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DEBATE ON THE FINANCIAL STRUCTURE OF AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA: THE MODERATING EFFECT OF INSTITUTIONAL QUALITY IN AN INCOME-BASED PANEL

Obukohwo Oba Efayena[1*], Jonathan Ojarikre Oniore[2] and Ngozi Patricia Buzugbe[1]

[1]*University of Nigeria, Department of Economics, Nsukka, Enugu State, Nigeria*
[2]*Bingham University, Department of Economics, Karu, Nasarawa State, Nigeria*

This study x-rays the moderating influence of institutional quality on the relationship between the financial structure (FS) and economic growth in 33 Sub-Saharan African (SSA) economies from 2006 to 2022, based on income classification. Aptly utilizing the two-step fixed-effects generalized method of moments, the investigation found that, among the low-income countries, those bank- and market-oriented were associated with the lower and higher levels of economic growth, respectively, whereas among the middle-income countries, those bank- and market-oriented financial structures were associated with the higher and lower levels of economic growth, respectively. Notably, the study establishes that institutional quality does not substantially spur the financial structure to positively contribute to economic growth. The disaggregated outcomes show that prevailing institutional quality mitigates the growth effects of the financial structures of the middle-income economies, whereas it does significantly exacerbate decelerating economic growth among the low-income ones. The study recommends the adoption of policies to strengthen institutional quality, as well as the enhancement of the synergy between the banking sector and the capital market.

Keywords: financial, growth, income, institutions

JEL Classification: E44, E46, O16

INTRODUCTION

As financial integration among economies advances globally, the financial structure (FS) among economies globally is evolving, simultaneously causing contagious impacts on economic performance. The financial structure refers to the ratio of financial instruments and intermediaries within a nation (Demirgüç-Kunt & Levine, 2001; Luintel, Khan, Arestis & Theodoridis, 2008; Yeh, Huang & Lin, 2013). Market- and bank-oriented *FS* broadly segment the financial structure. Market- and bank-oriented

* *Correspondence to:* O. O. Efayena, University of Nigeria, Department of Economics, Nsukka, Enugu State, Nigeria; e-mail: economix4life@gmail.com

FS differ in the capital allocation mechanism, price risk absorption, savings mobilization, and shocks absorption. Banks often depend on robust client connections to enable financial intermediation and risk assumption on their balance sheets. Markets serve as venues for the pricing, distribution, and trading of shares and debt instruments, facilitating direct resource allocation from savers to borrowers (Atanda & Osemene, 2019). Explicitly, bank-oriented systems highlight the central role of banks in capital allocation, savings mobilization, the coordination of corporate executives' portfolio decisions, and the supervision of risk management instruments (Chu, 2020; Bats & Houben, 2020). Securities markets play an important aspect alongside banks in channeling societal savings to firms, executing corporate control, and stimulating risk management in market-oriented systems (Demirgüç-Kunt & Levine, 2001; Levine, 2002; Hamdaoui & Maktouf, 2020).

The relative economic benefits of market-oriented vs. bank-oriented FS have been the subject matter of extensive discussion due to their unique characteristics, particularly after the decades of the insignificant influence of FS on economic growth outcomes (Demirguc-Kunt & Maksimovic, 2002; Beck & Levine, 2002; Levine, 2002; Ndikumana, 2005). However, market-oriented methods are typically preferred in the most empirical studies of the post-2008 global financial crisis (Demirgüç-Kunt, Feyen & Levine, 2013; Yeh *et al*, 2013; Castro, Kalatzis & Martins-Filho, 2015; Sakarya, Zeren & Akkuş, 2018; Chu, 2020; Liu & Zhang, 2020; Oro & Ekpo, 2020; Arsov & Naumoski, 2024), possibly because bank-oriented financial institutions are more economically vulnerable to a financial crisis than market-oriented financial structures are, as the global financial crisis had demonstrated. However, given the typical free-rider problem permeating the market-oriented FSs, the raging debate over market-oriented FSs outperforming bank-oriented *FSs* is inconclusive. Furthermore, F. Allen and D. Gale (2000) assume that the market-oriented FS exposes households to more risk than the bank-oriented *FS*. Nonetheless, the bank-oriented FS exerts benefits, which include the stimulation of innovative and profitable projects, the provision of standardized risk management services, and ensuring flexibility in financial resource accessibility (Morck & Nakamura, 1999; Levine, 2002; Kevser & Elitas, 2019).

A plethora of empirical studies on the FS and economic growth have left a wide gap in the situation in SSA. The region includes economies across several income classifications. The World Bank's classification categorizes the SSA economies into middle-income countries (MICs) and lower-income countries (LICs). There are limited studies investigating the nexus between the financial architecture and the economic growth trajectory in such nations. Most empirical studies in the region revolved around financial development and economic growth (Puatwoe & Piabuo, 2017; Ibrahim & Alagidede, 2018; Ayadi, 2019; Ustarz & Fanta, 2021; Mbuyi & Mulumba, 2022; Asante, Takyi & Mensah, 2023). In the studies that examined the FS-economic growth nexus, there are several shortcomings in terms of the scope and variable selection. For instance, N. Mathenge and E. Nikolaidou (2018) concentrated on analyzing the short- and long-term impacts of the *FS* on economic growth, whereas A. D. Ahmed and A. N. Wahid (2011) limited their study to only seven African developing countries, and N. Mahonye and K. Ojah (2014) failed to effectively categorize the various types of the FS. The closest to the present study is that of S. Ouedraogo and H. Sawadogo (2022), in which a financial development index was employed during the examination of the FS-growth nexus among the SSA countries between 1980 and 2017. However, the study simply identified the degree of reliance on the financial system, the financial market, or the banking industry.

There is limited research seeking to incorporate institutional integrity into the nexus between the FS and the economic growth trajectory. Notably, most studies look at how institutional quality affects countries' financial development (Kombo & Koumou, 2021; Khan, Khan, Khan, Haddad, Al-Ramahi & Sherfudeen, 2023), the influence of institutional quality on the financial development-economic growth nexus (Olaniyi & Oladeji, 2021; Bayraktar, Ozyilmaz, Toprak, Olgun & Isik, 2023), or the potential of institutional quality to influence financial inclusion (Chinoda &

Kwenda, 2019; Ha & Nguyen, 2023), which has created a void in the research investigating the moderating influence of institutional quality on the FS-economic growth nexus.

Therefore, this study x-rays the economic effects of the FS on the countries with different levels of income in SSA, and also investigates how institutional quality affects this relationship, since it is institutional quality that exerts a unique role in all economic, political, and financial activities. The paper specifically investigates the nexus between the FS and the economic growth trajectory, along with any potential moderating influence that institutional quality may exert on the FS-growth nexus. This study is novel with respect to the methodology and the context in that it differentiates the economic impacts of the FSs among the MICs and LICs in SSA. This procedure ensures the proper capturing of income-related characteristics and also analyzes any potential moderating influence of institutional quality on the FS-economic growth nexus.

Specifically, the investigation builds on the previous studies that have x-rayed the nexus existing between the FS and prevailing economic growth through the incorporation of the institutional quality moderating variable. This approach underscores the ways in which differences in governance, regulatory effectiveness, and institutional stability may affect the nexus between the FS and economic growth in SSA. The holistic approach offers a new viewpoint regarding the influence of institutions on economic results. This study specifically concentrates on the SSA region, in contrast to most existing studies that generalize findings across developing or global economies. This emphasis highlights distinct social, economic, political, and institutional circumstances in the region, which frequently receive insufficient attention in the existing literature.

In addition, sophisticated econometric methods are used in this study so as to adequately appraise the FS-economic growth-institutional quality nexus. The study effectively incorporates interaction effects in order to tackle endogeneity issues, simultaneously leading to a more precise estimation of how the institutional quality trajectory influences the association between the *FS* and economic growth. The systematic approach improves the dependability of the results. The outcomes of the investigation have significant and comprehensive implications for policy formulation. The evidence shows that improved institutional quality spurs the beneficial impacts of the FS on economic growth performance, thereby forming a foundation for policy recommendations. The SSA countries have the opportunity to focus on the institutional reforms that can enhance the advantages of financial development, thereby ultimately promoting sustainable growth.

Consequently, in actualizing the study's empirical drive, a panel of 33 SSA economies, consisting of 17 MICs and 16 LICs, was examined in the period from 2006 to 2022. Due to the limited data available, the fixed-effects generalized method of moments panel method (FE-GMM) was applied so as to evaluate the obtained data. Consequently, this research reveals two significant findings - firstly, the bank-oriented FS adversely affects economic growth, with a more pronounced impact in the LICs compared to the MICs, and secondly, the market-oriented *FS* significantly influences economic growth, with a more apparent effect perceived in the MICs than in the LICs of SSA. The study reiterates the need to adopt a diversified FS in SSA, regardless of the income category and has also established the loss-absorbing mechanism of the stock market, which ensures economic growth through the business cycle. This study extends the extant studies in SSA by analyzing the economic growth effects of the market-oriented *FS* and the bank-oriented FS. It is comprehensive because it disaggregates the FS into its broad components and examines their impact across different income categories.

The paper organizes the subsequent sections as follows: Section 2 defines the literature review. Section 3 delineates the research methodology used. Section 4 describes the analysis' findings and provides in-depth discussion of these findings. The study concludes in Section 5.

LITERATURE REVIEW

An exposition of previous investigations of the FS-economic growth nexus has shown contrasting and varying outcomes, depending on several factors which range from methodological techniques, a choice of FS instruments, and the financial development level, among others. For instance, P. Liu, Y. Peng, Y. Shi and J. Yang (2022) present new empirical evidence regarding the relevance of the FS for economic growth, based on a panel of 113 countries in the period from 1990 to 2013. The study evaluates the impact of political risk and the development stage, as well as their interplay, on the FS and also that, on average, an advanced market-oriented FS correlates with growth performance levels. Moreover, banks assume a more pivotal role in the growth trajectory within the market-oriented FS, whereas equity markets exhibit a greater sensitivity to economic growth in the bank-oriented FS.

M. J. Houshaimi (2020) examines the FS-economic growth dynamic nexus relationship utilizing three indicators related to the FS across 11 countries in the Middle East and North African regions. This study utilizes unbalanced data from 11 MENA countries spanning from 1995 to 2018, and seeks to conduct a thorough empirical appraisal, employing the fixed-effect technique. The outcomes indicate that the FS influences economic growth specifically through the banking system in an S-ACT framework.

G. Liu and C. Zhang (2020) analyze the importance of the FS for economic growth using a panel data study of 29 provinces throughout eastern, western, and central China in the period from 1996 to 2013. The empirical evidence demonstrates that the FS greatly impacts the growth trajectory. The impact of the FS on the regional growth trajectory is inconsistent and demonstrates an inverted U-shaped correlation. The results confirm the dynamic impact of the FS on economic growth performance in varying phases of the economic growth trajectory. Additionally, studies such as D. Asteriou and K. Spanos (2019) and L. Slesman, A. Z. Baharumshah and W. N. W. Azman-Saini (2019) opine that a financial crisis and institutional quality, alongside the income level and time, influence the FS-economic growth relationship.

L. K. Chu (2020) examines the FS-economic growth nexus utilizing the GMM technique for 99 countries, taking into account the repercussions of the banking crises, economic volatility, the financial development level, and inequality in the FS. The primary finding supports the market-oriented perspective; however, the unbalanced FS significantly reduces the beneficial impacts of an expanding securities market expansion *vis-à-vis* the bank-oriented system. Furthermore, A. Ujunwa, O. P. Salami, I. Nwakoby and A. H. Umar (2012) analyze the effects of various FS perspectives on Nigeria's economic growth trajectory. The study employs the annual data covering a period of 17 years (from 1992 to 2008). The investigation uses the ordinary least squares regression technique to estimate the constructed models in alignment with the FS theories. The results demonstrate that the coefficients linked to bank- and legal-based theories stimulate the economic growth trajectory.

E. Nkoro and A. K. Uko (2019) examine the influence of the FS on Nigeria's economic growth dynamics, utilizing the annual time data from 1981 to 2017 and the vector error correction model (VECM) for analysis. The findings indicate that both market- and bank-oriented FSs significantly influence economic growth. These findings contrasted those of A. C. Maduka and K. O. Onwuka (2013), who opine that the FS exerts a negative, yet significant, influence on economic growth. L. Gambacorta, J. Yang and K. Tsatsaronis (2014) and P. Arestis, A. D. Luintel and K. B. Luintel (2010) reached a similar conclusion.

M. O. Saibu, K. E. I. Bowale and A. E. Akinlo (2009) employ a vector error correction model so as to examine the nexus between fluctuations in Nigeria's overall FS and economic growth in the period between 1970 and 2004, and the findings indicate that alterations in Nigeria's FS do not significantly influences its economic growth. The results indicate that, although the FS negatively influences economic growth, it positively influences the stock market development. K. B. Luintel *et al* (2008) investigate the FS-economic growth nexus through the annual data, utilizing a panel technique which is both dynamic and heterogeneous in nature. The population of the study includes 14 countries. The findings indicate that

the FS substantially accounts for the output levels in most countries and the study finds the positive influence of the FS on economic growth.

Additional research provides support for a market-oriented FS utilizing advanced econometric methodologies. For instance, C. C. Yeh *et al* (2013) establish a correlation among the FS, economic growth, and growth volatility. This study employs a panel of 40 economies spanning between 1960 and 2009 in order to illustrate that a market-oriented FS promotes economic growth, albeit with increased long-term volatility. A study by K. B. Luintel, M. Khan, R. Leon-Gonzalez and G. Li (2016) contradicts the financial service perspective while simultaneously supporting the market-oriented view. The study analyzes a group of 33 high-income countries and 36 middle- and low-income countries from 1989 to 2011, employing a Bayesian framework. In contrast to the bank-oriented system, the market-oriented FS promotes the economic growth trajectory in the high-income countries. The FS does not significantly influence the economic growth trajectory in the middle- and low-income economies. F. Castro *et al* (2015) found that the FS significantly affected the investment behavior of the financially constrained firms, even when accounting for the degree of financial development among the Brazilian firms between 1998 and 2006.

An analysis of prior empirical studies identified significant knowledge gaps, particularly in African research, which the current study seeks to address. Notably, most previous investigations focused on financial development and growth trajectories. For instance, R. Dabi, M. Sari, N. Nugraha, D. Disman and E. Alghifari (2024) use an unbalanced panel dataset of 29 middle-income African countries from 1990 to 2019 in order to demonstrate the operation of the dynamic panel model in the economic growth-finance perspective nexus. Their findings demonstrate that any prevailing financial development significantly and positively influences growth performance, highlighting the importance of comprehensive advancements in the financial system for enhancing economic outcomes. Additional studies produce similar outcomes (Bandura & Dzingirai, 2019; Asante *et al*, 2023; Fengju & Wubishet, 2024; Adu-Darko, 2024). Furthermore, several studies examined the influence of the stock market development and institutional quality on economic growth (Mohammed, 2023; Eshun & Tweneboah, 2024; Mbulawa & Chingoiro, 2024).

Few studies have x-rayed the moderating impact of institutional quality on the FS-economic growth nexus in the context of the SSA economies. The investigation largely contributes to the existing literature by analyzing the moderating influence of institutional quality on the nexus between the FS and economic growth in the SSA countries.

METHODOLOGY

Model specification

The GMM panel estimation was utilized to model the effect of the FS systems on economic growth. The technique helps address the potential issue of the endogeneity of the explanatory variables. This model can categorically be expressed as follows:

$$GDPG_{i,t} = \alpha_{i,t} + FS_{i,t} + FS * IV_{i,t} + \sum_{i=1}^{n} Z_{i,t} + u_i + \lambda_i + \varepsilon_{it} \quad (1)$$

where *GDPG* denotes the GDP growth; *FS* denotes the financial structure; *IV* is the institutional variable; *FS*IV* captures the moderating effect; *Z* is the vector of the control variables (*TRADE*, *FDI*, *INF*, *FI*); and ε is the error term. The variables λ and u represent the time and country fixed effects, respectively. The subscripts *t* and *i* refer to the period and the economy, respectively. Following J. V. Bats and A. C. Houben (2020), the FS was proxied as the bank credit ratio divided by the sum of the stock market capitalization and the non-financial sector debt. The bank credit ratio was derived as the ratio of the bank credit to the private sector/GDP.

Following previous studies (see Butkiewicz & Yanikkaya, 2011; Madni & Chaudhary, 2017; Babajić,

Nurikić, Karabegović & Nuhanović, 2024; Efayena & Olele, 2024), the institutional quality variable (IV) was constructed from the six governance indicators (namely the absence of violence/terrorism, corruption control, the rule of law, political stability and voice and accountability, governance effectiveness, and regulatory quality), applying the principal component analysis (PCA) technique. Specifically, if the overall correlation among these variables is adequate to utilize the PCA was first examined. The Bartlett test of sphericity was used for that purpose. The test has the null hypothesis of no intercorrelation among the existing variables. The null hypothesis was accepted due to the results outlined in Table 1 (Panel A) at the 1% significance level. Furthermore, the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy was employed to see if the variables were adequate to construct an index. The KMO value of 0.874 exceeded the threshold of 0.6 (rule of thumb), indicating that the variables were adequate.

Thereafter, a factor analysis was carried out and the results revealed that only the factor 1 had an eigenvalue exceeding 1. Thus, the factor 1 accounting for 79.63% of the total variance was used in the construction of the *IV* index. In addition, the control variables include *FDI* (the foreign direct investment/GDP ratio), *FI* (the fixed investment/GDP ratio), *INF* (the log of inflation), and *TRADE* (the total trade/GDP ratio). Similar control variables were adopted by O. U. Oro and A. H. Ekpo (2020).

Furthermore, in order to address the potential issue of the reverse effects among the explanatory and dependent variables that may give rise to a simultaneity bias, the two-step fixed-effects GMM panel following M. Arellano (2003) was applied. The proposed fixed-effects instrumental variable (FE-IV) model was aptly captured in the model generalization. Specifically, the model hinges on the premise that the instruments are exogenous, which can be expressed as:

$$E[Y'\epsilon] = 0 \quad (2)$$

where Y represents the vector of the instrumental variables. For the internal instruments, the fourth and fifth lags of the *FS* variable and the control variables are included. These internal instruments omit both shorter and longer lags, as the former may be correlated with current gdpg values and the latter may lead to a finite sample bias due to the overfitting of the instruments. To achieve the estimations consistent in the presence of heteroscedasticity, the study's weighting matrix employs White GMM weights. To assess the validity of the instruments, the Sargan test for overidentifying restrictions was used.

Data

This study employs the data sourced from the *World Governance Indicators* and the *World Development Indicators*, concentrating on a sample of 33 SSA economies. The dataset covers the period from 2006 to 2022. The study classified the SSA economies into two groups, following the World Bank's classifications - 'middle-income countries' (MICs) and 'low-income countries' (LICs), as delineated in Table 2. The length of the coverage period and the countries incorporated in the analysis are contingent upon data availability.

Table 1 The test for the intercorrelation of the variables

Index	Panel A Bartlett test of sphericity		Panel B Kaiser-Meyer-Olkin test
	Chi-sq.	p-value	Stat.
Institutional quality (IV)	2071.39***	0.0000	0.874

Note: freedom degree = 32

Source: Authors

RESULTS AND DISCUSSION

Descriptive analysis

The descriptive statistics of the used datasets are explicitly delineated in Table 3.

The results show that the SSA region experienced mean growth of 3.86% during the period under consideration, this growth rate being relatively dismal given the region's enormous human and financial resources. Foreign direct investment (FDI) for the period is 3.65% of the GDP of the economy, whereas the maximum FDI is 160.11% of the GDP in SSA. The outcomes show that trade for the region performed poorly, averaging 4% of the GDP during the period. The mean for the FS was recorded at 2.51.

To establish the skewness/direction of the association, a correlation analysis was carried out in the study, whose outcomes are presented in Table 4.

The correlation matrix (Table 4) indicates that the financial structure shows an adverse association with inflation, whereas it shows a positive nexus with FDI, fixed investment, and trade. The relatively low coefficients indicate that the issue of multicollinearity does not constitute a problem in the dataset.

Table 2 Classification of Countries

Middle-income countries (MICs)	Botswana, Cameroon, Nigeria, Gabon, Congo Rep, Sudan, Mauritius, Angola, Comoros, Kenya, Cote D'Ivoire, South Africa, Namibia, Ghana, Equatorial Guinea, Senegal, Seychelles,
Lower-income countries (LICs)	Niger, Congo Dem Rep, Burkina Faso, Mozambique, Ethiopia, Malawi, Tanzania, Benin, Rwanda, Sierra Leone, CAR, Guinea, Chad, Togo, Burundi, Uganda

Source: The World Bank (2020)

Table 3 Descriptive statistics

	χ	St. dev.	Min.	Max.
GDP growth (GDPG)	3.87	8.49	-51.05	69.32
Financial structure (FS)	2.51	5.77	-27.19	33.63
Foreign direct investment/GDP (FDI)	3.65	9.51	-81.05	160.11
Inflation (INF)	5.89	7.73	-3.58	51.73
Fixed investment/GDP (FI)	4.59	22.67	37.88	67.18
Trade/GDP (TRADE)	4.04	11.07	10.99	33.68

Note: min., max., st. dev., and χ, denote the minimum, the maximum, the standard deviation, and the mean, respectively.

Source: Authors

Table 4 The correlation matrix

Variable	GDPG	FS	FDI	INF	FI	TRADE
GDP growth (GDPG)	1.000					
Financial structure (FS)	-0.102	1.000				
Foreign direct investment/GDP (FDI)	0.043	0.042	1.000			
Inflation (INF)	-0.204	-0.210	-0.075	1.000		
Fixed investment/GDP (FI)	-0.113	0.131	0.212	-0.200	1.000	
Trade/GDP (TRADE)	0.077	0.103	0.066	-0.110	0.146	1.000

Source: Authors

Cross-sectional dependence (C-D) test

Prior to examining the unit root test of the variables used, it is essential to estimate or conduct a panel C-D test in order to determine the potential interdependence between the economies over time. C-D may emanate from country-specific dynamics and ignoring such C-D in panel estimations may culminate in the size distortions and a substantial bias. To tackle the issue, the Pesaran-scaled LM, Breusch-Pagan LM, bias-corrected scaled LM, and Pesaran C-D tests were employed. Table 5 outlines the outcomes of the mentioned tests.

Table 5 The cross-section dependence tests

	Breusch-Pagan LM	Pesaran-scaled LM	Bias-corrected scaled LM	Pesaran C-D
Overall sample				
GDPG	632.13*** (0.0000)	81.33*** (0.0000)	79.09*** (0.0000)	14.27*** (0.0000)
FS	528.61*** (0.0000)	37.14*** (0.0000)	35.25*** (0.0000)	13.49*** (0.0000)
TRADE	238.62*** (0.0000)	20.05*** (0.0000)	18.63*** (0.0000)	9.17*** (0.0000)
FDI	204.19*** (0.0000)	22.65*** (0.0000)	19.09*** (0.0000)	9.61*** (0.0000)
FI	201.06*** (0.0000)	22.17*** (0.0000)	19.00*** (0.0000)	9.24*** (0.0000)
INF	196.43*** (0.0000)	20.32*** (0.0000)	18.81*** (0.0000)	8.12*** (0.0000)
Low-income countries (LICs)				
GDPG	218.09*** (0.0000)	36.14*** (0.0000)	34.07*** (0.0000)	12.54*** (0.0000)
FS	207.13*** (0.0000)	33.71*** (0.0000)	33.06*** (0.0000)	12.81*** (0.0000)
TRADE	135.01*** (0.0000)	28.65*** (0.0000)	28.02*** (0.0000)	7.91*** (0.0000)
FDI	108.05*** (0.0000)	27.82*** (0.0000)	26.09*** (0.0000)	7.13*** (0.0000)
FI	106.11*** (0.0000)	25.79*** (0.0000)	24.09*** (0.0000)	7.02*** (0.0000)
INF	103.49*** (0.0000)	22.09*** (0.0000)	20.65*** (0.0000)	5.52*** (0.0000)
Middle-income countries (MICs)				
GDPG	464.22*** (0.0000)	49.16*** (0.0000)	46.05*** (0.0000)	15.71*** (0.0000)
FS	451.35*** (0.0000)	45.60*** (0.0000)	44.13*** (0.0000)	14.09*** (0.0000)
TRADE	150.09*** (0.0000)	38.27*** (0.0000)	36.42*** (0.0000)	9.07*** (0.0000)
FDI	139.05*** (0.0000)	36.61*** (0.0000)	36.04*** (0.0000)	8.99*** (0.0000)
FI	121.76*** (0.0000)	34.08*** (0.0000)	33.91*** (0.0000)	8.07*** (0.0000)
INF	103.92*** (0.0000)	31.74*** (0.0000)	30.48*** (0.0000)	6.26*** (0.0000)

Note: (***), (**) (*) denote significance at the 1%, 5% and 10% significance levels, respectively.

Source: Authors

Table 5 shows the output for the whole sample, as well as LICs and MICs. The output shows that the null hypothesis of no C-D in both LICs and MICs was predominantly rejected by the four C-D tests, which implies the presence of C-D in the data. Consequently, these findings suggest employing the second-generation unit root tests specifically designed to adequately capture the potential effects of cross-sectional dependence.

Panel unit root tests

The identification of the presence of the cross-sectional dependence among the variables propels the use of the panel unit root tests (the second-generation type) for conducting unit root analyses. Table 6 presents the results of the stationarity tests.

The outcomes of the second-generation unit root tests delineated in Table 6 indicate the integration of the order-one variables [I(1)]. These findings reject stationarity at the levels, simultaneously supporting stationarity in their first difference.

Panel cointegration tests

The identification of all the variables under investigation as I(1) necessitates a critical assessment of their cointegration. Three tests were used to achieve this objective: the Kao test (Kao, 1999), the Pedroni tests, and the Westerlund test (Westerlund, 2005). Table 7 displays the findings of these tests, specifically in Panels A, B, and C.

The results of the Pedroni cointegration test accounted for in Table 7 (Panel A) show that all the variables

Table 6 The stationarity tests

	Bai and Ng - PANIC		Pesaran-CIPS	
	Level	First Diff.	Level	First Diff.
Overall sample of SSA				
GDPG	-0.2318	-3.6825***	-0.4307	-4.5504***
FS	-0.6121	-3.3741***	-0.3361	-5.5169***
TRADE	-0.4502	-3.6984***	-0.4781	-2.5412**
FDI	-0.3821	-3.7811***	-0.3068	-2.5714**
FI	-0.2508	-3.7251***	-0.4414	-4.5672
INF	-0.3881	-3.7985***	-0.3170	-2.6483
Low-income countries (LICs)				
GDPG	-0.1603	-3.3561***	-0.2417	-6.2054***
FS	-0.2799	-2.0296**	-0.3820	-3.8514***
TRADE	-0.7437	-3.3518***	-0.3305	-2.6811**
FDI	-0.4163	-2.5033**	-0.2045	-2.5789**
FI	-0.4008	-2.5009**	-0.2118	-2.7094**
INF	-0.1611	-3.3578***	-0.2462	-6.3127***
Middle-income countries (LICs)				
GDPG	-0.2791	-2.3164**	-0.5821	-4.4314***
FS	-0.1605	-3.8373***	-0.3811	-4.7045***
TRADE	-0.2691	-3.1892***	-0.5104	-4.6206***
FDI	-0.1187	-3.0477***	-0.3507	-3.1043***
FI	-0.1628	-3.8419***	-0.3821	-4.7106***
INF	-0.1136	-3.0365***	-0.3513	-3.1164***

Note: The null hypothesis rejected at the 1% (***) and 5% (**) significance levels.

Source: Authors

Table 7 The panel cointegration outcomes

Panel A. Panel cointegration tests						
	Full sample		LICs		MICs	
	stat.	prob.	stat.	prob.	stat.	prob.
Pedroni panel ('within dimension')						
'Panel v-statistic'	-1.8103	0.8043	-1.9262	0.8001	-1.9199	0.9652
'Panel rho-statistic'	-0.7031	0.8541	-0.6571	0.7106	-0.5704	0.5117
'Panel PP-statistic'	-11.2184	0.0000	-6.2714	0.0000	-9.6108	0.0000
'Panel ADF-statistic'	-8.5032	0.0000	-4.5401	0.0000	-5.4351	0.0000
Pedroni panel ('between dimension')						
'Group rho-statistic'	1.0773	0.7651	0.3931	0.5307	0.6399	0.5032
'Group PP-statistic'	-18.6035	0.0000	-12.2950	0.0000	-14.0308	0.0000
'Group ADF-statistic'	-8.2048	0.0000	-4.7006	0.0000	-4.2052	0.0000
Panel B. Kao residual cointegration test						
	Full sample		LICs		MICs	
	stat.	p-value	stat.	p-value	stat.	p-value
ADF	-6.5022	0.0000	-4.7352	0.0002	-6.0144	0.0000
Panel C. Westerlund (2005) cointegration test						
	Full sample		LICs		MICs	
	stat.	p-value	stat.	p-value	stat.	p-value
Variance ratio	-5.6132	0.0000	-3.7705	0.0002	-5.0317	0.0000

Source: Authors

included in the model for the full sample, along with LICs and MICs, demonstrate cointegration. The significant values of the Panel ADF-Statistic, Panel PP-Statistic, Group ADF-Statistic, and Group PP Statistic are all significant at the 1% level. The outcomes of the Kao test (Kao, 1999) [see Panel B] and the Westerlund test (Westerlund, 2005) [see Panel C] further confirm the cointegration of the variables across both the full sample and the income groups. These statistically significant statistics provide the evidence for this assertion.

Empirical estimation

Table 8 presents the FE-GMM panel results. As is previously mentioned, the results are heteroscedastic-consistent. The outcomes of the Sargan test of over-identification restrictions are also presented in Table 8.

Notably, Sargan test demonstrates that each estimation accepted the null hypothesis of the valid instruments. The estimates imply that in the LICs, the bank- and market-oriented FSs are associated with lower and higher economic growth, respectively. This variation is possibly caused by the fact that in the LICs, the market-oriented financial structures often facilitate greater economic growth by fostering competition, promoting innovation, and ensuring efficient capital allocation. The bank-oriented systems typically display a higher level of risk aversion and rigidity, potentially leading to inefficiencies and impeding economic growth, especially in the dynamic or emerging sectors that require flexible and diverse financial sources (Oro & Ekpo, 2020). Regionally, the results suggest that the bank- and market-oriented FSs are associated with lower and higher economic growth, respectively.

Conversely, the estimates suggest that, in the MICs, the bank- and market-oriented FSs are associated with higher and lower economic growth, respectively, which is so for several possible reasons. For instance, in such economies, the bank-oriented financial systems offer stability, relationship-orientated

Table 8 The fixed effect GMM estimations

Dependent variable: GDPG			
Variable	Full Sample	LICs	MICs
FS	-0.2703*** (0.0000)	-0.3191** (0.0038)	0.0740*** (0.0001)
FS*IV	-0.0401*** (0.0000)	-0.0169* (0.0052)	-0.0310*** (0.000)
FDI	-0.8006 (0.0913)	-0.1772** (0.0015)	-0.2616 (0.1301)
TRADE	0.1688 (0.0710)	0.0519 (0.1042)	0.0349 (0.1335)
FI	0.0682*** (0.0000)	0.1057*** (0.0000)	0.1953** (0.0031)
INF	-0.1073 (0.0001)	-0.3107** (0.0028)	-0.1572*** (0.0000)
'Country fixed effects'	Yes	Yes	Yes
'Time fixed effects'	Yes	Yes	Yes
Sargan test	0.43	0.38	0.40

Note: (***), (**) and (*) denote significance at the 1%, 5% and 10% significance levels, respectively.

Source: Authors

lending, and long-term financing essential to business growth, especially in the contexts characterized by underdeveloped capital markets and information asymmetries. These elements enhance the capacity of the banks to foster growth within these economies (Demirgüç-Kunt & Levine, 2001; Bats & Houben, 2020; Liu & Zhang, 2020). However, these nations' financial systems characterized by the market-oriented approach frequently show underdevelopment, susceptibility to volatility, and inefficiencies in directing resources to their most critical applications, potentially leading to diminished economic growth relative to bank-centric systems (Demirguc-Kunt & Maksimovic, 2002; Dabi *et al*, 2024). Explicitly, the results suggest the need to expand credit by financial institutions in SSA, especially in the LICs. In such economies, capital markets stimulate the economic growth trajectory more than the banking sector, which supports the findings of L. Gambacorta *et al* (2014), who suggested that banks slowed the reversal of the downward business cycles and took longer to reach equilibrium than the capital markets did.

The variable encapsulating the interactive impact(s) of *FSs* and institutional quality (FS*IV) on growth presents several policy implications. According to Table 6, the variable shows a statistically significant negative effect for the region (SSA) and among the LICs, while showing a positive effect for the MICs. Regionally, the results indicate that institutional quality does not significantly enhance the positive contribution the financial structure makes to economic growth in SSA. Instead, institutional quality diminishes the growth effects of the FS, especially in the MICs. The finding further indicates that institutional quality significantly exacerbates the decelerating economic growth within SSA, particularly in the LICs.

A possible reason for the foregoing outcome lies in institutional corruption widespread in many SSA economies, which serves as a catalyst for resource misallocation away from their intended productive purposes, hindering investment and undermining public confidence in governmental institutions. Such corruption may hinder economic growth because of its negative influence on the efficacy of resource allocation and its discouraging effect on both international and domestic investments. Moreover, the SSA countries often encounter political instability,

marked by the recurring cycle of governmental transitions and intermittent conflicts (Efayena, Olele & Buzugbe, 2024). Political instability may foster an environment of uncertainty, potentially impeding the progress of economic development. Investors often demonstrate hesitance in committing themselves to long-term investments in the areas characterized by instability. The existence of cumbersome and ineffective bureaucratic processes exacerbates the circumstances, dissuading entrepreneurial endeavours and hindering economic growth. Establishing and overseeing a business often involves the complex and laborious task of manoeuvring various protocols, which may dissuade prospective investors from both domestic and foreign entities.

The results also show that, although trade positively impacts economic growth in both groups of countries in SSA, irrespective of their income classification, the effect is not statistically significant. In addition, FDI had a negative effect, which was statistically insignificant across the panels. These findings reiterate the need to stimulate both FDI and trade in the region.

CONCLUSION

In this study, the moderating effect of institutional quality on the FS-economic growth nexus in 33 SSA economies classified by income between 2006 and 2022 is assessed. Despite the importance or essence of institutional variables, there is a lack of studies investigating the moderating influence of institutional quality on the FS and economic growth relationship in the SSA economies. The study utilized the two-step fixed-effects generalized method of moments (GMM) to address endogeneity and other econometric concerns. The empirical findings indicate that, in the LICs, the bank-oriented FSs are associated with lower economic growth, whereas the market-oriented FSs are associated with enhanced economic growth. Conversely, in the middle-income economies, the bank-oriented FSs are associated with high economic growth, whereas the market-oriented FSs are associated with reduced economic growth.

Furthermore, the study demonstrates that the quality of institutions does not significantly enhance the FS growth effect in SSA. The disaggregated findings indicate that institutional quality alleviates the growth impacts of the FSs in the MICs, whereas it markedly intensifies the decline in economic growth in the LICs. The results reveal considerable policy ramifications and economic drives. The SSA economies should undertake a thorough assessment of their existing institutional framework with the aim of uncovering any flaws or inadequacies that hinder the potential of the financial framework to promote the growth trajectory. It is essential to advance the current capital markets by improving their capital structure, particularly among the LICs. The study shows that the non-banking and stock markets exhibit greater activity and efficiency than the banks in the context of the MICs compared to the LICs. Moreover, the stock markets in these countries exhibit greater efficiency and activity compared to their banking systems. In those countries, there is a propensity to adopt a more market-orientated approach as their wealth increases. The study suggests that the economies characterized by high institutional quality are generally market-orientated, whereas those with low institutional quality often exhibit underdeveloped financial systems. Therefore, a synergy between the banking systems and the capital markets in SSA is highly essential. Public-private partnership arrangements in SSA can help achieve this goal. The SSA economies should diligently implement contextual policy reforms tailored to improve their banking and capital markets.

Despite its policy significance, the study has several limitations. For instance, the analysis excluded financial development due to the availability of adequate proxies among the SSA nations. Financial development may affect the degree of the influence that institutional quality has on the nexus between the FS and the economic growth trajectory. Given these limitations, subsequent studies should meticulously incorporate financial development in their assessments of the nexus between the FS and economic growth. The moderating effect of the institutional quality indicators on the financial services-economic growth nexus also needs to be

evaluated sector-by-sector so as to ensure a holistic investigation.

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Obukohwo Oba Efayena is postdoctoral researcher at the Foundation of Economic Research & Training (FERT), Lagos, Nigeria. He holds a PhD from University of Nigeria, Nsukka, Nigeria. His research focuses on development economics and public policy.

Jonathan Ojarikre Oniore is an Associate Professor of Economics in the Department of Economics, Bingham University, Karu, Nassarawa State, Nigeria. He holds a PhD from University of Port Harcourt, Nigeria, specializing in development economics and monetary economics.

Ngozi Patricia Buzugbe holds a PhD in Economics from the University of Nigeria, Nsukka, Nigeria, specializing in public finance and development economics.

RASPRAVA O FINANSIJSKOJ STRUKTURI I EKONOMSKOM RASTU PODSAHARSKE AFRIKE - UBLAŽAVAJUĆI UTICAJ KVALITETA INSTITUCIJA U PANELU ZASNOVANOM NA PRIHODU

Obukohwo Oba Efayena[1], Jonathan Ojarikre Oniore[2] and Ngozi Patricia Buzugbe[1]

[1]*University of Nigeria, Department of Economics, Nsukka, Enugu State, Nigeria*
[2]*Bingham University, Department of Economics, Karu, Nasarawa State, Nigeria*

U ovoj studiji se temeljno sagledava ublažavajući uticaj kvaliteta institucija na odnos finansijske strukture (FS) i ekonomskog rasta u 33 ekonomije Podsaharske Afrike (PSA) u periodu od 2006. do 2022. godine, a na osnovu klasifikacije prihoda. U istraživanju u kom se prikladno primenjuje dvostepeni generalizovani metod momenata s fiksnim efektima došlo se do saznanja da se, među zemljama s niskim prihodima, bankocentrično orijentisane zemlje povezuju s nižim nivoom ekonomskog rasta, a one tržišno orijentisane - s višim nivoom ekonomskog rasta. Među ekonomijama koje ostvaruju srednje prihode, finansijske strukture bankocentrično, odnosno tržišno orijentisanih zemalja se povezuju s višim, odnosno nižim nivoom ekonomskog rasta, respektivno. U ovoj studiji se primetno konstatuje da kvalitet institucija ne podstiče znatno finansijske strukture da daju svoj pozitivan doprinos ekonomskom rastu. Razloženi ishodi pokazuju da prevladavajući kvalitet institucija istovremeno umanjuje efekte finansijskih struktura na rast u ekonomijama sa srednjim prihodima i značajno pogoršava ionako usporavajući ekonomski rast u ekonomijama s niskim prihodima. U predmetnoj studiji se preporučuje usvajanje politika za jačanje kvaliteta institucija, kao i povećanje sinergije između bankarskog sektora i tržišta kapitala.

Ključne reči: finansijski, rast, prihodi, ustanove

JEL Classification: E44, E46, O16