Access to Finance and Agricultural Exports: A Look into the Top 10 Exporting Countries in Africa

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Abstract
The study assessed the impact of access to finance on agricultural exports in the top 10 exporting countries in Africa for the period 1996 to 2017. The study used panel data methodologies such panel ordinary least square, panel generalized linear model and dynamic panel data estimation using GMM two-step method to analyze the data and make statistical robustness inference. From the results, it was found that access to finance increases agricultural exports in Africa considering the easily accessible and convenient process devoid of corruption and the implementation of high quality regulations. Moreover, it was found that political stability contributes immensely to the growth of agricultural exports hence it is imperative for governments to create peaceful and sound environment for the production and export of agricultural products to earn foreign currencies.
Keywords: *Access to finance; Agricultural exports; Dynamic panel data; generalized linear model; ordinary least square*

1. Introduction

Access to finance helps to expand the operations, innovation, and investment of production activities of households and firms (OECD, 2016). Financing fuels the ability of the sectors of an economy to create employment and propel economic growth to reduce poverty. The zeal to expand in terms of operations, innovation and investment have resulted in financing gap faced by individuals and firms thus credit constrained. The gap is mostly in existence in developing countries whiles it is the opposite in the developed countries (Abidoye, 2013; Fowowe and Abidoye, 2013; Allen et al., 2011; Beck et al., 2009). According to the literature on the finance-growth nexus, the promotion of funds channeling to the sectors of an economy enhances financial development hence increases economic growth (Levine, 2005; Demirguc-Kunt and Maksimovic, 1998). According to the pecking order theory, the cost of finance increases with asymmetric information in line with the mode of raising financial resources as working capital; firms prefer financing that comes from internal funds to external funds (Boundless, 2014).

Agricultural exports in Africa ranks Africa as 5th largest exporter of a number of agricultural products in the world. However, over the recent years food insecurity has been raising the level of poverty and hunger. African agricultural exports include grapefruit, avocadoes, plums, and pears. Agriculture is widely considered to be the engine for growth in Africa. It is one of the most important fields of activity and growth for the African economy. Africa's economy has been stagnant over the past few decades and has coerced the countries to take a look back and give agriculture its due weight age so that the continent can be taken out of poverty and deprivation which rules the continent. Krueger (1978) and Ram (1987) posit that export is the driving force of economic growth and one of the determinants as well; the trade openness harness comparative advantage ensures the shift of goods to the sectors due to increase efficiency. In the developing economies like Africa, these sectors require unskilled labour and help in the expansion of job opportunities, improvement of income inequality and standard of living. Moreover, trade liberalization ushers in foreign direct investment and technology.

The study intends to assess the impact of access to finance on agricultural export in Africa as to how it affects the production and export of agricultural products. Africa is an agricultural driven economy hence the need to pump in more funds into the agricultural sector to take the continent out of poverty and underdevelopment.

The study contributes to the existing literature in this area to direct policymakers and the private agricultural firms as to how access to finance affects agricultural exports in Africa. Meanwhile, the study employs three strong econometric methodologies to analyze the scenario in a robust manner to make statistical inference.

The study is categorized into four sections; section 1 introduces the study, section 2 consists of the data and methodology used for the study and section 3 reports the results and discussion whiles section 4 concludes the study and proposes some recommendations.

Table 1 Agricultural exports and employment for top 10 exporting African countries

Country Name	Indicator Name	2010	2011	2012	2013	2014	2015	2016	2017
Ghana	Agricultural raw materials exports (% of merchandise exports)	6.95	4.95	2.97	4.31			8.53	2.67
Ghana	Employment in agriculture (% of total employment) (modeled ILO	49.87	48.44	46.85	45.38	40.44	35.18	34.70	34.27
South Africa	Agricultural raw materials exports (% of merchandise exports)	1.77	1.91	1.77	1.90	1.99	2.17	2.35	2.34
South Africa	Employment in agriculture (% of total employment) (modeled ILO	4.86	4.60	4.84	4.98	4.65	5.61	5.57	5.22
Nigeria	Agricultural raw materials exports (% of merchandise exports)	1.63	6.13	7.27	3.20	0.43		0.16	0.21
Nigeria	Employment in agriculture (% of total employment) (modeled ILO	40.78	40.19	39.32	38.27	37.70	37.08	36.91	36.81
Angola	Agricultural raw materials exports (% of merchandise exports)	0.00			0.00	0.01	0.03		
Angola	Employment in agriculture (% of total employment) (modeled ILO	48.73	51.22	50.88	50.33	49.78	49.39	49.44	49.27
Algeria	Agricultural raw materials exports (% of merchandise exports)	0.02	0.02	0.01	0.01	0.02	0.03	0.04	0.07
Algeria	Employment in agriculture (% of total employment) (modeled ILO	11.84	10.77	10.20	9.66	9.15	8.66	8.34	9.39
Libya	Agricultural raw materials exports (% of merchandise exports)	0.00							
Libya	Employment in agriculture (% of total employment) (modeled ILO	8.43	8.60	8.30	8.28	8.32	8.28	8.21	8.04
Egypt, Arab Rep.	Agricultural raw materials exports (% of merchandise exports)	3.01	2.76	2.49	2.07	2.19	2.60	2.62	1.95
Egypt, Arab Rep.	Employment in agriculture (% of total employment) (modeled ILO	28.28	29.24	27.07	27.96	27.55	25.82	25.57	25.04
Morocco	Agricultural raw materials exports (% of merchandise exports)	1.73	1.11	1.10	0.87	0.89	0.79	0.78	0.97
Morocco	Employment in agriculture (% of total employment) (modeled ILO	40.40	39.78	39.22	39.10	38.81	38.70	38.52	38.29
Tunisia	Agricultural raw materials exports (% of merchandise exports)	0.50	0.47	0.49	0.45	0.50	0.62	0.71	0.55
Tunisia	Employment in agriculture (% of total employment) (modeled ILO	17.95	16.36	17.07	15.36	14.87	15.04	15.04	15.04
Cote d'Ivoire	Agricultural raw materials exports (% of merchandise exports)	9.65	13.45	11.46	10.23	8.84	8.75	8.37	9.60
Cote d'Ivoire	Employment in agriculture (% of total employment) (modeled ILO	46.12	46.65	45.61	45.17	47.29	48.46	48.88	48.42

Table 2 List of top 10 exporters in Africa

Rank	Exporter	2018 Exports	% total	2014 - 2018
1	South Africa	$94.4 billion	19.80%	2%
2	Nigeria	$52.9 billion	11.10%	-46.70%
3	Angola	$42.1 billion	8.80%	-28.20%
4	Algeria	$41.6 billion	8.70%	-31.10%
5	Libya	$30 billion	6.30%	43%
6	Egypt	$29.4 billion	6.20%	9.60%
7	Morocco	$29.3 billion	6.20%	23.20%
8	Ghana	$17.1 billion	3.60%	no 2014 data
9	Tunisia	$15.5 billion	3.20%	-7.60%
10	Ivory Coast	$11.8 billion	2.50%	-8.90%

2. Data and Methodology

2.1 Data

The study uses panel data of 10 top exporting countries in Africa to assess the impact of access to finance on agricultural export for the period of 1996 to 2017. The study employed the proxy of domestic credit to the private sector as a measure of access to finance which is the independent variable; also agricultural export is measured by proxy of Agricultural raw materials exports (% of merchandise exports). In order to control for agricultural export, some control variables were considered, and these variables are; corruption control, regulation quality, political stability, population growth and employment in agricultural sector. All these factors were considered due to intervening features in an economy which one way or the other affect the level of production of goods and services. Corruption control makes the accessibility of funds smooth and convenient whiles the quality of regulations in a country ensures the implementation of policies and enforcement of laws as well as regulations to smoothen the ease of doing business. Population growth has the propensity to growth hence, as the population increase it is assumed that the labor force will also increase which will bolster economic growth when the labor force is economically viable. Employment in the agricultural sector means more labor to execute the tasks in and around the agricultural sector hence there will be growth in terms of production and export. The data were collected from World Bank Development Indicators and Worldwide Governance Indicators.

The econometric model for the study can be written as:

Equation 1

$$AEX_{it} = f(DCP_{it}, EIA_{it}, PG_{it}, POLST_{it}, \text{REGQ}_{it}, \text{CORCO}_{it})$$

In the equation (1), AEX refers to agricultural raw material exports, DCP refers to domestic credit to the private sector as proxy measure of access to finance, PG refers to population growth, REGQ refers to regulation quality and CORCO refers to corruption control. The study subsequently takes natural logarithm of domestic credit to private sector and employment in agricultural sector; the resulting equation is represented as:

Equation 2

$$\text{AEX}_{it} = \beta 0 + \beta_1 \log(\text{DCP})_{it} + \beta_2 \log(\text{EIA})_{it} + \beta_3 (\text{PG})_{it} + \beta_4 (\text{POLST})_{it} + \beta_5 (\text{REGQ})_{it} + \beta_6 (\text{CORCO})_{it} + \mu_{it}$$

In equation (2) β_0 is the intercept, $_i$ =1 …. I represent the cross-section of the countries, t =1……t represents the time period, and μ represents error term (disturbances and other factors that were not considered).

2.2 Methodology

The study uses panel study hence the use of panel data methodologies thus panel unit root test, panel correlation matrix, panel co-integration test, panel ordinary least square, panel generalized linear model, dynamic panel data estimation GMM (two-step method) and panel homogenous causality test. All these methodologies are considered because the study would like to make robustness and statistical inference from the results. The first step the study considers is the panel unit root test. Panel unit root test is performed to check for stationarity in the variables in order to test for co-integration to affirm their long run relationship. The null hypothesis is that there is unit root in the variables and the alternate hypothesis states that there is stationarity in the variables if not at level form then at first difference. The following tests are used to test for unit root in the variables; Levin-Lin Chu (LLC) Levin et al. (2002), Im-Pesaran Shim (IPS) Im et al. (2003), Fisher Augmented Dickey-Fuller (ADF) and Fisher Philips-Perron (PP) tests (Maddala and Wu, 1999). The study considers these three-panel unit root test because of Levin et al. (2002) test statistic for the homogeneity, Im et al. (2003), Fisher ADF and Fisher PP (Maddala and Wu, 1999) test statistic for heterogeneity. However, the specification proposed by Im et al. (2003) is as follows:Equation 3

$$y_{it} = \rho_i y_{i,t-1} + \sigma_i x_{it} + \varepsilon_{tt}$$

Equation, x_{it} stands for the combination of all the explanatory variables; ρ_i stands for the autoregressive elasticities, ε_{it} represents the residual term whilst $_i$ and $_t$ connote the time period. Im et al. (2003) make way for a different order of serial correlation, and subsequent the normal averaging of augmented Dickey Fuller (Inglesi-Lotz, 2016) given as the equation is adopted from (Maji and Sulaiman, 2019).

Equation 4

$$\varepsilon_{it} = \sum_{j=1}^{n=1} \theta_{ij} \varepsilon_{i,t-1} + \varepsilon_{it}$$

Equation (3) is then substitute into Eq. (4) to yield equation (5):

Equation 5

$$y_{it} = \rho_i y_{i,t-1} + \sigma_i x_{it} + \varepsilon_{it} + \sum_{j=1}^{n=1} \theta_{ij} \varepsilon_{i,t-1} + \varepsilon_{it}$$

From equation (5), ρi connotes the number of lags in the ADF regression. The null hypothesis of panel unit root test states that each variable has a unit root and the alternate hypothesis states that at least one of the variables in the panel is stationary in series.

By testing for unit root and all the variables confirm stationary then co-integration test follows suit. The regression of time series panel data requires either stationarity or co-integration. The co-integration tests examine the residuals of spurious regressions of non-stationary variables. In Eqn. (5), the dependent variable y is regressed on x to obtain the residual $e_{it.}$ The parameter σi is the individual effect, and θi is the deterministic trend. To confirm the null hypothesis, H_o of no co-integration that the variables are not co-integrated; the residuals will be I (1) process. In a nutshell, if the variables are co-integrated then the residuals in the alternative hypothesis H_1 is I (0) process. The next step is to perform the regression analysis with the methodologies considered thus panel ordinary least square and generalized linear model. Afterward, the dynamic panel data estimation methodology is used for robust analysis and to make our statistical inference. The model for Arellano and Bond dynamic panel data estimation can be found in equation (5) (Kim et al., 2018);

Equation 6

$$AEXit = \sum_{j=1}^{p} a_j \, ln.aex_{i.t-j} + \beta_1 lndcp_{it} + \beta_2 lneia_{it} + \beta_3 pg_{it} + \beta_4 polst_{it} + \beta_5 regq_{it} + \beta_6 corco_{it} + v_i + \varepsilon_{it} \quad i = 1, \ldots\ldots, N \, , t = 1, \ldots . T_i$$

In the equation (3), i represent the 7 cross sectional countries in the 10 countries, t represents the period of time from 1996 to 2017, v represents the panel level effect, and ε_{it} represents the independent and identically distributed (i.i.d.) over the whole data sample with variance σ_{ε}^{2}, j represents the time lag that will be determined by Arellano-Bond test for the serial correlation. Arellano and Bond (1991) recommended that the generalized method of moments (GMM) method has the capability to remove the autocorrelation of the error term and mitigate the correlation between the endogenous variables and the error term in a dynamic panel model. Lastly, Dumitriscu and Hurlin (2012) homogenous causality test is performed to ascertain the direction in which the variables cause each other.

3. Results and discussion

3.1 Summary statistics

Table 3 depicts the summary statistics of the variables considered for the study. From the table, it can be established that the mean and median are closely and homogenously related. The standard deviation, Skewness, Kurtosis, and Jarque-Bera tests confirm that the variables are in normal distribution except lndcp.

Table 3 Summary Statistics

	AEX	LNDCP	LNEIA	PG	POLST	REGQ	CORCO
Mean	-0.557	3.191	3.211	1.913	-0.650	-0.490	-0.519
Median	0.099	2.995	3.511	1.836	-0.390	-0.365	-0.463
Maximum	2.696	5.076	4.029	3.576	0.833	0.804	0.733
Minimum	-7.877	0.700	1.526	-0.037	-2.353	-2.274	-1.627
Std. Dev.	2.589	0.991	0.720	0.765	0.768	0.617	0.542
Skewness	-0.991	0.102	-0.738	0.312	-0.587	-0.547	-0.202
Kurtosis	3.072	2.327	2.197	2.644	2.192	2.918	2.078
Jarque-Bera	36.043	4.537	25.849	4.740	18.612	11.041	9.293
Probability	0.000	0.103	0.000	0.093	0.000	0.004	0.010
Observations	220	220	220	220	220	220	220

3.2 Panel Unit root tests

Table 4 exhibits the results of the panel unit root tests conducted and from the outcome, we realized that at level; AEX was stationary with LLC and IPS tests, Lndcp was stationary with PP-Fisher test, PG was stationary with IPS, and ADF-Fisher tests and LnEIA was insignificant and showed that it has a unit root. Meanwhile, POLST, REGQ, and CORCO showed significance with the all tests confirming their stationarity. Furthermore, all the variables became stationary at first difference except PG in the PP-Fisher test. However, we can conclude that all the variables are stationary in first difference hence the null hypothesis that there is unit root in the variables is rejected.

Table 4 Panel unit root tests

	AEX	LNDCP	LNEIA	PG	POLST	REGQ	CORCO
level							
LLC	-2.419**	-1.064	-0.019	-1.153	-2.377**	-3.211***	-2.585**
IPS	-1.548*	0.055	3.867	-2.801**	-3.777***	-4.673***	-4.292***
ADF-Fisher	27.062	24.667	10.138	49.550***	65.356***	86.308***	66.582***
PP-Fisher	27.422	34.350**	3.987	21.086	81.204***	89.841***	111.562***
First difference							
LLC	-13.510***	-8.497***	-6.337***	-5.677***	-35.812***	-40.586***	-39.603***
IPS	-13.405***	-8.815***	-5.625***	-6.082***	-29.963***	-33.800***	-34.645***
ADF-Fisher	166.285***	105.368***	83.769***	81.466***	708.068***	954.137***	1236.570***
PP-Fisher	360.550***	112.845***	89.018***	17.866	768.998***	988.204***	1388.890***

Note: *** symbolizes 1% significance, ** symbolizes 5% significance, * symbolizes 10% significance

3.3 Correlation matrix

To ensure that the variables are free from multicollinearity, the correlation matrix was computed to unravel that. Hence table 5 displays the results. From the table, the study can statistically confirm that there is no multicollinearity in the variables. The rule of thumb states that no two independent variables should be highly correlated with the dependent variable with coefficient of more than -/+0.70. In spite of this, the highest correlated coefficient is 0.505 hence there is no multicollinearity in the variables, and the independent variables are not highly correlated.

Table 5 Correlation Matrix

	AEX	LNDCP	LNEIA	PG	POLST	REGQ	CORCO
AEX	1						
LNDCP	0.24211	1					
LNEIA	0.30464	-0.4223	1				
PG	0.06651	-0.5535	0.61608	1			
POLST	0.11453	0.30236	-0.133	-0.1523	1		
REGQ	0.50467	0.53704	0.00092	-0.2046	0.5963	1	
CORCO	0.44544	0.53699	-0.2005	-0.3636	0.62517	0.87284	1

3.4 Pedroni and Johansen Co-integration test

The computation of co-integration tests reveals the co-integration relationship among the variables employed for the study. The null hypothesis is that the variables are not co-integrated. The test of co-integration among the variables confirms the long run equilibrium relationship among the variables in their estimations. Table 6 confirms the outcome of the co-integration tests of Pedroni and Johansen Fisher, from the results it can be realized that the outcome from within dimension and between dimension as well as the fisher trace test and max-eigen test is significant hence the variables are co-integrated. Therefore, the null hypothesis is rejected.

Table 6 Co-integration tests

Alternative hypothesis: common AR coefs. (within-dimension)				
	Statistic	Prob.	Weighted Statistic	Prob.
Panel v-Statistic	-2.536	0.994	-2.544	0.995
Panel rho-Statistic	-0.038	0.485	1.499	0.933
Panel PP-Statistic	-8.339	0.000***	-6.597	0.000***
Panel ADF-Statistic	-8.359	0.000***	-6.090	0.000***

Alternative hypothesis: individual AR coefs. (between-dimension		
Group rho-Statistic	2.843	0.9978
Group PP-Statistic	-7.933	0.000***
Group ADF-Statistic	-5.635	0.000***

Unrestricted Cointegration Rank Test (Trace and Maximum Eigenvalue)				
Hypothesized No. of CE(s)	Fisher Stat.* (from trace test)	Prob.	Fisher Stat.* (from max-eigen test)	Prob.
None	11.09	0.944	47.93	0.000***
At most 1	167.2	0.000***	167.2	0.000***
At most 2	487.0	0.000***	328.3	0.000***
At most 3	306.1	0.000***	181.1	0.000***
At most 4	162.3	0.000***	110.5	0.000***
At most 5	79.55	0.000***	67.42	0.000***
At most 6	41.97	0.003***	41.97	0.003***

Note: *** symbolizes 1% significance, ** symbolizes 5% significance, * symbolizes 10% significance

3.5 The impact of access to finance on agricultural exports (Top 10 exporters in Africa)

The study aims to assess the impact of access to finance on agricultural exports in the top 10 Africa export countries. Since every sector of the economy needs funds to augment its operations, it is assumed that financing of the agricultural sector will boost the production of raw materials to support the manufacturing sector. In table 7, the result of the analysis of the impact of access to finance on agricultural exports can be found. From the results, it can be ascertained that access to finance proxy thus domestic credit to private sector has positive impact on agricultural exports. All the three methodologies confirm the positive impact of Lndcp (access to

finance) on agricultural exports with coefficients of 0.601, 0.528 and 1.250 respectively. A percentage increase in domestic credit to private sector (access to finance) increases the level of agricultural exports by 0.601%, 0.528%, and 1.250% respectively. The study employed population growth, employment in agricultural sector, political stability, regulation quality and corruption control as control variables to check the impact of access to finance on agricultural exports. From the results displayed in table 7, PG (population growth) tends to increase agricultural exports as a result reveals positive impact of population growth on agricultural exports. Even though GLM showed positive and insignificant impact of population growth on agricultural exports, the robust check results with dynamic panel data estimation generalized method of moment (two-step method) confirm the positive and significant impact on agricultural exports. Moreover, countries that enjoy consistent political stability have the propensity to develop and grow with high level of regulation quality and corruption control. From table 5, it can be ascertained that political stability is inversely related to agricultural exports hence there is a negative impact of political stability on agricultural exports. An increase in political instability will decrease the export of agricultural products. A percentage increase in political instability decreases agricultural exports by the coefficients of -0.951%, -0.942% and -1.475% respectively. Corruption control and regulation quality have positive relationship with agricultural exports, but regulation quality showed insignificant impact on agricultural exports in the OLS and GLM methodologies but showed significance in the robust check methodology thus dynamic panel data estimation GMM method with coefficient of 1.083. Corruption control showed strong and positive impact on agricultural exports affirming that the control of corruption-related activities surrounding the export of agricultural exports will increase it by 2.347%, 2.369% and 1.772% as against a percentage increase in corruption control.

Table 7 The impact of access to finance on Agricultural exports (Top 10 exporters in Africa)

Variables	OLS	GLM	DPD
AEX L1.			-0.280
			(-28.34)***
LNDCP	0.601	0.528	1.250
	(2.239)**	(2.726)**	(22.71)***
LNEIA	1.292	1.381	1.364
	(10.926)***	(5.470)***	(26.07)***
PG	0.483	0.375	0.511
	(1.704)*	(1.532)	(8.56)***
POLST	-0.951	-0.942	-1.475
	(-3.405)***	(-4.222)***	(-26.17)***
REGQ	0.712	0.638	1.083
	(0.952)	(1.242)	(5.14)***
CORCO	2.347	2.369	1.772
	(5.468)***	(4.150)***	(26.17)***
Constant	-6.598	-6.461	-9.853
	(-3.980)***	(5.236)***	(-23.03)***
R-squared	0.477		
LR statistic		166.653***	
Sargan test			21.487
			0.965
AR(1)			-3.060**
AR(2)			0.736
Wald Chi2 test			12355.70***

Note: *** symbolizes 1% significance, ** symbolizes 5% significance, * symbolizes 10% significance

3.6 Homogenous causality test

The study adopted the homogenous causality test to ascertain the direction at which each variable homogenously causes each other. Table 8 displays the results of the homogenous test, and it can confirm that there is a bidirectional linkage between LNDCP↔AEX, PG↔AEX, POLST↔AEX, POLST↔LNDCP, REGQ↔LNDCP, PG↔EIA, CORCO↔PG, and REGQ↔POLST. The bidirectional linkage or causality confirms that the variation or change in one variable homogenously causes the other. Moreover, an evidence of unidirectional linkage or causality was found from LNEIA→AEX, REGQ→AEX, CORCO→AEX, LNDCP→LNEIA, PG→DCP, LNDCP→PG, CORCO→LNDCP, POLST→LNEIA, LNEIA→REGQ, CORCO→LNEIA, PG→POLST, PG→REGQ, CORCO→POLST, and CORCO→REGQ. The unidirectional linkage or causality means that the first variable homogenously causes the latter. In light of this, the null hypothesis that none of the variables homogenously causes another is rejected because table 6 confirms bidirectional and unidirectional linkage among the variables.

Table 8 Homogenous causality test

Null Hypothesis:	W-Stat.	Zbar-Stat.	Prob.	sig.
LNDCP does not homogeneously cause AEX	4.222	2.246	0.025	**
AEX does not homogeneously cause LNDCP	4.488	2.558	0.011	**
LNEIA does not homogeneously cause AEX	5.335	3.552	0.000	***
AEX does not homogeneously cause LNEIA	3.531	1.435	0.151	
PG does not homogeneously cause AEX	6.671	5.121	0.000	***
AEX does not homogeneously cause PG	20.334	21.154	0.000	***
POLST does not homogeneously cause AEX	4.254	2.284	0.022	**
AEX does not homogeneously cause POLST	3.853	1.814	0.070	*
REGQ does not homogeneously cause AEX	4.903	3.045	0.002	**
AEX does not homogeneously cause REGQ	2.211	-0.113	0.910	
CORCO does not homogeneously cause AEX	6.178	4.542	0.000	***
AEX does not homogeneously cause CORCO	1.904	-0.474	0.636	
LNEIA does not homogeneously cause LNDCP	3.205	1.053	0.292	
LNDCP does not homogeneously cause LNEIA	4.184	2.201	0.028	**
PG does not homogeneously cause LNDCP	4.540	2.620	0.009	**
LNDCP does not homogeneously cause PG	13.425	13.046	0.000	***
POLST does not homogeneously cause LNDCP	5.101	3.278	0.001	***
LNDCP does not homogeneously cause POLST	5.900	4.215	0.000	***
REGQ does not homogeneously cause LNDCP	3.903	1.872	0.061	*
LNDCP does not homogeneously cause REGQ	5.283	3.492	0.001	***
CORCO does not homogeneously cause LNDCP	5.263	3.467	0.001	***
LNDCP does not homogeneously cause CORCO	2.897	0.692	0.489	
PG does not homogeneously cause LNEIA	4.219	2.243	0.025	**
LNEIA does not homogeneously cause PG	18.749	19.294	0.000	***
POLST does not homogeneously cause LNEIA	3.917	1.889	0.059	**
LNEIA does not homogeneously cause POLST	3.284	1.145	0.252	
REGQ does not homogeneously cause LNEIA	3.600	1.516	0.130	
LNEIA does not homogeneously cause REGQ	4.487	2.557	0.011	**
CORCO does not homogeneously cause LNEIA	4.279	2.313	0.021	**
LNEIA does not homogeneously cause CORCO	2.428	0.141	0.888	
POLST does not homogeneously cause PG	2.794	0.570	0.568	
PG does not homogeneously cause POLST	10.586	9.714	0.000	***
REGQ does not homogeneously cause PG	2.499	0.225	0.822	
PG does not homogeneously cause REGQ	5.971	4.299	0.000	***
CORCO does not homogeneously cause PG	3.798	1.749	0.080	*
PG does not homogeneously cause CORCO	5.197	3.390	0.001	***
REGQ does not homogeneously cause POLST	4.463	2.529	0.011	**
POLST does not homogeneously cause REGQ	4.839	2.971	0.003	**
CORCO does not homogeneously cause POLST	4.966	3.119	0.002	**
POLST does not homogeneously cause CORCO	2.841	0.625	0.532	
CORCO does not homogeneously cause REGQ	5.327	3.543	0.000	***
REGQ does not homogeneously cause CORCO	1.637	-0.787	0.431	

Note: *** symbolizes 1% significance, ** symbolizes 5% significance, * symbolizes 10% significance

4. Conclusion and recommendation

The study examined the impact of access to finance on agricultural exports in the top 10 Africa export countries for the period 1996 to 2017 by using panel data methodologies such as panel unit root tests, panel correlation matrix, panel co-integration tests, dynamic panel data estimation GMM method, ordinary least square (OLS), generalized linear model and homogenous causality tests. The study employed three data analysis methodologies to make statistical robustness inference.

The results confirm that access to finance has a positive impact on agricultural exports in the top 10 Africa export countries where there is high regulation quality and high level of political stability then production of agricultural raw material will be efficient and effective to boost export. Population growth tends to increase the labor needed for the production of agricultural products hence population growth increases employment in agricultural sector to boost production of agricultural products for export. Corruption seemingly retards economic growth hence it is imperative to control corruption to ensure growth in every sector of an economy. From our results, corruption control has positive impact on agricultural exports which remit foreign currency into the economy to offset the current account deficit. In this regard, the control of corruption harnesses the efficiency of production which in the long run increases export.

The study recommends that the agriculture sector should be empowered through easy access to finance in order to employment for the growing population in the countries to boost the export of agricultural products. The countries that are endowment with natural resources have the potential growth and development; more so, countries that produce raw products in abundance also have the tendency to grow and develop. The agricultural sector is the now the engine for growth of every economy; therefore, it is pertinent for the governments to concentrate on the agricultural sector with the needed support and assistance to production in abundance to increase domestic consumption and exports.

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