Impact of Trade-Finance Openness and Economic Development in Africa: A Panel Study of 44 Sub-Saharan African Countries

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Abstract

There is global emphasis to liberalize trade and capital account. Yet, there impact of openness of trade and capital accounts are mixed, with few studies focusing on African Developing countries. The study examined the impact of openness (trade-financial) on economic development in Africa. This study uses annual data collected from 2002-2019 in a sample of 44 Sub Saharan African countries. The study employed a dynamic model Generalised Methods of Moments (GMM) both difference and system GMM were used to analyse the data. The result shows that trade de-facto has a positive and significant link to economic development while the financial de-facto has a negative and significant relationship to economic development. These clearly, show that the relationship between financial openness on economic development is asymmetry and depends on the level of trade openness. Inflation and government expenditure have negative but significant relationship to economic development. The study recommends that policy makers should concentrate on policies aimed at promoting openness with regard to trade liberalization and finance which leads to economic development, and to also place more priority on the openness (trade-finance) in their country since it has the greater effect on development.

Keywords: Trade-finance Openness; Economic Development; Sub-Saharan Africa; Generalized Methods of Moments (GMM)

1. Introduction

One of the cardinal objectives of a policy maker is to promote economic development through improvements in productivity growth and enhance welfare of citizenry. Economic development can be defined as a process of creating and utilizing physical, human, financial and social assets to generate improved and broadly shared economic well-being and quality of life for a region or nation, (Seidman, 2005). Empirical literatures on development are closely associated with the development of real GDP across countries.

The level of openness (financial and trade) may be regarded as important determinants of economic development amongst countries (Mohamed, 2021). Trade is important internationally because it

expand the range of goods and services available to the poor and reduce the prices of goods and services at such increasing real income. African economics growth in terms of trade is at 5% level of significant which indicates that at 1% rise in trade, export and openness index, there will be improvement in GDP per capita.

Financial openness is calculated as the sum of net inflows, FDI net outflows, investment to GDP, and Debt securities which are de facto (not applicable by law) and as de jure (applicable by law) is based on their methodology and systemization developed by IMF Annual Report on Exchange arrangement and exchange restrictions (AREAR). The Standard Index of de jure openness is that developed by Chinn and Ito (2008) and it is called the KAOPEN or capital account index. Openness (financial and trade) constraints can prevent firms, in developing countries, from taking full advantage of technology transfer (Zahanogo, 2016). Financial openness lower cost of financing, make allocation of resources effective, there will be international risk sharing, also increase investment in which developing countries like SSA countries need to develop. The mechanism to which globalization can affect poverty, inequality and economic growth is financial stability which is often associated with higher rates of economic development. This has effect on the factor of production which explains why liberalization appear to be permanent not temporary. On the other hand, the challenges of financial openness may rise in developing countries by the need to improve financial literacy, lack of formal documents of identification and the need for consumer protection.

On the other hand, trade liberalization can be a threat to developing nations or economies because they are forced to compete in the same market with stronger economies or nations which will lead to failure of newly developed industries, also trade has negative effect on growth in countries with low financial development and countries with high inflation rate which most SSA countries are going through.

The study intends to examine the impact of openness (trade-finance) on economic development of 44 SSA countries. These Sub-Saharan African Countries are composed of low, lower- middle, upper-middle and high-income countries. Most of which are fragile or conflict affected. The economic growth of SSA is set to decelerate from 4.1% in 2021 to 3.3% in 2022 as a result of slowdown in global growth, rising inflation which is largely the effect of the war in Ukraine, adverse weather condition, weakness in global financial condition and the risk of debt distress which compromises poverty reduction and set back by the impact of covid-19 pandemic. The fiscal deficit of the region

has expanded to 5.6% of GDP in 2020 from 3.0% of GDP in 2019, in 2022 its amount to 4.8% of GDP due to consolidation efforts (Kiambi, et al., 2023).

The rest of the study is organized as follow; section 2 is the literature review, section 3 is data and methodology, section 4 is discussion and analysis of result, and section is conclusion and recommendations.

2. Theoretical and Empirical Literature

Trade openness is defined as the outward or inward orientation of a given country's economy taken into consideration the significant of opportunities to trade with other countries which enable poverty reduction and job creation and it is measured by the actual size of registered imports and exports with a national economy also known as impex rate.

The foundation of theories on the existence of relationship between openness (trade and financial) and economic development is based evolves from the classical trade theory of comparative advantage by Adam smith and David Ricardo's works which is the ability of a country to produce a good or service for a lower opportunity cost than other countries. A nation or region with comparative advantage makes trade off worthwhile. Ricardo argues that trade openness allows countries to handle their finite resources and direct output to more efficient sectors. Smith, on the other hand, contends that openness is critical for economic progress because it expands the market and provides each economy with the need to increase return to scale through division of labor. (Uchak, 2015).

Another view of theories is the traditional view which reveals many potential links between globalization and economic development. Grossman & Helpman (2015) show that integrating people and cultures makes it easier for ideas to flow across national lines as foreign ideas can aid in the development of new products, the improvement of existing products, and the production of items at a reduced cost, this indicates that development can also be gotten from openness especially in SSA countries.

There are plethora of studies on openness-economic development nexus, yet the results are mixed. For instance, Chi et al., (2021), examine the causal relationship between financial development and economic growth through trade openness for the leading ASEAN countries (Indonesia, the Philippines, Malaysia, Singapore, Thailand, and Vietnam). The result shows that trade openness has a positive association with growth whereas the financial development is positive, but insignificantly associated with growth.

Sghaier, (2020) examined the relationship between trade openness, financial development and economic growth on a panel of four North African countries (Tunisia, Morocco, Algeria and Egypt), over a 5-year period from 1998 to 2017. Using the Generalized Method of Moments (GMM), it was found that trade openness is positively related to economic growth which suggest that trade openness and financial development are important elements in determining economic growth in these countries.
Gnangnon (2020) investigates the impact of openness to international trade on the diversification of external financial flows for development, which could help developing countries achieve the SDGs by 2030, using the two-step system generalized method of moments (GMM) approach it shows that greater trade openness exerts a positive and significant impact on the diversification of external financial flows for development especially in least developed countries (LDCs). Raghutla (2020) investigates the impact of trade openness on economic growth in a panel of five emerging market economies, covering the data period from 1993 to 2016, a long-run relationship among trade openness, economic growth, financial development, inflation, labour force, and technology existed.
Ritu and Naresh (2019), investigates the long-run association and direction of causality among economic growth, trade openness and gross capital formation in Brazil, Russia, India, China and South Africa (BRICS) nations, using panel granger causality and panel VECM. A long-run relationship among economic growth, trade openness and gross capital formation was found. Mbogela, (2019) examined the effects of trade openness on economic growth for the African countries using two-stage least squares (2SLS) for panel data models approach and uses data from the World Bank database shows that all the variables that were included in the growth model, gross capital formation revealed a great impact on economic growth for African economies, followed by openness and then FDI flows.
Amirkhalkhali and Dar (2019), attempts to contribute to existing empirical studies on the implications of the degree of trade openness for total and individual factor productivity growth in 27 OECD countries over the 2000-2015 period. The study revealed that higher degree of trade openness would result in higher export expansion and could contribute positively to total factor productivity and economic growth.
Hajilee and Niroomand (2019) investigates the impact of financial market inclusion, the existence of shadow economy and real output on trade openness for a select group of emerging economies found that financial market inclusion has played a significant role in the short run and has symmetric effects on the trade openness of the majority of emerging economies.

Ahmad, et al (2018) examine the effect of financial instability, energy prices and trade openness on economic growth for leading African countries (Egypt, Kenya, Morocco, Nigeria and South Africa). The second generation cointegration and the Dumitrescu and Hurlin (DH) heterogeneous panel Granger causality were tested over the period from 1970 to 2016 which revealed existence of a cointegration relationship between the financial instability, oil prices, and trade openness on economic growth for leading African countries.

Mireku, et al., (2017) investigated the impact of trade openness on economic growth volatility of Ghana from 1970 to 2013, using cointegration and error correction techniques. The result show that both the long and short run economic growth volatility is positively influenced by changes in trade openness.

The reviewed literatures on various Sub-Saharan African countries show a mixed result some are of positive and significant association while some studies are showing negative relationship. In theory the apriori expectation is that Openness should impact positively on economic development.

3. Data and Methodology

This study uses annual data from 2002-2019 in a sample of 44 Sub Saharan African countries namely (Algeria, Angola, Benin, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Democratic Republic of Congo, Congo republic, Cote d'Ivoire, Djibouti, Egypt, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Liberia, Libya, Mali, Malawi, Madagascar, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, South Africa, Sudan, Togo, Tunisia, Tanzania, Uganda, Zambia, Zimbabwe). Data on Inflation, Government expenditure, trade % of GDP and Real GDP Per Capita are collected from World Development Indicator (WDI) Database, 2021. Data on Trade Openness and Financial Openness defacto (not applicabale by law) and de jure (applicable by law) are collected from globalization index 2021. Data on capital account openness (Kao) is collected from Chin and Ito.

Inflation, consumer prices (annual %) represented by the consumer price index reflects the annual percentage change in the cost to the average consumer. These variables have been used in studies by Cogoljević, et al (2018), trade is represented by the sum of exports and imports of goods and services measured as a share of gross domestic product. These variables have been used in studies by Saeed & Hussian, (2015), Real GDP and GDP per capita is gross domestic product divided by midyear population. Data are in constant 2015 U.S. dollars. This variable has been used in studies by Asongu

et al., (2020) general government final consumption expenditure (annual % growth) annual percentage growth of general government final consumption expenditure based on constant local currency. Aggregates are based on constant 2015 prices, expressed in U.S. dollars.

Trade Globalisation (de facto) is represented by trade in goods, trade in services and trade partner diversity while Trade Globalisation (de jure) is represented by trade regulations, trade in services, trade taxes, trade partner diversity tariffs and trade agreements. This variable has been used in studies by Moyo & Khobai (2018). Financial Globalisation (de facto) is represented by foreign direct investment, Portfolio investment, international debt, international reserves and international income payments while Financial Globalisation (de jure) is represented by investment restrictions, capital account openness, and international investment agreements. This variable has been used in studies by Polat et al (2014); while capital account openness (Kao) has been used in a study by Jahan & Wang, (2016).

The study employs a dynamic model, precisely, two-step generalized methods on moment. The GMM is defined as the moment conditions formed under the assumptions that particular lagged levels of the dependent variable are uncorrelated to the difference disturbances (Arellano and Bond, 1991). Two-step GMM uses the optimal weighted matrices where the moment conditions are weighted by a consistent estimate of the covariance matrices. It employs weighted matrix

$$W_{NI} = (\mathrm{I}/\mathrm{N}\sum_{i=I}^{N} Z_I' \Delta V_i \Delta V')^{-I} \quad = \Delta V_i = \quad \Delta Y_i \; - a_i \; \Delta Y_{i-I}$$

Two-step GMM is more efficient under more general condition such as heteroscedasticity, which thus makes two-step GMM a better estimator over one-step. Two-step GMM has some potential problems in that it is bias in small sample and may increase the number of instruments in multiple of the time period, hence making it inconsistent estimator in this case.

We start with functional presentation of the relationship between openness and economic development

$$rgdpc = f(tr, fo, Xs) \ldots\ldots\ldots\

Where; $rgdpc, tr, fo, \inf, gov$ Represent real GDP per capita, trade openness, financial openness, inflation, and general government expenditures. Subscript it denotes panel model specification. The subscript $it-1$ implies lagged of the dependent variable which represent the dynamic component of the model. ε is the error term. β_0 is the intercept of constant term in the model. $\beta_1 - \beta_5$ represent the coefficient of parameter estimates or the slopes. Since the variables are expressed/measured in different forms, we take the natural log and represent equation (2) below;

$$lrgdpc_{it} = \beta_0 + \beta_1 lrgdpc_{it-1} + \beta_2 ltr_{it} + \beta_3 lfo_{it} + \beta_4 \inf_{it} + \beta_5 \lg ov_{it} + \varepsilon_{it} \quad \text{.....eqn (3)}$$

Where

$rgdpc, tr, fo, \inf, gov, \varepsilon, it, \beta_0, \beta_1 - \beta_5$ are as defined above. l represent natural log. It is important to note that we do not transform inflation into natural log because it is already expressed as percentage. The essence for converting variables to log form is to express them in elastic forms so that it can be interpreted as percentage change. To test for the concurrent opening of trade and financial sectors on economic development, we interact them and re-specify our model

$$lrgdpc_{it} = \beta_0 + \beta_1 lrgdpc_{it-1} + \beta_2 ltr_{it} + \beta_3 lfo_{it} + \beta_4 \text{int}_{it} + \beta_5 \inf_{it} + \beta_6 \lg ov_{it} + \varepsilon_{it} \text{.....eqn (4)}$$

Where int represent the interaction term obtained by multiplying trade openness by financial openness (I.e tr*fo). in order to interpret the model, we must compute the marginal effect as

$$\frac{dy}{dx} = \beta_3 + \beta_4 tr; \text{ ..... eqn (5)}$$

Where $\frac{dy}{dx}$ represent change in economic development as a result of change in financial openness (for instance).

Table 1 Summary of variables Openness and Economic Development

Variables	Description	Measurement	Source	Expected Sign
dependent Variable				
Economic Development	Real GDP per capita (constant 2010)	US Dollar	WDI	Positive
Independent Variable				
Inflation	Consumer Price Index	Annual percentage	WDI	Ambiguous
Government expenditure	General government final consumption expenditure (constant 2010)	US Dollar	WDI	Ambiguous
Top 1 de facto	Trade in good Trade in services Trade partner diversity	Ratio	Globalization Index	Positive
Fop 1, de facto	Foreign direct investment Portfolio investment International debt International reserves 1.3 International income payments	Ratio	Globalization Index	Positive
RGDP	RGDP per capital (proxy for economic growth)	US Dollar	WDI	Positive

1. Results and Discussion

This section presents the results of our summary statistics of variables used in the model estimation of the impact of openness on economic development. The results are presented in table 2 and 3. Table 2 present the result of the descriptive statistics while table 3 depict the result of the dynamic model.

The result from Table 2 shows the mean of real GDP per capita is 2123.62, the standard deviation is 2508.414, the minimum is 265.5 (Malawi) and the maximum is 16172.5 (Equatorial Guinea). The mean of both trade de facto and financial de facto is 48.46086, the standard deviation is 1549203 and 15.04766 while the minimum is 15 (Sudan) and 12 (Rwanda) and maximum is 90 (Equatorial Guinea) and 99 (Mauritius) respectively. The inflation rate mean is 7.232323, the standard deviation is 10.18178 and the minimum is -6 (Chad) and the maximum is 133 (Zimbabwe). Government expenditure mean is at the rate of 14.58712, the standard deviation is 5.924791 with minimum is 1 (Guinea) and maximum is 46.5(Guinea).

Variable	Obs	Mean	Std. Dev.	Min	Max
Rgdpc	396	2125.62	2508.414	265.5	16172.5
Trdf	396	48.46086	15.49203	15	90
f2df	396	50.33081	15.04766	12	99
Inf	396	7.232323	10.18178	-6	133
govexp	396	14.58712	5.924791	1	46.5

The pairwise correlation matrix result shows that there is significant, positive but weak correlation between real GDP per capita and measures of openness; that is: trade de facto (0.467) and financial de facto (0.449). On the contrary, we find significant negative but weak correlation between real GDP per capita and inflation (-0.0923) at 10 percent level of significant. Government expenditure is insignificant on real GDP per capita (0.0287). There are no strong correlations amongst controlled/explanatory variables in the model, which may imply the absence of the problem of multicollinearity in our estimation/model.

Table 2 Summary Statistics

Note: rgdpc, trdf, f2df, inf, and govexp denote real GDP per capita, trade de facto, financial de facto, inflation, government expenditure respectively.

Table 4.2 Pairwise correlation Matrix

Variable	rgdpc	Trdf	f2df	inf	govexp
Rgdpc	1.000				
Trdf	0.467***	1.0000			
f2df	0.4489***	0.4975***	1.0000		
Inf	-0.0923*	-0.1259**	-0.0418	1.0000	
govexp	0.0287	0.0782	0.1355***	-0.0270	1.0000

Note: rgdpc, trdf, f2df, inf, and govexp denote real GDP per capita, trade de facto, financial de facto, inflation, government expenditure respectively. ***, **, and * denote significance at 1, 5, and 10 percent levels respectively

The following criteria are used to select the most appropriate model/method of estimation to rely upon. One of the major factors is that the number of instruments must be less than the number of groups. Secondly, the instruments must be valid and Sargan test must be statistically insignificant at 5 percent level of significance. Thirdly, no serial autocorrelation at second order meaning that AR (2) is not significant at 5 percent level. Also, the lag dependence variable most be significant. Having found that all models have met these conditions, we rely on the fact that the system GMM is most consistent in the presence of persistence series as in case of all our models. Therefore, we shall rely on the System GMM as our preferred model.

The result shows that trade de facto has a positive and significant link to economic development at 1% while the financial de facto has a negative and significant relationship to economic development. Inflation also has a negative but significant relationship to economic development at 1% and government expenditure has a negative and significant relationship to economic development at 5%. The system GMM with interaction of trade and finance shows that the interaction has a negative but significant role to play on economic development at 1%. The marginal effect of the interaction at low, median and high has a positive but insignificant link to economic development, has negative but significant relationship to economic development at 5% and a negative, significant relationship to economic development exist at 1% respectively.

The findings of negative impact of government expenditure and inflation on economic development is expected. Government spending are usually political in nature and not necessary to the most productive sector or to economically non-viable projects. This usually crowd-out private investment, which ultimately undermine development. Worse, high level of corruption is another contributing

factor to the negative relationship between government expenditure and economic development in the Sub-Saharan Africa. On papers, public funds are committed to projects which may have economic effect on the society. In reality however, the funds are embezzled or mismanaged. The general trend now is private sector driven development because of allocative efficiency. There is general call for less government participation in the process of economic development. The result buttresses the finding of Al-Khulaifi (2018).

Again, inflation has the tendency of reducing welfare and aggregate demand. Generally, when income does not grow in tandem with inflation, aggregate demand falls which has negative effect of development. Worse, most African nations are import dependent and rely heavily on other countries for most of their consumer products. This may lead to unemployment and imported inflation which ultimately are detrimental to economic development, Cogoljević, et al (2018).

The relationship between financial openness on economic development is asymmetry and depends on the level of trade openness. The preposition that the relationship between financial openness and economic development is preconditioned on the level on trade openness is consistent with our result. The result show that the impact of financial openness on real per capita GDP is not homogeneous across all levels of trade openness. Rather, financial globalization is found to have insignificant effect of economic development at lower level of trade globalization. On the contrary, at median and higher level of trade globalization, financial openness undermines economic development.

The finding of negative effect of financial globalization on development is in line stylized fact. Onanuga and Onanuga (2016), Gries, et al. (2009), Menyah, et al. (2013) and Yucel, (2009) found negative relationship between financial openness and economic development. The impact of financial and trade globalization is through current and capital account, hence through exchange rate. Financial globalization may promote volatility, especially if the financial sector is not sufficiently developed to absorb the flow of financial resources. Further, trade globalization of most African countries is import concentrated. Therefore, financial openness will ensure the flow of foreign capital which leads to exchange rate appreciation and hence promote import. Unfortunately, export which is expected to neutralized the effect of foreign capital inflow is very low. Thus, it can be seen that foreign capital inflow, which leads to exchange rate appreciation may undermine employment and economic development. Another view point is that financial globalization may increase the level of corruption and provide means to channel funds abroad easily, thereby negating development.

Table 3: Summary of the Dynamic Model

VARIABLES	DIFF GMM	DIFF GMM	SYS GMM	SYS GMM
l.lrgdpc	0.867*** (0.035)	0.867*** (0.034)	0.950*** (0.012)	0.953*** (0.013)
trdf	0.001*** (0.000)	0.002 (0.001)	0.001*** (0.000)	0.005*** (0.001)
f2df	-0.000 (0.001)	0.000 (0.001)	-0.002*** (0.001)	0.002 (0.001)
inf	-0.001*** (0.000)	-0.000*** (0.000)	-0.001*** (0.000)	-0.001*** (0.000)
govexp	-0.002** (0.001)	-0.002** (0.001)	-0.003** (0.001)	-0.002** (0.001)
Interaction 2		-0.000 (0.000)		-0.000*** (0.000)
Cons	0.986*** (0.265)	0.955*** (0.238)	0.473*** (0.064)	0.270 ** (0.121)
Marginal Effect				
Low		0.000 (0.001)		0.001 (0.001)
Median		-0.001 (0.001)		-0.001** (0.001)
high		-0.002 (0.002)		-0.005*** (0.001)
Sargan	15.277 [0.227]	15.830 [0.199]	28.083 [0.082]	27.223 [0.099]
AR(1)	-1.423 [0.155]	-1.424 [0.155]	-1.433 [0.152]	-1.385 [0.166]
AR(2)	0.379 [0.704]	0.355 [0.722]	0.465 [0.642]	0.447 [0.655]
No. of instrument	18	19	25	25
NO. of Group	44	44	44	44

Note: rgdpc, trdf, f2df, inf, govexp and interaction 2denote real GDP per capita, trade de facto, financial de facto, inflation, government expenditure and interaction between trade de facto and financial de facto respectively. Values in () and [] denote standard error and p-values respectively. ***, ** represent significant at 1% and 5% respectively.

5 Conclusion and Recommendations

The objective of the study is to analyze the impact of Openness on Economic Development and study is restricted to panel sample ops 44 sub-Saharan African countries using annual data from 2002 to 2019 to investigate the impact of openness on economic development. We employ dynamic panel GMM methods as our estimator. The estimate is suitable for panel studies with large cross-sectional unit and small time series data. The method of estimation is also superior over other panel data estimators in terms of addressing the problem of biasness, individual specific effect and endogeneity.

The result shows that openness both in trade and finance have affect economic development significantly and positively. The impact of openness and development depends on the nature and level of development in that economy. Openness influences development in developing countries. The level Openness can only have impact on economy of developing countries if all the variables of openness are used accordingly. The result ultimately shows that openness (trade-finance) is important to economic development.

Economic development is one of the primary goals of policy makers and our recommendation on the basis of our result which shows positive impact of openness on economic development. Regardless of the level of development of any country, our results still stand thou we are dealing with 44 sub–Saharan African countries. We recommend that policy makers should concentrate on policies aimed at promoting openness with regard to trade liberalization and finance which leads to economic development. To achieve these objectives, policy makers should place more priority on the openness (trade-finance) in their country since it has the greater effect on development.

Developing countries stand to gain majorly on the openness which will make them to be able to compete against each other and compete with developed countries. Measure that leads to openness or increase openness should be put in place by policy makers by stimulating policies to regulate and control openness in other to have check and balances.

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