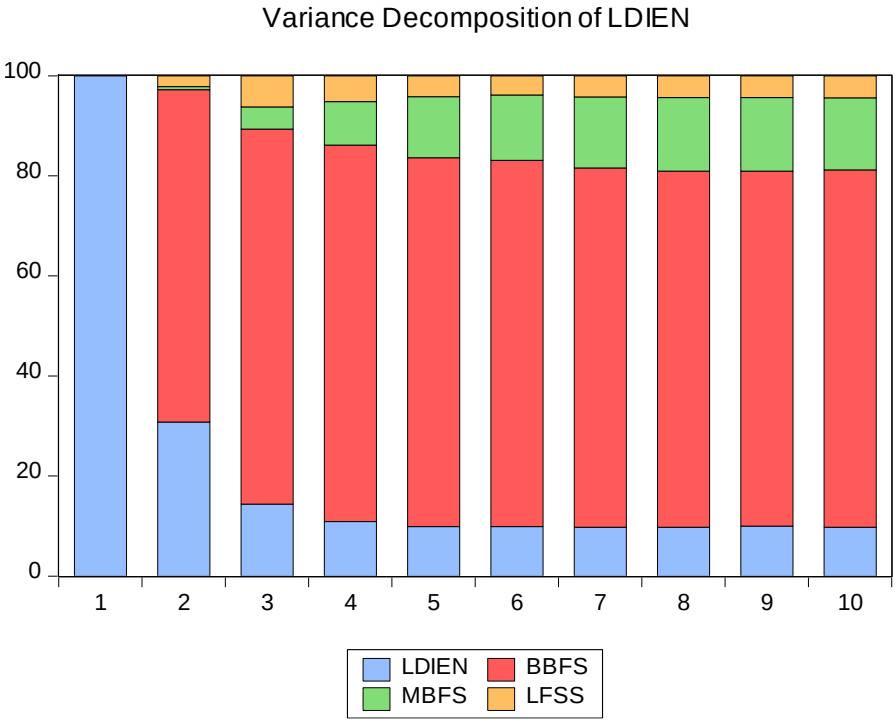

Figure 6: Variance decomposition of forecast errors stacked graph

CONCLUSIONS

The primary objective of this study was to assess the impact of financial structure on dynamic inequality in selected WAMZ countries. Contrary to theoretical expectations, the VECM analysis revealed that the financial structure—encompassing bank-based, market-based, and financial stability factors—had a non-significant effect on dynamic inequality in both the short and long term. Specifically, under the current financial structures in WAMZ countries, only the bank-based financial structure was found to significantly widen the inequality gap in the long run, assuming other factors remain constant. This suggests that the existing dynamic inequality in these countries, driven by structural issues such as discrimination, unequal access to resources, and biased banking practices, could potentially worsen in the future.

Analysis of the impulse response function indicated that dynamic inequality in the selected WAMZ countries generally responded negatively to itself on average. However, contrary to expectations, it responded positively to changes in the bank-based financial structure. Regarding forecast error variances, dynamic inequality primarily influenced itself during the first period, with weaker endogeneity in subsequent periods. Conversely, the bank-based financial structure showed a strong impact on dynamic inequality, indicating it is less exogenous. In contrast, market-based financial structure and financial stability were found to be strongly exogenous, with minimal impact on dynamic inequality in the selected WAMZ countries.

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