Developing Country Studies
ISSN 2224-607X (Paper) ISSN 2225-0565 (Online)
Vol.4, No.8, 2014

www.iiste.org

Trade Openness, Institutions and Economic Growth in sub-Saharan Africa (SSA)

Matthew, A. Oluwatoyin[1*], Adegboye, B. Folasade[2]

1. Department of Economics & Development Studies, Covenant University, P.M.B.1023, Ota, Nigeria.

2. Department of Banking & Finance, Covenant University, P.M.B.1023, Ota, Nigeria.

[*]Email of corresponding author: matthew.toyin2013@gmail.com

Abstract

A major discourse in literature is that one of the causes of the limited growth effects of trade liberalization is the weakness of institutions. The main objective of this study is to investigate the impact of trade openness and institutions on economic growth in sub-Saharan Africa (SSA). Institutions are crafted by man to create a peaceful habitation and reduce uncertainty in the exchange of values; and they play key roles in the management of economies in recent years. 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. The study employed econometric analyses involving the Panel Unit Root, Least Square Dummy Variables (LSDV) and the Generalized Method of Moments (GMM) techniques for the period 1985-2012 on thirty selected SSA countries. Secondary data were used for the estimations. 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. Therefore, the study recommended that the SSA countries should ensure that funds be channeled appropriately to projects of economic importance so as to further develop their institutions to have meaningful impact on economic growth. These SSA countries should also create conducive economic and political environments that will engender free international trade between them and other countries of the world.

Keywords: Institutions, Trade Openness and Economic Growth.

1. Introduction

Sub-Sahara African (SSA) countries have implemented a series of economic reforms, including trade liberalization, with the aim of improving on the level of their economic growth. The theoretical motivation for these reforms is that trade liberalization is expected to increase trade, which in turn raises the rate of economic growth. However, the empirical evidence from the large and growing literature on trade and growth remains mixed (Chaudhuri *et al.* 2008; Chandra *et al.* 2010; Claustre *et al.* 2010; Du 2010). Some studies suggest that trade liberalization is not associated with growth while others conclude that trade openness may even retard growth. For example, while Dollar and Kraay (2003) argue that trade openness helps to increase the speed of convergence; the evidence from the study by Easterly (2008) suggests that increased openness to trade has led to income divergence rather than convergence in African countries. In fact, Rodrik (2001) argues that, regarding trade openness and growth, "the only systematic relationship is that countries dismantle trade restrictions as they get richer."

The issue of whether trade and increased openness of trade would lead to higher rates of economic growth is an age-old debate between pro-traders and anti-traders over the years. Early proponents of free trade have lauded the gains from trade through the specialization of countries in the production of goods in which they have comparative advantage and engage in trade and exchange to meet their other needs. But the anti-traders see trade to be the main cause of dumping of goods that have affected the developing countries adversely. New development theorists contend that openness to trade stimulates technological change by increasing domestic rivalry and competition, leading to increased innovation; and that trade liberalization by allowing new goods to flow freely across national borders increases the stock of knowledge for technological innovations which spur growth (Alege, 1993; Ahmed and Sattar, 2004).

It has been observed from literature that one of the causes of the limited growth effects of trade liberalization is the weakness of institutions. Indeed, one strand of the literature on growth has argued for the primacy of institutions in economic growth (Easterly and Levine, 2003; Dollar and Kraay, 2003; Rodrik, Subramanian and Trebbi, 2004). Findings from empirical studies have concluded that institutions are crucial for the success of

economic reforms in developing countries (Acemoglu, Johnson and Robinson, 2003; Dollar and Kraay, 2003; Addison and Baliamoune-Lutz, 2006). This evidence suggests that the failure of trade reforms to promote trade and growth in sub-Sahara African countries may be attributable to the poor quality of institutions. In a study by Addison and Baliamoune-Lutz (2006) on North African countries, the results from their study show that the growth effects of economic reforms depend to a large extent on the quality of institutions. This paper examines whether this finding can be generalized to all African countries. The paper estimates a growth model including measures of institutional quality and indicators of openness in addition to conventional correlates of growth. The paper employs the use of panel data comprising a sample of thirty (30) African countries selected across the regions of sub-Sahara Africa covering the period 1985-2012. The econometric technique employed for the analysis is the least squares dummy variable (LSDV) and the Generalized Method of Moments techniques.

Therefore, the objectives of this paper includes; (i) to examine the effect of trade liberalization and institutional quality on economic growth in selected African countries; and (ii) to explore the validity of the theoretical argument that one of the causes for the limited growth effects of trade liberalization is the weakness of institutions in the African continent. The hypothesis formulated in this study stated in the null form is: H_0: There is no significant relationship between trade openness and institutions and economic growth in the selected SSA countries. The remaining part of this paper is structured as follows: section II is the literature review and theoretical framework. The next is the methodology in section III. Data analyses and discussion are in section IV. Summary of findings, Recommendations and Conclusion are in section V.

2. Literature Review and Theoretical Framework

Economic theory predicts that trade openness should promote trade, which in turn boosts growth in the long run. Theory suggests that trade openness expands trade opportunities, improves efficiency of allocation of resources (towards the most efficient sectors) and accelerates technological development especially through liberalization of imports. It is expected that high-technology imports enhance domestic innovation, thus raising productivity and growth. However, after decades of liberalization experiments in Africa and in developing countries in general, the evidence on the growth effects of trade liberalization remains mixed (Easterly and Levine 2003; Dollar and Kraay 2003; Rodrik *et al.* 2004). Various arguments have been advanced to explain the limited effects of trade openness on growth. In this review we only stress some of the possible reasons for the weak empirical evidence on the growth effects of trade openness.

There has been several studies in the literature that have contributed to a better understanding of the determinants of long-run economic growth by identifying a set of growth-enhancing policies and institutions on top of the traditional influences of physical capital accumulation and human capital in the form of education or health (Solow, 1957; Mankiw *et al.*, 1992; Cohen and Soto, 2007; Aghion *et al.*, 2011). A number of studies stress the importance for economic growth of trade openness (Frankel and Romer, 1999; Wacziarg and Welch, 2008), of the level and the structure of taxation and government expenditures (Easterly and Rebelo, 1993; Lee and Gordon, 2005), of research and development activity (Vandenbussche *et al.*, 2006), of well-developed financial markets (King and Levine, 1993; Levine, 2005), of economically friendly institutions or cultural traits (Tavares and Wacziarg, 2001; Djankov *et al.*, 2003; Acemoglu *et al.*, 2005; Aghion *et al.*, 2010). One consensus reached in these studies is the fact that institutions play a great role in bringing about the effect of trade openness to be feasible on economic growth.

The theoretical base of this study is premised on the new endogenous growth theory which was developed as a reaction to omissions and deficiencies in the Solow neoclassical growth model. The theory explains the long-run growth rate of an economy on the basis of endogenous factors as against exogenous factors of the neoclassical growth theory. This theory is of the view that the growth in gross domestic product (GDP) is a natural consequence of long-run equilibrium. The theory explains both growth rate differentials across countries and a greater proportion of the growth observed. Endogenous growth theory discards the neoclassical assumption of diminishing marginal returns to capital investments, permitting increasing returns to scale in aggregate production and frequently focusing on the role of externalities in determining the rate of return on capital investments. By assuming that public and private investments in human capital generate external economies and productivity improvements that offset the natural tendency for diminishing returns, endogenous growth theory explains the existence of increasing returns to scale and the divergent long-term growth patterns among countries. Thus, the theory emphasises technical progress resulting from the rate of investment, the size of the capital stock and the stock of human capital (Todaro and Smith, 2011).

This study is also based on the LaPorta *et al.* (1999)'s theories of institutional development which centres on factors that can lead to the formation and persistence of a given institutional framework in a society. The theories

of institutional development can be classified into three based on their structural composition namely: economic, political and cultural institutional theories. The economic theory of institutional framework believes that institutions are essentially crafted when it is efficient to create them. The connotation of this is that institutions are mostly created by economic actors when the perceived social benefits of such creation significantly exceed the perceived transaction costs that are associated with their creation. The political theory of institutional development hinges fundamentally on redistribution of societal resources much more than economic efficiency. The basic maxim of the political institutional development is that institutions are fashioned by those that have political powers in such a way that they can stay in power with a view to extracting economic rents (Persson, *et al.* 2003; Adewole and Osabuohien, 2007). While the cultural theory of institutional development postulates that a given society will usually hold beliefs that can shape collective actions of the constituting human agents.

3. Methodology

The model specified in this study was analyzed using two econometric techniques of estimation namely; least square dummy variable (LSDV) and the Generalized Method of Moments (GMM) techniques. The choice of these econometric techniques stem from the fact that in the LSDV, all observations are pooled together but each cross-sectional observation has its own heterogeneous intercept dummy variable. Since this study used panel data, that is, both time-series and cross-sectional data, the LSDV reveals the slope coefficient peculiar to all the countries and do not take note of the individual characteristics of each entity. While the GMM was used because it defines a class of estimators that have properties of consistency and asymptotic normality and is used when the sample moments (mean) are used to estimate the population moments (mean). In addition, since the previous growth level and the current growth level in the selected countries are integrated, the GMM is a suitable econometric technique to test this relationship. STATA 11.0 statistical software was used to analyze the data. This is based on the ability of the software to handle panel data and various test statistics that the study is interested in.

3.1 Model Specification

The model for this study is adapted from the works of Kagochi *et al.*, (2007); Baliamoune-Lutz and Ndikumana, (2007) and Bhattacharyya, (2011). The Solow and endogenous growth theories constitute the theoretical base of the model specified in this study. For the purpose of this study, the growth model is specified as:

$$Grgdp = f(Gkap, Lab, INST, TLIB) \quad (3.1)$$

where; Grgdp: growth rate of real GDP;
Gkap: gross fixed capital formation (proxy for capital or investment);
Lab: employment to population ratio (proxy for labour);
INST: a vector of institutional variables;
TLIB: trade liberalization variable.

Trade liberalization and institutional variables are made up of a combination of variables which are specified in equations (3.2) and (3.3):

$$INST = f(Reprisk, Polrig, Ethsion, Hkap, Taxes, Nare) \quad (3.2)$$

$$TLIB = f(Open) \quad (3.3)$$

where; Open: degree of openness (measure of trade liberalization);
Taxes: proxied by tax revenue on natural resources;
Hkap: human capital (proxied by primary and secondary school enrolments);
Nare: natural resource endowment (proxied by the share of fuel in total export);
Reprisk: repudiation risk (proxy for contracting institutions);
Polrig: political Rights (proxy for political institutions);
Ethsion: ethnic tensions (proxy for cultural institutions).

Putting equations (3.1), (3.2) and (3.3) together in one equation gives us the growth model used in this study:

$$\mathbf{Grgdp = f(Gkap, Lab, Hkap, Reprisk, Polrig, Ethsion, Open, Nare, Taxes)} \quad (3.4)$$

Recall that the model has some conventional variables found in the Solow growth model, and it is assumed that a non-linear relationship exists between the variables based on the Cobb-Douglas production function assertion. Hence, equation (3.4) stated in Cobb-Douglas form gives:

$$Grgdp = AGkap^{\alpha_1} Lab^{\alpha_2} Hkap^{\alpha_3} Reprisk^{\alpha_4} Polrig^{\alpha_5} Ethsion^{\alpha_6} Open^{\alpha_7} Nare^{\alpha_8} Taxes^{\alpha_9} \varepsilon \quad (3.5)$$

where; A is the total factor productivity – a measure of productivity.

Equation (3.5) cannot be estimated directly using the OLS technique of estimation since it is non-linear. Therefore, it would be necessary to transform it into linear form that allows the use of the OLS technique. In doing this, the double log-transformation rule is applied on the equation. The essence of this is that it provides

estimated parameters that can be interpreted directly as elasticities that is, the sensitivity of a change in the Grgdp following a change in the variables included in the model. Consequently, equation (3.6) becomes:

$$lGrgdp_t = \alpha_{0i} + \underset{(+)}{\alpha_{1i} lGkap_t} + \underset{(+)}{\alpha_{2i} lLab_t} + \underset{(+)}{\alpha_{3i} lHkap_t} + \underset{(-)}{\alpha_{4i} Reprisk_t} + \alpha_{5i} Polrig_t + \underset{(-)}{\alpha_{6i} Ethsion_t} + \underset{(+)}{\alpha_{7i} lOpen_t} + \underset{(-)}{\alpha_{8i} lNare_t} + \underset{(+)}{\alpha_{9i} lTaxes_t} + \varepsilon_t \quad (3.6)$$

where; α_0 is the intercept. The α_is, for i = 1, 2, 3, 7, 8, 9, being elasticities such that $\alpha_i \lesseqgtr 1$; the signs below the variables in brackets indicate the *apriori* expectations.

Recall that this study made use of thirty (30) SSA countries; which means that we have both time series and cross-sectional data. The Ordinary Least Squares (OLS) technique cannot be used to estimate combined time series and cross-sectional data. Therefore, there is a need to use an appropriate technique that takes care of panel data, hence the usage of the LSDV technique. Consequently, equation (3.6) expressed in panel data form becomes:

$$lGrgdp_{it} = \alpha_{0i} + \alpha_{1i} lGkap_{it} + \alpha_{2i} lLab_{it} + \alpha_{3i} lHkap_{it} + \alpha_{4i} Reprisk_{it} + \alpha_{5i} Polrig_{it} + \alpha_{6i} Ethsion_{it} + \alpha_{7i} lOpen_{it} + \alpha_{8i} lNare_{it} + \alpha_{9i} lTaxes_{it} + \varepsilon_{it} \quad (3.7)$$

where; i = 1, 2… 30 (countries); t = 1, 2… 28 (years). $i = 1,...,N$, t = 2,…,T; ε is the error term, i is i^{th} country and t is the time period for the variables we defined above. The intercept term carrying a subscript i suggests that the intercepts of the selected countries may be different. The coefficients α_1… α_3 and α_7… α_9 are elasticities because they measure the rate of change. α_0 is the intercept.

However, the limitations of the LSDV includes; (i) there is the degrees of freedom problem arising from introducing too many dummy variables; (ii) the problem of multicollinearity arising from too many variables, both individual and multiplicative, this makes precise estimation of one or more parameters difficult; and (iii) the LSDV may not be able to identify the impact of time invariant variables. Due to these limitations, this study introduced the concept of dynamic panel data. As a result of this, the study assumed study that there is a connection between the level of growth experienced in a country in the preceding year with that of the current level, that is, the level of growth achieved in the previous year has a link with the level of growth that the country would attain in the current year. In other words, there is integrated growth in the country. This is particularly necessary because the economy is assumed not to exist in isolation; there are interconnections among the various sectors in the economy, hence, the economic activities in the preceding year have a bearing with current economic activities. This is why the dynamic panel data is used in this study to estimate this link. Thus, the linear dynamic panel data model is expressed as:

$$Grgdp_{it} = \alpha_1 Grgdp_{i,t-1} + \alpha_2 INST_{it} + \alpha_3 TLIB_{it} + v_i + e_{it} \quad (3.8)$$

where; $Grgdp_{t-1}$: one period lag of growth rate of real GDP; INST is a vector that comprises of strictly institutional exogenous covariates (ones dependent on neither current nor past e_{it}); TLIB is the trade liberalization exogenous covariate.

Thus, expressing equation (3.8) in dynamic panel data form putting all the variables in equation (3.6) gives equation (3.9):

$$lGrgdp_{it} = \alpha_{0i} + \alpha_{1i} lGrgdp_{t-1} + \alpha_{2i} lGkap_{it} + \alpha_{3i} lLab_{it} + \alpha_{4i} lHkap_{it} + \alpha_{5i} Reprisk_{it} + \alpha_{6i} Polrig_{it} + \alpha_{7i} Ethsion_{it} + \alpha_{8i} lOpen_{it} + \alpha_{9i} lNare_{it} + \alpha_{10i} lTaxes_{it} + \varepsilon_{it} \quad (3.9)$$

Equation (3.9) was estimated using the Generalized Methods of Moments (GMM) technique.

4. Data Analyses and Discussion

In this section, data analysis and discussion of results for this study are made. The unit root test is used to test the nature of time series to determine whether they are stationary or non-stationary. If a time series is stationary, it means that its mean, variance and auto covariance are the same at the very point they are measured. That is, they are time invariant. But if the mean, variance and auto covariance of a time series are not the same at any point they are measured, the time series is non stationary. This is a unit root problem. This implies that the study of the behaviour of that time series is only possible for the time period under consideration. It cannot be generalized to

other time periods. Such time series may be of little value for forecasting. The stationarity of the time series is important because correlation could persist in non stationary time series even if the sample is very large and may result in what is called spurious or nonsense regression (Yule, 1989; Wei, 2006). Thus, in order not to have spurious results, this study carried out panel unit root tests. The panel unit test can be carried out on a pooled data when two conditions are met; first, the time series and cross-sectional observations must be more than fifteen years each and second, the panel must be balanced, that is, there should not be any missing data. These two conditions are met by this study. There are thirty countries selected and the time period is twenty-eight years; while the data used is a balanced one. Panel unit root test is the panel data (both time series and cross-sectional data) version of the time-series unit root test. The null and alternative hypotheses are formulated as:

H_0: All panels contain unit roots.

H_1: At least one panel is stationary.

The rule of thumb for decision making under panel unit root test involves the rejection of the null hypothesis at the 1 percent statistical significance level, this implies that all panel series in the panel data set do not contain a unit root; therefore, at least one panel is stationary. This automatically implies the acceptance of the alternative hypothesis which means that at least one panel is stationary.

The results presented in Table 1 are the panel unit root tests of the variables. It reveals that all the variables used in the growth model are statistically significant at 1 percent and are stationary at levels. Therefore, we reject the null hypothesis that states that all panels contain unit roots. This means that there are no unit roots in the panels of this study, therefore, this implies that at least one panel is stationary. The implication of this is that the variables are stationary which means that the results obtained from this study is not only possible for the present time period but can also be generalized for other time periods. In addition, this means that the results obtained from this study are not spurious.

Table 1: Augmented Dickey Fuller (ADF) Unit Root Test Results at Levels

Variables	Chi-squared Statistic	Remark
Lngrgdp	206.02*** (0.0000)	I(1) Stationary
Lngkap	142.09*** (0.0034)	I(1) Stationary
Lnssenr	132.43*** (0.0086)	I(1) Stationary
Lnpsenr	123.02*** (0.0000)	I(1) Stationary
Lnopen	181.09 *** (0.0002)	I(1) Stationary
Ethsion	244.47*** (0.0000)	I(1) Stationary
Reprisk	128.87*** (0.0012)	I(1) Stationary
Polrig	89.61*** (0.0084)	I(1) Stationary
Lntaxes	88.23*** (0.0074)	I(1) Stationary
Lnnare	166.12*** (0.0000)	I(1) Stationary
Number of panels 30 Number of periods 26		

Source: Estimated by the Author. Probability values are displayed in parentheses beside the chi-squared coefficients.

Note: *** - significant at 1 percent, ** - significant at 5 percent.

Equation (3.7) was estimated to obtain the results presented in Table 2. The results show that the adjusted R^2 is 0.244. This implies that all the independent variables explain about 24.4 percent variation in the dependent variable. The R^2 for panel data is usually low; this explains why the R^2 is 0.280. The F-stat probability is 0.0000, that is, significant at 1 percent. In conclusion, based on these results, political rights (proxy for political institutions) have a higher significant impact on economic growth than trade liberalization, economic and cultural institutions examined in this study. The LSDV results in Table 2 reveal that Gkap (gross fixed capital formation) and political rights (proxy for political institutions) are statistically significant at 1 percent, while Ssenr (secondary school enrolment – proxy for human capital), employment to population ratio (Lab), degree of openness (Open), repudiation risk (proxy for economic institutions), taxes and natural resource endowment (Nare) are statistically significant at 10 percent, on the other hand, Psenr (primary school enrolment – proxy for human capital) and ethnic tensions (proxy for cultural institutions) are statistically significant at 5 percent. In addition, the coefficients of elasticity are less than one for the entire variables.

As regards the coefficient estimates, the coefficients of Open, Reprisk and natural resource endowment are small (13.3 percent, 29.2 percent and 14.3 percent respectively). This implies that trade openness and economic institutions do not have a noticeable impact on economic growth. But labour, ethnic tensions, gross fixed capital formation and political rights have a high impact on economic growth; this is evident from the high coefficient estimates of 63.1 percent, |75.4| percent 48.6 percent and 36.2 percent respectively. This implies that political and cultural institutions have statistically significant influence on economic growth in the selected SSA countries. This supports the empirical findings of Alonso and Garcimartin (2009) who opined that taxes and strong economic and political institutions exert a positive impact on economic growth. But this may not be totally true for the sampled SSA countries as some of them are not experiencing the growth they are supposed to, due to many militating factors such as economic and political insecurity, high inflation rate and so on.

The second aspect of the estimation process involved the Generalized Method of Moments (GMM) regression analysis. Equation (3.9) was estimated to obtain the results presented in Table 3. The system GMM estimator is categorized into the one-step and two-step options, these are reported in columns 2 and 3 respectively. The pooled Ordinary Least Square (OLS) and the Least Square Dummy Variable (LSDV) results are reported in columns 1 and 4 respectively. The results in Table 2 begin with some diagnostic tests. The starting point is based on the assumption that, the individual errors are serially uncorrelated for the system GMM estimators for consistent estimations. The presence of autocorrelation will indicate that lags of the dependent variable (and any other variables used as instruments that are not strictly exogenous), are in fact endogenous, hence bad instruments. Arellano and Bond (2001) develop a test for this phenomenon that would potentially render some lags invalid as instruments. Of course, the full disturbance ε_{it} is presumed autocorrelated because it contains fixed effects, and the estimators are designed to eliminate this source of trouble. The next diagnostic test is a test of over-identifying restrictions of whether the instruments, as a group, appear exogenous. This test of instrument validity has to do with a comparison of the number of instruments used in each case and the related number of parameters. It is implemented by the Sargan and Hansen J tests. The Sargan and Hansen J tests are used to test if the instruments as a group are exogenous. The test is out to accept or reject the null hypothesis that states that the instruments as a group are exogenous. The higher the p-value of the Sargan statistic, the better.

Table 2: Results for the Growth Model

Dependent Variable - Grgdp			
Variable	LSDV		Pooled OLS
Lgkap	0.486***	[6.75]	0.372***
	[5.98]		
	(0.000)		(0.000)
Lssenr	0.314*	[1.99]	0.171*
	[1.91]		
	(0.059)		(0.063)
Lpsenr	0.474**	[2.07]	0.257**
	[1.98]		
	(0.039)		(0.048)
Llab	0.631*	[1.75]	0.229*
	[1.88]		
	(0.080)		(0.080)
Lopen	0.133*	[1.97]	0.091**
	[2.41]		
	(0.067)		(0.026)
Reprisk	0.292*	[1.92]	0.232*
	[1.88]		
	(0.073)		(0.081)
Polrig	0.362***	[3.29]	0.264**
	[2.00]		
	(0.001)		(0.045)

Ethsion	-0.754** [2.07] [2.71] (0.044)	-0.372*** (0.007)
Ltaxes	0.298* [1.86] [2.27] (0.074)	0.214*** (0.004)
Lnare	0.143* [1.91] [3.04] (0.087)	0.074*** (0.002)
Constant	2.169* [1.79] [1.92] (0.098)	0.397** (0.027)
R^2	0.280	0.192
Adjusted R^2	0.244	0.178
F-stat	5.02 (0.000)	6.46 (0.000)
Country Dummy	Yes	No
Countries	30	30
Number of Observations	713	713

Source: Estimated by the Author. **Notes:** Gkap, Lab, Ssenr and Psenr are proxies for employment to population ratio, capital or investment and human capital respectively. Absolute *t* statistics are displayed in parentheses beside the coefficient estimates while probability values are in brackets under the coefficient estimates. LSDV-Least Square Dummy Variable, OLS – Ordinary Least Square. * - significant at 10 percent; ** - significant at 5 percent; *** - significant at 1 percent.

The results in Table 3 reveal that for one-step, non-robust estimation, the Sargan statistic which is the minimized value of the one-step GMM criterion function, is applicable. The Sargan statistic in this case is, however, not robust to autocorrelation. So for one-step, robust estimation (and for all two-step estimation), the *xtabond2* (STATA command) also reports the Hansen J statistic, which is the minimized value of the two-step GMM criterion function, and is robust to autocorrelation. In addition, *xtabond2* still reports the Sargan statistic in these cases because the Hansen J test has its own problem: it can be greatly weakened by instrument proliferation. Only the respective *p-values* are reported for this test results in the lower part of Table 2. Here, the null hypothesis that the population moment condition is valid is not rejected if $p > 0.05$. The summary statistics indicate that the one-step and two-step system GMM dynamic panel models of the selected 30 SSA countries have 30 instruments and 11 parameters each. This represents a total of 19 over-identifying restrictions in each case. The number of instruments satisfies the rule that says that the number of instruments should be less or equal to the number of groups. In this study, we have thirty sampled countries. In both specifications, the Hansen–J statistic does not reject the over-identifying restrictions (OIR), thus confirming that the instrument set can be considered valid. The Sargan test is significant at 5 percent.

With respect to the results of the proxies for capital and labour (gross fixed capital formation and employment to population ratio); they are satisfactory, the coefficient estimates are consistent with theoretical expectations. The Blundell–Bond (system-GMM) robust estimates indicate that the lagged growth value (first lag) is statistically significant across the sampled SSA countries. In other words, past realizations of economic growth do produce some significant impact on the current level of economic growth. Secondary and primary school enrolments – proxies for education produced some very interesting results in the Blundell–Bond robust estimates. One striking observation here is that education produced a positive impact on economic growth across the sampled countries over the study period. This variable is also statistically significant at the 5 percent level in the one-step and two–step system GMM options. In more definitive terms, a one percent change in secondary and primary school enrolment under the two–step system GMM estimates, brings about a greater proportionate change in economic growth across the study group respectively; and under one-step system GMM estimates also brings about a greater proportionate change in economic growth respectively. Theoretically, the implication of this result is education has a great impact on economic growth in the selected SSA economies. The more educated the citizens of the countries are, the better growth these countries experience, *ceteris paribus*. A one percent change in the employment to population ratio (Lab) brings about a less than one percent change in economic growth. The implication of this result is that labour does significantly contribute to economic growth in the selected SSA countries. The implication of this is that when labour increases, aggregate output increases and hence an improvement in the level of economic growth.

Table 3: GMM Results of the Growth Model

Dependent Variable – Grgdp				
		SYSTEM-GMM		
Regressors	Pooled OLS	One-step Collapsed	Two-step Collapsed	LSDV
(1)	(2)	(3)	(4)	
LGrgdp(-1)	-	0.265*** (0.000)	0.197*** (0.000)	-
LLab	0.229* (0.080)	0.436** (0.045)	1.380* (0.072)	0.631* (0.080)
LGkap	0.372*** (0.000)	0.159* (0.083)	0.140** (0.037)	0.486*** (0.000)
LSsenr	0.171* (0.063)	0.073** (0.045)	0.160** (0.040)	0.314* (0.059)
LnPsenr	0.257** (0.048)	0.279* (0.067)	0.118** (0.048)	0.474** (0.039)
LOpen	0.091** (0.026)	0.057** (0.011)	0.076** (0.034)	0.133* (0.067)
Polrig	0.264** (0.045)	0.291** (0.026)	0.235** (0.029)	0.362*** (0.001)
Reprisk	0.232** (0.081)	0.147** (0.028)	0.188* (0.070)	0.292* (0.073)
Ethsion	-0.372*** (0.007)	-0.375** (0.038)	-0.483*** (0.003)	-0.754** (0.044)
LTaxes	0.214*** (0.004)	0.219** (0.042)	0.098** (0.040)	0.298* (0.074)
LNare	0.074*** (0.002)	0.024* (0.055)	0.040* (0.056)	0.143* (0.087)
Constant	0.397** (0.027)	-3.716*** (0.006)	-8.260*** (0.006)	2.169* (0.098)
No. of Instruments	-	30	30	-
Country Effects	No	No	No	Yes
F-stat (Wald χ^2)	-	66.41	1849.28	-
F-stat (p-value)	[0.000]	[0.000]	[0.000]	[0.000]
AR(1)	-	[0.000]	[0.001]	-
AR(2)	-	[0.957]	[0.761]	-
AR(3)	-	-	[0.531]	-
No of Observations	713	605	605	713
Sargan Test (OIR)	-	[0.023]	[0.023]	-
Hansen Test (OIR)	-	-	[0.528]	-
Number of Countries	30	30	30	30

Source: Estimated by the Author. **Notes:** The standard errors are robust and consistent in the presence of any pattern of heteroskedasticity and autocorrelation. Robust standard errors are with Windmeijer (2005) finite-sample correction for the two-step covariance matrix which are reported in braces. Probability values are in parenthesis.

Surprisingly, capital input (gross fixed capital formation) is statistically significant when the one-step and two-step system GMM with collapsed instrument options are considered. Capital input in this sense turns out to be a major consideration in driving economic growth in the sampled SSA economies. Though, some of these SSA countries are still relatively characterized with the dominance of the labour intensive sectors in most SSA economies but there are still huge capital investments in these countries. In terms of the trade liberalization variable – degree of openness (Open), it is statistically significant at 5 percent. From the result, a one percent change in the degree of openness under the two–step system GMM estimates brings about a less than one percent change in economic growth across the study group. The implication of this is that international trade plays an important role in the growth of the selected SSA countries.

In terms of the influence of economic institutions on economic growth, the result of repudiation risk (Reprisk) shows that it is statistically significant at 10 percent. From the result, a one percent change in repudiation risk under the two–step system GMM estimates brings about 29.2 percent change in economic growth across the study group. This implies that economic institutions affect economic growth positively in the selected SSA countries. In terms of cultural institutions, the result for ethnic tensions (Ethsion) reveals that it is statistically significant at 1 percent. The impact of Ethsion on economic growth is fairly large as revealed in the result (about 75.4 percent change in economic growth across the sampled SSA countries). This may be due to the fact that some of these SSA countries e.g. Sudan, Nigeria had been plagued with ethnic crises which have hindered trade liberalization and economic growth. Furthermore, the political institutions variable – political rights (Polrig) has a statistically significant positive impact on economic growth across the sampled countries over the study period. From the result, a one percent change in the political rights under the two–step system GMM estimates brings about 36.2 percent change in economic growth across the study group. What this finding suggests is that a good political system aids economic growth and this should be the case in the SSA countries as well. These results conform to the findings of Bhattacharyya (2011). Generally, the results in Table 3 depict that trade liberalization

had one of the lowest impact while institutions have significant impact on economic growth in the selected SSA countries covered in this study.

With respect to natural resource endowment (Nare), one of the explanatory variables, the result revealed that it is statistically significant at 10 percent. A one percent change in natural resource endowment under the two–step system GMM estimates brings about a less than one percent change in economic growth across the study group. This implies that the revenue earned from the export of natural resources if properly utilized help in boosting economic growth of any country, the selected SSA countries are no exceptions to this rule. Finally, for taxes, another explanatory variable, it has a coefficient of elasticity that is less than one in absolute value and is statistically significant at 5 percent. The implication of this is that the revenue generated from taxes in the sampled SSA countries may not have been channeled to viable economic projects that will contribute to economic growth but rather some corrupt government officials in charge of the collection of taxes in the tax office may have misappropriated the funds.

In addition, apart from providing some additional robustness check, the results in columns 1 and 4 provide a guide based on the position of Bond, Hoeffler and Temple (2001) that suggests the pooled OLS and the LSDV estimators should be considered as the upper and lower bound respectively for the system GMM coefficients. With this guide in place, it will be easy to tell when each coefficient estimate is either downward or upward biased. Repudiation risk (proxy for economic institutions), Ethsion (proxy for cultural institutions), gross fixed capital formation (Gkap), secondary school enrolment (Ssenr), degree of openness and natural resource endowment are the only variables that have their pooled OLS and LSDV values as upper and lower bound respectively, the other variables did not fulfil this criterion. It is evident from the results in Table 3 that most of the coefficient estimates are downward biased.

5. Summary of Findings, Recommendations and Conclusion

This section presents the summary of major findings of the study, the recommendations made and the conclusions that are drawn; with a view to making the impact of institutions cum trade liberalization have a significant impact on the economic growth of sub-Saharan African countries.

5.1 Summary of Findings

From the results presented and discussed in section four, this section provides a summary of the major findings and the policy implications. The main findings of the study are enumerated below:

1. In terms of the influence of trade openness on economic growth, the study found that there is no much significance impact of trade openness on the economic growth in the selected SSA countries, though there is a positive relationship between trade openness and economic growth. The implication of this is that international trade can be positively beneficial to a country especially if the country is an exporter of goods and services rather than being just an importer of goods and services.
2. As regards the impact of institutions on economic growth, the results revealed that economic, political and cultural institutions have significant positive impacts on economic growth respectively. The results show that out of the three forms of institutions focused on in this study, the political and cultural institutions exert a better influence on economic growth than economic institutions. The implication of this is that a politically stable country would experience better growth rate than a politically unstable one; and it is when there are no political catastrophes in a country that trading activities can take place and economic/cultural institutions can strive well. The results also imply that ethnic tensions in a country have negative influence on the level of economic growth in a country, since no country can claim to grow when there are ethnic unrests in the country, international trade is also hindered as no country would want to trade with such a country coupled with the fact that foreigners would not want to invest in such a country.
3. The result of the capital or investment variable – gross fixed capital formation showed that it has a statistically significant impact on economic growth in the selected SSA countries in this study. This supports theoretical expectation which postulates a significant and positive influence of capital on economic growth. The implication of this result is that when there is a fall in capital which results in a fall in investment in some of these SSA countries and this has resulted in the slow rate of growth in these countries over the years.
4. Education which is a measure of human capital development is found to exhibit positive influence on economic growth in SSA countries. This supports theoretical assertion of a positive relationship between education and economic growth. Also, human capital growth is believed to be important in the determination of the quality of institutions (Siba, 2008). The implication of this finding is that though human capital plays a vital role in improving the level of economic growth; the story among the

sampled SSA countries used in this study seems to be different empirically; human capital has not had a great impact on institutional quality. This is the aftermath effect of the fall in the education standards experienced in some of these countries.

5. In terms of the influence of natural resource endowment on economic growth, the results revealed that the variable had a statistically significant impact on economic growth. Theoretically, natural resource endowment has a positive impact on economic growth (Alonso and Garcimartin, 2009). In addition, the result of the taxes variable revealed that it has a statistically significant impact on economic growth in the sampled SSA countries. From literature it is observed that, a sound tax system not only provides the necessary resources to build high quality institutions, but also enables the consolidation of a social contract that gives rise to a more demanding relationship between state and citizens.

5.2 Recommendations

Based on the findings noted above, the following recommendations are made by this study.

i. This study recommends that there is a need to ensure that contracts are made easily enforceable. This is a very important tool that can be used to improve trade liberalization in SSA countries. The reason for this is that it will make the economic agents involved in international trade to be optimistic as they are sure that the moral hazards and adverse selection challenges are reduced. Coupled with this is the fact that the rest of the world will find it easier to trade with countries that are reputed for adequate contract enforcement more than others that are not so reputable. If effective contract enforcement procedures are in place, transaction costs will be reduced and this will eventually improve the level of trade liberalization in the region.

ii. The study also recommends the provision of a peaceful economic and political environment needed for local and foreign investment. The governments of these SSA countries should provide financial backing in form of easy accessibility to loans (credit facilities to investors) so as to boost local investment coupled with the fact that foreign investors should also be attracted to invest in the country via improving on the state of security and embarking on conducive policies that supports investments. It is when there is huge investment in the economy that the country can experience growth which will improve on the quality of institutions in the SSA countries.

iii. In order to efficiently utilize the revenues from taxes and the exports of natural resources and further boost economic growth, corruption among public officials has to be eradicated. Corruption in public offices has become one major obstacle militating against growth in the SSA region. It is in the light of this that the study recommends that the revenues generated from taxes should be judiciously spent on economic projects that will be beneficial to the country and have a noticeable impact on economic growth. To achieve this, corruption and financial misappropriation should be eradicated, the policies to eradicate corruption should be taken seriously by the governments of these countries and anyone found liable should be prosecuted no matter his/her position in the society.

iv. Lastly, since human capital plays a crucial role in boosting economic growth in SSA countries, the study strongly recommends that the government should find ways that will be geared towards improving the stock of human capital in the SSA region. Some of these include the training and retraining of experts such as lawyers, economists, accountants, among others, in SSA countries and their respective ministries such as trade, justice, commerce and industry. This is because a well-informed and trained crop of persons that control policy formulation and implementation in these institutions are essential. This is most crucial in this 21st century era which is mostly knowledge-driven. Hence, having and engaging individuals in the region that are conversant with the rapidly changing policy environments and the global issues would be very needful for the region's trade relations. Coupled with this is the fact that human capital also has a significant impact on the quality of institutions, and once the institutions in these countries are very strong, then economic growth would be further enhanced.

5.3 Conclusion

This study examined the influence of trade openness and institutions on economic growth. In order to contribute to existing knowledge, this study used a sample of thirty (30) countries in SSA for the period 1985-2012 to empirically evaluate the role of institutions and trade openness on economic growth sub-Saharan Africa. The major findings from this study revealed while institutions have significant impact on economic growth, trade openness do not have as much significance. For these SSA countries to harness maximum gains from international trade, there has to be the presence of strong institutions. Conclusively, the study has made contribution by increasing the level of empirical researches that have been carried out on the link between trade liberalization, institutions and economic growth especially in SSA. Therefore, there is a need for the

governments of SSA countries, especially the sampled countries to wake up from their slumber and pursue the growth of their economies vigorously so that they can compete with the developed countries.

References

Acemoglu D., S. Johnson and J. Robinson (2004). "Institutions as fundamental cause of long run growth," Handbook of Economic Growth edited by Philippe Aghion and Steve Durlauf.

Acemoglu, D., S. Johnson, and J. Robinson (2005), "Institutions as a fundamental cause oflong-run growth", in Aghion, P. and S. Durlauf (eds), *Handbook of Economic Growth*.

Acemoglu, D. and J. Robinson (2008). "The role of institutions", *Commission on Growth andDevelopment Working Paper,* No.10, pp. 10-28.

Addison, T. and M. Baliamoune-Lutz (2006). "Economic reform when institutional quality is weak: the case of the Maghreb", *Journal of Policy Modeling,* Vol.28, pp. 1029-1043.

Adewole, M.A and Osabuohien, E.S. (2007). "Analysis of cost of governance and its reduction options in Nigeria" *Nigerian Journal of Economic and Social Studies,* Vol.49, No.1, pp. 137-159.

Aghion, P., Y. Algan, P. Cahuc and A. Shleifer (2010). "Regulation and distrust", *Quarterly Journal of Economics*, Vol. 125, No. 3, pp. 1015-1049.

Aghion, P., Howitt, P. and F. Murtin (2011). "The relationship between health and growth", *Review of Economics and Institutions*, Vol. 2, No. 1, pp. 1-24.

Ahmed, S. and Z. Sattar, (2004). "Impact of trade liberalization: looking at the evidence", *Economic and Political Weekly,* pp. 4059-4067.

Alege, P. O. (1993). "Export and growth in the Nigerian economy: a causality test", *The Indian Journal of Economics,* Vol. XXIII, Part III No. 290, January.

Alonso, J.A. and C. Garcimartin (2009). "The determinants of institutional quality: more on the debate", Centre for Research in Economic Development and International Trade (CREDIT) Research Paper, No. 09/04, University of Nottingham, United Kingdom.

Baliamoune-Lutz, M. and L. Ndikumana (2007). "The growth effects of openness to trade and the role of institutions: new evidence from African countries", Economics Department Working Paper Series, Paper 38, University of Massachusetts, Amherst, USA.

Bhattacharyya, S. (2011). "Trade liberalization and institutional development", accessed on the 25thJune, 2012 from http://users.ox.ac.uk/~econ0295/.

Bond, S. A. Hoeffler and J. Temple (2001). "GMM estimation of empirical growth models. Economics Group, Nuffield College, University of Oxford, *Economics Papers,* 2001-W21.

Chandra, A.C., L.A. Lontoh, and A. Margawati (2010). "The gender implications of trade liberalization in Southeast Asia", *International Institute for Sustainable Development,* Canada.

Chaudhuri, S., S. Yabuuchi and U. Mukhopadhayay, (2006). "Inflow of foreign capital and trade liberalization in a model with an informal sector and urban unemployment", *Pacific Economic Review*, 11(1), pp. 87-103.

Claustre, B.M., J.K. Timoh and J.R. Kim (2008). "Trade liberalization, growth and productivity". Paper presented at the Conference titled 'New directions in International Trade Theory'at the University of Nottingham. Accessed on 10th May, 2012 from: https://ocs.usask.ca/ocs/index.php/economics/economics/paper/.../4.

Cohen, D. and M. Soto (2007). "Growth and human capital: good data, good results", *Journal of Economic Growth*, Vol. 12, No. 1, pp. 51-76.

Dollar, D. and A. Kraay (2003). "Institutions, trade and growth", *Journal of Monetary Economics,* Vol.50, pp. 133-162.

Djankov, S., R. LaPorta, F. López de Silanes, and A. Shleifer (2003). "Courts". *Quarterly Journal of Economics,* Vol. 118, No. 2, pp. 453–517.

Du, J. (2010). "Institutional quality and economic crises: legal origin theory versus colonial strategy", *The Review of Economics and Statistics,* Vol.92, No.1, pp.173-179.

Easterly, W. (2008). "Design and reform of institutions in LDCs and transition economies institutions: top down or bottom up?" *American Economic Review,* Vol.98, No.2, pp.95-99.

Easterly, W. and R. Levine (2003). "Africa's growth tragedy: policies and ethnic divisions", *Quarterly Journal of Economics,* Vol.112, No.4, pp.1203-50.

Easterly, W. and S. Rebelo (1993), "Fiscal policy and economic growth", *Journal of Monetary Economics* Vol. 32, pp. 417-458.

Frankel, J.A. and D. Romer (1999), "Does trade cause growth?" *The American Economic Review*, Vol. 89, No. 3, pp. 379-399.
Kagochi, J., N.O. Tackie and H. Thompson (2007). "An analysis of the impacts of freedom on economic growth, *Journal of African Development,* Vol.1, No.1, Spring.
King, R. and R. Levine (1993), "Finance and growth: Schumpeter might be right", *Quarterly Journal of Economics*, Vol. 108, No.3, pp. 717–738.
LaPorta, R., F. Lopez-de-Silanes, A. Schleifer and R. Vishny (1999). "The quality of government", *the Journal of Law, Economics and Organization,* Vol.15, No1, pp. 222-279.
Lee, Y. and R.H. Gordon (2005), "Tax structure and economic growth", *Journal of Public Economic,* Vol. 89, pp. 1027–1043.
Levine, R. (2005), "Finance and growth: theory and evidence," in *Handbook of Economic Growth*, Vol.1B, ed. by Phillipe Aghion and Steve Durlauf (Amsterdam: North- Holland).
Mankiw, G.N., D. Romer, and D.N. Weil (1992). "A contribution to the empirics of economic growth", *Quarterly Journal of Economics,* Vol. 107, No.2, pp. 407–437.
Persson, T.F., G. Roland and D. Tabellini (2003), "Trade liberalization, product variety and growth in a small open economy: a quantitative assessment", *Journal of International Economics,* Vol.56, No.2, pp. 247-272.
Rodrik, D. (2001). "The global governance of trade as if development really mattered", Trade and Human Development Series, UNDP, New York.
Rodrik, D., A. Subramanian and F. Trebbi (2004). "Institutions rule: the primacy of institutions over geography and integration in economic development", *Journal of Development Economics,* Vol.78, No.2, pp. 529-547.
Solow, R.M. (1957). "Technological change and the aggregate production function", *Review of Economics and Statistics*, Vol. 39, No. 3, pp. 312-320.
Tavares, J. and R. Wacziarg (2001). "How democracy affects growth", *European Economic Review*, Vol. 45, No. 8, pp. 1341-1379.
Todaro, M. P. and S. C. Smith (2011). *Economic Development,* 12th Edition, Delhi: Pearson Education.
Vandenbussche, J., P. Aghion, and C. Meghir (2006). "Growth, distance to frontier and composition of human capital", *Journal of Economic Growth,* Vol.11, No. 2, pp. 97-127
Wacziarg, R. and K. Welch (2008). "Trade liberalization and growth: new evidence", *World Bank Economic Review*.

Appendix: List of Countries and their Identifier (id)

id	Central	id	East and Southern Africa	id	West Africa
1	Angola	3	Botswana	2	Benin Republic
4	Burundi	10	Djibouti	6	Cape Verde
5	Cameroon	12	Ethiopia	9	Cote d'Ivoire
7	Chad	16	Kenya	14	Gambia
8	Congo	17	Lesotho	15	Ghana
11	Equatorial Guinea	18	Madagascar	21	Niger
13	Gabon	19	Malawi	22	Nigeria
23	Rwanda	20	Mozambique	24	Senegal
		25	South Africa		
		26	Sudan		
		27	Swaziland		
		28	Tanzania		
		29	Uganda		
		30	Zambia		

Source: UNCTAD (2009) Handbook of Statistics; WTO (2009) International Trade Statistics

The IISTE is a pioneer in the Open-Access hosting service and academic event management. The aim of the firm is Accelerating Global Knowledge Sharing.

More information about the firm can be found on the homepage:
http://www.iiste.org

CALL FOR JOURNAL PAPERS

There are more than 30 peer-reviewed academic journals hosted under the hosting platform.

Prospective authors of journals can find the submission instruction on the following page: http://www.iiste.org/journals/ All the journals articles are available online to the readers all over the world without financial, legal, or technical barriers other than those inseparable from gaining access to the internet itself. Paper version of the journals is also available upon request of readers and authors.

MORE RESOURCES

Book publication information: http://www.iiste.org/book/

Recent conferences: http://www.iiste.org/conference/

IISTE Knowledge Sharing Partners

EBSCO, Index Copernicus, Ulrich's Periodicals Directory, JournalTOCS, PKP Open Archives Harvester, Bielefeld Academic Search Engine, Elektronische Zeitschriftenbibliothek EZB, Open J-Gate, OCLC WorldCat, Universe Digtial Library , NewJour, Google Scholar