COMPETITIVENESS AND DETERMINANTS OF COCOA EXPORT FROM NIGERIA

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Abstract: Since the introduction of Cocoa into Nigeria in about 1874, it has grown to become the fourth largest exporter in the world with production level, reaching 385, 000 metric tonnes per annum. In view of Nigeria's significant contribution and export capacity to the world volume, the study examined the competitiveness by assessing her export performance and determinants of cocoa export from Nigeria. The Revealed Comparative Analysis (RCA) and multiple regression were employed as analytical tools using data set from various institutional sources that ranged from 1990 to 2005. The outcome of the analyses revealed that Nigeria has comparative advantage in the exportation of cocoa, based on the RCA and RSCA indices. The OLS estimates showed that world export volume, exchange rate and Nigerian cocoa output were determinants of cocoa export from Nigeria. As such, the study recommended that priority should be accorded to the rehabilitation of old cocoa farms and establishment of new ones as a means of sustaining output levels. [Report and Opinion 2010;2(7):51-]. (ISSN: 1553-9873).

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Introduction

Cocoa belongs to the family *steruliacaea* and genus theobroma. It is a perennial tree crop grown in tropical climates, with over 66 per cent produced by smallholder farmers in West Africa. Since the introduction of the crop into Nigeria in about 1874 (Oyedele, 2007), it has grown to be a major export crop. Nigeria is the third largest producer of cocoa in Africa, producing about 12 percent of the total world production behind Ivory Coast which produces 35 percent and Ghana's 13 percent (Wilcox and Abbot, 2004).

At present, the production capacity of cocoa in Nigeria has reached about 385, 000 metric tones per annum, an increase of 215, 000 metric tones from year 2000 production level. This disposition places Nigeria as the fourth highest cocoa producing nation in the world after Ivory Coast, Indonesia and Ghana (Erelu, 2008). By implication, Nigeria competes favourably with other frontline producing nations in supplying the world market.

However, the production of this export crop in Nigeria has suffered a reduction in recent years owing to a number of factors (Oluyole and Sanusi, 2009). Villalobos (1989) identified some of these factors as: low yield, inconsistent production pattern, disease incidence, pest attack and use of simple farm tools. In addition, Oduwole (2004) in his study identified aging cocoa farms as one of the factors responsible for the decline in cocoa production in south western Nigeria. Many farms were over 40 years old and such farms constitute as much as 60 percent of the cocoa farms in Nigeria. Farms in South – south and South eastern zones are relatively younger and mostly in their productive phase (Oluyole and Sanusi, 2009).

As an important cash crop, cocoa plays a critical role in the economies of the major producers in Africa as a main export good and source of foreign exchange. In addition, smallholder farmers (<5 ha) typically grow cocoa, which generates work opportunities for an estimated 10.5 million Africans. In Nigeria, Cocoa is largely produced on a small scale. The average delivery per farmer is less than 5 bags (roughly 300kg per hectare of cocoa) per season. In terms of capacity, Ondo State is rated as the largest cocoa producing state in Nigeria (Oluyole, 2005).

Prior to the oil boom era in Nigeria, cocoa, cotton, groundnut, oil palm products and rubber were the principal export crops. With export re-orientation, only cocoa remained of any importance after 1975. With assistance from the World Bank, the government restored cocoa production in the late 1970s and 1980s through replanting programs and producer price supports.

Although the failure of the marketing boards in the 1990s was disappointing, it facilitated the liberalization of the cocoa market. Nigeria became the first West Africa Cocoa Producer to liberalize (in

1996), with reforms from producer and input level through the marketing chain to exporting the beans (Wilcox and Abbot, 2004). Dand (1991) had stated that less is known about Nigeria, which liberalized first, but there are reports that it has the most exporters who are still warehousing and exporting independent of the multinationals that are also present.

In view of the significant contribution and export capacity of Nigeria in the world cocoa market, it is pertinent to analyze their export performance and the level of competitiveness; estimate the determinants of its cocoa export. The above formed the major thrust of the study.

Materials and Methods

The study employed time-series data on the production, export of cocoa bean for Nigeria and the world and were obtained from the database of the Food and Agriculture Organization (FAO). The values of exports were referred to in US dollars to net out the effect of changes in exchange rate. The exchange rates were elicited from Central Bank of Nigeria (CBN) statistical bulletin. The data spanned from 1990 to 2005.

In the analysis of the export performance which employed Export Performance Ratio (EPR), the trend was estimated intertemporally. The Export Performance Ratio (EPR) was estimated to examine the comparative advantage of Nigeria in the export of cocoa, following the method used by Balassa (1965); Osuntogun *et al* (1997); Serin and Civan (2008); Kumar *et al* (2008) and stated as follows:

$$EPR = (X_{ij} \div X_{it}) \div (X_{jw} \div X_{tw}) \ldots\ldots\ldots(1)$$

Where:
X_{ij} = the value of Nigeria's exports of cocoa.
X_{it} = total value of agricultural exports of Nigeria
w = Subscript referring to world totals

EPR is based on the observed pattern of trade flows; it is called Revealed Comparative Advantage

(RCA). If EPR/RCA is greater than unity, the country has comparative advantage in export of the commodity. The RCA could be made symmetric by obtaining an index called Revealed Symmetric Comparative Advantage (RSCA). This is computed as (RCA-1/RCA+1) and it varies from -1 to +1.

In estimating the determinants of cocoa export, the regression analysis was carried out using the Ordinary Least Squares (OLS) method in line with Shende and Bhole (1999), Kumar (2004) and Kumar *et al* (2008). Beyond their approach, different functional forms were tried and the lead equation selected on the basis of best fit (coefficient of multiple determination, level of significance of the variables, signs of the coefficients, Durbin Watson estimates). [Equation 2]:

$$Yexp = a + Wexp^{b1} + Pexp^{b2} + Qpro^{b3} + E_{rate}^{b4} + U_i \ldots\ldots\ldots(2)$$

where,
$Yexp$ = Nigeria's export quantity of cocoa (tonnes)
$Wexp$ = World total export of cocoa (tonnes)
$Qprod$ = Nigeria's total output of cocoa (tonnes)
E_{rate} = Exchange rate (₦/US$)
a = Intercept
$b_i s$ = Elasticity of respective variables
Ui = Random error term

The study period spanned over 17 years (1990 – 2006) and careful attention was paid to the DW estimate to avoid the problem of autocorrelation. It is expected that Wexp, Qprod and E_{rate} would be greater than zero.

Results and Discussion
Export performance and International competitiveness

To analyze the international competitiveness and export performance of Nigeria in cocoa trade, the export performance ratio which draws heavily from the Revealed Comparative Advantage theory was estimated. The results were presented in Table 1. From the results, it could be observed that

Table 1: Revealed Comparative Advantage for Cocoa: 1990 – 2005

Year	RCA	RSCA
1990	16.17	0.88
1995	28.17	0.93
2000	22.40	0.91
2005	21.18	0.84

Source: Computed from FAOSTAT (2009)

Nigeria has been highly competitive in the export of cocoa over the period under study. The level of competitiveness increased sharply between 1990 and 1995 probably as a result of the positive response to the export policy during that period which was triggered by the Structural Adjustment Programme (SAP).

Following it was a decline between 1995 and 2000. The posture was not surprising because Nigeria had a change of government from military to a civilian government after a colossal financial expenditure on elections in the bid to democratize the nation. The RCA appreciated slightly in 2000 – 2005 owing to the economic reform of the democratic government that injected a new lease of life into the various sectors of the economy. The result is consistent with the research outcome of Osuntogun *et al* (1997) who had similar indices in their study on the potentials for diversifying Nigeria's non – oil exports to non- traditional markets. Therefore relevant and specific policies and programmes to enhance its national cocoa output and sustain its continued supply to the world market are advocated.

Determinants of Nigeria's Cocoa Export

To identify the factors affecting the export of cocoa from Nigeria, multiple regression analysis was performed. The four functional forms of the regression model namely the linear, double log, exponential and semi-log were fitted to the data by the method of the Ordinary Least Squares. Based on the statistical and econometric criteria adduced supra, the lead equation was chosen as the best fit. As shown by table 2, the exponential function was the lead equation. Attention was also given to the DW estimate in order to eliminate the doubt of autocorrelation since OLS was used. DW estimates within the range of 1.5 – 2.5 show absence of autocorrelation. Given the fact that the DW estimate (2.142) fell within the range, we conclude that the chosen function exhibited absence of autocorrelation. The result has also shown that the coefficients of total world volume, exchange rate of the Nigerian currency (Naira) against the dollar and Nigerian cocoa production (output) are statistically significant; thus explaining 70.3 percent of the variability in the export of cocoa from Nigeria as confirmed by the R^2 estimate. This also means that they are the major determinants of cocoa export. By implication, any one percent increase in the total world export triggers an increase in Nigeria's cocoa export by 3.82 percent. This result is similar to that of Kumar *et al* (2008) in their study on determinants of cucumber and Gherkin export from India. In line with a prior expectation, Nigeria's output of cocoa was also highly significant, precisely at one percent risk level. This is not surprising given the fact that Nigeria occupies the fourth position in the world in terms of cocoa exportation. This confirms our earlier result that Nigeria has comparative and competitive advantage in cocoa production and export (See RCA estimates, table 1). Exchange rate though significant has a negative coefficient and thus reflects declining productivity of Nigerian economy within the period under study vis-à-vis her weak currency. However, export price was not significant and as such, not a determinant of cocoa export from Nigeria.

Table 2: Determinants of Cocoa Export from Nigeria

Variables	Linear	Double Log	Semilog	Exponential
Constant	46152.819	-1.321	-19999.58	11.280
	(0.624)	(-0.207)	(-2.001)*	(28.094)***
World Exp Volume	0.061	1.046	193299.8	3.820
	(3.050)***	(2.085)**	(2.091)*	(22.081)***
Export Price	-14.352	-0.138	-13015.9	-5.711
	(-0.733)	(-0.548)	(-0.282)	(-0.688)
Exchange rate	338.417	0.044	9781.273	-5.739
	(1.985)*	(0.583)	(7.104)***	(-2.725)***
Nigerian Cocoa Output	-0.062	-0.056	-13563.8	5.771
	(-0407)	(-2.800)***	(-1.045)	(2.509)***
R^2	0.691	0.682	0.669	0.703
F- ratio	6.698	6.432	6.077	7.094
DW	2.041	2.101	2.089	2.142

Source: Computations from FAOSTAT (2009) CBN (2007) and NBS (2008)
Note: *, ** and *** are significance at 10 %, 5% and 1% probability (risk) levels. Values in parentheses are t-test estimates.

Conclusion

The study has revealed that Nigeria has a high comparative advantage in the exportation of cocoa and as such is highly competitive. It is therefore absolutely necessary that government needs to step up efforts in ensuring that the old cocoa plantations are rehabilitated while establishment of new ones should be accorded top priority. The essence is to sustain or rather surpass export quantity; earn more foreign exchange and strengthen the purchasing power of our currency. Besides, the goal of diversifying Nigerian economy will be achieved.

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