

MODERATING EFFECT OF STATE FRAGILITY ON THE GLOBALISATION: ECONOMIC GROWTH NEXUS IN SUB-SAHARAN AFRICA

CHRISTIAN AGU

University of Nigeria, Nsukka. Enugu State, Nigeria
chris.agu@unn.edu.ng

Abstract

This paper uses panel data over the 2006 - 2019 periods, a modified endogenous growth equation, and a dynamic panel estimator to investigate the impact of globalization on economic growth in Sub-Saharan African (SSA) countries, and how the fragility of SSA countries is influencing this impact. Utilizing a two-step System GMM, the findings of the study show that globalization had a significant positive impact on economic growth, while the impact of state fragility is negative and significant. In examining the role of state fragility, as a moderator, in the globalization-economic growth nexus, the findings reveal that the interactive effect of state fragility and globalization on economic growth is negative and statistically significant. This suggests that state fragility interacts with globalization to weaken the impact of the latter on economic growth. The study therefore recommend that there is the urgent need for decision makers in SSA to chart a new course towards ending the incessant instability associated with the zone.

Keywords: globalization, state fragility, economic growth, interaction, system GMM, SSA

JEL Classification: C33, F02, F15, F51, F60

1. INTRODUCTION

National economies have become increasingly intertwined since the beginning of the twenty-first century, and the concept of globalization — that we are moving toward a single, inclusive economy — has gained traction (Dornbusch et al., 2011). Since the mid-1990s, globalization has been a hot subject of debate and concern in the business world. The leaning toward further integrated international markets has clearly opened up a large prospect for amplified growth, and it represents an ideal chance for developing countries to improve their economic prosperity. As the World Bank (2020) shows, activities linked directly or indirectly to international commerce are generating an increasingly high share of global GDP.

While globalization has indeed contributed to the expansion of global prosperity and income in recent years, it is essential to acknowledge that its impact has been uneven. Daouas (2001), Wade (2001), and Calamitsis (2001) have highlighted that globalization has not benefited all regions and countries equally. Critics argue that it has led to increased unemployment, a rise in contingent labor, and weakened labor movements in many developing countries. It is also noteworthy that globalization has played a role in the rise of inequality, not only in developing countries but also in developed nations. Therefore, while globalization has generally increased income and prosperity globally, it has simultaneously exacerbated income inequality, with its effects varying widely across different regions and countries. For instance, due to persistent political instability, weak institutions, and other factors such as substantial indebtedness, Sub-Saharan African countries have not reaped the benefits of globalization (Majidi, 2017).

There is no doubt that the world has become increasingly globalized as a result of technology breakthroughs in recent decades, tying every country on the planet together. The problems generated by insecure sovereign states are one of the main concerns of the present world order (Demir and Varlik, 2015). These states are frequently referred to be fragile, implying that the government is unable to keep the country stable in some way. Within the social science discourse, there are several levels of fragility described, including 'weak,' 'failing,' 'failed,' and 'collapsed' states (Di John, 2010). The latter two constitute the final degree of fragility, which signifies that the government has lost control of the state, or in other words, that the country has devolved into anarchy (Trauschweizer and Miner, 2014).

In the context of this study, it is crucial to clarify the concept of "State Fragility." State fragility refers to the condition of a nation-state in which its government is unable to maintain stability and control over the country, often resulting in various degrees of instability. Within the social science discourse, there are several levels of fragility described, including 'weak,' 'failing,' 'failed,' and 'collapsed' states (Di John, 2010). The latter two represent the most extreme forms of fragility, signifying that the government has lost control of the state, or, in other words, that the country has descended into anarchy (Trauschweizer and Miner, 2014).

Because Africa has four out of every five fragile nations in the globe, state fragility is a major concern (Jones and Tarp, 2016). In fact, based on the OECD (2015) definition of state fragility, 30 of 54 African countries (almost 60%) with a population of more than half a billion people might be considered unstable. Figure 1 clearly defines the fragile state of SSA countries. Except for Botswana, all other SSA countries fall under either warning or alert zone.

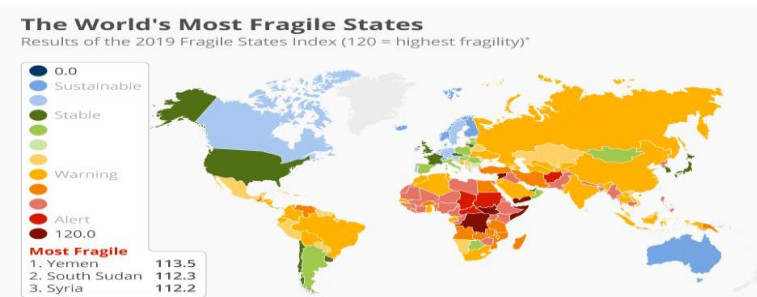


Figure 1: The World's Most Fragile States
Source: Statista (2022)

The 2019 Fragile States Index (120 = highest fragility) is depicted in the Figure 1. Almost all Sub-Saharan African countries, as expected, are in the risk zone of state fragility. This, without a doubt, calls for immediate action.

Based on data from the World Development Indicators (World Bank, 2020), real income growth in Sub-Saharan Africa did not keep pace with population increase between 1970 and 2000. After a modest average annual growth rate of roughly 1.5 percent in real per capita income throughout the 1970s, these rates fell to 1.4 percent and 0.7 percent in the 1980s and 1990s, respectively. Since 2000, SSA countries' growth rates have improved, owing mostly to recoveries in primary commodities, and most appear to have recovered rapidly from the global economic predicament. Despite this, SSA's average real per capita income is little higher than in 1970, and it trails all other regions in most development indicators. The regional average also hides huge differences within the continent, with countries affected by violent conflict and political instability performing the worst, while resource-rich countries have reaped the advantages of the commodities boom since 2000 (see Table 1 and Figure 2).

Table 1: Average Annual Per Capita Growth Rates, 1960-2019

Average compound growth rates per decade (percentage)						
	1960-69	1970-79	1980-89	1990-99	2000-09	2010-19
World	3.5	2.2	1.2	1.1	1.5	3
East Asia & Pacific	1.5	4.8	5.7	6.5	7.9	4.6
Latin America & the Caribbean	2.5	3.5	-0.1	1.1	1.7	2.1
Europe & Central Asia				-2.6	4.9	1.9
South Asia	1.8	0.6	3.1	3.3	4.7	6.4

The Middle East & North Africa	2.6	-1.6	2.1	2.7	2.9	
Sub-Saharan Africa	1.6	1.5	-1.4	-0.7	2.7	3.5
GDP per capita in constant 2010 US dollars						
World	4,321	5,714	6,528	7,421	8,803	10,298
East Asia & Pacific	290	430	721	1,363	2,650	9,144
Latin America & the Caribbean	4,072	5,703	6,434	6,841	7,807	9,514
Europe & Central Asia				5,125	6,745	24,984
South Asia	337	380	462	623	927	1,573
Middle East & North Africa	1,004	2,996	2,661	2,743	3,483	7,561
Sub-Saharan Africa	1,161	1,433	1,321	1,051	1,335	1,668

Source: Authors' computation using data from WDI

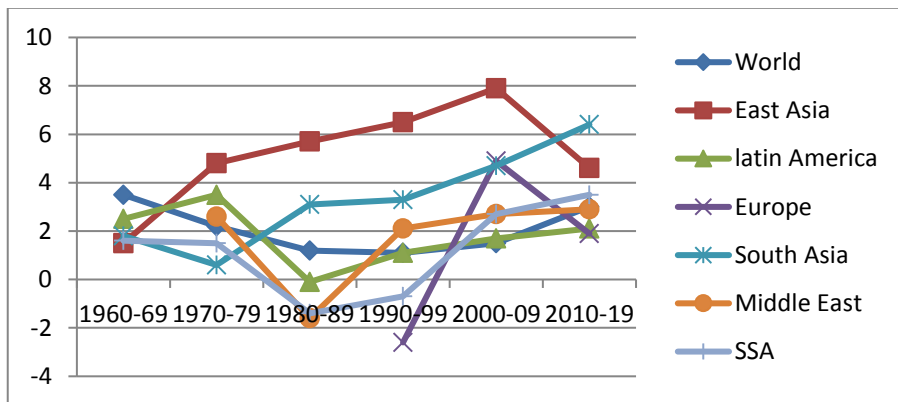


Figure 2: Average Compound Growth Rate Per Decade (%)

Source: Authors' computation using data from WDI

The World Bank has classed 22 of SSA's 48 countries as fragile states, or countries with policies and institutions of governance that are so inadequate that the state's capacity to ensure the security of its population and provide basic public services is severely constrained. More concerning is the fact that their performance has lagged behind that of non-fragile states since the late 1990s, with the gap expanding over time. Furthermore, based on the European Report on Development (2009), fragility appears to be a long-term phenomenon; the probability of an African

fragile state remaining fragile in 2009 was 0.95. Globally, 35 nations classified as fragile by the World Bank in 1979 remained fragile in 2009.

Not minding the critical role state stability plays in the economic development of countries, the extant literature in Africa has not accounted for the fragility of state in investigating the effect of globalization in Sub-Saharan African countries' growth performance. Given this background, this research is aimed at examining the impact state fragility plays in the globalization-economic growth nexus in Sub-Saharan African countries, something which no previous study has done, to the best of our knowledge.

In view of the foregoing, the study is seeking to: (i) ascertain the impact of globalization on the economic growth of Sub-Saharan African countries; (ii) determine the extent at which the fragility of state in Sub-Saharan African countries affect economic growth in the zone; (iii) establish the moderating influence of state fragility on the globalization-economic growth nexus in Sub-Saharan Africa. This study will contribute largely to the existing literature on globalization. Given the contradictory evidence in the literature regarding the nexus between globalization and economic growth in SSA, it will be of immense importance to investigate if the level of state fragility in the zone has played any role in this relationship. Existing studies have only focused on the direct impact of globalization on economic growth in the zone. They have largely neglected how the fragility of state could help moderate the globalization-economic growth nexus. Hence, this study is aimed at bridging this gap.

The remaining sections of this paper are organized as follows: Section 2 provides an overview of the existing literature; Section 3 describes the data and methodology; Section 4 presents the empirical results; and Section 5 concludes the paper and offers some policy recommendations.

2. RELATED LITERATURE

In this section, we review the existing literature on the interplay between state fragility, economic expansion, and globalization. To provide a more organized overview, we have segmented the literature into two sub-sections: "2.1 Globalization-Economic Growth Nexus" and "2.2 State Fragility-Economic Growth Relationship."

2.1 GLOBALIZATION-ECONOMIC GROWTH NEXUS

The relationship between globalization and economic growth has been extensively studied in various contexts. Stensnes (2006) emphasized the importance of strong institutions when integrating with global markets. He found that countries with effective conflict management structures tend to experience robust economic growth in response to greater openness.

Gurgul and Lach (2014) examined the impact of globalization on economic growth in Central and Eastern European economies, highlighting the growth-stimulating effects of globalization, particularly in social and economic dimensions. Dreher (2006) analyzed globalization's dimensions and their influence on economic growth. He found that actual economic flows and restrictions in developed countries strongly promote economic growth. Hassan et al. (2019) discussed globalization's role in promoting economic growth in Pakistan, while Zahonogo (2018) explored its effects in Sub-Saharan African countries, revealing an inverted U-curve relationship. Santiago, Fuinhas, and Marques (2020) examined the impacts of globalization on the economic growth of Latin American and Caribbean countries, concluding that globalization had a positive impact on long-term economic growth. Hasan (2019) studied the impact of various dimensions of globalization on South Asian countries and found that overall globalization, economic globalization, and political globalization positively accelerated economic growth in the long run. Sun et al. (2023) focused on the role of globalization in the economic growth of Asian economies, particularly in emerging and developing nations. Nguea, Noula, and Nomba (2023) explored the impact of financial globalization and democracy on economic growth in African countries. Xu et al. (2021) investigated the effects of globalization on GDP growth in Asian economies, highlighting the importance of sound regulatory control and political stability.

While various studies have examined the impact of globalization on economic growth, including Aderemi et al. (2020), Rodrik (1999), Sindzingre (2005), Ali et al. (2018), Kilic (2015), Kaya (2010), Lilicarlsan and Dumrul (2018), and Reeshan and Zubair (2017), none have investigated the role of state fragility as a moderator in this relationship, especially in the African context. This study aims to fill this critical research gap and contribute to the existing literature on the globalization-growth nexus in Africa.

2.2 STATE FRAGILITY-ECONOMIC GROWTH RELATIONSHIP

State fragility is a critical factor that affects economic growth and development. Various studies have examined the relationship between state fragility and economic growth. O'Neil and Sheely (2019) highlighted the influence of governance issues on a nation's stability, emphasizing that poorer governance frameworks increase vulnerability to social discontent and violence. Collier (1999) focused on the impact of civil wars on economic growth, finding a negative relationship between civil war occurrence and growth. Burnside and Dollar (2000) explored the effectiveness of aid in developing nations with strong institutions and policies. Elmakkawe (2021) examined state fragility in Egypt and its impact on sustainable development goals, concluding that despite socioeconomic progress, Egypt remained politically fragile. Ojuolape et al. (2021) conducted an empirical study in West African countries, revealing that fragility significantly impacts macroeconomic variables and is self-reinforcing.

There are a few other studies which have tried to examine the impact of state fragility/violence on economic growth. Some of these studies include Bardwell and Iqbal (2021); Blomberg et al. (2004); Corbet et al. (2019); Yahya (2017); Zakaria et al. (2019); Besley and Persson (2011); Carment et al. (2008). Again, none of these studies has attempted to examine fragility as it relates to its interaction with globalization. This leaves another vacuum to be filled and this is where this study comes in.

3 MATERIALS AND METHODS

3.1 THE DATA

This study sampled 38 Sub-Saharan African countries of Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Comoros, Congo DR, Cote d'Ivoire, Equatorial Guinea, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Sierra Leone, South Africa, Sudan, Tanzania, Togo, and Uganda, between 2006 and 2019. The countries sampled were based on availability of data. The data was sourced from the World Bank's World Development Indicators (World Bank, 2020), The Fund for Peace (2021), KOF Swiss Economic Institute (KOF, 2021), Worldwide Governance Indicators (WGI, 2021), and Penn World Table (PWT, 2021). The definition and measurement of the variables used in the analysis are presented in Table 2. For the apriori expectation from both theoretical and empirical point of view, globalization has been found to have both positive and negative impact on economic growth. Therefore, in this study, it will be expected to have either positive or negative impact on growth. State fragility is expected to however have a negative impact on economic growth.

Table 2: Variables descriptions

Brief	Description and Measurement	Source
pcgdp	Real Gross Domestic Product (GDP) per capita, the measure of a country's economic output that accounts for its number of people, and adjusted for inflation. It is measured in constant US dollars, using 2015 as the base year.	WDI
glob	Globalization index, measures the economic, social and political dimensions of globalization. We used the index, which is an aggregate of all the components of globalization. The higher the value of the index, the more globalized a nation becomes.	KOF Swiss Economic Institute
frag	State fragility index, produced by The Fund for Peace, is a critical tool in highlighting not only the normal pressures that all states experience, but also in identifying when those pressures are pushing a state towards the brink of failure. The higher the value of the index, the more fragile (unstable) a nation becomes	The Fund for Peace
ace	Access to electricity (% of population)	WDI

lbf	Labor force participation rate for ages 15-24, total (%) (modeled ILO estimate)	WDI
gov	Government effectiveness, reflects perceptions of the quality of public services, the quality of the civil service and the degree of its independence from political pressures. It ranges from -2.5 to +2.5. The higher the value of the index, the more effective government institutions become.	WGI
hum	Human capital index, based on years of schooling and returns to education.	PWT
gfcf	Gross fixed capital formation (% of GDP)	WDI
ict	Mobile cellular subscription, subscriptions to a public mobile telephone service that provide access to the PSTN using cellular technology	WDI

Note: pcgdp and ict were transformed into their natural logarithm before they enter the model

3.2 THEORETICAL FRAMEWORK

In this section, we establish the theoretical framework that underpins the analysis of the interplay between state fragility, economic growth, and globalization. Our research draws on two key theoretical perspectives, namely Institutional Economics and Dependency Theory, which provide a consistent and coherent foundation for our empirical investigation.

3.2.1. INSTITUTIONAL ECONOMICS

Institutional Economics, as articulated by scholars such as North (1990), Acemoglu and Robinson (2005), and Williamson (2000), centers on the important role of institutions and governance structures in shaping economic outcomes. This framework posits that the effectiveness of a state's institutions, encompassing legal, political, and economic structures, significantly influences its economic trajectory. Weak governance institutions in fragile states can hamper economic growth, while strong and well-functioning institutions facilitate economic development (North, 1990). Our analysis leverages the insights of Institutional Economics to understand how the governance capabilities of fragile states interact with economic growth and globalization.

3.2.2. DEPENDENCY THEORY

Dependency Theory, rooted in the works of scholars like Prebisch (1950) and Frank (1967), offers a valuable perspective on the dynamics between global economic forces and state fragility. This theory contends that developing countries may become dependent on developed nations and global economic systems, leading to structural imbalances. Within our research context, Dependency Theory helps illuminate how globalization can either exacerbate or mitigate the challenges of state fragility and its repercussions on economic growth (Prebisch, 1950). By examining the power dynamics within the global economic system, we gain insights into how

state fragility is influenced by external forces and the impact of globalization on fragile states.

With the inclusion of these theoretical frameworks as the basis for our study, we intend to have a firm ground for investigating state fragility, economic growth, and globalization.

3.3. MODEL SPECIFICATION

The model for this investigation will be estimated using the system Generalized Method of Moment (GMM) estimation technique, as described by Arellano and Bover (1995); and Blundel and Bond (1998).

The functional form of the model is given as:

$$pcgdp = f(\text{glob}, \text{frag}, \text{glob}*\text{frag}, \text{ace}, \text{lbf}, \text{gov}, \text{hum}, \text{gfcf}, \text{ict}) \quad (1)$$

Specifying equation (1) in a panel data and econometric form, gives:

$$\ln pcgdp_{it} = \alpha_i + \lambda_{i1} \ln pcgdp_{it-1} + \beta_{i1} \text{glob}_{it} + \beta_{i2} \text{frag}_{it} + \beta_{i3} (\text{glob}_{it} * \text{frag}_{it}) + \beta_{i4} \text{ace}_{it} + \beta_{i5} \text{lbf}_{it} + \beta_{i6} \text{gov}_{it} + \beta_{i7} \text{hum}_{it} + \beta_{i8} \text{gfcf}_{it} + \beta_{i9} \text{inict}_{it} + \gamma_i + \epsilon_{it} \quad (2)$$

Where $pcgdp$ is Gross Domestic Product per capita, $glob$ is globalization index, $frag$ is state fragility index, gov is government effectiveness, hum is human capital index, $gfcf$ is gross fixed capital formation, ict is mobile cellular subscription, α is the constant term, γ is unobserved country-specific effect, ϵ is stochastic error term, $pcgdp_{it-1}$ is the lagged level of $pcgdp$, $\lambda_{i1}, \beta_{i1}, \beta_{i2}, \dots, \beta_{i7}$, are the parameters to be estimated, i is the cross-sectional index ($i = 1, 2, \dots, 38$), and t is the time period ($t = 2006, 2007, \dots, 2019$). The interaction term ($glob_{it} * frag_{it}$) is included to ascertain the moderating role of state fragility on the relationship between globalization and economic growth in Sub-Saharan Africa.

The general form of the GMM estimation is stated as follows:

$$\ln Y_{it} = \phi \ln Y_{it-1} + \beta X'_{it} + \alpha Z'_{it} + (\gamma_i + \epsilon_{it}) \quad (3)$$

Incorporating our model into this, we have that:

$\ln Y_{it} = \ln pcgdp_{it}$ - represents (N x 1) vector of regress and

$\phi \ln Y_{it-1} = \lambda_{i1} \ln pcgdp_{it-1}$ – represents the lagged value of the regress and

X'_{it} = represents (2 x K) vector of regressors (i.e., $glob_{it}, frag_{it}$)

Z'_{it} = is a 6 x K vector of control variables i.e $ace_{it}, lbf_{it}, gov_{it}, hum_{it}, gfcf_{it}, inict_{it}$,

$\beta =$ is a K x 2 vector of parameters to be estimated

$\gamma_i =$ Unobserved country-specific effect

$\epsilon_{it} =$ Stochastic error term

Arellano and Bond (1991) proposed a Generalized Method of Moments estimator that uses all available lags in levels to instrument differenced variables that are not strictly exogenous. They also devised a test for autocorrelation, which can render some lags useless as instruments if it exists. Lagged levels are poor

instruments for first differences if the variables are close to a random walk, which is a problem with the original Arellano-Bond estimator.

In view of the foregoing, forward orthogonal deviations transformation will be applied instead of first differencing. The orthogonal deviations transformation, proposed by Arellano and Bover (1995), subtracts the average of all possible future data rather than the prior observation. It is computable for all observations except the last for each individual, regardless of how many gaps there are, minimizing data loss.

Therefore, equation (2) is specified thus:

$$\Delta \ln pggdp_{it} = \lambda_{i1} \Delta \ln pcgdp_{it-1} + \beta_{i1} \Delta glob_{it} + \beta_{i2} \Delta frag_{it} + \beta_{i3} (glob_{it} * frag_{it}) + \beta_{i4} \Delta ace_{it} + \beta_{i5} \Delta lbf_{it} + \beta_{i6} \Delta gov_{it} + \beta_{i7} \Delta hum_{it} + \beta_{i8} \Delta gfcf_{it} + \beta_{i9} \Delta ict_{it} + \Delta \epsilon_{it} \tag{10}$$

Using the system GMM, there are some basic diagnostic tests to be carried out in order to check for the suitability of the instrument sets used. These include the test for instrument validity developed by Hansen (1982) and Sargan (1985) known as the J-test. Secondly, test for autocorrelation/serial correlation of the second order (AR(2)) of the error term by Arellano and Bond (1991). These tests will be carried out accordingly.

4. RESULTS AND DISCUSSIONS

4.1 DESCRIPTIVE STATISTICS AND CORRELATION MATRIX/ VARIANCE INFLATION FACTOR (VIF)

In order to observe the variability and distribution of the variables utilized, it is necessary to define the nature of the data used in its raw form. Tables 3 and 4 present the summary statistics and the correlation matrix, respectively.

Table 3: Summary statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
<i>pcgdp</i>	532	2108.474	2687.521	278.2026	16438.64
<i>glob</i>	532	49.01166	8.010864	31.0596	72.66879
<i>frag</i>	532	87.25301	14.25748	40.5	113.7
<i>ace</i>	532	58.54456	32.23476	0.996907	204.843
<i>lbf</i>	510	53.60582	12.44074	28.868	84.117
<i>Gov</i>	532	-0.74673	0.615934	-1.85	1.06
<i>Hum</i>	532	1.502615	0.628509	0.33	2.911752
<i>Gfcf</i>	532	22.50608	7.756907	5.885067	53.61273
<i>ict</i>	532	1.28E+07	2.28E+07	36877	1.74E+08

Source: Authors

Table 3 shows the summary statistic which provides essential insights into the dataset's variables. In this dataset comprising 532 observations each, except for labor force with 510 observations, several key variables are examined. The mean

Gross Domestic Product per capita (pcgdp) stands at approximately 2108.47, reflecting income levels, with a notable standard deviation of 2687.52, indicating considerable income disparity across observations. The globalization index (glob) shows an average value of 49.01, showcasing the degree of global integration, while the state fragility index (frag) averages 87.25, indicating the level of political and social fragility within the dataset. Government effectiveness (gov) exhibits a mean of approximately -0.75, reflecting variations in this governance measure. The human capital index (hum) averages 1.50, indicating the level of human capital development. Gross fixed capital formation (gfcf) averages 22.51, representing investment levels, and the mobile cellular subscription (ICT) data ranges widely, from 36,877 to approximately 174 million, with an average of 1.28E+07. These statistics offer a comprehensive overview of the dataset's central tendencies, variability, and the range of values observed for each variable, facilitating a deeper understanding of the dataset's characteristics.

Table 4a: Correlation matrix

	<i>lnpcgdp</i>	<i>Glob</i>	<i>Frag</i>	<i>ace</i>	<i>lbf</i>	<i>Gov</i>	<i>hum</i>	<i>gfcf</i>	<i>lnict</i>
<i>lnpcgdp</i>	1.00								
<i>glob</i>	0.58	1.00							
<i>frag</i>	-0.58	-0.64	1.00						
<i>ace</i>	0.29	0.28	-0.38	1.00					
<i>Lbf</i>	-0.33	-0.21	0.18	-0.27	1.00				
<i>gov</i>	0.46	0.76	-0.74	0.36	-0.17	1.00			
<i>hum</i>	0.22	0.48	-0.35	0.06	0.08	0.44	1.00		
<i>gfcf</i>	0.33	0.13	-0.11	0.35	-0.20	0.19	0.05	1.00	
<i>lnict</i>	-0.01	0.46	0.18	-0.30	0.00	0.14	0.25	-0.08	1.00

Source: Authors

There is the need to check for collinearity among the regressors. That is, to check whether two or more regressors are exerting the same influence on the dependent variable. The basis for this test is the correlation matrix result using the correlation coefficient between pairs of regressors. According to Gujarati and Porter (2009), if the correlation coefficient between any pair of regressors exceeds 0.8, then there is multicollinearity between the two variables. Thus, since none of the coefficient between any pair of the regressors is more than 0.8, we can conclude that the variables employed in the study do not suffer from multicollinearity problem.

Table 4b: Variance Inflation Factor (VIF)

Variable	VIF	1/VIF
<i>glob</i>	4.45	0.224719
<i>frag</i>	3.82	0.261479
<i>gov</i>	3.61	0.27685
<i>lict</i>	3.26	0.307071
<i>ace</i>	1.64	0.609119
<i>hum</i>	1.32	0.760087
<i>lbf</i>	1.29	0.773639
<i>gfcf</i>	1.11	0.899269
Mean VIF	2.56	

Source: Authors

Furthermore, the Variance Inflation Factor (VIF) is also used to assess multicollinearity among the independent variables. VIF values exceeding 10 are considered problematic, and values exceeding 5 may raise concerns (James et al., 2013). The VIF results for the variables as shown in Table 4b are all below 5, with a mean VIF of 2.56, indicating no significant multicollinearity. This is consistent with the prior correlation test findings, suggesting that multicollinearity is not a concern in our analysis.

4.2 BOND TEST

This empirical study began by completing the Bond (2002) test to find the proper estimator between the difference and system GMM estimators in order to guarantee that the decision to use the system GMM estimator rather than the difference GMM estimator was not erroneous.

Table 5: Bond test result

Bond Test	Coefficient of Lagged Dependent Variable
Pooled OLS	0.863
Fixed Effect	0.703
Two-Step Difference GMM	0.416
Decision	Use System GMM

Source: Authors

Table 5 shows the results of the Pooled OLS, Fixed Effect and Two-Step Difference GMM. The results show the coefficient of the lagged dependent variable (1.pcgdp). According to Bond (2002), in deciding whether to use Difference GMM or System GMM, the following rule-of-thumb should apply: if the coefficient of the lagged dependent variable obtained from the Difference GMM estimate is close to

or below the Fixed Effects estimate, the implication is that the former estimate is downward biased because of weak instrumentation and therefore, a system GMM estimator should be preferred. Consequently, based on the results obtained above, a System GMM will be employed in this study.

4.3 SHORT-RUN SYSTEM GMM RESULTS

The empirical results of this study are presented in Table 6 based on the system GMM estimations. In this table, Panel A reports the baseline estimation, which excluded the interaction term (*glob*frag*), while Panel B reports the same model with the inclusion of this interaction term.

Table 6 System GMM estimation results

Variables	Panel A	Panel B
<i>laglnpcgdp</i>	0.551*** (0.154)	0.581*** (0.143)
<i>glob</i>	0.033*** (0.004)	0.041** (0.013)
<i>frag</i>	-0.113** (0.004)	-0.411** (0.004)
<i>glob*frag</i>		-0.34** (0.173)
<i>ace</i>	0.381** (0.145)	0.519*** (0.510)
<i>lbf</i>	0.711*** (0.311)	0.535*** (0.141)
<i>hum</i>	-0.031 (0.040)	0.047** (0.035)
<i>gov</i>	0.013** (0.005)	0.016 (0.005)
<i>gfcf</i>	0.05*** (0.032)	0.03** (0.051)
<i>lnict</i>	0.013 (0.033)	0.016** (0.015)
<i>constant</i>	3.156*** (1.321)	5.133** (1.456)
Observations	473	473
Instruments	6	6
Groups	37	37
AR(1)	0.034	0.047
AR(2)	0.401	0.611
Hansen	0.635	0.487

Source: Authors. **Note:** (***) and (**) indicate significance at 1% and 5% respectively. Standard errors are in parentheses; p-values are reported for AR(1), AR(2) and Hansen statistic.

The results in Table 6 clearly show that the lag of the dependent variable (GDP per capita) has a significant positive impact on the current dependent variable

in both Panels. This no doubt is in line with economic theory. As suggested by the neoclassical theory, the initial position of the economy is a significant determinant of growth in any economy. This finding is consistent with studies such as Levine and Renelt (1992), which also established that the initial level of real GDP per capita is an important determinant of GDP per capita growth. Therefore, this study has established that initial GDP per capita impacts positively and significantly on GDP per capita growth in SSA.

Our finding shows that globalization has a positive impact on economic growth in SSA countries in both Panels and this is also significant in both Panels. It shows that a percentage increase in the globalization index will increase growth in the zone by 3.3% and 4.1% respectively, all things being equal. This implies that variations in the globalization index can explain variations in economic growth in the zone. This is consistent with extant literature which opined that globalization enhances economic growth by accelerating trade and other economic and social interaction among nations (see Abrishami et al., 2006; Chang et al., 2013; Razavi and Salimi, 2013; Gurgul and Lach, 2014; Danladi et al., 2015; Hassan et al., 2019; Santiago et al., 2020; Xu et al., 2021). This result is also in line with Majidi (2017) who concluded that globalization has had a significant positive effect on economic growth in MENA. It is clearly evident that the gains of globalization to most economies of the world is enormous. For according to the World Development Indicators (World Bank, 2020), an increasingly large share of the world GDP is generated in activities linked directly or indirectly to international trade. Without a doubt, when countries relate with other countries of the world, they benefit as Ricardo (1817) and Hechscher-Ohlin (Hechscher et al., 1991) stated it in their trade model. This result is supported by the Granger causality test result presented in Appendix 1.

The results of this study further show that high rates of state fragility in SSA have significantly impacted negatively on economic growth in the zone. This finding is in line with several other studies like that of Chuku and Onye (2019), Andrimihaja et al. (2011), McGillivray and Feeny (2008), Ngepah and Ngepah (2018), Cilliers and Sisk (2013), Fowowe and Folarin (2016), Ferreira (2018), Chauvet et al. (2007), Adedeji and Adeniyi (2021), and Ojuolape et al. (2021). In fact, Chauvet et al. (2007) specifically concluded in their study that being a failing state corresponds to a decrease in the growth rate by 2.6%. There is no reservation that the fragility of most SSA countries has contributed immensely to the low level of growth associated with the zone. Since little or no development can take place in an atmosphere of war, maintaining a more stable state therefore becomes a critical precondition for growth. Bodea and Elbadawi (2008) agree to this view by concluding that political violence, and particularly civil war, has a significant negative effect on growth. More so, according to the World Bank (2011), fragile and conflict-affected countries are generally considered to be the poorest, least developed and most aid dependent countries of the world. This assertion is also supported by the works of Jones and Tarp (2016), Murdoch and Sandler (2004), Siegle (2011), Geda (2011), and Zaijaja

et al. (2019). Coincidentally, the result obtained from this study is in conformity with previous extant studies on the impact of state fragility on economic growth in developing countries.

The interaction between globalization and state fragility, denoted as "glob*frag," is found to have a negative and statistically significant impact on economic growth in the region, signifying its importance. Its significance holds crucial economic implications. Examining the individual effects of these variables reveals that globalization has a significant positive influence on economic growth, while state fragility independently exerts a negative impact. However, when these two variables interact in the context of SSA, the positive impact of globalization is transformed into a negative one due to the high level of fragility observed in the region. This has significant economic implications, suggesting that the gains of globalization are dampened by the prevailing fragility in SSA countries. In essence, an increase in globalization is associated with heightened economic growth only in politically stable states, not in fragile ones. In simpler terms, as state fragility intensifies, it diminishes the positive effects of globalization. This underscores the idea that politically stable states stand to benefit more from globalization than fragile ones. This finding aligns with the perspectives of scholars like Wade (2001) and Calamitsis (2001), who contend that Sub-Saharan African countries have not fully harnessed the benefits of globalization due to ongoing political instability, weak institutions, and the high fragility characterizing many countries in the region. Additionally, as Stensnes (2006) notes, in the absence of robust state institutions and political stability, countries integrating into global markets become more vulnerable to external shocks, potentially unleashing domestic conflicts and economic uncertainty that are detrimental to growth.

Regarding the control variables introduced in the study, the variable "ace" is related to Access to electricity (% of population), representing the percentage of the population with access to electricity. In Panel A of the analysis, the coefficient for "ace" is positive and statistically significant at the 5% level, with a value of 0.381. This indicates that an increase in access to electricity by 1 percentage point is associated with an approximate 0.381 percentage point increase in economic growth, holding other variables constant (Kessides, 1993; Lee and Lim, 2001). Moving to Panel B, which includes the interaction term (glob*frag), the coefficient for "ace" becomes even stronger. In this case, the coefficient is 0.519, and indicate a statistically significant positive relationship at 1%. This suggests that improved access to electricity continues to have a positive impact on economic growth, even when considering the moderating effect of the interaction between globalization and state fragility. The variable "lbf" represents the Labor force participation rate, which is the percentage of the population that is actively participating in the labor force. In Panel A of the analysis, the coefficient for "lbf" is positive and highly statistically significant at the 1% level, with a value of 0.711. This suggests that an increase in the labor force participation rate is associated with a substantial positive impact on economic growth in Sub-Saharan Africa. This finding aligns with the idea that a

larger and more active young labor force can contribute significantly to economic productivity and growth (Crespo, et al., 2014; Schneider, 2015; Onah, 2022. In Panel B, which includes the interaction term (glob*frag), the coefficient for "lbf" remains positive and statistically significant, albeit with a slightly lower magnitude. In this case, the coefficient is 0.535, indicating that even after accounting for the moderating effects of globalization and state fragility, a higher labor force participation rate continues to have a positive impact on economic growth in the region.

Government effectiveness shows a negative connection with growth in the zone in panel B. This is a further confirmation of the poor and ineffective government that characterizes most SSA countries as a result of their fragile nature. The findings regarding human capital present an intriguing picture. In Panel A, human capital exhibits a positive and significant relationship with economic growth, which is in line with theoretical expectation as human capital is viewed as an important driver of economic growth in the development economics literature (Romer, 1986; Mankiw et al., 1992). The implication of this result is that human capital development in SSA countries has positively contributed to growth in the zone. This result contradicts some studies that found human capital to be either weak or insignificantly related to growth in Africa (Ekeocha et al., 2022; Awolusi et al., 2017).

The results in Table 6 also show that gross fixed capital formation is positive and significant in both Panels. This is consistent with theoretical expectation as suggested by the new growth theory which explains that accumulation of physical capital is a key factor in the economic growth process. Our finding is also consistent with numerous recent empirical evidence in Africa, such as Ekeocha et al. (2021), Iheonu et al. (2017), Ho (2018), Tumwebaze and Ijjo (2015) and Ogbuabor et al. (2019). Furthermore, our results shed light on the positive relationship between information communication technology (ICT), as measured by mobile cellular subscriptions, and economic growth. This relationship is particularly significant in Panel B. The findings suggest that the increased availability and accessibility of telecommunication services, reflected in the high mobile cellular subscription rates, have played a constructive role in SSA's economic landscape.

This study subjected the model to two important diagnostic tests, these include the Arellano-Bond second-order AR(2) test for serial correlation and the Hansen test for over-identifying restrictions. As presented in Table 6, the AR(2) P-values of 0.401 and 0.611 for Panels A and B respectively indicate that we are not rejecting the null hypothesis of no autocorrelation at the 5% level of significance. In other words, the model does not suffer autocorrelation problem; which means that there is no evidence of model misspecification. Also, for the Hansen test, with a P-values of 0.635 and 0.487 for Panels A and B respectively, the null hypothesis that the instruments are not correlated with the residuals is not rejected. Hence, the instruments used in the model are valid for the estimation. The conclusion here is that the estimated parameters obtained are robust and efficient for policy purpose.

5. CONCLUDING REMARKS

Over the last three decades and up until the global economic and financial crisis, globalization played a crucial role in the unprecedented and sustained rate of growth seen around the world, particularly in developing market economies. The integration of world economies grew deeper over time as aggregate output remained stable, owing to increased worldwide demand for manufactured goods. However, the integration of the world has been faced with enormous challenges, especially in developing economies of SSA. One of the challenges of the contemporary globalized world as identified by scholars, is the problems caused by unstable and fragile countries. This has in no small measure impeded the gains of globalization in the zone. One may wish to ask, can any good thing come out of an atmosphere of rancor and chaos? The answer is emphatically no. The fragility of most SSA countries is very high, hence the zone has not been able to harness the opportunities linked to globalization. It is therefore the firm believe of this study that maintaining a more stable state will help SSA countries to fully maximize the gains of globalization. Overall, based on the findings of this study, the following key recommendations are given:

- Sub-Saharan African countries should ensure an increased integration with the rest of the world by relaxing some of the restrictions against international trade in order to further reap the enormous gains of a globalized world. This will provide them with newer and more resourceful technologies to build their industries such as agriculture and manufacturing.
- Since it has been discovered that the fragile nature of most SSA countries has impacted negatively on the zone, there is the urgent need for decision makers to chart a new course towards ending the incessant instability associated with the zone so as to maximally exploit the gains of globalization. This should start with the leaders upholding the rule of law and avoiding the “sit tight” syndrome that is associated with most African leaders. If leaders of the zone adhere to the rule of law and implement policies that are pro masses, the current wave of military coup that is ravaging the zone will become less popular.
- Furthermore, a practical strategy is needed for fragile states, one that places a greater emphasis than is currently the case on the underlying sociopolitical and institutional causes of crises. Countries must seek novel solutions to the specific sources of fragility that arise in each situation. This includes exploring creative ways to improve accountability, inclusivity, diversity, and justice that go beyond attempts to merely replicate what the Western model offers.
- Since each country faces a unique problem, policies to address state fragility should focus on the specific type of fragility present in the target country. A generalized solution for state fragility is no more credible, as shown by the scope of the problems and the variety of fragile states. Understanding the unique characteristics of each nation and developing strategies around them

are necessary to address state fragility in all of its manifestations. Every situation is different: no fixed formula or method of prioritization will work everywhere.

- There is good indication for further studies in the future. The work would benefit by including more African countries, and most importantly, by conducting a comparative analysis between Sub-Saharan African countries and other regions across the globe.

APPENDIX

In a bid to confirm the robustness of our results, we employed the Granger causality test of a panel vector autoregression model in a GMM framework for panels with large cross-sections (N) and small time periods (T) as proposed by Abrigo and Love (2016). Using our core variables, that is, globalization index, with the response variable, per capita GDP, the results, as presented in Appendix 1, show that there exist a unidirectional causality between globalization and per capital GDP in SSA. That is, while globalization Granger causes per capita GDP, per capita GDP does not Granger cause globalization. This finding is consistent with our earlier conclusion that globalization is a driver of economic growth in sub-Saharan Africa.

Appendix 1: Panel Granger causality test results.

Hypotheses	chi_2	df
GLOB does not Granger cause PCGDP	6.089**	1
PCGDP does not Granger cause GLOB	1.178	1

Source: Authors. **Note:** (**) indicates significance at 5%.

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