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International Trade and Economic Growth in Sub-Saharan Africa: is Institutional Structure Relevant?

Adelowokan Oluwaseyi A.[1], Okwu Andy T.[1*] and Osisanwo Bukonla G.[1]

[1]Department of Economics, Olabisi Onabanjo University, Ago-Iwoye, Nigeria
adelowokan.oluwaseyi@oouagoiwoye.edu.ng, okwua@babcock.edu.ng
osisanwo.bukonla@oouagoiwoye.edu.ng

*Corresponding author: *okwua@babcock.edu.ng*

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Abstract
Sustainable economic growth is a prerequisite for improved overall macroeconomic performance in Sub-Saharan Africa (SSA). However, Balance of Payments (BOP) deficits constrain the potentials of SSA and other developing countries to sustain high economic growth rates. Therefore, international economics and financial literature emphasise the relevance of financial inflows for sustainable economic growth in developing regions, especially with adequate absorptive domestic capacity. There is no consensus yet about the effect of trade on economic growth in SSA. Moreover, previous studies on SSA ignored the role of institutional structure in the trade flows-economic growth nexus. This study examined the interactive effects institutional structure and trade flows on economic growth, using panel data within the System Generalised Method of Moments (Sys-GMM) econometrics procedure. The data spanned 27 years (1996 – 2022) across 29 out of the 48 SSA countries. The findings were that export and import dampened economic growth, and that institutional structure (quality of institutions and financial sector) was not relevant in the trade flows-economic growth nexus. Therefore, the SSA governments pursue a paradigm shift in their trade relations via increased export incentives, trade infrastructure and subsidies.

Keywords: Export, Financial sector, Import, Institutions, Interaction, System-GMM.

1. Introduction

Sustainable economic growth is among the macroeconomic goals of modern economies, including the Sub-Saharan Africa (SSA). Economic literature identifies trade as a key driver of economic growth through job creation, poverty reduction and increased economic opportunities (Carrasco & Tovar-Garcia, 2020; Abendin et al., 2021; Bardi & Hfaiedh, 2021; Okechukwu & Okwu, 2021; Okwu et al., 2021). In line with this, the World Trade Organisation (WTO, 2014) launched the Trade Facilitation Support Programme (TFSP) to provide assistance mostly for SSA and other least developed countries to strengthen their cross-border environments in line with World Trade Organisation Trade Facilitation Agreement (WTO TFA). In addition, the World Bank facilitates developing countries' access to and participation in the global trading system (World Bank, 2022). Therefore, these institutions recognise that trade creates job, reduces poverty and stimulates economic opportunities and, thus, promotes economic growth, especially when there are adequate prevailing domestic economic conditions. This is consistent with the view of international economics and finance literature, which advocate for improved trade position to reduce BOP deficits and boost the potentials of developing countries to create conditions for sustainable high economic growth rates (Thirwall-Hussain, 1982; Arif, 2019; World Bank, 2020). Obviously, economic literature suggests a robust link between trade and economic growth in SSA and other developing regions.

Insight from World Bank (2022) data reveal that SSA's gross domestic product (GDP) growth rates remain low relative to values and growth rates of exports and imports. For instance, GDP growth rates across Central, East, Southern and West African sub-regions of SSA averaged 2.34%, 2.99%, 6.17%, -1.63% and 4.04% in 1990, 2000, 2010, 2022 and 2022, respectively. On the other hand, exports shares of GDP averaged 29.50%, 33.54%, 33.89%, 26.90% and 31.34%, in the corresponding years. Similarly, imports shares of GDP averaged 29.50%, 33.54%, 33.89%, 26.90% and 31.34%, in the corresponding years. Therefore, the data show that GDP growth rates do not keep pace with trade growth rates in SSA. Yet, previous studies did not sufficiently examine the source of the low GDP growth rates relative to trade (Leichenko, 2000; Marwan et al., 2013; Dritsaki & Stiakaskis, 2014; Makun, 2018; Govori & Fejzullahu, 2020). This is attributable to the fact that the studies ignored the catalytic role of institutional structure (institutional quality and financial sector development) in trade-economic growth nexus. Therefore, the studies failed to put economic growth effect of trade in its proper perspective to stimulate appropriate and relevant macroeconomic policies initiatives.

From the foregoing, the motivation for this paper is that despite the fact that economic literature recognises trade as a critical determinant of economic growth, especially when relevant domestic characteristics are adequate, previous studies on SSA ignored the relevance of quality of institutions and financial sector development (institutional structure) in trade-flows economic growth nexus. The studies misrepresented the tripartite effect of trade on economic growth in SSA. Thus, this paper does not only contribute to the empirical literature on trade-economic growth nexus but also unveils the mediating influence of quality of institutions and financial sector development in the nexus between trade and economic growth in SSA. Furthermore, this paper holds the potential to stimulate further interest and expand research scope in this and related areas to engender policy thrusts for sustainable economic growth in SSA.

The paper has five sections. The first articulates the problem and motivation for the paper. The second section explores the theoretical framework and reviews relevant *extant* empirical literature. The third explains the methodological procedures, while section four discussed the results and section five articulates the conclusion and proffered recommendations.

2. Theoretical Framework and Review of Empirical Studies

2.1 Theoretical Framework

The preoccupation of theoretical economic growth theories is to foster key determinants of economic growth. Thirlwall-Hussain's (1982) Balance of Payments-Constrained Model of Economic Growth gives a robust explanation of the dynamics of economic growth in the context of economy openness and financial resources inflows to stimulate high output growth rates in the developing countries. Thus, capital inflows are essential to finance current account deficits and increase aggregate output growth rates in the developing regions from initial current accounts disequilibrium and foreign exchange challenges. It emphases the relevance of financial inflows like export earnings in economic growth process, working through the balance of payments (BOP) channel. Thirlwall and Hussain express the disequilibrium of developing countries as follows:

$$P_{dt}X_t + C_t = P_{ft}M_tE_t \quad (1)$$

where X represents export, P_d denotes domestic price of export, M depicts import volume, P_f is foreign price of import, E denotes exchange rate, and C is volume of capital inflows, while t depicts regular time interval in the inflows. $P_{dt}X_t$ represents the domestic sector, while $P_{ft}M_tE_t$ denotes external sector of the economy.

Equation (1) says that domestic sector ($P_{dt}X_t$) of a developing economy falls short of its external sector ($P_{ft}M_tE_t$), and that the deficit is augmented by capital inflows (C_t). Thus, developing countries face current account disequilibrium that necessitates foreign capital inflows (C) to reduce BOP deficits and enhance their potentials for sustainable growth of gross domestic product. The rates of change of the

variables are obtained by differentiating equation (1) partially with respect to P_{dt}, X_t, C_t, P_{ft}, M_t and E_t. Hence,

$$\left(\frac{E}{R}\right)(p_{dt}+x_t)+\left(\frac{C}{R}\right)(c_t)=p_{ft}+m_t+e_t \qquad (2)$$

where $\left(\frac{E}{R}\right)$ and $\left(\frac{C}{R}\right)$ are the proportions of import bill financed by export earnings and capital inflows, respectively, while. c_t and $(p_{dt}+x_t)$ depict the growth rates of capital inflows and export earnings, respectively.

Given the assumption of constant elasticity of demand for import and export, nominal expression of import and export functions are as follows:

$$M_t=\left(\frac{P_{ft}E_t}{P_{dt}}\right)^{\varphi}Y_{dt}^{\pi} \qquad (3)$$

$$X_t=\left(\frac{P_{dt}}{P_{ft}E_t}\right)^{\eta}Y_{ft}^{\varepsilon} \qquad (4)$$

where φ and η denote price elasticity of import demand (φ < 0) and price elasticity of export demand (η < 0), respectively. Y_{dt} denotes aggregate domestic income, π is income elasticity of demand for imports, while Y_{ft} depicts level of income of the rest of the world, and ε is income elasticity of demand for exports. *t* denotes regular time interval during the trading period.

Obtaining partial derivatives of equations (3) and (4) with respect to P_{dt}, X_t, C_t, P_{ft}, M_t and E_t gives the rates of change of the variables. Thus,

$$m_t=\psi\left(p_{ft}+e_t-p_{dt}\right)+\pi\left(y_{dt}\right) \qquad (5)$$

$$x_t=\eta\left(p_{dt}+e_t-p_{ft}\right)+\varepsilon\left(y_{ft}\right) \qquad (6)$$

Incorporating equations (4) and (5) into (2) gives the BOP-constrained economic growth of the developing countries starting from initial current account disequilibrium:

$$Y_{Bt}=\frac{\left(\frac{E}{R}\eta+\psi\right)\left(p_{dt}-e_t-p_{ft}\right)+\left(p_{dt}-p_{ft}-e_t\right)+\frac{E}{R}\left(\varepsilon\left(y_{ft}\right)\right)+\frac{C}{R}\left(c_t-p_{dt}\right)}{\pi} \qquad (7)$$

Disaggregating equation (7) into component effects on BOP-constrained real GDP growth gives:

$$Y_{Bt}=\frac{\left(\frac{E}{R}\eta+\psi\right)\left(p_{dt}-e_t-p_{ft}\right)}{\pi}+\frac{\left(p_{dt}-p_{ft}-e_t\right)}{\pi}+\frac{\frac{E}{R}\left(\varepsilon\left(y_{ft}\right)\right)}{\pi}+\frac{\frac{C}{R}\left(c_t-p_{dt}\right)}{\pi} \qquad (8)$$

where $\frac{\left(\frac{E}{R}\eta+\psi\right)\left(p_{dt}-e_t-p_{ft}\right)}{\pi}$ depicts volume effect of relative price changes, $\frac{\left(p_{dt}-p_{ft}-e_t\right)}{\pi}$ shows terms of trade effect, $\frac{\frac{E}{R}\left(\varepsilon\left(y_{ft}\right)\right)}{\pi}$ denotes effect of exogenous changes in foreign income growth, and $\frac{\frac{C}{R}\left(c_t-p_{dt}\right)}{\pi}$ represents effect of growth rate of capital inflows.

This paper is not focusing on effect of relative prices or on effect of terms of trade on economic growth. Thus, they are considered constant and assumed unimportant determinants of economic growth in the SSA countries. Hence, equation (8) becomes:

$$y_{Bt}^{*}=\frac{\frac{E}{R}\left(\varepsilon\left(y_{ft}\right)\right)+\frac{C}{R}\left(c_t-p_{dt}\right)}{\pi} \qquad (9)$$

where y_{Bt}^{*} denotes BOP-constrained economic growth rate.

With reference to initial current account disequilibrium, equation (9) expresses BOP-constrained economic growth rate as the ratio of weighted sum of growth rates of real capital flows and exports induced by the ratio of growth in income of foreigners to income elasticity of demand for imports. Since information on income level of the rest of the world $\left(Y_f\right)$ and its growth rate $\varepsilon\left(y_{ft}\right)$ is not accessible to the authors, it is not emphasised in this paper. Again, we assume that $\varepsilon\left(y_{ft}\right) = x_t$ to enable us incorporate any changes in export volume induced by movements in relative price. Hence, equation (9) becomes:

$$y^*_{Bt} = \frac{\frac{E}{R}(x_t) + \frac{C}{R}(c_t - p_{dt})}{\pi} \tag{10}$$

Within the framework of the Thirlwarl-Hussain construct, equation (10) expresses the BOP-constrained economic growth model of the developing countries, which identifies growth rates of exports, capital flows, domestic price of exports and proportion of import bills that is financed by exports earnings and capital flows as the drivers of economic growth. Obviously, changes in relative price affect both exports and imports because they are the two sides of a trade relation. Therefore, we introduce changes in imports volume resulting from the same movements in relative price. Thus, we extend equation (10) as follows:

$$y^*_{Bt} = \frac{\frac{E}{R}(x_t) - \frac{E}{R}(m_t) + \frac{C}{R}(c_t - p_{dt})}{\pi} \tag{11}$$

Though the focus of this paper is on trade, we place no emphasis on export price $\left(p_{dt}\right)$. Therefore, we retain the growth rates of export $\left(x_t\right)$ and import $\left(m_t\right)$ but drop the growth rate of capital (c_t) and export price $\left(p_{dt}\right)$ from equation (11). Hence, the equation is re-expressed as follows:

$$y^*_{Bt} = \frac{\frac{E}{R}(x_t) - \frac{E}{R}(m_t)}{\pi} \tag{12}$$

In tandem with the thrust of this paper, we emphasise the relative shares of the growth rates of exports, imports, capital flows and growth rate of real GDP, while we hold income elasticity of demand for imports and exports constant. This affords us the basis to make equation (12) linear and amenable for estimation. Thus, equation (12) becomes:

$$y_t = x_t - m_t \tag{13}$$

Therefore, in the context of the Thirlwall-Hussain economic growth model, with the modifications and extension, equation (13) shows that growth rates of exports (x_t) and imports (m_t) are among the key drivers of real GDP growth (y_t).

2.2 Review of Empirical Studies

Previous studies have examined the nexus between trade flows and economic growth in countries at different stages of economic growth and development. Studies on Sub-Saharan Africa (SSA) ignored the relevance of the quality of institutions and financial sector development in trade flows-economic growth nexus. Thus, the studies downplayed the intertwining relationship among international trade and the moderating influences of institutional quality and financial sector, on the one hand, and economic growth, on the other hand.

Valeriani and Peluso (2011), Ajide et al. (2015) and Yildirim and Gokalp (2016) found that quality of institutions promotes economic growth in developed and developing countries. Similarly, Wanjuu and Roux (2017), Nguyen et al. (2018), and Glawe and Wagner (2019) found that quality of institutions enhances economic growth in the Economic Community of West African States (ECOWAS), emerging market economies and European countries respectively, while Seyingbo and Adeniyi (2018) found the effect of institutional quality on economic growth in SSA to be dismal. On the other hand, Leichenko (2000) showed that exports leads to economic growth and vice versa (bilateral causality) in the United States of America. However, Kutan et al. (2017) showed that quality institutions are the pre-requisite for financial

sector development to promote economic growth. This implies that both boost the potentials of trade in promoting economic growth.

Some related studies found that trade promotes economic growth. For instance, Marwan et al. (2013) and Jetter (2016) reported significant positive effect of exports on economic growth in Sudan and cross-section of 157 countries respectively, and Xinying et al. (2019) obtained similar result for West Africa. Similarly, Okwchukwu and Okwu (2021) and Okwu et al. (2021) found that exports and imports enhanced economic growth in ECOWAS, Nigeria and Cote D'Ivoire, respectively. Similarly, Abendin and Duan (2021) found that trade promoted economic growth in a sample of 53 African countries, more so when interacted with digital economy index. However, the complexity in the finding is that the authors were not specific about the effects of export and import components of trade. On the other hand, Makun (2018) found that imports dampen economic growth in the long-run in Republic of Fiji Islands. Interestingly, these studies ignored the role of institutional quality and financial sector development in trade-economic growth nexus. Bardi and Ffaiedh (2021) improved on Makun's (2018) study by recognising the critical role of financial sector in international trade-economic growth nexus in countries in the Mediterranean basin (Egypt, Greece, Italy, Morocco, Portugal, Spain, Tunisia and Turket). The study showed that financial sector undermined the economic growth potentials of international trade in the countries.

From the foregoing, it is evident that recent studies on Sub-Saharan Africa (SSA) ignored the catalytic role of institutional quality and financial sector in trade-economic growth nexus, which form integral parts of absorptive capacity of a domestic economy (Adeniyi et al., 2015; Yildirim & Gokalp, 2016; Glawe & Wagner, 2019).

3. Methodology

3.1 Data and Sources

In this paper, real gross domestic product (RGDP) is the proxy for economic growth, while the predictor variables are exports (EXP) and imports (IMP). Institutional structure components are institutional quality (IQ) and financial sector development (FSD), which serve as the mediating variables. In addition, gross capital formation (GCF) and official exchange rate (OEXR) are considered as control variables. The institutional structure variables are multidimensional. IQ comprises six indices , namely: control of corruption (CoC), rule of law (RoL), government effectiveness (GE), political stability and absence of violence (PSAV), regulatory quality (RQ) and voice and accountability (VaA), while FSD consists of three indices, namely: domestic credit to the private sector (DCPS), gross domestic saving (GDS) and broad money supply (BMS). Capital market aspects of financial sector are not considered in this paper because relevant data on them are sparsely available. The data on the variables span 27 years from 1996 to 2022), while 29 out of the 48 countries in SSA make up the cross-sectional scope. The data are subjected to logarithmic and or one-period lag transformations, where necessary, in order to mitigate any potential bias that could have arisen from differences in measurement units.

To avoid the complexity of introducing each dimension of the mediating variables into the analytical models in this paper, Principal Component Analysis (PCA) is deployed to compute a composite index for each of IQ and FSD. This facilitates scientific compression of IQ and FSD dimensions in single indices, without losing relevant information about the data set (Smith, 2002; Anton & Rorres, 2010; Abdi & Lynne, 2010). Moreover, excluding any of the dimensions would diminish the concept of institutional quality (Kaufmann et al., 2002) and, by extension, financial sector development. Furthermore, the dimensions of institutional structure are normalised for comparable scales that guaranteed non-biased PCA results.

3.2 Analytical Model

The empirical equations in this paper directly derive from the theoretical model - Thirlwall-Hussain's (1982) Balance of payments (BOP) constrained model of economic growth. The construct provides robust explanations about financial flow determinants of economic growth in open developing countries like the SSA. In addition, the theory recognises the constraint that BOP disequilibrium places on economic growth potentials of a developing region such as SSA. Therefore, the theory emphasises the critical role of trade in

financing current account deficits and promoting output growth rates in the developing countries from their initial current accounts disequilibrium, even in the face of foreign exchange challenges.

From equation (13), which is distilled from the Thirlwall-Hussain model, the analytical models in this paper are specified. This is appropriate because the focus is on trade-economic growth nexus, taking the mediating influence of institutional structure into consideration. The literature recognises the relevance of quality of institutions and financial sector in trade-economic growth nexus (Adeniyi et al., 2015; Seyingbo & Adeniyi, 2018; Glawe & Wagner, 2019). Thus, given the strength of the theoretical framework and empirical evidence, the models below are explored to determine the effects of trade flows on economic growth, and the relevance of institutional structure. Equation (14), without the moderators (IS and FSD), is the reference model, while equation (15), in which exports and imports are mediated with IQ and FSD, is the treatment model. Estimates of the coefficients of equations (14) and (15) are benchmarked to show the relevance of the institutional structure in the trade flows-economic growth nexus.

Reference Model (RM):

$$rgdp_{i,t} = \beta_0 + \beta_1 rgdp_{i,t-1} + \beta_2 \exp_{i,t} + \beta_3 imp_{i,t} + \beta_4 gcf_{i,t} + \beta_5 oer_{i,t} + \omega_t + \delta_t + \mu_{2,t} \quad (14)$$

where $rgdp$, $\exp_{i,t}$ $imp_{i,t}$, $gcf_{i,t}$, $oer_{i,t}$ are as defined earlier. $rgdp_{i,t-1}$ is one-year lag value of $rgdp$. β_j (j = 0, 1, 2, …, 5) denotes the parameters of the model, while β_k (k = 1, 2, …, 5) is vector of the coefficients of the explanatory variables in the model. β_0 is the intercept of the model. The respective coefficients β_k $(k = 1, 2, ..., 5)$ designates the nature and size of the effect of the associated explanatory variables on the explained variable. ω_1 is the time invariant fixed effect, while δ_t is country specific effect, and $\mu_{2.t}$ is white noise error term to accommodate the influence of any other factors that exert influence on the explanatory variable. i and t are cross-section and time identifiers.

Treatment Model (TM):

$$rgdp_{i,t} = \varphi_0 + \varphi_1 rgdp_{t-1} + \varphi_2 iq_t * \exp_{i,t} + \varphi_3 iq_{i,t} * imp_{i,t} + \varphi_4 fsd_{i,t} * \exp_{i,t} + \varphi_5 fsd * imp_{i,t} + \varphi_6 gcf_{i,t} + \varphi_7 oer_{i,t} + \delta_t + \omega_i + \mu_{5,t} \quad (15)$$

where $\varphi_2 iq_t * \exp_{i,t}$ and $\varphi_3 iq_{i,t} * imp_{i,t}$ are interactions of export and import with institutional quality, respectively, while $\varphi_4 fsd_{i,t} * \exp_{i,t}$ and $\varphi_5 fsd * imp_{i,t}$ are export and import mediated with financial sector development, respectively. φ_j (j = 0, 1, 2, …, 7) represents the vector of the parameters of the model, while φ_k (k = 2, 3, 4, 5) depicts the vector of the interaction coefficients to capture the nature and magnitude of the conditioned effects of exports and imports on economic growth. ω_1, δ_t, $\mu_{2.t}$, i and t are as defined earlier.

3.2 Estimation and Evaluation Procedures

Descriptive statistics and other features of the data on the variables are examined. In addition, the panel data are diagnosed for cross-sectional dependence among the selected SSA countries. Thus, first generation (without cross-sectional dependence) and second-generation (with cross-sectional dependence) panel unit root tests are carried out to ensure that none of the variables is integrated at order 2 or higher (Blomquist & Westerlund, 2013). The second-generation unit root tests of Cross-Sectional Augmented IPS (CIPS) account for cross-sectional dependence. The variables are stationary in their levels, except real GDP, which becomes stationary in 1st difference. Given that the variables are integrated of different orders, and that similar data structure characterise the reference and treatment models, the same estimation technique is appropriately deployed. Therefore, system Generalised Method of Moments (sys-GMM) is suitable for the analysis (Saddiqui & Ahmed, 2013). Moreover, he Sys-GMM estimator accommodates the instrument for the equation in the first difference as well as lagged endogenous variables and predictors that are not strictly exogenous in the levels equation. Hence, it is more efficient than the diff-GMM (Saddiqui & Ahmed, 2013;

Olubusoye et al., 2016). Furthermore, the Sys-GMM estimator allows for fewer instruments (Hansen, 1982).

One of the conventions of Generalised Method of Moments (GMM) is testing for slope heterogeneity. Thus, Blomquist and Westerlund (2013) test statistic is used for the test of the analytical models in this paper. In addition, the Arellano-Bond (1991) test of serial correlation of first autoregressive order AR(1) and the Arellano-Bond (1991) test of the serial correlation test of second autoregressive order AR(2) are used. Furthermore, no over-identifying restrictions, proper instrumentation of the variables and non-violation of key assumptions of the analytical regression models are ascertained through Hansen (1982) and Sargan (1958) tests statistics. Similarly, suitability and robustness of the Sys-GMM-based estimates of the coefficients were ensured via Eberhardt's and Bond's (2009) Augmented Mean Group (AMG). This guarantees that the estimates of the models are reliable and consistent.

4. Results and Discussion

Table 1: Summary of Descriptive Statistics

Variable	Mean	Maximum	Minimum	Std. Dev.	Skewness	Obs.
RGDP	34526.960	518476.800	651.346	83977.250	3.870	783
EXP	7858.001	143695.200	28.460	19214.480	4.466	783
IMP	7969.205	123558.600	74.000	17594.890	4.385	783
CoC	-0.616	1.230	-1.559	0.622	0.851	783
GE	-0.651	1.057	-1.849	0.631	0.638	783
RoL	-0.637	1.077	-1.852	0.637	0.517	783
PSAV	-0.522	1.282	-2.452	0.870	0.012	783
RQ	-0.535	1.127	-2.236	0.587	0.296	783
VaA	-0.424	-1.007	-1.723	0.656	0.218	783
DCPS	22.246	142.422	0.403	25.216	2.658	783
BMS	31.205	163.650	5.143	21.661	2.214	783
GDS	14.622	64.927	-40.845	14.452	0.902	783
GCF	21.557	79.401	-2.424	9.417	1.507	783
OER	795.513	10439.430	0.164	1476.359	3.930	783

Source: Researcher's computations (2023)

***Notes**: RGDP, EXP and IMP are in billions of US dollars. Coc, GE, RoL, PSAV, RQ and VaA are in a scale range of -2.5 to 2.5, with -2.5 depicting worst quality and 2.5 indicating best quality. DCPS, GDS and BMS) are percentages of gross domestic product (GDP). GCF, is percentage of GDP, while OER is the ratio of local currency units of the selected SSA countries to one US dollar.*

As presented in Table 1, RGDP averaged US$34,526.96 billion, with standard deviation of US$83,977.250 billion and maximum and minimum values of US$518,476.8 billion and US$651.346 billion, respectively. The standard deviation, which differed greatly from the mean, implies wide fluctuations in RGDP over time. Maximum export receipts was US$143,695.200 billion and the minimum was US$28.360 billion, with mean and standard deviation of US$7,858.001 and US$19,214.480, respectively. The large difference between the mean and the standard deviation shows that there were wide fluctuations in the export receipts during the period. Similarly, import payments exhibits wide fluctuations as shown by the standard deviation value of US$17,594.890 billion, mean value of US$7,969.205 billion, US$123,558.600 billion maximum value and US$74.000 billion minimum value. The standard deviations show that exports receipts of the representative SSA countries fluctuated more than import payments values during the period.

The measures of institutional quality reported heterogeneous descriptive statistic values. Within the -2.5 to 2.5 scales, maximum and minimum values of PSAV and CoC were 1.282 and 1.230 respectively, while maximum values of GE, RoL, RQ and VaA were 1.057, 1.077, 1.127, and -1.1007, respectively. The negative maximum value of VaA (-1.007) shows that voice and accountability was the worst quality of political, legal and regulatory institutions in the selected SSA countries. In addition, the respective

components of the quality of the institutions exhibited negative minimum performance measure (-1.559, -1.849, -1.852, -2.452, -2.360 and -1.723, respectively). The implication is that, on the aggregate, the quality of institutions of the selected SSA countries is still rudimentary. Moreover, mean values of each measure of the quality of the institutions were negative (-0.616, -0.651, -0.637, -0.522., -0.535 and -0.422, respectively), with standard deviations 0.622, 0.631, 0.637, 0.870, 0.587 and 0.656, respectively. These vary far widely from the mean values and, thus, imply wide fluctuations in each of the indicators of institutional quality of the selected SSA countries.

Furthermore, the results show values of descriptive statistics of the measures of financial sector development. Maximum and minimum value of DCPS, BMS and GDS were 142.422 and 0.403, 163.650 and 5.143, and 64.927 and -40.845, respectively. Correspondingly, mean values of the measures were 22.246, 31.205 and 14.622 respectively, with standard deviations of 25.216, 21.661 and 14.452, respectively. The standard deviations of the measures did not differ widely from their mean values. The implication is that, during the period under review, the pace of financial sector development of the selected SSA countries was stable relative to the quality of the institutions and economic growth.

Descriptive statistics of the gross capital formation (GCF) and official exchange rate (OER) of the countries reported maximum and minimum values of 79.401 and -2.424 percent of GDP respectively, and 10439.430 and 0.164 local currency units to one US dollar. The mean and standard deviation of GCF were 21.557 percent and 9.417 percent respectively, while the mean and standard deviation of OER were 975.513 and 1476.539, respectively. From the mean and standard deviation values, it is clear that OER of the countries fluctuated more widely than GCF.

Table 2: Partial Correlation Coefficients

Variable	RGDP	EXP	IMP	GCF	OER	VIF
RGDP	1					NA
EXP	0.891	1				1.021
IMP	0.884	0.964	1			3.523
GCF	-0.035	-0.041	-0.038	1		1.487
OER	-0.132	-0.134	-0.132	-0.052	1	1.277

Note: *RGDP, EXPT and IMPT were in billions of US dollars. GCF was in percentage of gross domestic product, while OER was units of domestic currency for one US dollar.*

The results in Table 2 show that RGDP relates positively with EXP and IMP (0.891 and 0.884), but negatively with GCF and OER (-0.035 and -0.132). The results also show that GCF and OER relate negatively with EXP and IMP. The implications are that growth of the economies of the SSA and trade flows change in the same direction, while GCF and OER change in the opposite direction with EXP and IMP. Since the correlation coefficients of EXP, IMP, GCF and OER are below the 0.80 tolerable limits (Kim, 2019), except the coefficient value of 0.964 between export and import, it is evident that the variables are not highly correlated. This exception did not sufficiently influence the accuracy of the estimates in the study. Therefore, the partial correlation coefficients did not provide evidence of potential multicollinearity problem among the variables in models. This is further substantiated by the values of variance inflation factor (VIF), each of which are less than 10 (Garcia et al., 2016).

Table 3: Cross-Sectional Dependence Test Results

Foreign Direct Investments and Growth Equation		
Test	**Statistic**	**Prob.**
Breusch-Pagan LM	949.659***	0.000
Pesaran scaled LM	19.079***	0.000
Pesaran CD	9.955***	0.000
Foreign Direct Investments, Institutional Structure and Growth Equation		
Breusch-Pagan LM	4030.590***	0.000
Pesaran scaled LM	127.198***	0.000
Pesaran CD	47.757***	0.000

***Note**: *** indicates significance at the 1% level..*
Source: Author's computations (2024)

The results in **Table 3 provide** statistical evidence (p-values = 0 < 0.01) of cross-sectional dependence among the cross-section of the SSA countries. Thus, economic growth challenges in SSA countries could be traced to their similar macroeconomic conditions and rudimentary level of institutional structure.

Table 4: 1st and 2nd Generation Panel Unit Root Tests

Variables	**IPS**	**CIPS**	**Variables**	**IPS**	**CIPS**	**Remarks**
LnRGDP	-1.369	-1.856	ΔlnRGDP	-4.029***	-3.756***	I(1)
LnEXPT	-1.232	-2.882***	ΔlnEXPT	-4.922***	-4.739***	I(0)
LnIMPT	-1.158	-2.980***	ΔlnIMPT	-4.876***	-5.125***	I(0)
GCF	-2.151***	-2.645***	ΔGCF	-5.452***	-5.053***	I(0)
LOER	-1.931**	-2.633***	ΔLOER	-3.872***	-4.267***	I(0)
INSQ	-2.262***	-2.138**	ΔINSQ	-5.630***	-4.481***	I(0)
FSD	-1.309	-2.415**	ΔFSD	-5.476***	-4.490***	I(0)

***Notes**: The panel unit root test without cross-sectional dependence was the Im, Pesaran, and Shin, while the panel unit root test with cross-sectional dependence was the CIPS. *** and ** indicate 1% and 5%, respectively, and the respective critical values were CIPS - 2.23 and -2.11; and IPS = -2.02 and -1.87.*
Source: Researcher's computations (2024)

As seen in Table 4, using both the first-generation panel unit tests (IPS) and the second-generation panel unit root tests (CIPS), the series became stationary in their level, *I(0)*, except real GDP, which became stationary in 1st difference, *(1)*. Therefore, the results showed that the time series values of the variables had mixed order of integration.

Table 5: Blomquist and Westerlund Homogeneity Test Results

Export, Import and Growth Equation		
Test	**Statistic**	**Prob**
Δ	19.212***	0.000
Δ adj	21.784***	0.000
Export, Import, Institutional Quality and Growth Equation		
Δ	3.366***	0.001
Δ adj	4.162***	0.000
Remittances, Institutional Quality and Growth Equation		

**** represents significance at the 1% critical level*
***Note:** The null hypothesis was no homogeneous slope coefficient. Alternative hypothesis was homogeneous slope coefficient.*
Source: Researcher's computations (2024)

The results presented in Table 5 show that the null hypothesis of non-homogeneity of the slope coefficients is not valid, which implies that the slope coefficients are heterogeneous. Hence, there is the presence of heterogeneity amongst the selected SSA countries. The statistical evidence is that the Blomquist and Westerlund (2013) homogeneity test statistic is statistically significant at 1 percent critical level (p-value = 0.000 < 0.01).

Table 6: Estimates of the Effects of Trade Flows and Institutional Structure on Economic Growth in SSA

Reference Model (RM): Effects of Exports and Imports			**Treatment Model (TM): Effects of Interactions of Exports and Imports with Institutional Structure**		
Dependent Variable: lnRGDP			**Dependent Variable: lnRGDP**		
Variable	**GMM**	**AMG**	**Variable**	**GMM**	**AMG**
L.lnRGDP	1.1788***		**L.lnRGDP**	**0.9851*** **	
	(30.949)			**(37.593)**	
LnExp	-0.0963***	0.1069***	**IQ*LnEXP**	**0.0008** **	**0.0053*** **
	(-4.317	(2.829)		**(2.194)**	**(2.798)**
LnImp	-0.0607**	-0.0312	**IQ*LnIMP**	**0.0000**	**0.0000**
	(-2.486)	(-0.716)		**(0.834)**	**(0.642)**
GCF	0.0031	0.0032	**FSD*LnEXP**	**0.0024**	**-0.1358****
	(1.739)	(1.761)		**(0.424)**	**(-2.470)**
LOER	-0.0340***	0.0314	**FSD*LnIMP**	**-0.0045**	**0.1198** **
	(-2.650)	(0.348)		**(-0.853)**	**(2.272)**
Constant	-0.3764***	**8.0361*** **	**GCF**	**0.0007**	**0.0028**
	(-2.954)	**(20.991)**		**(0.053)**	**(1.467)**
Observations	754	**783**	LOER	**-0.0040**	**0.1364**
				(-0.767)	**(1.199)**
Number of group	29	**29**	**Constant**	**0.1604**	**8.2630*** **
				(0.691)	**(21.647)**
Wald chi-square	646401.2 [0.000]		**Observations**	**754**	**783**
AR(1) test	-3.22 [0.001]		**Number of group**	**29**	**29**
AR(2) test	-1.17 [0.241]		**Wald chi-square**	473014.65 [0.000]	
Sargan test	4.80 [0.375]		**AR1 test**	-3.28 [0.001]	
Hansen test	7.38 [0.194]		**AR2 test**	-0.52 [0.603]	
			Sargan test	6.19 [0.568]	
			Hansen test	45.04 [0.649]	

*** and **** denote significant at 10%, 5% and 1%, respectively.*

***Note**: The z-statistic values (in brackets) are based on White heteroscedasticity-consistent std. errors. P-values for AR(1), AR(2), Sargan and Hansen (over identification restrictions) statistic values are in parentheses [ ].*

Source: Author's computations (2024).

As seen in the results of the RM in Table 6, the statistic value of -3.22, with p-value = 0.001< 0.01, provides evidence that the serial correlation of autoregressive of order 1 (AR(1)) is statistically significant at 1 per cent. Thus, the null hypothesis of no serial correlation is rejected, while the alternative of serial correlation is accepted. This is consistent with the sys-GMM that the AR(1) should be significant, and that the successive error terms should be correlated. On the other hand, the AR(2), with a statistic of -1.17 and p-value = 0.241 > 0.05 is not statistically significant. Hence, the null hypothesis of serial correlation is

accepted, while the alternative of serial correlation is rejected. This is consistent with the literature that the AR(2) should show serial independence (Hansen, 1982).

Based on the Sargan test statistic value of 4.80, with a p-value of 0.375 or 37.5 per cent, the null that the variables are proper instruments of the estimated model was not rejected. Thus, the post-estimation tests results presented in Table 6 reveal that the estimated model is efficient, and that dependable inferences could be drawn from the results. Similarly, the Hansen test statistic of 7.38 with p-value of 0.194 greater than 5% critical level, is statistically insignificant. Hence, the null that the model has valid instrumentation is not rejected. This provides evidence that the variables are valid instrumentation of the estimated model.

The results provide evidence that lag of real GDP exerts significant positive effect on current year's real GDP in the sampled SSA countries (β_1 = 1.179, z-stat = 30.95, p-value = 0.000 < 0.05). Thus, previous values of the real gross domestic product are a significant factor that influences changes in real GDP the SSA countries. The results also reveal that export exerts significant negative effect on real GDP in SSA (β_2 = -0.096, z-test = -4.32, p-value = 0.000 < 0.05). Thus, export is detrimental to economic growth in SSA. The significant negative effect of exports on economic growth contradicts the findings of some previous studies (Marwan et al., 2013; Govori & Fejzullahu, 2020) for Sudan and Kosovo, rspectively. Pehaps, this is because primary produce, rather than manufactured products, dominate the export baskets of SSA countries. Similarly, the effect of import on economic growth is negative and significant (β_3 = -0.061, z-test = -2.490, p-value = 0.013 < 0.05). This implies that import is harmful to economic growth in SSA. This finding lends credence to some previous studies (Marwan et al., 2013; Tuhir et al., 2015; Makun, 2018; Govori & Fejzullahu, 2020) for Sudan, Maylasia, Pakistan, Republic of Fiji Islands and Kosovo respectively, but contradicts Carrasco's and Tovar-Garcia's (2020) finding that imports promotes economic growth in a sample of 29 developing countries. This is owing to the fact that, unlike in the study by Carrasco's and Tovar-Garcia's (2020), direct consumables, rather than high-tech and capital goods imports, usually dominate the import basket of SSA countries.

In addition, it is evident in the results that gross capital formation does not significantly increase real GDP in SSA (β_5 = 0.003, Z-test = 1.740, p-value = 0.082 > 0.05), which implies that gross fixed capital formation is not a significant determinant of the changes in real GDP in SSA countries. Furthermore, exchange rate significantly dampens economic growth (β_5 = -0.034, Z-test = -2.650, p-value = 0.008 < 0.05). Thus, exchange reduces economic growth in SSA countries.

The Arellano-Bond test statistic in the results of the TM in Table 6 show that the serial correlation of autoregressive of order 1, AR(1) is statistically significant at the 1 per cent critical level (z-statistic = -3.28, p-value = 0.001 < 0.01). Hence, the null of no serial correlation is rejected, while and the alternative that there is serial correlation is accepted. This is consistent with the sys-GMM that the AR(1) should be significant and that the successive error terms should be correlated. On the other hand, the test statistic revealed that the AR(2) is not significant (z-statistic = -0.52, p-value = 0.649 > 0.10). Thus, the null of serial correlation is rejected, while the alternative of no serial correlation is accepted. Again, this aligns with the literature that the AR(2) should show serial independence (Sargan, 1958; Hansen, 1982). In addition, the Sargan test statistic supports the null that the independent variables in the estimated model are not subject to overriding instrumentation (chi^2 = 6.19, p-value = 0.568 > 0.10), and that the variables appropriately instrument the estimated model. Going forward, the post-estimation tests results show that the estimated TM is efficient and suitable for reliable inferences. In addition, the Hansen test statistic (chi^2 = 5.04, p-value = 0.649 > 0.10) is not significant and, thus, favours the null hypothesis that the model had valid instrumentation. The results show positive relationship between the lag of real GDP and real GDP (φ_1 = 0.9851).

Benchmarking the estimated coefficients of the RM and TM, it is evident from the results that the hitherto significant negative effect of export on real GDP becomes positive when moderated with institutional

quality and financial sector development, respectively. Specifically, the interactive effect of export and institutional quality is positive and significant (φ_2 = 0.0008, z-*stats* = 2.19, p-value = 0.028 < 0.05), while the interactive effect of export and financial sector development is positive but not significant (φ_4 = 0.0024, z-*stats* = -4.32, p-value = 0.000 < 0.01). This implies that institutional quality stimulates economic growth effect of export more than financial sector. These show that the moderated positive effects of export are low, and could be attributed to weak quality of the institutions and underdeveloped level of financial sector in the SSA. Similarly, the significant negative effect of import on real GDP in the RM results (β_3 = -0.0607; z-stat = -2.48, p-value = 0.013 > 0.05) becomes zero or neutral when interacted with institutional quality (φ_3 = 0.0000), and insignificant negative when interacted with financial sector development (φ_5 = -0.0045, z-stat = -0.85, p-value = 0.394 > 0.05). These imply that quality of institutions of the SSA countries neutralises the negative effect of import, but is not adequate to stimulate positive effect of import on real GDP. Though the neutral and insignificant negative interactive coefficients indicate improvement in the effect of import on economic growth, it is evident that quality of the institutions and financial sector in SSA are inadequate to sufficiently catalyse the potential economic growth benefits of imports.

The significant positive effect of IQ*LnEXP on economic growth, as well as the neutral effect of IQ*LnIMP compared to significant negative effects of export (EXP) and import (IMP) alone provide evidence that the institutions boost the effect of export on economic growth in SSA. Similarly, the positive though not significant effect of FSD*LnEXP on economic growth relative to the significant negative effect of export (EXP) alone implies that financial sector enhances the economic growth effect of export. In addition, the negative though not significant effect of FSD*LnIMP compared with the significant negative effect of import (IMP) alone is a clear indication that financial sector enhanced the effect import on economic growth in Sub-Saharan Africa. The implications of these are that, though the quality of the institutions of Sub-Saharan Africa is weak the financial sectors are underdeveloped, institutional structure (institutional quality and financial sector development) is relevant in the trade-economic growth nexus in Sub-Saharan Africa.

5. Conclusion and Recommendations

It is evident from the results that trade flows (export and import) dampened economic growth in Sub-Saharan Africa. Stemming from this is the conclusion that trade relations of SSA countries are not to their advantage. The implication is that manufactured and processed goods are not prominent in the exports baskets of SSA, and that the import mix consists more of direct consumable products than productive factor and ingredient inputs. Based on the findings, it is safe to conclude that institutional quality and financial sector development (institutional structure) in the SSA slightly boost the effects of trade flows (exports and imports) on economic growth. Thus, institutional structure of SSA is relevant in the trade flows-economic growth nexus. Therefore, this paper recommends that SSA countries need a paradigm shift of their export base into manufactured goods. In addition to the existing export processing zones, countries in the SSA should create attractive export manufacturing zones. The governments of the SSA should give investors considerable incentives in order to attract long-term investments into the export manufacturing zones. In addition, the governments should reduce investment overhead costs by providing the zones with adequate infrastructure, security and subsidies. The governments should articulate and implement policy guidelines to compel firms in the export-processing zones to supply at least a certain percentage of their processed raw material inputs to firms in the export-manufacturing zones at subsidised prices. These would not only reduce the heavy reliance on export of primary produce but also enable the firms to import more of manufacturing factor inputs but less of manufacturing ingredient inputs. If implemented, trade flows would ultimately stimulate positive effects of exports and imports on economic in the SSA.

In addition, the governments of SSA should articulate and implement import substitution polices to promote export of manufactured goods, reduce export of primary produce or processed goods and favour importation of productive factor inputs over direct consumables. For instance, the governments should subsidise the importation of productive factor inputs, reduce import duties on them and increase duties on importation of manufacturing ingredient inputs that could be sourced from within the domestic economies of SSA. Furthermore, authorities in SSA countries should upgrade relevant laws and regulations to strengthen the

capacity and improve the quality of the institutions. The governments should implement far-reaching fiscal policy thrusts like necessary governments' subsidies and effective economic and social transfers to deepen their financial sectors and increase domestic savings. Within the framework of monetary policy dynamics, the monetary authorities in SSA should direct that certain proportions of total domestic credits should be allocated to productive real sectors of the economies. Implementing these will enhance the capacity and adequacy of the institutional structure of SSA to stimulate positive economic growth potentials of trade flows.

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