COCOA EXPORT PERFORMANCE IN THE WORLD'S LARGEST PRODUCER

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Abstract

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The trade theories maintain that countries should specialize in the production and exportation of products that they have relative factor endowments or a competitive advantage. Therefore, Cote d'Ivoire has taken the advantage to become the largest producer and exporter of cocoa beans in the world. The product is also the leading foreign exchange earner in Cote d'Ivoire. Thus, the importance of the commodity to the country cannot be overstated.

Against this background, this contribution assesses the country's export performance and determines some external drivers of cocoa export trade in Cote d'Ivoire in recent decades, using both empirical and descriptive approaches. Both trade specialization index and trade competitiveness indicators suggest that even though the country's performance slightly fluctuated over the years, it remains competitive and have witnessed positive direction almost throughout the years under study. Also, using OLS and Granger causality, the OLS regression results reveal that cocoa bean production, world prices, trade openness and real effective exchange rate have a positive influence on cocoa export performance in Cote D'Ivoire. The Granger test shows that there exists a bidirectional causality running from production to export. A unidirectional is observed from world price to export, as well as from world price and exchange rates to production in Cote d'Ivoire. The government of Cote d'Ivoire and partners should create an enabling environment and some incentives to reinvigorate cocoa production and earnings for a sustainable export performance in the country.

Key words: comparative advantage, export performance, openness, world price, Cote d'Ivoire

Introduction

Historically, both traditional (see Smith, 1776; Ricardo, 1817; Heckscher, 1919; Ohlin, 1933) and modern (see Leontief, 1953; Linder, 1961'; Vernon, 1966; Grubel and Lloyd, 1971; Helpman and Krugman, 1986; Porter, 1990) trade theories explain the reason(s) why countries trade and the benefits derived from such transactions. The former strongly emphasizes that trade takes place due to the relative costs of production or factor endowments while the latter argues that there are many factors beyond the costs of production. Therefore, it has become imperative for countries to trade by exporting products that they have a comparative or competitive production factor(s) and importing products that are scarce domestically. Consequently, many Sub-Saharan African (SSA) countries, such as Cote d'Ivoire and Nigeria largely export primary agricultural and other products which they have abundant factor endowments (use mainly labour and materials) and import mostly processed food and manufactured commodities, which they do not have sufficient capital and technology to produce as postulated by dependency theories.

Agricultural trade is identified as among the key drivers of economic growth and development in developing countries that are willing to take advantage of the trade liberalization in the era globalization. Cocoa is the largest source of export earnings in Cote d'Ivoire, accounting for over 37% of total exports in 2015 (UNCTAD, 2016). As earlier indicated, Cote d'Ivoire is also the largest producer and exporter of cocoa beans in the world. This implies that the country has a comparative advantage in the production and exportation of this crop.

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Similarly, using Revealed Comparative Advantage (RCA) technique, Rafin (2013) finds out that Cote d'Ivoire, Ghana and Nigeria and Indonesia have a comparative advantage in producing cocoa beans in the world. Verter and Bečvářová (2014a, 2014b) and Verter (2015) argue that Cote d'Ivoire, Indonesia and Nigeria have a comparative advantage in the production and exportation of cocoa beans mainly because of the favourable tropical climatic conditions in their regions. As a result, they have taken the advantage by cultivating the crop for trade as postulated by the classical trade theories. Nonetheless, processed cocoa products still face with many bottlenecks, such as tariff escalation that impede exports and earnings in the producing countries.

Some researchers have attempted to investigate the drivers of cocoa performance (Syrovátka and Darkwah, 2008; Syrovátka, 2009; Ndubuto et al., 2010; Daramola, 2011; Amoro and Shen, 2013; Okon and Ajene, 2014; Verter and Bečvářová, 2014a and 2014b) in the major producing countries. For instance, Verter and Bečvářová (2014a) determine the factors that drive cocoa exports in Nigeria. Their results indicate that trade liberalization; global prices of cocoa beans and exchange rates spur export performance in Nigeria. They conclude that Nigeria has a comparative advantage in the production and exportation of cocoa beans to the global market. Similarly, Okon and Ajene (2014) also find a robust positive relationship between cocoa production and export development in Nigeria. In the same direction, Verter and Bečvářová (2014b) also confirm that trade and production have a positive impact on cocoa export performance in Ghana.

Equivalently, Ndubuto et al. (2010) confirm that cocoa output has a positive influence on export in Nigeria. Their results show that Nigeria has a comparative advantage in producing and exporting cocoa beans. On the other hand, findings by Abolagba et al. (2010); Amoro and Shen (2013); Verter and Bečvářová (2014a, 2014b) show an inverse connection between domestic consumption and export in Cote D'Ivoire, Nigeria and Ghana respectively.

In the same direction, Daramola (2011) finds a robust positive relationship between world prices and cocoa export in Nigeria. As expected, the results show an inverse relationship between farm gate price (producer price) and cocoa exports, as well as between exchange rate and export in the country. Arguably, an increase in producer price is likely to discourage producers from exporting their products. Akanni et al. (2004) examine the effects of free trade on the principal agricultural products: cocoa, groundnut, palm kernel and palm oil in Nigeria. They confirm that free trade has a positive connection with these export products. They employ the government to formulate policies aimed at stimulating investment in these products to increase output and export. Similarly, Amoro and Shen (2013) confirm a positive relationship between production and export performance in Cote D'Ivoire.

Empirical studies by the IMF (2016), shows that real government spending in Cote d'Ivoire is extremely sensitive to changes in revenues from cocoa exports. Even though cocoa is an important agricultural product, which serves as the largest source of export earnings in Cote d'Ivoire, empirical studies on the export performance of the crop in the country is rather scanty, thus, this article bridges the gap. The aim of this study is to assess the export performance of cocoa products in Cocoa products in the country. The study also aimed at investigating external drivers of cocoa export performance in the country in recent decades.

Materials and Methods

The statistical data for the study are obtained from the Food and Agriculture Organization of the United Nations (FAO), International Trade Centre (ITC), and the United Nations Conference on Trade and Development (UNCTAD). No other agricultural export product comes to mind more than Cocoa in Cote d'Ivoire. The study attempts to analyse the level of export trade specialization to determine trade performance of both raw and processed cocoa products in Cote d'Ivoire, using Trade Specialization Index (TSI), based on UNCTAD calculations, which is mathematically defined as follows:

$$TSI_{ji} = \frac{x_j^i - M_j^i}{x_j^i + M_j^i},\qquad(1)$$

where: TSI_{ji} is the index of trade specialization of economy j for goods i in a given period; i denotes the product or product group; j stands for the economy (nation or nation group); X_{ij} represents economy's j exports of goods i; and M_{ij} denotes economy's j imports of goods i. The range of values is between -1 and +1; the positive value signifies that an economy has net exports (thus, it specializes in the production of the particular product). Conversely, a negative value means that an economy imports more than it exports (net consumption). TSI is also known as normalized trade balance by individual product because it measures the degree of specialization in the production/consumption of goods through trade.

To determine some external drivers of cocoa export performance in Cote d'Ivoire for the period between 1980 and 2013, a general form of a regression model is specified as follows:

$$lnCEX = \beta_0 + \beta_1 lnQCP + \beta_2 WP + \\ + \beta_3 lnTOPEN + \beta_4 lnREER + \varepsilon,\qquad(2)$$

where CEX is the raw quantity of cocoa exports (tonnes), called cocoa beans. QCP is the annual quantity of cocoa bean

production (tonnes); WP is the world price of cocoa beans; it is the average daily cocoa bean prices at the New York/London (US$) markets. TOPEN denotes trade openness index ((Exports+ Imports)/Nominal GDP)*100), which is an indicator of free trade. *REER* is the real effective exchange rate index (2010 = 100). Finally, ε denotes the error term. A priori expectation is for all the variables have positive signs. These variables are chosen because they seem to have significant impacts on the export of the product.

To avoid reporting spurious regression findings, a unit root test, called Augmented Dickey-Fuller (ADF) coined by Dickey and Fuller (1979) for testing for a stationary time series data is used. The unit root test determines whether the series is stationary at the level, first or second difference. The standard ADF test is carried out by estimating after subtracting from both sides of the equation as follows:

$$\Delta y_t = \alpha y_{t-1} + x_t'\delta + \varepsilon_t \tag{3}$$

Finally, Granger causality test will be run after the unit root test. Before the Granger causality, an unrestricted vector autoregression (VAR) model will be performed. The VAR model is typically used for forecasting systems of interrelated multivariate time series data and for analysing the dynamic impact of random disturbances to the system. The mathematical representation of a VAR is as follows:

$$y_t = A_1 y_{t-1} + \ldots + A_p y_{t-p} + \beta x_t + \varepsilon_t \tag{5}$$

where y_t is a k of vector of endogenous variables, x_t is a d vector of exogenous variables, while $A_1, \ldots A_p$ and B are matrices of coefficients to be estimated in the model, and ε_t is a vector of unobservable or white noise. The most common approach for testing if there is a causal relationship between two variables is Granger causality. The model was proposed by Granger (1969) to answer the question of whether x causes y and see how much of the current y could be explained by previous values of y and then to see whether adding lagged values of x could improve the explanation. The mathematical representation of Granger causality is as follows:

$$y_t = \alpha_0 + \alpha_1 y_{t-1} + \ldots + \alpha_l y_{t-l} + \beta_1 x_{t-1} + \ldots + \beta_l x_{t-l} + \mu_t \tag{6}$$

$$x_t = \alpha_0 + \alpha_1 x_{t-1} + \ldots + \alpha_l x_{t-l} + \beta_1 y_{t-1} + \ldots + \beta_l y_{t-l} + \mu_t \tag{7}$$

This is for all possible pairs of *(x, y)* time series in the group in the Granger equation. The reported F-statistics are the Wald statistics for joint hypothesis:

$$\beta_1 = \beta_2 = \ldots = \beta_l = 0 \tag{8}$$

for the equation. The null hypothesis is that x does *not* Granger-cause y in the first regression and that y does *not* Granger-cause in the second regression.

Cocoa performance in Cote d'Ivoire

The global production of cocoa beans increased from 1.2 million tonnes in 1961 to 4.6 million tonnes in 2013. Similarly, global export also rose from 1.03 million tonnes in 1961 to 3.04 million tonnes in 2004, then fluctuated and declined to 2.72 million in 2013. This performance is recorded largely because of the high demand of the crop in the importing (consuming) economies, especially in North America and Europe, and recently, in emerging economies, such as India, China and Malaysia.

Cocoa is one of the topmost agrarian products produced and exported in four West African countries, namely, Cote d'Ivoire, Ghana, Nigeria and Cameroon. Available data from FAOSTAT (2016) shows that Cote d'Ivoire (first), Ghana (second), Nigeria (fourth) and Cameroon (fifth) are the largest producers of cocoa beans in the world. The cocoa bean output in these four countries dramatically increased from 816 thousand tonnes or accounting for 65% (Cote d'Ivoire 7%, Ghana 35%, Nigeria 17% and Cameroon 6%) of global production in 1961 to 3.1 million tonnes or accounting for 64% (Cote d'Ivoire 32%, Ghana 18%, Nigeria 8%, and Cameroon 6%) of global production in 2013. This reveals that production performance and positions of these countries have changed significantly during the period under study. For instance, Cote d'Ivoire's market share sharply increased from 7% in 1961 to 32% of global production in 2013, overtook Ghana and has become the largest producer in the world since 1978 (Figure 1).

In global trade, these West African countries are also the first (Cote d'Ivoire), second (Ghana), fourth (Nigeria) and fifth (Cameroon) largest exporters of cocoa beans in the world. Similarly, these countries' export performance also remarkably increased from 753 thousand tonnes, accounting for 73% (Cote d'Ivoire 9%, Ghana 40%, Nigeria 18% and Cameroon 6%) of global export in 1961 to 1.7 million tonnes, accounting for 63% (Cote d'Ivoire 30%, Ghana 19%, Nigeria 7% and Cameroon 7%) proportion of global exports in 2013. On country by country, just as recorded in the crop output, the export share of Cote d'Ivoire in the global market, remarkably increased from 9% in 1961 to 30% in 2013, while Nigeria and Ghana's exports reduced in the same period under study. Even though cocoa production and export in these countries have increased over the years, their global market share has slightly reduced.

Figure 1 shows the annual quantity cocoa beans produced and exported in Cote d'Ivoire between 1965 and 2013. The volume of cocoa output fluctuated but increased during the years from 122 thousand tonnes in 1965 to 1.45 million tonnes in 2013. Irregular weeding, lack of finance, inadequate or untimely fertilizer application, diseases and
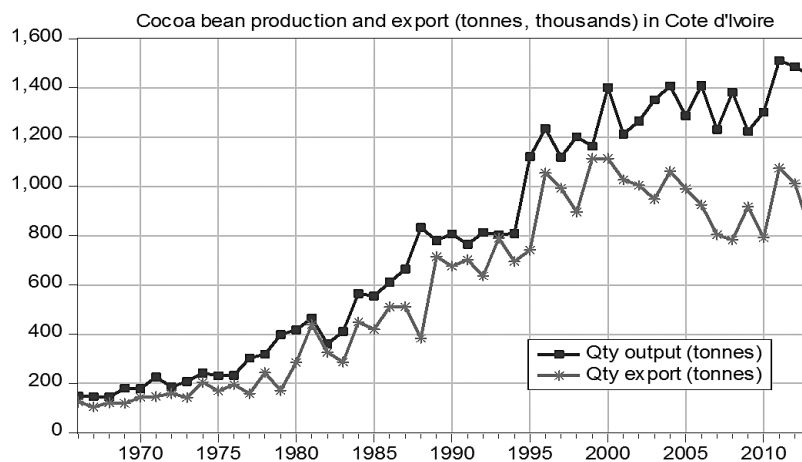
Cocoa bean production and export (tonnes, thousands) in Cote d'Ivoire

Fig. 1. Cocoa production and export (tones, thousands) in Cote d'Ivoire, 1966-2013
Source: Author's analysis based on FAOSTAT, 2016

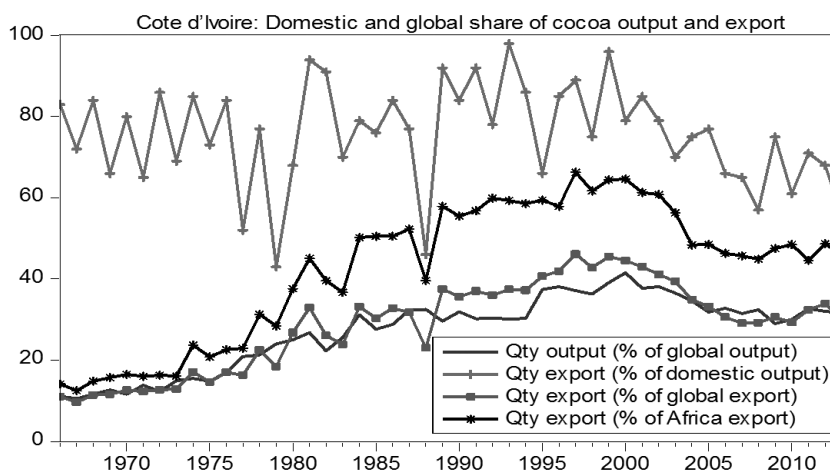Cote d'Ivoire: Domestic and global share of cocoa output and export

Fig. 2. Cote d'Ivoire: Cocoa performance (% of domestic/global output and exports), 1966-2013
Source: Author's analysis based on FAOSTAT, 2016

pests, unfavourable weather, small-scale subsistence farms (primarily rely on outdated farming practices) with high production costs, labour force, lack of improved seeds, low yield per hectare among other reasons have been identified as the factors militating drastic increase in the overall total output of cocoa beans in Africa (ITC, 2001; Verter and Bečvářová, 2014a) relative to South American producing countries (Figure 2).

The quantity of cocoa exports in Cote d'Ivoire has also slightly fluctuated in the same period under study. The quantity export increased from 122 thousand tonnes (85% of domestic output) in 1966 to 1.1 million tonnes (95% of domestic production) in 1999, and then fluctuated over the years

and declined to about 814 (56% of domestic production) thousand tonnes in 2013. Cote d'Ivoire recorded an average year-over-year of 76% cocoa exports as a percentage of domestic production between 1965 and 2013 (Figure 1 and Figure 2). This does not only signify that over 76% of the raw cocoa product is exported, but also there is a market access in cocoa products, albeit only in its primary form. It is also of great importance to emphasize that, part of the remaining cocoa beans are processed (in the form of butter, paste, powder and cake), consumed and exported, mostly within the African sub-regions. This shows that Cote d'Ivoire is likely to be exporting an average of about 80% of annual domestic cocoa beans produced. The Netherlands, USA, Germany, Spain

Table 1
Cote d'Ivoire: Cocoa Trade Performance HS (US$ millions and %), 2010 and 2014

Indicators 2014	Export ($)	Import ($)	Net trade ($)	Export (% of total exports)	Exports (% of world exports)	Export Growth (%)	Net Trade*
1800 All industries in sector 18	4627	5	4622	35.64	9.38	5	99.8
1801 Cocoa beans, whole, raw or roasted	3045	0	3045	23.45	30.45	5	00
1803 Cocoa paste, whether or not defatted	765	0	65	5.89	22.51	6	00
1804 Cocoa butter, fat and oil	462	0	462	3.56	7.85	11	00
1802 Cocoa shells, husks, skins & other waste	225	0	225	1.73	86.9	4	100
1806 Chocolate & food containing cocoa	68	5	63	0.53	0.25	-15	85.4
1805 Cocoa powder	63	0	63	0.49	2.93	-14	99.9
Indicators 2010							
1800 All industries in sector	3827	4	3823	37.21	10.14	n.a	99.8
1801 Cocoa beans, whole, raw or roasted	2493	0	2493	24.24	30.25	n.a	100
1803 Cocoa paste, whether or not defatted	602	0	602	5.85	23.97	n.a	100
1804 Cocoa butter, fat and oil	302	0	302	2.94	7.13	n.a	100
1802 Cocoa shells, husks, skins & other waste	189	0	189	1.84	70.58	n.a	100
1806 Chocolate & food containing cocoa	128	4	123	1.24	0.65	n.a	93.4
1805 Cocoa powder	113	0	113	1.1	4.16	n.a	100

Source: Author's analysis based on ITC, 2016a. Notes: *Net Trade = (X-M)/(X+M) * 100. n.a = not available

and Canada are the leading cocoa bean importing countries from Cote d'Ivoire. Similarly, some of the key cocoa processing (chocolate) companies in the world are from these countries.

Regarding export competitiveness, Cote d'Ivoire's cocoa bean export as a proportion of global exports also drastically increased from 9.6% in 1967 to 46% in 1997. Even though the share steadily decreased to 30% in 2013 and 2014, the country's share remains the highest in the world, contributing one-third of the total global supply (Figure 2, Table 1). On the contrary, the country's global share of total cocoa (both raw and processed) exports in value slightly decreased from 10.1% in 2010 to 9.4% in 2014. This may be because part of cocoa beans are domestically processed in the form of butter, paste and powder for domestic consumption and export (Table 1), albeit in small quantity.

Also, global competition may have caused these changes. Consequently, the country's share of primary exports has declined. Even though locally processed cocoa export products, such as cocoa paste, butter, powder, cake and beverages have accounted for an insignificant percentage of the total output of cocoa beans, it is more than other African producers. Interestingly, both local and neighbouring countries' markets for the processed cocoa products have been expanding in recent years. This development to some extent has provided the impetus for production, processing, value chain development and competitiveness in the sector.

The cocoa trade performance in Cote d'Ivoire as presented in Table 1 shows that the value of total cocoa products increased from $3.8 million in 2010 to $4.6 million in 2014. The table also shows that the country had a widely positive trade balance in both raw (beans) and processed (powder, butter and chocolate) cocoa products during the period under study. All the export growth rates were in positive in 2014 except for powder and chocolate. On the general note, the overall development suggests that the country's export performance has been impressive even though its global share in powder, chocolate and other food preparations containing cocoa was below expectations.

Table 2 presents merchandise trade specialization index (TSI) in cocoa and other food items in Cote d'Ivoire. The index reveals that Cote d'Ivoire has continued to record positive trade balance in both raw and processed cocoa products and overall food items. Nonetheless, it also shows a trade deficit in basic food items excluding tea, coffee, cocoa and spices. This implies that these products substantially account for the overall food export items in the country. Arguably, Cote d'Ivoire has a comparative advantage in both raw and processed cocoa products (Table 1, 2) relative to other cocoa-producing countries in Africa, such as Cameroon, Ghana and Nigeria.

External factors, such as inadequate capacity building in Sanitary and Phytosanitary (SPS) lead to low quality of cocoa, which sometimes does not comply with internation-

Table 2
Merchandise trade specialization index in Cote d'Ivoire, 1995-2012

Indicator/year	1995	2000	2005	2009	2010	2011	2012
All food items (SITC 0 + 1 + 22 + 4)	0.62	0.62	0.53	0.50	0.54	0.52	0.41
Food, basic (SITC 0 + 22 + 4)	0.64	0.64	0.56	0.53	0.57	0.55	0.45
Food, basic excluding tea, coffee, cocoa and spices	0.05	0.09	-0.16	-0.26	-0.20	-0.22	-0.20
Coffee, tea, cocoa, spices, and manufactures thereof	1.00	0.99	0.99	0.99	0.99	0.99	0.99
Coffee and coffee substitutes	1.00	1.00	0.99	0.99	0.98	0.91	0.97
Cocoa	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Chocolate, food preparations with cocoa, n.e.s.	0.74	0.81	0.95	0.93	0.93	0.90	0.85

Source: UNCTAD, 2016

al standards, volatility in the foreign exchange rate (Verter and Bečvářová, 2014a) and world prices (Syrovátka and Darkwah, 2008; Syrovátka, 2009; Daramola, 2011) trigger the demand and supply shocks in the global markets (Weymar, 1969; Gbetnkom and Khan, 2002). There is still a high tariff escalation in the major importing countries (i.e. USA, EU and Japan) in processed and semi-processed products, such as cocoa, coffee and pineapples. For instance, available data from ITC (2016b) shows that in 2015, the major cocoa importing economies (i.e. EU, USA and Japan) did not charge zero percent tax for cocoa beans from Cote d'Ivoire, whereas chocolate and other food preparations containing cocoa were charged for about 41% in the EU markets and 29.8% in Japan.

Empirical Results and Discussion

Given that time series data is prone to spurious regression results, the study carried out Augmented Dickey- Fuller (ADF) unit root test to address the issue. Table 3 presents ADF test statistics. All the variables have become stationary after first difference. As stated above, both Ordinary Least Squares (OLS) regression and Granger causality tests were run after unit root tests. Similarly, diagnostic checklist tests for the OLS regression was done, and all the classical assumptions were fulfilled (Table 4). Also, based on the information criteria, an unrestricted Vector Auto- Regression (VAR) model was used before the Granger causality estimation. To ensure the validity of the Granger test, VAR residual tests were also carried out, and all the diagnostic tests were satisfied.

The OLS regression result is presented in Table 5. The results indicate that all the explanatory variables in the model jointly influence cocoa bean export performance in Cote d'Ivoire. The results further suggest that the lagged quantity of cocoa production (QCP) has a positive impact on cocoa exports (CEX) in Cote d'Ivoire. This signifies that holding

Table 3
ADF unit root test for stationarity

Variable	Levels	ADF test Statistics
LCEX	Level	-2.162
	First difference	-7.789***
LQCP	Level	-1.298
	First difference	-8.319***
WP	Level	-1.628
	First difference	-4.002***
LTOPEN	Level	-1.192
	First difference	-5.111***
LREER	Level	-2.705*
	First difference	-5.700***

Table 4
Diagnostic test

Test	P. value
Ramsey's RESET (squares)	0.6620
Heteroskedasticity Test: White	0.237
Heteroskedasticity Test: ARCH	0.9798
LM test for autocorrelation	0.0621
Heteroskedasticity Test: Breusch-Pagan-Godfrey	0.5951
Test for normality of residual	0.2139
Non-linearity test (squares)	0.6336

other variables constant, a 1% increase in the quantity of cocoa output; its export performance may well increase by 0.88%. This result is in line with the works by Ndubuto et al. (2010); Amoro and Shen (2013); Verter and Bečvářová (2014b); Okon and Ajene (2014) who also find a robust positive connection between cocoa production and export performance in Cote d'Ivoire and Ghana respectively.

The result also confirms the direction of the annual data presented in Figure 1, which shows an average of over 76% quantity of cocoa beans produced in Cote d'Ivoire was exported between 1965 and 2013. Arguably, an increase in co-

Table 5
Determinants of cocoa (bean) export performance in Cote d'Ivoire

Variables	Coefficient	t-statistics	VIF
Cons	−0.0089	−0.3706	
lnQCP_1	0.8794	3.3543***	1.241
WP	0.0050	5.0257***	1.291
lnTOPEN	1.1657	2.1218**	1.571
lnREER	1.0773	3.5146***	1.507
R-squared	0.50	Adjusted R^2	0.42
F(6, 40)	12.83	P-value(F)	5.60e-06
Durbin-Watson stat	2.73		

Notes: ** and *** denote statistical significance at 5%, and 1% levels; VIF denotes Variance Inflation Factor (test for multicollinearity)

coa production in Cote d'Ivoire may correspondingly boost export performance in the country, holding all other factors constant. Cocoa is not only a notable cash crop and principal export commodity for West African producing economies (notably, Cote d'Ivoire, Ghana, Nigeria and Cameroon) but also it is a critical import product for consuming countries, which typically do not have favourable climatic conditions for crop cultivation. Consequently, major consuming and processing economies have to import the product as posited by some trade theories.

The results also show a positive connection between world prices of cocoa beans (WP) and cocoa export performance in Cote d'Ivoire, statistically significance at the 1% level. This signifies that all things being equal, a 1% increase in the world price may boost exports by 0.5% in the country. This result is in line with earlier studies by Daramola (2011); Verter and Bečvářová (2014a); IMF (2016) who find a positive relationship between world prices and cocoa exports in Nigeria and Cote d'Ivoire. Studies by Rafin (2013) indicate that cocoa bean export in Nigeria and Cote d'Ivoire are elastic to world price changes, while Indonesia and Ghana are inelastic to price variations in the global market. The results further confirm that world price is a major determinant of cocoa exports from Nigeria and Cote d'Ivoire.

The results in Table 5 further shows that trade openness (TOPEN) has a positive relationship with cocoa export performance in Cote d'Ivoire. Holding other factors constant, a 1% increase in trade openness proxied for trade liberalization; cocoa exports may improve by 1.2%. Trade openness partly indicates the size of the Cote d'Ivoire's integration into the global economy. This result is in line with earlier studies by Verter and Bečvářová (2014a and 2014b) who find a positive relationship between trade lib-

eralization and cocoa exports in Nigeria and Ghana. Even though agricultural commodities from developing countries, such as Cote d'Ivoire face trade barriers, regarding tariff escalation and quotas in the importing advanced economies, there is evidence of market liberalization in cocoa beans as there exists a zero tariff regime and less stringent trade regulations for the product. Consequently, Cote d'Ivoire has taken the advantage in the production and exportation of cocoa beans to the Western consumers, notably Europe and the USA.

The results also show a robust positive relationship between real effective exchange rate (REER) and cocoa export performance in Cote d'Ivoire, statistically significance at the 1% level. This signifies that all things being equal, a 1% increase in the REER may reinvigorate export performance by 1.1% in the country. This result is in line with earlier studies by Verter and Bečvářová (2014) who also find a positive relationship between REER and cocoa exports in Nigeria. On the contrary, Daramola (2011) finds an inverse relationship between foreign exchange rate and cocoa exports in Nigeria. By and large, the OLS regression results show that cocoa export performance is driven by the quantity of cocoa beans produced, the cocoa price movements in the global markets, trade liberalization and the real effective exchange rates in Cote d'Ivoire.

The results from the *Granger causality technique* as presented in Table 6 shows that all the variables in the model jointly Granger- cause cocoa export performance in Cote d'Ivoire. The result further suggests that there is a bidirectional causality running from cocoa production to export performance in Cote d'Ivoire. The result also suggests there is also a unidirectional causality running from world price to cocoa export performance in the country.

Arguably, the price of cocoa beans fluctuates at the world exchange markets, partly due to the difference in the level of global output and consumption, as well as differing levels of speculations, sometimes exacerbate supply, demand and price volatility. An increase in the world price would stimulate farmers to produce more for export, albeit only when they are compensated comparably with the world prices, which is always the case in African producing countries. Arguably, governments and traders from these countries are inelastic at increasing farm gate prices when world price increases. Also, few exporters, such as Hershey's, Cadbury and Nestle control cocoa market, and these firms still influence cocoa prices in the country.

The result also confirms a unidirectional causality running from the world prices of cocoa beans to cocoa production in Cote d'Ivoire (Table 6). This implies that the world price of cocoa products has an influence on cocoa production

in the country. A unidirectional causality is also confirmed to be running from REER to cocoa production in Cote d'Ivoire. Given that over 60% of cocoa beans is exported, the improvement in Cote d'Ivoire's currency against other major currencies in the market may lead to an appreciation of the product, which in turn might cause production to change in the country. Finally, it is worth to mention that all the variables in the model jointly Granger cause cocoa production in Cote d'Ivoire.

In conclusion, given that cocoa is widely consumed, especially in the non-cultivating countries, notably Europe and the USA, and there is trade liberalization in cocoa beans, an increase in production and world prices may as well as trigger export performance in Cote d'Ivoire. Nevertheless, tax escalation in processed cocoa products has discouraged, value added and robbed domestic producers and traders in the country from getting additional revenues from their products and businesses.

Table 6
VAR Granger causality/block exogeneity Wald test

Equation	Excluded	χ2- statistic	df	Prob.
DLCEX	DLQCP	14.70312	4	0.0054**
	DWP	18.02617	4	0.0012***
	DLTOPEN	3.760283	4	0.4394
	DLREER	3.443413	4	0.4865
	All	41.02045	16	0.0006***
DLQCP	DLCEX	15.49961	4	0.0038***
	DWP	8.642580	4	0.0707*
	DLTOPEN	5.449220	4	0.2442
	DLREER	10.68044	4	0.0304**
	All	28.20826	16	0.0299**
DWP	DLCEX	1.027430	4	0.9056
	DLQCP	4.954222	4	0.2920
	DLTOPEN	1.855091	4	0.7624
	DLREER	0.994093	4	0.9107
	All	18.86312	16	0.2758
DLTO-PEN	DLCEX	6.098791	4	0.1919
	DLQCP	2.816831	4	0.5889
	DWP	1.821008	4	0.7686
	DLREER	3.473595	4	0.4819
	All	13.78155	16	0.6150
DLREER	DLCEX	1.281171	4	0.8646
	DLQCP	1.045855	4	0.9028
	DWP	0.554494	4	0.9680
	DLTOPEN	1.557940	4	0.8163
	All	6.658015	16	0.9793

Notes: ***, ** and * indicate the rejection of the null hypothesis at 0.01, 0.05 and 0.10 significance level respectively

Conclusions

Classical trade theories maintain that nations should specialize in the production and exportation of products that they have relative factor proportions. Consequently, Cote d'Ivoire has taken advantage of its favourable climatic condition to become the world's largest producer and exporter of cocoa beans. Given that cocoa is the largest export earnings in Cote d'Ivoire, and the country as the largest producer and exporter in the world, this paper assess the level of export performance and some external drivers of cocoa export performance in the country in recent decades. Both trade specialization index and trade competitiveness indicators suggest that even though the country's performance slightly fluctuated over the years, it remains competitive and have witnessed positive direction almost throughout the years under study. Also, using OLS and Granger causality, the OLS regression results reveal that cocoa bean production, world prices, trade openness and real effective exchange rate have a positive influence on cocoa export performance in Cote D'Ivoire.

The Granger test shows that there exists a bidirectional causality running from production to export. A unidirectional is observed from world price to export, as well as from world price and exchange rates to production in Cote d'Ivoire. The government of Cote d'Ivoire and partners should create an enabling environment and some incentives to reinvigorate cocoa producers and traders by subsidizing farm inputs, and providing soft loans to improve cocoa production and export performance in the country.

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