ENHANCING THE TRADABILITY OF SSA's AGRICULTURAL EXPORTS: WHAT CAN INSTITUTIONS OFFER?

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Abstract

The paper addressed the interaction between agricultural exports and institutions in Sub-Saharan Africa-SSA. Total exports share of world market for SSA were at low echelon of 0.03% and 0.05% which were lower than the global average and those of other regions all through 1995-2008. The challenge becomes more pathetic when one considers agricultural exports as its share in world market revolved around 0.07% and 0.09% within the same period From the background, the main research question in the paper was – the role institutions play in enhancing the tradability of agricultural exports in SSA?. The paper therefore analyses the role of institutions in enhancing agricultural exports in SSA using Fixed Effects (FE) as well as Two-Stage Least Squares (2SLS) for the period 1996-2008. The major finding was that different aspects of institutions exert diverse degrees of influence on agricultural exports. The policy implication for the managers of economies in SSA noted was the need for them to look more inward in improving their institutional quality with a view to promoting the agricultural exports.

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1.0   INTRODUCTION

Majority of the countries in Sub-Saharan Africa (SSA) are characterised by low economic performances. With over 12.3% of world's population, more than 67.4% (33 out of 49) of world's Least Developed Countries (LDCs) are in SSA as at 2009 but the region contributes just 1.41% of world's total output. The region's average per capita income growth in 2008 was 2.54% (World Population Reference Bureau, 2009; World Bank Group, 2010). SSA lag behind on the average compared to other regions due to some factors such as: weak institutions, weak political culture, corruption, inadequate infrastructures, among others (Artadi and Sala-i-Martin, 2003; Fosu, 2008).

The level of export performance of a region (and country) can be assessed using some indicators, which include: percentage of different components of exports to gross domestic products (GDP), share of exports in world market, real growth in exports, and so on (World Bank,2010). With regards to some of these, SSA had less than desirable outcomes. For instance, the percentage share of SSA's total exports in GDP was lower than those of other developing regions[1] such as: Latin America and the Caribbean (LAC), and Middle East and North Africa (MNA) between 1995 and 2008 (World Bank, 2010). Total exports share of world market for SSA was at low level of 0.03% and 0.05% which was lower than the global average and those of other regions all through 1995-2008 as can be seen in Table 1.1 in the Appendix. The challenge becomes more pathetic when one considers agricultural exports, which is believed to be the mainstay of the region in terms of employment. The share of agricultural exports, which revolved between 0.07% and 0.09%   1995-2008 (reached 0.10% only in 1996) was not only lower the world average but all other regions presented (see Table 1.1 in the Appendix).

Weak institutional quality has worked against SSA's economic development as well as her performance in trade. This can be observed in Table 2.1 in the Appendix where SSA's values on some measures of institutional quality were lower than the world average and than other regions

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[1] Data on high income regions like high income OECDs and Non-OECDs were not presented to make it more comparative.

between 1996 and 2008. This gives an indication that institutional framework in SSA might not been very supportive for economic activities.

From the background, the main question is whether institutions are crucial for agricultural export performance in SSA? This motivated this paper with the objective of examining the influence of institutions in SSA on agricultural export performance. It has been noted that though the role of institutions are recently given some attentions, it has been related to economic growth (Meon and Sekkat, 2008). Not much has been done in relating institutions to agricultural exports in SSA. Meon and Sekkat (2008) made used panel of 59 countries (1990-2000) mostly in America and Asia where they grouped total exports into manufacturing and non-manufacturing exports. This paper complements their work by looking at agricultural exports, which they did not cover. This is necessary given the dominant role agricultural sector plays in many SSA countries. This is one of the areas where this paper differs markedly from the previous studies. The next section paper treats the conceptual framework and reviews some literature, while section III examines the analytical framework and estimation technique; section IV presents the empirical results and discussion. The last section is the conclusion.

2.0   CONCEPTUAL FRAMEWORK AND BRIEF LITERATURE REVIEW

2.1   Conceptual Framework

Institutions have been seen to play a key role in management of economies in recent years. This is due to the fact that it is becoming increasingly clear that those involved in economic transactions are not only influenced by economic variables (especially price) but by a host of other factors including institutions. North (1991) defined institutions as the humanly formulated constraints that structure political, economic and social interactions, which consist of both informal constraints (e.g. traditions) and formal rules (e.g. constitutions). Formal institutions, which generally entail rules and regulations that control the existence of a system can be categorised into two major areas- economic and political institutions.

Economic institutions are essential for economic performance and growth in a country due to their influence in shaping incentives for various economic actors in a society (Acemoglu and Robinson, 2008). On the other hand, the political institutions refer to how the political structure

in a country influences the behaviour of agents in the society especially with the distribution of political power (*de jure and de facto*). Examples of political institutions[2] include the form of government in a country, rule of law, and the extent of constraint of political power (Acemoglu and Robinson, 2008; Hassan, Wachtel and Zhou, 2009).

In a trade context, the likelihood for conflicts over the exchange of values are usually a source of concern- an issue that has to be considered before engaging in it. The effectiveness in lowering the costs of transacting depends on the degree to which the laid down guidelines were adhered. This has been noted in early Britain where overseas ventures were pursued through trade expansion and joint stock corporations (Gonzalez de lara, Greif and Jha, 2008). The growth of long distance trade usually poses two distinct transaction cost problems (North, 1994). One is the traditional problem of agency and the second problem consists of contract negotiation and enforcement where there is no readily accessible way to achieve agreements and ensure contract enforcements (Williamson, 2000).

2.2   Brief Review of Related Literature

The difference between in the level of economic performance has been seen be attributable to, among others, difference in the institutional quality (Khawaja, 2009). This has been observed for the difference in economic growth between North Korea and South Korea where the institutional quality in the later was conducive for economic development compared to the former (Acemoglu and Robinson, 2008). In SSA, an analogous has been made between economic growth of Botswana and Zambia where Botswana was to outperform Zambia mainly due to her better institutional quality (Parsons and Robinson, 2006).

Some factors have been attributed to low trade performance of African countries which include: small size of markets, poor transport facilities and high trading costs, double taxation, which have made them benefit marginally from the potentials in trade (Hansson, 1995; Yang and Gupta, 2007). Yang and Gupta suggested the need for African countries to undertake a broad-based trade liberalisation and streamlining existing regional trade arrangements as well as

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[2] In this paper, focus is on political institutions. Beside the great influence of political institutions, other forms i.e. economic and financial institutions are being treated elsewhere.

improving infrastructure to facilitate trade in order to benefit more from trading. Other studies such as Coe and Hoffmaister (1999), Rose (2004), etc have equally established that the declining share of African products in world trade can be essentially due to its low of growth of income, size of population, geography, and most importantly the nature of economic policy. Ng and Yeats (2002) have also argued that Africa should diversify away from traditional exports or continue to suffer from a decline in the terms of trade and slow growth of demand for these exports.

Oyejide (2007) noted that a reduction in real exchange rate overvaluations could improve exports relative to GDP. This is because overvaluation of the domestic currency would act as tax on exports and thereby inhibit their prices compared to the prices of domestic products. In this case, changes in the real exchange rate may be induced by policy changes in a variety of ways such as trade, fiscal and monetary policies, capital movements, and the nominal exchange rate, as well as through autonomous shifts in the terms of trade. Making reference to the Nigerian scenario, Alege and Ogun (2004) made the conclusion that trade policies as rules have been inconsistent despite various trade reforms. The authors made a case for the promotion of duty-free inputs imports for enhancing the productivity of the manufacturing sector.

The era after the 1990s, has witnessed interest in the effects of institutions and economic growth. The significance of economic environments such as monetary and price stability, secure property rights, and openness to international exchange that is consistent with the development and efficient use of resources have been found to exert impacts on countries' economic growth. In other words, inappropriate institutional arrangements and policies in a country can lead to sub-optimal performance. Some economists have examined the link between institutions within countries especially developing countries in relation to democracy and economic growth using cross-national studies (e.g. Barro, 1996 etc). Building on aggregate production function, Kagochi, Tackie, and Thompson (2007) examined a specific developing country-Nigeria, using economic freedom index and political freedom index as proxies for institutions in the country and concluded that political freedom was significant while economic freedom was not statistically significant in explaining economic growth.

In as much as it is not always possible to have benign public officers, it becomes paramount to put in place institutional constraints on public officers and technocrats, which will minimize the extraction of rent from the state and thereby improve its performance (Adewole and Osabuohien, 2007; Gonzalez de lara, Greif and Jha, 2008). More so, Adewole (2006) related the issue of unemployment in Nigeria to the quality and perception of the managers of the country's economy as dictated by her quality of institutions. The author noted that general macroeconomic problems and unemployment in particular are indications of institutional weaknesses. Acemoglu, Johnson and Robinson (2001) have shown that weak institutions in a country might encourage *coup d'etat* and revolutions that could lead to political and economic instability. In other words, weak institutions will make economic adjustment difficult.

Fosu (2003) examined the influence of political instability on export performance in 30 SSA countries using various coups incidences ('successful' coups, abortive coups, and coup plots) from 1967 to 1986. The author, building on the augmented production function, found that lack of stable political environment adversely affects export performance. On the other hand, it was equally established that the political instability plays a more crucial role in export than in overall growth of GDP, which denotes that the effect of political instability was more detrimental on exports than overall GDP. Allan (2004) used data from Global Trade Analysis Project (GTAP) Version 6 within the framework of general equilibrium model to analyse selected scenarios of tariff and subsidy reductions. The author observed that the extent of government provisions in vegetable production and trade was not as high as other farm sections such as meat and dairy products.

In another dimension, Meon and Sekkat (2008) examined the effects of institutional quality on trade with panel data from 1990-2000 for about 59 countries mainly in America and Asia (with eight in Africa). The authors, using fixed effects model along with instrumental variables, established that exports of manufactured products were positively affected by control of corruption, rule of law, government effectiveness, and political stability. Amongst the institutional variables used, control of corruption exerted more effects on export of manufactured products compared to non-manufactured and total exports. However, the authors were cautious

given the fact that the governance (institutional) indices used lacked sufficient time-dimension. Hence, they called for further research to examine more on trade-institutions nexus.

In the model involving 145 countries in panel spanning from 1984 to 2002 and governance indicators from International Country Risk Guide (ICRG), Lavallee (2005) noted that institutional proximity tends to increase trade. Lavallee (2005) added that corruption in both importing and exporting countries acts as barrier to bilateral exports, which is harmful to trade especially in a situation of weak bureaucratic quality. On the other hand, Levchenko (2004) built on Grossmann-Hart-Moore framework of contract incompleteness to assess the quality of contract enforcement, property rights, shareholder protection with a sample that covered 389 industries in 117 countries averaged for the period 1980-1998. He opined that developing countries do not stand to benefit much from trade because factor prices may not equalise. The author finally submitted that interactions between institutions and trade are imperative and as such the type of effects that prevail will require further enquiry.

Taking the issue the other way round, Wanchek (2009) appraised the influence of international trade on institutional quality. Using industries in Central and Eastern Europe and Former Soviet Union in 2000, he ascertained that international trade played key role in influencing institutions (measured with Freedom House indices). This was based on the fact that businesses predicting their potential to export would tend to lobby for more credible institutions in order to reduce transaction costs that are related to exports. This was similar to Levchenko (2008)'s submission that international trade impact on the quality of institutions (from Kaufmann et al dataset). The author established using a sample of 141 countries for the period 1996-2000 that in a situation of similar technology, counties that trade together would be made to improve the quality of their institutions. This may be due to the fact that trading countries will need to improve the quality of institutions to maintain benefits of trade (Levchenko, 2008).

Dollar and Kraay (2009) used rule of law (from Kaufmann et al dataset) as a measure of institution and ratio of trade to GDP on cross-country level of 168 (2000-2001). The study found that changes in trade and changes in institutional quality had substantial effect on growth and thus suggest the possibility of a joint role for trade and institutions on growth. The literature

reviewed brought one major fact to limelight- that though institutions have been treated with respects to different aspects of the economy but limited work has been done especially with regards to export performance in SSA.

3.0   ECONOMETRIC MODEL AND ESTIMATION TECHNIQUE

3.1   Econometric Model

The econometric model of the paper relates agricultural export performance (*agrex*) to some variables that influence them. The model extends the works of Fosu (2003) and Meon and Sekkat (2008). The former study examined the influence of political instability on export performance in 30 SSA countries using coups incidences (1967-1986) with augmented production function. The latter study used panel data from 1990-2000 for about 59 countries based fixed effects model and with instrumental variables (IV) and categorised exports into manufactured and non-manufactured.

The extension of Meon and Sekkat (2008) model in the current paper was the focus on agricultural exports. As noted earlier, this is crucial given the fact that the agricultural sector plays an important role in SSA in terms of the proportion of their population that are engaged in it[3]. Thus, the model for this paper is formulated as follows:

$$\ln agrex_{it} = B_{i0} + B_1 \ln rexch_{it} + B_2 agrot_{it} + \delta_t + \mu_{it} \tag{1}$$

Where:

agrex : agricultural exports in country i.

B_{0i} :   country i's fixed effects

exch :   country i's real exchange rate;

agrot : growth rate of value added by agricultural sector. This is used in preference to growth rate of partners' GDP used by Meon and Sekkat (2008) and domestic economic growth rate as the paper is interested in examining influence of agricultural sector growth on its tradability.

Table 3.1 in appendix provides definition of variables.

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[3] The paper is based its analysis on sector not product; hence, it did not use product classification such as Standard International Classification Code (SITC).

δ_t :time effects capturing the trend in the data. It is presupposed that including time effects will help to pick omitted shocks that affect trade performance across the countries in a similar manner (Dollar and Kraay, 2002).

μ_{it} :error term.

The expectation is that $B_1 < 0$ and $B_2 > 0$. This is given the fact that increase in real exchange rate value would imply appreciation of the exporting currency, denoting less competitiveness, while positive sign of agricultural growth would signal better productivity which will lead to capacity to export, *ceteris paribus*.

B_{0i} generated in equation (1) is used in the second aspect of the estimation as stated in equation (2) below:

$$B_{0i} = \lambda_0 + \lambda_1 ln(Mkpot_i) \ + \ \lambda_2 ln(Inst^k_i) + e_i \qquad\qquad (2)$$

Where:

Mkpot: market potential as defined by CEPII and used by Meon and Sekat (2008) that controls for the closeness of a country to other markets.

$Inst^k_i$:indicators of institutions as defined by Kaufmann et al (2009)'s six indicators, i.e $k = 1,..,6$. As rightly mentioned Meon and Sekkat (2008), the indicators are different aspects of institutions and not the same way of viewing the same thing.

e_i :the error terms that captures variables not included and expected to be *iid* $N(0, \sigma^2)$.

The expectation is that λ_1 and $\lambda_2 > 0$, because increase in market potentials should increase the demand for a country's exports and improved institutional quality should increase her ability to export as the economy becomes favourable for productive activities.

Generally, the nature of institutions can influence economic activities including exports and it had been mentioned that institutions are somewhat hard to measure (Rodrik, 2005). However, there are various institutional indicators that have been formulated to compare the quality of institutions across the world. The popular ones include: World Governance Indicators (WGI) involving six parameters of the World Bank developed by Kaufmann et al; Corruption Perception Index (CPI) of Transparency International; International Country Risk Guide (ICRG) Political Risk rating, Polity IV Governance and Institutional Indicators; Country Policy and

Institutional Assessment (CPIA), World Business Environment Survey (WBES) of the World Bank, among others. This paper, like Meon and Sekkat (2008) used WGI given the coverage especially for SSA countries within the period studied. The period covered is 1996-2008 due to the fact that WGI dataset started 1996.

3.2   Estimation Technique

The estimation technique employed is panel data Fixed Effects (FE) because of the need to obtain the country fixed effects as stated in equation (1) for the time variant variables, which was useful in the second aspect. The second aspect employed Instrumental Variable (IV) estimation technique also known as Two-Stage Least Squares (2SLS) for the variables that have little time variation. This choice of the techniques is to handle possible problems of endogeneity and as such have reliable results. In other words, the institutional indicators stated in equation (2) can be perceived to be endogenous.

The need to get instruments for institutions in order to capture their influence in economic relationships have been documented (e.g. Djankov et al, 2002; Acemoglu and Johnson, 2005 etc). Several instruments have been specified such as: distance from the equator (equator); ethnolinguistic fractionalisation; fraction of population that speaks English, French or a major European Language. Others are: religious affiliation especially Catholics, Muslims and Protestants (La Porta et al, 1999; Bossert, D'Ambrosio and Laferrara, 2006); settlers' mortality and the augmented version; legal origin and legal formalism (e.g. Du, 2010); latitude; area; barrier to entry and formalities; among others. The choice of valid instruments are usually determined by examining the results of the First Stage especially the F-statistics, which has a rule of thumb of 10 (Staiger and Stock,1997; Papaioannu,2009). The optimal instruments can be determined with Sargan and Basmann tests (Baum, 2006).

In addition to avoid having 'weak' instruments, the instruments should be highly correlated with the regressors (in this case institution) but directly uncorrelated with the dependent variable – agricultural exports. This is commonly referred to as 'orthogonality' assumption. Given the focus of the paper choice was made in favour of ethnolinguistic fractionalisation/its generalised version

(*ethfra*)[4], settlers' mortality and the augmented version (*logemaug*), and legal origin (*legalor*). The above choice is based on some reasons. One of such is the fact that instruments like latitude, area, and distance from the equator may have some measure of influence on agricultural exports performance. Another reason is that in most SSA countries, religious affiliation has great association with ethnicity; it is not uncommon to see a given religion dominant in some ethnic groups than others. For example, among the Hausa ethnic group in Nigeria and Niger, Muslims are dominant. To this end, *ethfra* will almost capture religious influence.

In view of the above, equation for the first stage regression, which involves the instrumental variables mentioned above is stated below as:

$$Inst^k_i = f(gethra,\ legalor,\ logmeaug) \tag{3}$$

Equation (3) is expressed in explicit form as:

$$ln(Inst^k_i) = \chi_0 + \chi_1 gethra + \chi_2 legalor + \chi_3 logmeaug + e_i \tag{4}$$

where:

$Inst^k_i$: indicators of institutions as earlier discussed.

gethra : generalised version of ethnolinguistic fractionalisation,

legalor : legal formalism and origin - English and French dichotomy, and

logmeaug : settler's mortality and its augmented version.

The coefficient of *gethra* is expected to be negative (i.e. $\chi_1 < 0$) based on the fact that a more ethnically fractionalised society will result in weak institutions. The sign of χ_2 and χ_3 cannot easily be stated *apriori* because it will depend on the quality of institutions left behind by colonisers in the selected SSA countries.

The extended model used in the estimation is shown in equation (5), which was obtained by the substitution of equation (4) into (2):

$$B^j_{0i} = \lambda_0 + \lambda_1 ln(Mkpot_i) + \lambda_2 ln(Inst^x_i = \chi_0 + \chi_1 gethra + \chi_2 legalor + \chi_3 logmeaug) + e_i \tag{5}$$

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[4] This was referred to as Politically Relevant Ethnic Group (PREG) by Posner (2004). This paper assessed the difference between *ethfra* and *PREG* in the First Least Squares results; the latter performed better on the average than the former. Hence, *PREG* was used as augmented version *(gethfra).*

4.0 EMPIRICAL RESULTS AND ANALYSES

4.1. Descriptive Analysis

This section presents and discusses the descriptive analysis of the paper. The number of countries in SSA used in the data analysis was 34[5]. The level of agricultural exports (*agrex*) is plotted in Figure 4.1, which was done with a view to examining its trend over the period studied.

As shown in Figure 4.1, the contribution of agricultural exports to GDP ranged from 6.3% to 10.7%. This appears low given the fact that the sector provides over 50% employment in most economies in SSA. The reason that can be adduced here may be the fact that the agricultural sector has not witnessed substantial transformation in the economic growth process as it is still dominated by traditional method of production. This implies that the tradability of the sector is limited in scope. The fact can also stem from some challenges of meeting standards by the exporting firms in the sector, which has not made agricultural exports competitive in the global market.

Figure.4.1 Trend in Agric. Export 1996-2008
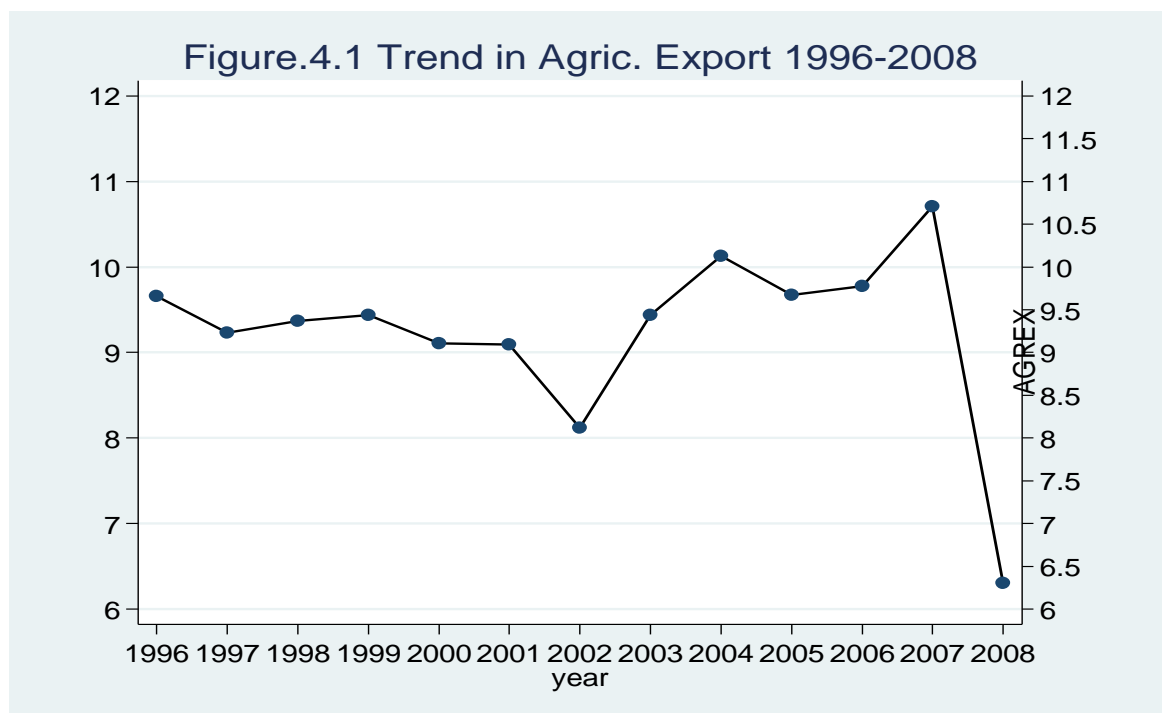
Source: Computed by the Authors.

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[5] The countries include: Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Cote d'Ivoire, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Senegal, Seychelles, South Africa, Swaziland, Tanzania, Togo, Uganda, Zambia, and Zimbabwe. The choice was based on data availability.

Another observation that can be made from Figure 4.1 is that the contribution of agricultural sector witnessed a great deal of fluctuation especially from 2001 to 2008. It decreased from 9.1% in 2001 to 8.1% in 2002, it increased again to 10.1% in 2004 and immediately decreased to 9.7% in 2005. It later increased to 10.7% in 2007 and finally nose-dived to the lowest value of 6.3% in 2008. The sharp decline observed at the later years of the graph may be associated with the global economic/financial crises. The challenge here is the fact that agricultural exports are quite prone to unfavourable shocks in the global market. This has some implications for the SSA countries because primary products may not be competitive compared to other products (Olayiwola and Osabuohien, 2009). Thus to promote agricultural exports, means that will help in providing processing and storage facilities will go a long way. This will help to improve the quality of SSA's agricultural products and as a result enhance their tradability in world market. Instances have been mentioned where products from some African countries were rejected in Europe on the accounts of quality (Biggs, 2007).

Table 4.1 Trade Facilitations Indicators across the World

Region	No. of documents for export	Days for export	Cost to export (US$ per container)
	1995-2009	1995-2009	1995-2009
Sub-Saharan Africa	**8.12**	**36.07**	**1,770.50**
South Asia	8.40	33.95	1,261.30
Latin America and Caribbean	7.01	21.56	1,166.40
Middle East and North Africa	7.15	28.37	1,162.40
East Asia- Pacific	7.14	26.21	950.00
World	**6.91**	**25.76**	**1,288.60**

Source: World Bank Group (2010)

In order to further buttress some of the points mentioned above, the paper presented some indicators on trade facilitations across the various regions of the world as reported in Table 4.1. The indicators presented include: number of documents required for exports, days it will take to export and cost it will take to export a container. This is because the paper is interested in enhancing export given that export is an injection to the economy. As can be observed from the Table, the values for SSA were higher than all the regions presented as well as world. For instance, it will require an over 36days to export from SSA countries compared to the world average of 25.76days. Similarly, the will cost almost twice to export a commodity in SSA region

than it will take for East-Asia region. The inference that can be drawn from herein is that the level constraints to export in SSA are much higher than those of other regions. This, among other things may be the reason why the region experienced low level of export performance especially in agricultural products as noted earlier. Thus, to enhance the regions tradability, these constraints need to be reduced.

4.2   Summary Statistics

The summary statistics of major variables are presented in Table 4.2.

Table 4.2 Summary Statistics of Main Variables

Variables	Mean	Std. Dev.	Min	Max	Observations
Agriex	9.53	8.16	0.01	42.81	371
Agrot	3.19	7.55	-29.34	41.04	410
RL	2.97	0.61	1.69	4.42	339
GE	2.98	0.57	1.70	4.33	339
CC	3.03	0.56	2.13	4.62	339
VA	3.08	0.69	1.70	4.51	339
RQ	3.13	0.62	1.14	4.92	339
PS	3.14	0.86	1.04	4.64	339

Note : Original values of institutions variables ranged from -2.5 to +2.5 (higher values indicate better institutional Quality) but the rescaled values ranged from 1 to 6.

Source: Computed by the Authors.

The Table show that the mean value of agricultural exports was 7.82%, which suggest that SSA countries' agricultural export is quite low. This may be linked to the low growth rate of the sector's output that averaged 3.19% within the sampled period. With regards to institutional factors, it can be observed that all the chosen institutional indicators presented were lower than the average of 3.5 denoting that the original values lie in the negative domain. This implies that on average, the institutional quality in SSA countries might not have been very conducive for vibrant economic activities. Table 4.2 further brings out the fact that among the institutional variables, rule of law (RL) has the lowest value closely followed by government effectiveness (GE), control of corruption (CC), voice and accountability (VA), regulatory quality (RQ), and political stability (PS), respectively.

4.3 Estimation Results and Discussion

The estimation process started with equation (3) to assess the influence of time varying variables on agricultural exports. As noted in Table 4.3, Fixed Effects (FE) technique of panel data was employed. However, the process kicked-off with Ordinary Least Squares technique (OLS) as a matter of check. The result of OLS (not reported) was inconsistent as it could be expected. Also the model with time effects performed better; hence attention is focused on it.

Table 4.3 shows that agricultural growth had the expected positive sign. However, beside the fact that the coefficient was very low, it was not significant at the usual levels. This means that an increase in agricultural productivity has the capacity of enhancing the tradability of agricultural exports in SSA but it is yet to have such inducement. This may not be unconnected with the low productivity that characterised agriculture sector especially the persistence of subsistence and traditional practices across the region.

Table 4.3 Results on Agricultural Exports and Agricultural Growth

Regressors	Lnrexch	agrot	constant	R^2	F-stat	Time effect	ID	Observations
	0.039 [.710]	0.003 [.252]	1.993* [.000]	0.045	2.70* [.000]	Yes	34	338

Note: *Dependent Variable -Agricultural Export. Estimation Technique :Fixed Effects (FE). * :significant at 1%. The Coefficients of time and country effects were not reported to avoid clumsiness.*
Source: *Estimated by the Authors.*

The result in Table 4.3 also points out that real exchange rate was not statistically significant and it had a contrary sign. The simple implication here is that exchange rate devaluation do not lead to the enhancement of agricultural exports. This may mean that the 'Marshall-Lerner' condition for the effectiveness of exchange devaluation might not have been met in the region[6]. This policy implication herein is the need for SSA countries to look away from the use of exchange rate devaluation but focus on means of improving the productivity of the sector because countries can only export what has been produced; devalued exchange rate notwithstanding.

Next, the paper presents the results from the 2SLS technique as shown in Table 4.4. The dependent variable is the country fixed effects obtained from the previous estimation. Columns *A*

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[6] The Marshal-Lerner condition simply denotes that for currency depreciation to significantly have positive effect on trade outcome – trade balance, the sum of price elasticity of export and import in absolute terms must be greater than one (1).

and *B* represent equations without and with instrumental variables, respectively. The equations with instruments performed relatively better; hence emphasis was placed on them. The results of the First Stage regression that show the influence of the instruments on the institutional indicators are presented in Table 4.5.

Table 4.4   2SLS Results of Influence of Institutions on Agricultural Exports

Regressors	A	B	A	B	A	B	A	B	A	B	A	B
Lnmkpot	-0.231[a]	-0.219[a]	-0.236[a]	-0.364[a]	-0.217[a]	-0.265[a]	-0.234[a]	-0.192[a]	-0.255[a]	-0.292[a]	-0.212[a]	-0.162[b]
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)	(.011)
LnRL	0.469	1.827[c]										
	(.129)	(.051)										
LnVA			0.157	2.852[b]								
			(.139)	(.040)								
LnRQ					-0.600[c]	2.283[b]						
					(.060)	(.026)						
LnCC							0.194	-1.128[c]				
							(.189)	(.060)				
LnGE									0.588[c]	2.667[c]		
									(.080)	(.070)		
LnPS											0.539[a]	1.912[b]
											(.007)	(.044)
constant	-0.661[c]	-2.064	-0.219	-2.308[b]	0.546	-2.763	-0.368	1.082	-0.810[b]	-1.941	-0.740[a]	-2.168[b]
	(.053)	(.037)	(.504)	(.033)	(.148)	(.020)	(.361)	(.416)	(.034)	(.060)	(.001)	(.036)
R^2	0.091	0.117	0.083	0.096	0.096	0.073	0.084	0.057	0.094	0.129	0.109	0.058
F-stat	12.71		11.47		13.39		11.60		13.13		15.51	
(P-value)	(.000)		(.000)		(.000)		(.000)		(.000)		(.000)	
Wald -stat		21.18		18.19		18.07		16.07		20.69		15.63
(P-value)		(.000)		(.000)		(.000)		(.000)		(.000)		(.000)
Instruments	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes	No	Yes
Sargan-P		0.181		0.153		0.421		0.227		0.163		0.318
Countries	34	34	34	34	34	34	34	34	34	34	34	34

Instruments - logemaug, gethfra and legalor.
The p-values from Sargan and Bassman tests were almost the same, hence only the former is reported.
Superscripts a,b, and c mean significant at 1, 5 and 10%, respectively.
Source: Estimated by the Authors.

Table 4.4 indicate that market potential had contrary sign in all the equations in its influence on agricultural exports. This surprising finding may be linked to the fact that in most SSA countries, those that are engaged in agricultural production are majorly small-scale farmers that use the traditional methods of farming. Thus, the availability of market potentials may not be very relevant for them. The reason may also result from the challenges of processing and storage facilities in most SSA countries. Given the fact that agricultural products are quite perishable, they usually have short shelf-life and as a result penetration of markets will be quite difficult. The reason for the contrary sign may equally be connected to the fact that intra-African trade is usually minimal compared to trade with other regions of the world, which would imply limited vibrancy in market potential.

An examination of the institutional factors shows that the six of them came out the expected sign positive signs, which are also significant at the usual levels. This underscores the fact that institutional factors are very crucial in influencing agricultural exports. With regards to their degrees of relevance; they follow this ranking: voice and accountability, government effectiveness, regulatory quality, political stability, rule of law, and control of corruption.

4.4   Robustness and Sensitivity of Results

The results in Table 4.4 in the 2SLS confirm that the model is efficient as can be seem from the Wald statistics and its probability value, which implies than the estimates are reliable and robust. In addition, the Sargan p-values confirm that the null hypothesis of no over identification of instruments cannot be rejected at the usual levels. The First Stage regression results in Table 4.5 equally lend credence to the reliability of the results. The results show that the chosen instrumental variables were significant in influencing the respective institutional variables, which means that not accounting for them will bias the effects of institutions. For instance, when instrumental variables were used, the influence of the institutional variables increased showing the imperativeness of using instruments to properly account for the effects of institutions. As can be seen in the third column of Table 4.4, the coefficient for voice and accountability not only improved by being significant, its magnitude increased from 0.157 to 2.852. The use of instrumental variables was observed by Meon and Sekkat (2008) but they only found ethnolinguistic fractionalisation relevant.

Table 4.5 First-Stage Regression Results

Regressors/Dependent Var.	LnRL	LnVA	LnRQ	LnCC	LnGE	LnPS
Legalor	0.083^a	0.076^a	0.025^a	0.014^c	0.091^a	0.058^b
	(.003)	(.000)	(.003)	(.070)	(.000)	(.035)
Logemaug	-0.043^a	-0.037^a	-0.038	-0.033	-0.042^a	-0.024^c
	(.000)	(.002)	(.003)	(.000)	(.000)	(.092)
Gethra	-0.002^b	-0.004^a	-0.004^a	-0.002^a	-0.002^a	-0.003^b
	(.022)	(.000)	(.000)	(.007)	(.004)	(.024)
Constant	1.315	1.220	1.229	1.349	1.362	0.999
	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
F-stat.	9.72	12.24^a	14.87	10.72	17.65^a	9.54
(P-value)	(.000)	(.000)	(.000)	(.000)	(.000)	(.000)
R^2	0.125	0.152	0.146	0.124	0.251	0.077

Number of countries- same with 2SLS results. gethra is referred to as augmented ethnolinguistic fractionalisation (Posner,2004 calls it politically relevant ethnic group- PREG) performed better than the usual one, hence it was used.
Source: Estimated by the Authors.

The F-statistics in Table 4.5 is approximately equal and greater than the rule of thumb of 10. The coefficients of the instruments reveal that Settler Mortality and augmented ethnolinguistic fractionalisation had negative and significant effects on institutions SSA but legal origin and formalism had positive influence and significant result[7]. The above confirms that a country that is more ethnically fractionalised will be more prone to the possibility of having weak institutions, *vice versa*. This finding is very essential for SSA countries where many of them have high degree of fractionalisation. The coefficients of Settler's Mortality support Acemoglu, Johnson and Robinson (2001) that colonisers left weak institutions in areas not found lucrative for rent extraction. On the other hand, legal origin and formalism points out that origin of legal system in SSA countries had significant effects on their institutional quality. The implication that can be drawn from here is the need for SSA countries to overhaul their legal system and create the one that will meet their peculiarities. This is because a strong legal system will promote strong institutions.

In addition to the above robustness checks, the study also examined the sensitivity of the estimates, which was done by estimating a sample of the institutional variable -rule of law. This was deemed essential given the need to examine the degree of variation of the magnitudes of the respective institutional factors in terms of their influence on agricultural exports. This was achieved by estimating all the 34 SSA countries in the sample, then excluding South Africa. Afterwards, estimation was carried out for only the least developed countries (*LDCs*)[8] in the sample. Besides the need to ascertain if the LDCs in SSA had similar measure of influence in terms of institutional change, it was also considered expedient to examine this check given the fact that some International Agencies especially African Development Bank (AfDB), usually discuss African data by classifying North Africa, SSA, and SSA less South Africa AfDB,2008).

As it is reflected in Table 4.6, the results bring to the fore that using rule of law as a sample of institutions had not much difference with regards to the level of significance when the estimation was done without South Africa. This means that South Africa did not exert outlier effects in the estimated results as the magnitude did not change substantially. However, when only the LDCs

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[7] Both English and French legal origin were estimated but they were almost perfectly correlated, as a result one was used to avoid the challenge of multicollinearity and reported as legal origin (*legalor*).
[8] The 20 LDCs in the study include : Benin, Burkina Faso, Burundi, Central Africa Republic, Ethiopia, Gambia, Guinea, Lesotho, Madagascar, Malawi, Mali, Mauritania, Mozambique, Niger, Rwanda, Senegal, Tanzania, Togo, Uganda, and Zambia (WTO, 2009:160).

were estimated, there was appreciable difference in both significant level and magnitude of the coefficients. The coefficient more than doubled as it increased from 1.827 to 4.235. This implies that institutional factors are significant for the 34 sampled SSA countries, but they have much more influence for the LDCs in SSA. This may as a result structural differences in LDCs and others in the sample. This means that the effects of institutions are very relevant for SSA countries but it is much more crucial for their LDCs. Thus, strengthening of their institutional factors especially voice and accountability as well as government effectiveness will enhance the tradability of their agricultural exports.

Table 4.6 Sensitivity Check in the Sample

Regressors	SSA	SSA Less South Africa	Only LDCs
Lnmkpot	-0.219[a]	-0.153	-0.375[a]
	(.000)	(.027)	(.000)
LnRL	1.827[c]	2.834	4.235
	(.051)	(.029)	(.000)
Constant	-2.064	-3.051	-4.999
	(.037)	(.022)	(.000)
R^2	0.117	0.094	0.356
Wald-	21.18	16.49	23.54
(P-Value)	(.000)	(.000)	(.000)
Instruments	Yes	Yes	Yes
Sargan-P	0.181	0.189	0.686
Countries	34	33	20

Dependent variable: agricultural exports.
Source: Estimated by the Authors.

4.5   Summary of Findings, Policy Implications and Conclusion

The paper had examined tradability of agricultural export in SSA especially as it relate to institutions. The objective was achieved by using a sample of 34 countries in SSA for the period 1996-2008, which were estimated by fixed effects and instrumental variable techniques. Some important findings and implication for policy from the paper are summarised herein.

Firstly, the paper found that contribution of agricultural exports to SSA countries was quite low compared to the proportion of their population that engaged in it. It was equally noted that agricultural export experienced some measure of fluctuation especially between 2004-2008. This was interpreted to have resulted from adverse effects of the global economic/financial crises. The paper also found that real exchange rate depreciation did not significantly promote agricultural exports in SSA. The policy implication of the above findings is that exchange rate deprecation

will not yield meaningful results instead SSA countries should make frantic efforts to increase their export supply by improving their agricultural productivity.

The paper found market potential to adversely affect agricultural exports. This might have resulted from the fact large scale agricultural production and export is limited in the region. The policy implication that emanates here is the urgent need to improve the processing and storage facilities for agricultural products in the region in order to increase the shelf-life, which will enhance their tradability by penetrating far markets such as those of Asian and Latin America countries.

It was equally established that institutional variables influence significantly agricultural exports at varying degree. This finding give credence to Acemoglu and Johnson (2005)'s maxim of *unbundling* institutions in assessing their influence. It was noted that among the institutional factors voice and accountability as well as government effectiveness were found to be most crucial for agricultural exports. The policy implication is that the promotion of good institutions especially focusing on effective governance that will be accountable to the citizenry will go a long way in promoting agricultural exports in SSA. In this wise the paper notes that a reform of the legal system will be rewarding in creating strong institutional quality that will help to promote agricultural exports.

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APPENDIX

Table 1.1 Some Export Shares of World Market Across Regions (%)

Region	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004	2005	2006	2007	2008
Total Exports Shares of World Total Exports (%)														
SSA	0.03	0.04	0.03	0.03	0.03	0.03	0.03	0.03	0.03	0.04	0.04	0.04	0.04	0.05
World	0.59	0.59	0.59	0.58	0.58	0.59	0.58	0.56	0.56	0.56	0.56	0.56	0.58	0.64
EAP	0.42	0.44	0.48	0.46	0.48	0.56	0.53	0.58	0.60	0.60	0.65	0.69	0.90	1.09
ECA	0.20	0.20	0.20	0.19	0.17	0.19	0.21	0.21	0.22	0.24	0.27	0.28	0.29	0.34
LAC	0.15	0.16	0.17	0.17	0.18	0.19	0.19	0.18	0.17	0.17	0.18	0.19	0.18	0.21
MNA	0.11	0.12	0.11	0.09	0.11	0.13	0.13	0.14	0.14	0.15	0.18	0.19	0.19	0.23
Agricultural Export Shares of World Agricultural Export (%)														
SSA	0.09	0.10	0.09	0.09	0.09	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09
World	0.83	0.76	0.71	0.71	0.69	0.62	0.62	0.62	0.63	0.64	0.66	0.67	0.76	0.80
EAP	1.55	1.27	1.17	1.02	1.16	0.81	0.78	0.85	0.86	0.85	0.95	1.12	1.19	1.91
ECA	0.23	0.24	0.22	0.20	0.18	0.18	0.21	0.22	0.24	0.25	0.29	0.30	0.34	0.40
LAC	0.39	0.39	0.42	0.50	0.43	0.43	0.43	0.43	0.44	0.46	0.48	0.48	0.62	0.60
MNA	0.12	0.12	0.09	0.10	0.12	0.12	0.11	0.12	0.12	0.12	0.14	0.14	0.10	0.10
SSA	0.09	0.10	0.09	0.09	0.09	0.07	0.07	0.07	0.08	0.08	0.08	0.09	0.09	0.09

World- World Average; EAP-East Asia- Pacific Average; ECA-Europe and Central Asia Average;
MNA-Middle East and North Africa Average; LAC-Latin America and Caribbean Average; SSA-Sub-Saharan Africa Average.
Source: World Bank Group (2010) *World Trade Indicators 2009/10*

Table 2.1 Some Measures of Institutional Quality

year	1996	1998	2000	2002	2003	2004	2005	2006	2007	2008
Government Effectiveness										
SSA	-0.66	-0.69	-0.72	-0.71	-0.71	-0.75	-0.78	-0.79	-0.76	-0.78
World	-0.04	-0.01	-0.01	-0.02	-0.01	0.00	-0.01	-0.01	-0.02	-0.01
EAP	-0.30	-0.49	-0.48	-0.47	-0.55	-0.53	-0.46	-0.46	-0.54	-0.53
ECA	-0.58	-0.49	-0.51	-0.48	-0.39	-0.37	-0.37	-0.34	-0.36	-0.31
LAC	-0.34	-0.11	-0.15	-0.25	-0.21	-0.20	-0.14	-0.13	-0.12	-0.10
MNA	-0.45	-0.68	-0.63	-0.58	-0.55	-0.53	-0.63	-0.63	-0.64	-0.61
Political Stability/Absence of Violence and Terrorism										
SSA	-0.56	-0.65	-0.70	-0.65	-0.60	-0.54	-0.56	-0.54	-0.57	-0.56
World	-0.11	-0.09	-0.09	-0.09	-0.04	-0.03	-0.03	-0.03	-0.03	-0.02
EAP	-0.04	0.02	-0.17	-0.09	0.07	0.13	0.20	0.14	0.14	0.10
ECA	-0.36	-0.48	-0.52	-0.41	-0.42	-0.53	-0.44	-0.36	-0.24	-0.13
LAC	-0.14	-0.15	-0.05	-0.18	-0.07	-0.03	-0.10	-0.10	-0.10	-0.13
MNA	-0.90	-0.90	-0.74	-0.83	-0.89	-0.94	-0.94	-0.97	-0.94	-0.91
LAC	-0.30	-0.32	-0.27	-0.34	-0.30	-0.31	-0.34	-0.32	-0.33	-0.36
MNA	-0.58	-0.47	-0.45	-0.50	-0.50	-0.44	-0.52	-0.55	-0.56	-0.54

The values ranges from -2.5 (worst) to 2.5 (best) i.e. the higher the better.
Source: World Bank Group (2010) *World Trade Indicators 2009/10 as computed by Kaufmann et al (2009)*

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Table 3.1 Definition of Variables and Sources

Names	Description and source
agrex	Agricultural exports as percentage of GDP to correct for the differences in sizes of the countries in similar fashion like Meon and Sekkat (2008). Source: World Trade Indicators.
Rexch	Real exchange rate- computed as the country's official exchange rate to US$ divided by GDP deflator.
agrot	Agricultural growth rates. Source: World Development Indicators
RL	Rule of law- captures perceptions of the extent to which agents have confidence in and abide by the rules of society, and in particular the quality of contract enforcement, the police, and the courts, as well as the likelihood of crime and violence.
VA	Voice and accountability- measures the extent to which a country's citizens are able to participate in selecting their government, as well as freedom of expression, association, and a free media.
RQ	Regulatory quality- shows the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development.
CC	Control of corruption- shows the perceptions of the extent to which public power is exercised for private gain, including both petty and grand forms of corruption.
GE	Government effectiveness- measure the quality of public services, the quality of the civil service and the degree of its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies.
PS	Political stability and absence of violence/terrorism- measures the likelihood that the government will be destabilised or overthrown by unconstitutional or violent means. We simply referred it as political stability.
Source: World Governance Indicators as computed Kaufmann et al (2009) for the World Bank. The values were available for all the period except for 1997,1999 and 2001. The original values were rescaled by the addition of 3.5 in order to have logarithmic transformation. Higher values denote better institutional quality.	
gethra	Augmented/generalised ethnolinguistic fractionalisation. It is the average value of five different indices of ethnolinguistic fractionalisation - i) the probability that two randomly selected persons from a given country will not belong to the same ethnolinguistic group; ii) probability that randomly selected individuals speaking different languages; iii) probability of two randomly selected individuals do not speak the same language; iv) percent population not speaking the official language ;and v) percent of population not speaking the most widely used language. The values ranges from 0 (0%) to 1 (100%). Source: La Porta et al (1999) and Posner (2004).
logmeaug	log of AJR augmented settlers' mortality. Source: Acemoglu, Johnson and Robinson (2001) and Hopkins (2006).
legalor	Legal origin and formalism. It measures the legal origin of the Company Law or Commercial Code of a country. Source: La Porta et al (1999).
Mkpot	Market potential measured as the inverse-distance weighted average of a country's partners GDP. Source: CEPII (Centre d'Etudes Prospective et d'Informations Internationals) webpage.