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## TRADE BALANCE, INSTITUTIONS AND ECONOMIC GROWTH IN SUB-SAHARAN AFRICA

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### Abstract

*The study examines the impact of trade balance, institutions on economic growth in sub-Saharan African. The study employed a panel data of 23 Sub-Saharan Africa out of the 48 countries that made up SSA, the period which span from 2002 to 2022, the data were sourced from world development indicator and world governance indicator. The study employed econometric analyses involving the Panel Unit Root test, the panel bound cointegration and autoregressive distributed lag (ARDL) was use as the techniques for analysis. The result of the findings shows that trade openness which is a proxy for trade balance was found to have a positive and significant relationship with gross domestic product. Institutions on the other hand has a positive correlation with GDP but was found not to be statistically significant. The study recommends that government should encourage trade balance through agreements like free trade agreement, to promote economic growth.*

**Keyword:** Trade Balance, Institution Quality, Gross Domestic Product, Panel Estimation, Sub-Saharan Africa.

**JEL Classification:** C23; F40; F43

### 1. Introduction

The notion of economic growth is fundamental to economists and policy makers because of its central role in economic development. Therefore, the key factors that propel economic growth have been an area of interest for a very long time to economists and policy makers because of their significant role in the improvement of the standard of living of the populace around the globe. Trade balance as one of the factors that can impact economic growth has also become very important as the expansion of world markets took cause within the global economy contributing to increasing world trade volume and cross-border capital flows (Conteh, Yijun, & Sesay, 2021). More so, there is growing emphasis on the role of institutions and governance on explaining economic growth. In Africa, there are four different studies that seeks to explain growth variations across countries.

These include geography study, cultural and historical study, trade study and institution and policy study. The first is of the opinion that Africa is poor because of its geographical disadvantages while the second study states that culture and historical antecedences put Africa at disadvantage, hence Africa cannot grow as fast as other regions. Trade study argues that Africa is poorer because it's trading lesser internationally, and the last study postulates that weak institutions and wrong policy choice impedes Africa's economic growth (Kilishi, Mobolaji, Yaru, & Yakubu, 2013).

The International Monetary Fund (IMF) trade policy reforms suggested for African to embrace an outward oriented as against its predominant inward oriented strategies has gain acceptance among most countries in Africa but there remain marked differences in their

expected growth outcomes. In essence, economic policy orientation is directly connected with the aims of growth, distribution and sustainability of wealth. These adduced reasons informed the purpose of this research. In a quest to evaluate the interaction effects of institutions on trade balance and economic growth in some selected sub-Saharan African (SSA), answers to these questions becomes imperative; what role have institutions played in the growth of sub-Saharan African economies? In what way does trade balance affect growth in the region? The major objective is to examine the impact of trade balance, institutions and economic growth in selected SSA countries.

The rest of the study is organized as follow; Section two presents a brief literature review, Section three presents the methodology, nature and sources of data, section four presents empirical results while section five deals with conclusion and recommendations.

## 2. Literature Review

### 2.1 Conceptual Clarification

**Trade Balance:** Trade balance revolves around the economic relationship between a country's exports and import of goods. It's an essential component of the balance of payments, which accounts for all economic transactions between a country and the rest of the world. Trade balance is the difference between exports and import of goods and services. Trade balance is in surplus position if exports exceed imports or deficit, when imports are greater than exports it becomes deficit trade balance (Yaya 2021).

**Institutions:** Institutions in a broader sense refer to an established structures, organizations or system within a society that shape and govern various aspects of human interactions and behavior. From economic perspective of a society, institutions play a crucial role in shaping the economic behavior of individuals and business. Key economic institutions include: financial institutions, legal and regulatory frameworks, market structures, property rights, government policies, and labour market institutions. The quality of institutions is an indicator of less corruption, less violence, good laws and other

situations with better governance in the economy (Khan, Kahan & Naqvi 2022). The good quality of this indicator creates a conducive environment for trade and economic growth.

### 2.2 Theoretical Framework

In the theoretical literature, the Solow Model, or also called Solow-Swan model, a neoclassical exogenous economic model of economic growth made by Robert Solow (1956) and Trevor Swan (1956), which uses a Cobb-Douglas production function to account for changes in the level of production in an economy over time as a result of changes in the savings ratio, the rate of technological progress and the rate of population growth. The model also describes how economic growth occurs as a result of labor and capital accumulation. The production function in the model clarifies the connection between the labor and physical capital - output/production per worker and capital per worker (Mankiw, 2018). The production function for Solow Model concludes that output is affected by the labor force and capital stock (Mankiw, 2018).

$$Y = F(K, L) \quad (1)$$

Where  $Y$  stands for production and is a function of  $K$  which is capital stock,  $L$  for labor and  $A$  is level of technology/advancement.

$$Y = F(K, L) = AK^\alpha L^{1-\alpha} \quad (2)$$

Moreover, this equation also includes  $\alpha$  which stands for share of output from capital and  $(1 - \alpha)$  indicates the share of output from labor. Based on the model, labor force is not the only factor that makes up production in an economy and it is necessary in order to make things work with the given amount of physical capital. According to what the Solow model states, factors such as a higher rate of engagement in international trade will leads to knowledge spillover and technology/innovation transfers, an increased savings quota, all these factors help improve the overall productivity of a country.

### 2.3 Empirical Literature

Blavasciunaite, Garsviene and Matuzeviciute (2020) investigated the impact of the trade balance on economic growth as well as to evaluate it during the periods of trade deficit. The estimations was based on the European Union (EU) 28 countries panel data over the period of

1998–2018, using the OLS method of multivariate regression analysis with fixed effects and focusing on two strategies: (i) including all trade balance periods, and (ii) adding deficit dummy variable seeking to evaluate whether during deficit periods, the finding shows different and significant effect on economic growth, and focused on all trade balance periods and included only trade balance deficit periods. Evaluating all 28 EU countries shows positive changes in their overall trade balance: gross surplus was increasing and gross deficit was decreasing. The study therefore, concluded that trade balance of EU countries is improving. However, comparing the rates of average trade balance growth and economic growth in both 10 and 20-year cases shows that the situation in 28 EU countries differs, and it could be a cause for the deeper trade balance, or its deficit evaluation. Comparing the results of both models, the study concluded that trade balance deterioration reduces average economic growth and form linear relationship evaluation; it does not matter whether it starts from trade deficit or surplus result.

Yaya, (2021) in his study investigates the determinants of the trade balance in West African and Monetary Union (WAEMU) over the period 1975–2017, using the Mean Group (MG) estimator along with the grouped mean version of Dynamic OLS (DOLS) and Fully Modified OLS (FMOLS) to deal with both endogeneity and cross-country heterogeneity. The results revealed trade balance to be negatively related to domestic and foreign income whereas real effective exchange rate depreciation improves the trade balance in the long-run. However, the results do not confirm the short-run worsening of trade balance suggested by the J-curve. In the short-run, the trade balance was sensitive only to foreign real income but not to domestic income and real exchange rate. The country-level estimates showed heterogeneity in the response of the trade balance to real exchange rate, domestic and foreign income.

In the sub Saharan Africa, Gislain, Gandjon, and Mohamadou (2020) assessed the effect of trade openness on economic growth in Sub-Saharan African countries. Using the new trade openness indicator of Squalli and

Wilson (2011) through the Generalized Moment Method (GMM) in system. The main results show that: (i) trade openness promotes economic growth in SSA countries; (ii) when accompanied by insufficient policies to promote infrastructure, financial development, human capital, investment in physical capital and price stability, trade openness does not further stimulate economic growth in SSA countries. Also, Conteh, Yijun, and Sesay, (2021) investigated how trade openness impacts growth in SSA. The work examined the interaction effect of openness and institutions quality on growth using panel data set of 27 SSA countries covering the period 1996-2016. The study employed a dynamic panel estimation technique. The results revealed that trade openness alone bring significant negative impact on growth performance in SSA. However, the simultaneous interaction of trade openness with institutions quality brings about positive and significant impact on growth. This shows that positive impact of trade openness on growth is conditional on the quality of institutions. While Kilishi, Mobolaji, Yaru, and Yakubu, (2013) focusing only on 'Institutions and Economic Performance in Sub-Saharan Africa' addressed three issues: does institution matter in Africa? If yes which of them matters most and what is the interaction effects of institutions on growth? Using system GMM estimator institutions were found to be significant in promoting economic performance in sub-Saharan Africa especially, regulatory quality and rule of law. The study also showed that, increase in investment in physical and human capital, openness of trade and reduction in population growth would improve economic performance.

Accordingly, Matthew and Adegboye (2014) studied the impact of trade openness and institutions on economic growth in sub-Saharan Africa (SSA). The study employed econometric analyses involving the Panel Unit Root, Least Square Dummy Variables (LSDV) and the Generalized Method of Moments (GMM) techniques using panel data for the period 1985-2012 on thirty selected SSA countries. The major findings of the study revealed that institutions had a significant positive impact on economic growth but trade openness only had a little significance on growth in the selected SSA

countries. However, this study used variables as Taxes (proxied by tax revenue on natural resources); human capital (proxied by primary and secondary school enrolments); natural resource endowment (proxied by the share of fuel in total export); repudiation risk (proxy for contracting institutions); political Rights (proxy for political institutions); and ethnic tensions (proxy for cultural institutions) to represent institutional quality which in actual sense may not sufficiently represent the institutions indicator developed by world governance index. Contrariwise, Agyei and Idan (2022) assesses the moderating role of institutions in the trade openness and inclusive growth nexus in Sub-Saharan Africa (SSA). Based on the System General Method of Moment estimation technique applied to data from 39 SSA countries from 1996 to 2017, the results offer support for the assertion that institutions strengthen the positive relationship between trade openness and inclusive growth in SSA. In the same vein, Asamoah, Mensah and Bondzie (2019) analytically examines the role of institutions as an interactive factor in the foreign direct investment (FDI), trade and growth nexus in sub-Saharan Africa (SSA) using the Structural Equation Modelling (SEM) technique with data from 34 SSA countries covering the period 1996–2016. From the results, institutions were found to have positive effect on trade openness and economic growth; however, FDI showed sign of declining effect on economic growth with no effect on trade openness. Similarly, Ngouhouo, Nchofoung and Kengdo (2021) evaluated the factors of trade openness in Sub-Saharan Africa (SSA) countries with attention on the role played by domestic institutions. Employing the Generalized Methods of Moments (GMM) on 36 SSA countries over the period 1996–2017, the outcomes of the assessment showed that domestic institutions as a composite index determines trade openness. Specifically, government effectiveness, regulatory quality and rule of law were all enhancing on trade openness. Moreover, access to sea, foreign direct investment, and trade openness lagged by one period all significantly and positive in determining trade openness.

Meanwhile a related but time series study by Omoke and Opuala–Charles (2021) looked the nexus between trade openness and economic growth in Nigeria by

incorporating the role of institutional quality. Covering the period of 1984 to 2017, employs three indicators of trade openness; total trade, import trade, and export trade. Using the ARDL approach, found that export trade has a significant positive impact on economic growth while the impact of import trade on economic growth was negative and significant. The results also showed that the negative long-run effects of import trade on economic growth in Nigeria decreases as institutional quality (quality of governance) improves, which revealed that good governance could help channel the dividends of trade openness into growth-enhancing activities.

The study is significant considering the fact that trade and institutions have been found to exert some measure of influence on the growth of countries. However, evidence has shown that not much has been done in relating institutions to trade in SSA. Most of the studies that considered institutions

### 3. Methodology

The concept of this study is related to the assumption that the trade of most country's economic growth depends on its institution, trade balance to determine whether it's a deficit or surplus trade. Therefore, this study examines trade balance; institutions and economic growth in some selected sub-Saharan African countries which span the period 2002 to 2022, Panel data of 23 out of the 48 countries that made up sub-Saharan African (SSA) countries were selected. The 23 SSA that made the list are Nigeria, Angola, Benin republic, Burkina Faso, Chad, Cameroon, Equatorial Guinea, Congo Democratic, Cote d'Ivoire, Gambia, Kenya, Madagascar, Mali, Niger, Seychelles, South Arica, Togo, Zimbabwe, Central Africa, Guinea and Mozambique the reason for the selection was due to the availability of data for the period of study and also to evaluate the IMF suggested outward oriented trade policy reforms for Africa. The panel data were sourced from world development indicator and world governance indicator database. The variables of interest are Gross domestic product (GDP annual growth rate), which is the dependent variable, while the explanatory variables of interest are Trade Openness which is a proxy for trade balance, Foreign direct investment, Inflation, exchange rate, Institutional

quality (which is measured by government effectiveness, political stability, rule of law, control of corruption and regulatory quality, are all combined together using Principal Component Analysis (PCA) , Agricultural and services all value added were also compressed using PCA.

The data was analyzed using the augmented Panel Autoregressive Distributive Lag (ARDL) bound test approach which can be applied whether the regressors are I (1) and or I (0). The study used the ARDL bound approach to test the effects of trade balance and Institutions on economic growth.

### 3.1 Variables Description

**Table 1: Data Source, Measurement and definitions of Variables**

| variables | Type        | Individual Indicator                | Measurement/ Definition                                                                                                                                                                                                                                                                                                    | Data Source                             |
|-----------|-------------|-------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------|
| GDP       | Dependent   | Annual growth rate (%)              | GDP is measured by making deductions for depletion and degradation of natural resources. GDP is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products.                                                            | WDI 2002-2022                           |
| FDI       | Independent | FDI net inflows (% of GDP)          | Foreign direct investment is measured by the net inflows of investment in an enterprise operating in an economy other than that of the investor, it is divided by GDP. FDI It is the sum of equity capital, reinvestment of earnings, other long-term capital, and short-term capital as shown in the balance of payments. | IMF. International statistics 2002-2022 |
| EXC       | Independent | Real exchange rate                  | Real effective exchange rate is the nominal effective exchange rate (a measure of the value of a currency against a weighted average of several foreign currencies) divided by a price deflator or index of costs.                                                                                                         | WDI 2002-2022                           |
| INF       | Independent | Inflation consumer price (annual %) | Inflation as measured by the consumer price index. This denote the annual percentage change in the cost to the average consumer of acquiring a basket of goods and services that may be fixed or changed at specified intervals, such as yearly. The Laspeyres formula is generally used.                                  | WDI 2002-2022                           |
| TOP       | Independent | Trade (% GDP)                       | Trade openness is the Measure of trade balance, this connote the total sum of exports and imports of goods and services measured as a part of gross domestic product (in percentage)                                                                                                                                       | WDI 2002-2022                           |

|       |             |                                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |               |
|-------|-------------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|
| VASAC | Independent | Agriculture and Services sector Value added (% GDP)                                                                                                     | Both Agric and services' correspond to International standard industrial classification (ISIC) Agric which includes forestry, hunting, and fishing, as well as cultivation of crops and livestock production. While Services include wholesale and retail trade services. Value added is the net output of a sector after adding up all outputs and subtracting intermediate inputs.                                                                                                                                                                                                                                                                                                     | WDI 2002-2022 |
| IQ    | Independent | Five institutional quality indicators namely; Political stability, government effectiveness. Rule of law, control of corruption and regulatory quality. | Simple average ranging from -2.5 to 2.5. <i>PS</i> captures perceptions of the possibility of political instability. <i>GE</i> reflect the perception of the quality of public, civil servant and the degree of its independence from political pressure. <i>RL</i> Captures the perception that people have about the rules that govern them; <i>CC</i> It covers all forms of major and minor corruption, as well as the extent to which private interest influence decision-making to their own benefit. <i>RQ</i> Reflects perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development | WGI 2002-2022 |

**Source:** Authors compilation from World Bank and world governance indicator database 2023.

### 3.2 Model Specification.

The baseline model for this study is adapted from the works of Mathew and Adegboye (2014). The Solow and swan, Robert Solow (1956) and Trevor Swan (1956) theory constitute the theoretical base of the model specification. Thus for this study the model is specified as:

$$GDP = f(FDI, EXC, INF, TOP, VASAC, IQ) \quad (3)$$

Transforming equation (3) into an econometric model gives

$$GDP_{it} = \alpha_0 + \beta_1 FDI_{it} + \beta_2 EXC_{it} + \beta_3 INF_{it} + \beta_4 TOP_{it} + \beta_5 VASAC_{it} + \beta_6 IQ_{it} + \mu_{it} \quad (4)$$

Where:

**GDP**= Gross Domestic Product

**$\alpha_0$**  = is the intercept

**FDI**= Foreign Direct Investment at time

**EXC** = Real Exchange Rate.

**INF** = Inflation rate.

**TOP** = Trade openness.

**VASAC** = Value added of both Agriculture and service sector (PCA)

**IQ** = Institutional Quality (government effectiveness, political stability, rule of law, control of corruption and regulatory quality, PCA).

**$\mu$**  = error term at time t, assume to be a white noise process.

**It** = Country i in year, and time dummy variables of 2002 - 2022 year

**$\beta_1$  to  $\beta_5$**  = Parameters of the independent variables.

The ARDL form of the model is given as;

$$GDP_{it} = \alpha_0 + \sum_i^p = i \beta_1 FDI_{it} + \sum_i^q = i \beta_2 EXC_{it} + \sum_i^q = i \alpha_3 INF_{it} + \sum_i^q = i \beta_4 TOP_{it} + \sum_i^q = i \beta_5 VASAC_{it} + \sum_i^q = i \beta_6 IQ_{it} + \sum_i^q = i \beta_7 GDP_{it} + \mu_t \quad (5)$$

**Table 2: Summary of the Apriori Expectation**

| <i>Regressand</i> | <i>Relationship</i> | <i>Regressors</i> |
|-------------------|---------------------|-------------------|
| GDP               | +                   | FDI               |
| GDP               | +                   | EXC               |
| GDP               | -                   | INF               |
| GDP               | +                   | TOP               |
| GDP               | +                   | VASAC             |
| GDP               | +                   | IQ                |

*Source: Authors compilation 2023.*

**Table 3 Panel Descriptive Statistics.**

| <b>Variable</b> | <b>Observation</b> | <b>M</b> | <b>SD</b> | <b>Min</b> | <b>Kurto</b> | <b>Skewness</b> | <b>JB</b> | <b>Prob</b> |
|-----------------|--------------------|----------|-----------|------------|--------------|-----------------|-----------|-------------|
| GDP             | 483                | 3.900    | 5.439     | -36.39     | 14.589       | -0.3493         | 2712.9    | 0.0000      |
| FDI             | 483                | 361.50   | 388.40    | -2.042     | 186.43       | 13.2194         | 691.43    | 0.0000      |
| EXC             | 483                | 225.11   | 149.11    | 0.055      | 53.753       | 7.0320          | 558.45    | 0.0000      |
| IFL             | 483                | 9.016    | 32.931    | -8.894     | 231.35       | 13.7847         | 106.45    | 0.0000      |
| TOP             | 483                | 67.530   | 35.555    | 16.352     | 9.5414       | 2.3413          | 130.44    | 0.0000      |
| VASAC           | 483                | 1.0830   | 1.0943    | -2.462     | 2.8486       | 0.2935          | 7.3979    | 0.0247      |
| IQ              | 483                | 4.4064   | 2.0074    | -3.556     | 3.0880       | 0.6349          | 32.6070   | 0.0000      |

**Note:** Ho: they are normally distributed, Hi: they are not normally distributed

*Source: Estimated by the Authors using E-views 10*

From the above result in table 3, GDP has an average mean of 3.900 for the period 2002 to 2022, while INF, VASA and IQ with average mean value of (9.016, 1.0830 and 4.4064). However, FDI, EXC and TOP have the highest average mean value of (225.11, 67.530 and 361.50) respectively for the study period 2002 to 2022. The minimum (min) values of the variables are having a mixture of positive and negative value. The standard deviation value of the variables GDP, FDI, TOP, VASA and IQ deviate from the mean because it is greater than the mean value, with exception of EXC and INF. From the above result the kurtosis of all the variables are greater than three (3) which means they variables used for the study are platokurtic, only VASA with value 2.8486 was found to be leptokurtic. Skewness of all the variables tailed toward the right with positive values, only but GDP that tailed to the left having a negative value of -0.3493. The Jarque-bera value of the variables

## 4. Result and Discussions

### 4.1 Panel Descriptive Statistics

Descriptive statistics enables us to have a glimpse of the data used in the study, or to have a greater idea of the distribution of the variables. Common sample descriptive statistics was used because there are no missing values in our data understudy. The descriptive statistics are presented on a sample of 23 SSA countries (2002-2022).

compared with the probability value of 5% level of significance shows that all the variables (GDP, FDI, EXC, INF, TOP, VASA and IQ) are normally distributed with all the p-values less than 0.05 significance value.

### 4.2 Correlation Matrix

It indicates how the independent variables correlate with one another. It also shows the correlation between the explained variable and the explanatory variables. The correlation matrix table below represents how all the different variables that were used in the study correlates with each other. The results shows that there is no risk of a multicollinearity problem occurring between the variables since the highest correlation between the variables is the ones found in value added of agriculture, services sector and institutional quality which is only measured at a value of 0.391388.

**Table 4: Correlation Matrix**

| VARIABLES | GDP       | FDI       | EXC       | INF       | TOP      | VASAPCA  | IQPCA    |
|-----------|-----------|-----------|-----------|-----------|----------|----------|----------|
| GDP       | 1.000000  |           |           |           |          |          |          |
| FDI       | 0.002292  | 1.000000  |           |           |          |          |          |
| EXC       | -0.016825 | -0.014102 | 1.000000  |           |          |          |          |
| INF       | -0.091227 | 0.003112  | 0.217684  | 1.000000  |          |          |          |
| TOP       | 0.076544  | -0.013377 | -0.021465 | 0.003152  | 1.000000 |          |          |
| VASAC     | -0.091249 | 0.010947  | 0.194467  | 0.115066  | 0.358195 | 1.000000 |          |
| IQ        | 0.081518  | 0.126086  | -0.173328 | -0.064214 | 0.318154 | 0.391388 | 1.000000 |

*Source: Estimated by the Authors using E-views 10*

The variables that positively and strongly correlate with each other are; IQ with a value of 0.391388, TOP and VASAC with a value 0.358195 and finally TOP and IQ (0.318154) all this variables, VASAC, IQ and TOP correlate positively with GDP and this indicates that the variables have a positive impact on economic growth which is the dependent variable. However, EXC and VASAC variables correlates negatively with the dependent variables (GDP annual growth rate), and this does not conform to the apriori expectation, this could be attributed to the fact that most SSA is import dependent and having a weak export which has made our currency to depreciate over time, volatility of the exchange rate in the international market could also be a major factor too because of our production capacity which tend to be low.

Similarly for VASAC most SSA countries are mostly exporters of raw materials with most their trading partners who are usually developed countries, in the international market these raw materials have a diminishing return compared to the processed good. Nevertheless, FDI, TOP and IQ were all found to be positively correlated with GDP, this therefore conforms to the Apriori expectation, only but INF does not conform to the apriori expectation. This could be as a result of low rate of inflation during the period under review. Other variables that were found to have a negative correlation with each other are EXC, TOP and FDI, likewise EXC and IQ, then EXC and TOP, and finally INF and IQ.

**Table 5: Cross Sectional Dependency Test**

| Variable    | Breuch Pagan LM        | PersaranScaled LM     | Bia- Corrected Scaled LM | Pesaran CD           |
|-------------|------------------------|-----------------------|--------------------------|----------------------|
| <b>GDP</b>  | 449.32***<br>(0.0000)  | 8.7278***<br>(0.0000) | 8.1528***<br>(0.0000)    | 6.99***<br>(0.0000)  |
| <b>FDI</b>  | 552.78***<br>(0.0000)  | 13.32***<br>(0.0000)  | 12.75***<br>(0.0000)     | 5.68***<br>(0.0000)  |
| <b>EXC</b>  | 2477.32***<br>(0.0000) | 98.88***<br>(0.0000)  | 98.30***<br>(0.0000)     | 43.28***<br>(0.0000) |
| <b>INF</b>  | 723.10***<br>(0.0000)  | 20.89***<br>(0.0000)  | 20.32***<br>(0.0000)     | 15.68***<br>(0.0000) |
| <b>TOP</b>  | 1153.53***<br>(0.0000) | 40.03***<br>(0.0000)  | 39.45***<br>(0.0000)     | 3.45***<br>(0.0000)  |
| <b>VASA</b> | 1164.80***<br>(0.0000) | 40.53***<br>(0.0000)  | 39.95***<br>(0.0000)     | 5.52***<br>(0.0000)  |
| <b>IQ</b>   | 1629.89***<br>(0.0000) | 61.21***<br>(0.0000)  | 60.63***<br>(0.0000)     | -0.47***<br>(0.0000) |

**Note:** Null hypotheses states that there is no cross-section dependence or correlation. \*\*\* indicates rejection of the null hypotheses at 1 percent level of significant. The Breusch-Pagan LM, follows a chi-square distribution, Bias-corrected scaled LM and Pesaran CD follow standard normal distribution.

*Source: Estimated by the Authors using E-views 10*

Table 5 above shows the results of the Breusch-Pagan LM, Bias-corrected scaled LM and Pesaran (2022) cross section dependence test. The test indicated that there is cross section dependence in all the variables among the selected African countries. This simply implies that a

shock in one of the selected countries tends to be transmitted to other countries within the region.

### 4.3 Panel Unit Root Test Results

**Table 6: The summary of the panel unit root test for the variables used is presented below.**

| Variable | Level Pesaran | Chu       | First Diff Pesaran | Chu        | Remark          |
|----------|---------------|-----------|--------------------|------------|-----------------|
| GDP      | -13.427***    | -5.739*** | -6.267***          | -14.970*** | 1(0) Stationary |
| FDI      | -7.002        | -1.664    | -10.245***         | -7.002***  | 1(1) Stationary |
| EXC      | 3.474         | 3.408     | -9.5881***         | -10.158*** | 1(1) Stationary |
| INF      | -9.582***     | -9.963*** | -18.271***         | -15.293*** | 1(0) Stationary |
| TOP      | -1.035***     | -2.186*** | -10.367***         | -7.305***  | 1(0) Stationary |
| VASA     | -3.688***     | -6.655*** | -9.717***          | -9.864***  | 1(0) Stationary |
| IQ       | -0.455        | 0.676     | -8.784***          | -6.930***  | 1(1) Stationary |

**Note:** \*\*\* the hypotheses of a unit root is rejected at 1% significant level.  $H_1$ : individual unit root process

**Source:** Estimated by the Authors using E-views 10

Table 6 reveals the result of the panel unit roots test of the seven variables at level and at first difference with individual effect and trend. The table reveals that all the variables are stationary at level except for Exchange rate (EXC) and institutions quality (IQ) which was not stationary at level but at first difference at both Pesaran and Chu. However, after taking the first difference, all

the series became stationary at first difference, the null ( $H_0$ ) of a unit root process is strongly rejected at 1% significance level. To account for the cross-section dependence, the panel cointegration test was conducted to examine whether long run relationship exist between the dependent variable and explanatory variables.

**Table 7: Panel Cointegration Test Results**

| Statistics          | Without trend Statistics | Prob  | With trend statistics | Prob  |
|---------------------|--------------------------|-------|-----------------------|-------|
| Panel V- Statistic  | -2.415                   | 0.992 | -2.809                | 0.997 |
| Panel rho-statistic | 2.248                    | 0.987 | 1.319                 | 0.906 |
| Panel PP-Statistic  | -7.546***                | 0.000 | -11.125***            | 0.000 |
| Panel AD-Statistic  | -6.671***                | 0.000 | -9.511***             | 0.000 |
| Group rho-Statistic | 3.193                    | 0.999 |                       |       |
| Group PP-Statistic  | -15.359***               | 0.000 |                       |       |
| Group ADF-Statistic | -8.189***                | 0.000 |                       |       |

**Note:** Null hypotheses states that there is no panel long-run relationship between the dependent and independent variables. \*\*\* represents statistical significance at 5% level. **Source:** Estimated by the Authors using E-views 10

Table 7 shows the panel cointegration test of the seven variables; GDP, FDI, EXC, INF, TOP, VASA and IQ respectively. Based on the panel cointegration test result, long run relationship exists between the dependent and independent variable, because six statistical variables out

of eleven are significant at 0.05 significance level. Implying that FDI, EXC, INF, TOP, VASAC and IQ have long run effect on gross domestic product (GDP) in the selected sub-Saharan African countries. The result is explicitly presented as thus;

**Table 8:** ARDL Test Results

Panel A: Long Run coefficient – dependent variable GDP

| Variable           | Coefficient   | Std error     | T-statistics  | Prob*         |
|--------------------|---------------|---------------|---------------|---------------|
| FDI                | 0.6245        | 0.1980        | 3.1534        | 0.0017        |
| EXC                | -0.0710       | 0.0367        | -1.9336       | 0.0537        |
| TOP                | 0.1146        | 0.0496        | 2.2473        | 0.0250        |
| VASAC              | -1.7476       | 1.6683        | -1.0474       | 0.2954        |
| INF                | -0.1030       | 0.0805        | -1.2802       | 0.2011        |
| IQ                 | 0.9797        | 0.8651        | 1.1500        | 0.2507        |
| <b>C</b>           | <b>2.5967</b> | <b>1.3077</b> | <b>1.9857</b> | <b>0.0476</b> |
| Panel B: Short Run |               |               |               |               |
| D(LFDI)            | 0.1987        | 0.0289        | 1.9857        | 0.0376        |
| D(EXC)             | 0.0000        | 0.0000        | 2.1802        | 0.3289        |
| D(INF)             | -0.5862       | 0.1412        | -6.0196       | 0.2100        |
| D(TOP)             | 0.0152        | 0.0021        | 13.4331       | 0.0000        |
| D(VASAC)           | 0.0251        | 0.0081        | 3.3459        | 0.0000        |
| D(IQ)              | 0.0321        | 0.0251        | 4.9312        | 0.3205        |
| ECM(-1)            | -0.5812       | -1.1073       | -19.0417      | 0.0800        |

*Source: Estimated by the Authors using E-views 10*

The estimated coefficient of the long run relationship is presented in panel A, while the short run is presented in panel B. Both long run and short run of each variable will be discussed concurrently. The long run and short run result shows that FDI is positive and is statistically significant to GDP, this implies that a unit increase in FDI will lead to an increase in GDP growth rates annually in the selected SSA countries this conform to our apriori expectation. EXC was found to be positive (0.0000) but then it is found not to be statistically significant (0.3289) in the long run while in the short run it was found to be positive and not significant, therefore in the long run the sign conform to the a priori expectation while in the short run it is in contrast to the apriori expectation. However, the variable was not significant which is in contrast to Yaya (2021) whose study revealed that exchange rate depreciation improves trade balance in the long run. On the other hand INF was found to be negative with a coefficient of (-0.5862) in the long run and short run and found not to be statistically significant (0.2100) to GDP this conform to our a priori expectation and is consistent with economic theory. This implies that the high inflationary rate has a negative effect on the GDP growth rate of most SSA. TOP in both long run and short run has a positive

relationship with GDP and is found to be statistically significant this conform to the a priori expectation, and it is in line with the study done by Gislain, Gandja and Mohammed (2020) which deduced that trade openness promotes economic growth. Similarly it is in consonance with the Solow Swam growth model (1956) which states that there is a relationship between trade openness and increase in economic growth. Removal of trade barriers are expected to promote technological transfer, foreign investment and aid, which can accelerate growth, SSA Countries that are more open, have greater capacity to attract higher technologies, that is likely to speed up economic growth. In a nutshell a unit increase in TOP is associated with an increase of 0.0152 in GDP. VASAC was found to have a negative relationship with GDP in the long run while in the short run it was positively related with GDP and is statistically significant. A unit increase in VASAC is associated with an increase of 0.0321 in GDP, this conform to our a priori expectation. Finally in both long run and short run IQ was found to have a positive relationship with GDP but was not statistically significant in both long run and short run the p-value (0.3205) was greater than 5% level of significance. This is in contrast to the findings made by Conteh, Yijan and Sesay (2021) in which their study

revealed that institutional quality brings about positive impact on economic growth and has a significant relationship with GDP. Going by the finding of this study which found institution not to be statistically significant, the implication could be attributed to the weak institutions in most SSA countries that have the tendency of compromising policy actions. Therefore weak institutions are mostly credited with the failure of some well-intended policies in SSA. Finally political instability is endemic in most SSA countries and has long been a major concern to both domestic and foreign investors.

ECM is negative and less than one (-0.5812) its means there is a short run equilibrium relationship between the dependent variable with the independent variables, this implies that it takes an average of 58.12% to return back from the short run to the long run, if there is a disequilibrium it takes an average speed of 58.12% to return back from the short run to the long run, meaning there is an high speed to adjust if there is any disequilibrium in a period. However, it was not statistically significant at the p-value of (0.08) which is greater than 5%, this could due to the influence of the explanatory variable IQ and INF which were found to be insignificant.

## 5. Conclusion and Recommendations

Trade balance has been found to a large extend to influence economic growth, especially improvement in the performance of most SSA countries in international trade. However, the institution quality was not significant in explaining GDP growth rate in the SSA countries; this could be as a result of the use of PCA to combine five indicators of institutions. These indicators

of institutions may have contradicting effect among themselves making it insignificant in impacting GDP growth rate. Integration of SSA countries into the world economy through trade is the main drivers of rapid economic transformation, thus these countries that are more open to trade will grow faster since trade is believed to facilitate knowledge transfer and technological advancement as well as capital inflows. Trade also leads to greater competition, stronger institutions that will safeguard property right, political stability and implement market friendly policies which in turn influence decisions for foreign investment in factors of production among other things. And lastly a stable exchange rate to a large extend will accelerate economic growth and encourage domestic export.

- i. Government should focus on improving institutions to create an environment conducive to both domestic and international trade.
- ii. Government should encourage trade balance through agreements like free trade agreement, to promote economic growth.
- iii. The government should also consider and formulate policies to address the potential negative consequences of trade, such as Job displacement in certain sector.

## Suggestion for Further Studies

It's therefore essential for researchers to note that the specific relationship between these factors can vary depending on a country's unique circumstances and the policies it implements; there is need for further studies on this aspect as to study these dynamics to make informed decisions about economic development strategies.

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