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Effects of Trade Liberalization on the Production and Export Performance of Groundnut in Nigeria

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Abstract
The study was carried out to examine the effects of trade liberalization on the production and export performance of groundnut in Nigeria. Secondary data were used to obtain information on groundnut. The data were analysed by trend and the regression analysis model. The data analysed covered a period of about 40 years from 1969 – 2009 which was sub-divided into two sections tagged pre-liberalization period (1969/1970 to 1984/1985) and liberalization period (1985/1986 to 2008/2009). The results from empirical analysis showed that the mean quantity of groundnut produced during the liberalization period was higher than that of the pre-liberalization period by approximately 1,246,550 tons. The coefficients of the trend variables for quantity of groundnut export in the pre and during liberalization regime were significant at 1% respectively, which implies that the growth in groundnut output was highly time dependent. There was also a direct relationship between the quantity of groundnut output and population, which were significant determinants of groundnut output in Nigeria in the pre and during liberalization. Based on the findings, it was recommended that reassessment of the country's trade liberalization policies and their effectiveness should be considered by the government.

Keywords*: export performance, output, production, quantity, trade liberalization*

1. Introduction

Groundnut (*Arachis hypogaea* L) also known as peanut, is one of the world's principal oil seed crops. Groundnut originated from South America, but is now widely cultivated throughout the tropical, sub-tropical and the warm temperate areas. The production of groundnut in Nigeria started around 1912. This was in response to the high world prices. Since then, Nigeria was prominent among world producers. In the fifties, Nigeria was among the leading exporters of groundnut. It took the lead as the largest producer and exporter of groundnut in the sixties with a production of 500,000 metric tons per year (CBN, 2003). Nigeria reached a peak production of 1.6 million metric tons in 1973. While, in less than a decade production had declined to about 800,000 metric tons due to a combination of two important factors. First, the drought of 1974/75 growing season, which brought with it aphid infestation, wiped more than 750,000 hectares of groundnut fields. This brought tremendous loss to both farmers and merchants. Second is the coincidence of oil boom in Nigeria about the same time (Ntare *et al.*, 2005). The loss from groundnut and the availability of oil money transformed groundnut merchants to government contractors. Government on its part equally shifted its attention from agriculture to the oil industry. The crushing down of oil prices in the eighties reduced government revenue from oil and forced to adopt stringent measures. One the prominent measures was the Structural Adjustment Programme which led to the dismantling of commodity marketing boards including groundnut. Since the liberalization, groundnut marketing structures have been dismantled and the private sector has taken over. This left farmers without assured and ready markets and prices. Farmers adopted different strategies to cope with the situation and one of the strategies was shifting from groundnut to other crops. This had major effect on the production of the crop. But, recent evidence had showed that groundnut production in Nigeria is picking up again.

Groundnut is an economic crop which is been used for many purposes. The haulms are important folder for livestock, especially sheep and goat and particularly ram. Through its biological activities, the plant fixes

nitrogen into the soil, which is an important soil fertility conserver. The nuts are consumed roasted, boiled or as confectionary, snack nuts, peanut butter or in cookies. The nuts are crushed to produce oil which is principally used for cooking. But is also used for other industrial purposes such as; pharmaceuticals as carrier and cosmetics. It is useful to produce margarine. The by-product, meal (cake) is used for both human and livestock consumption. In other major producing areas in Nigeria, groundnut is largely a smallholder crop, grown under rainfall conditions in semi-arid areas. Although it is also grown in commercial farms in America and Europe, the developing countries, with their small-scale production, account for over 94 and 95 percent of world groundnut area and production respectively (Nigam *et al.*, 1999). Production is concentrated in Asia and Africa. Asia accounts for 60 and 70 percent of world area and production respectively. India (35% area, 28% production) and China (17% area, 34% production) are the major producers in Asia. Africa accounts for 35 percent of the global area but only 21 percent of the production. The major producers in Africa are Senegal, Nigeria and Sudan. The other major world producers are USA and Argentina.

Nigeria's groundnut featured prominently in world trade accounting for 29% of Africa export and 12% of the world export. In the 1950s, Nigeria contributed 50% of the African export and 30% of the world export (Ndiame *et al*., 2004). Agricultural exports decreased in quantity after 1970 partly because of the discouraging effect of low world prices. It also important to note that the agricultural sector has not been the only sector in decline, before the trade liberalization policy in the 1980, the manufacturing sector constituted 17% of total Nigerian GDP, as at 2006 manufacturing had drop to a pitiable 3% contribution to total GDP and productivity in the industrial sector has also continued to fall. The study of trade liberalization which has dominated conventional wisdom in recent years as far as economic policy has been linked with economic growth by various studies. Trade policy since the 1960s has witnessed extreme policy swings from high protectionism in the first few decades after independence to its current more liberal stance (Adenikinju, 2002). The main thrust of trade policy is therefore the enhancement of competitiveness of domestic industries, with a view to, inter alia, stimulating local value-added and promoting a diversified export base. The Trade liberalization policy in Nigeria was initiated principally to support the agricultural sector in general and agricultural export. Specific trade liberalization measures include: the removal of bureaucratic controls on trade, the import licensing system and the exchange control on all current transactions. Agricultural trade liberalization essentially encompasses reforms in the trade and exchange rate domains and this involved liberalization of the exchange rate, relaxation of import restrictions, trimming of the import prohibition list and reduction of tariffs on imports. These measures were intended to expose local producers to international competition and fair trade in the spirit of the tenets of the World Trade Organisation (WTO). In quantitative terms, China is now the world largest exporter of groundnut, with 32% of world edible groundnut exports, followed by the USA (19%) and Argentina (10.5%). Sub-Saharan Africa (like Senegal, Gambia, Nigeria, Malawi, South Africa and Sudan) has lost most ground in the world edible groundnut markets, and collectively now accounts for only 5% of the world (Ndiame *et al*., 2004). Though Nigeria once was a leading exporter of groundnut in the world, but it lost out and is currently not listed among the world major exporters due to production and marketing problems. Nigeria's groundnut is exported only to the neighbouring West African countries (Akanni, *et al*., 2009). Therefore, this study is specifically aimed to examine the economic performance of groundnut production and its export to boost the Nigerian economy.

2. Methodology

2.1. The study area

This study was carried out in Nigeria. Nigeria is a West African country, Sub-region of Sub-Saharan Africa; between Latitudes 4^0 to 14^0 North and Longitudes 2^02' and 14^030' East. Agricultural holdings are generally small and scattered, farming is often of the subsistence variety characterized by simple tools and shifting cultivation. These small farms produce about 80 percent of the total food. About 30.7 million hectares (76.75 million acres) or 33% of Nigeria's land area are under cultivation. Nigeria's diverse climate from the tropical areas of the coast to the arid zone of the north make it possible to produce virtually all agricultural products that can be grown in the tropical and semitropical areas of the world. The country is well endowed with expansive arable and fertile lands. It is bordered by the sea to the south and has several rivers, streams,

lakes, forests and grasslands. The climate and soil types vary across the regions that allow ecological specialization. Five ecological zones influenced by the climate are identifiable namely as Mangrove swamp, Rain forest, Forest savannah, Guinea savannah and Sudan savannah. Nigeria has an active and vibrant population of over 150 million people. Thus, it is well positioned to be self-sufficient in the production of food and cash crops for local consumption and export as well as raw materials for her industries (CBN, 1995). Groundnut, cocoa and palm oil constitute Nigeria's main cash produce. Cocoa is grown in the South West including Cross River, the principal commercial crops from the North is groundnut while palm oil is produce from the South East and South-Central area of the country. Nigeria is generally endowed with abundant natural resources, numerous all-season rivers and a favorable tropical climate. Rainfall is generally adequate and well distributed throughout the country. Out of the 98.321 million hectares of land available in Nigeria, about 75.30% may be regarded as arable land, 10% is under forest reserves and the remaining 13.02% is assumed to be made up of permanent pastures, built up areas and uncultivable waste (Olajide and Olayemi 1972). In the light of the foregoing, agriculture is still a major sector as well as remains of the cornerstone of the Nigerian economy.

2.2. Method of data collection

The study made use of secondary data. Data on groundnut production and export performance were obtained from various publications of the Central Bank of Nigeria (CBN), National Bureau of Statistics (NBS), publications of the Government of Nigeria, Food and Agricultural Organisation of the United Nation (FAO) and United Nations websites. The secondary data used in the research covered the period 1970 to 1985 for the pre-liberalization period and 1986 to 2009 for the liberalization period.

2.3. Analytical techniques

i. Data were analysed through the use trend analysis model. The exponential trend or log linear trend were also employed in line with Onyenweaku and Okoye (2005; 2008) and it is fitted as:

$$\text{In}Y_{it} = \beta_0 + \beta_1 t + e_{it} \quad (1)$$

$$\text{In}\ Q_{it} = \beta_0 + \beta_1 t + e_{it} \quad (2)$$

Where,

$\text{In}Y_{it}$ = output of the selected agricultural cash crop (e.g. groundnut) measured in tonnes.
$\text{In}\ Q_{it}$ = export of selected agricultural cash crop (groundnut) measured in tonnes.
β_0 = the constant in the regression line.
β_1 = the trend coefficients.
t = trend measured in years.
e_{it} = the error term.

The compound growth rate equation was given as:

$$r = (e^{\beta} - 1) \times 100 \quad (3)$$

Where,

e = Euler's exponential constant (2.71828).
β = estimated coefficient in equations (i) and (ii) respectively.

To achieve this, t- distribution was used. A paired sample t-test was employed to test for differences between the mean values and growth rates of output and of groundnut in the pre and during liberalization.

The t- statistic is given as;

$$T = \frac{X_i - X_j}{Sp^2(1/n_i + 1/n_j)} \quad (4)$$

Where, Sp^2 is pooled variance given as;

$$Sp^2 = \frac{(n_i - 1)S_i^2 + (n_j - 1)S_j^2}{n_i + n_j - 2} \quad (5)$$

X_i = output and export for groundnut in the pre-liberalization period.
X_j = output and export for groundnut in the liberalization period.
n_i = number of output and export for groundnut in the pre-liberalization period.
n_j = number of output and export for groundnut in the liberalization period.
S_i^2 = variance of output and export for groundnut in the pre-liberalization period.
S_j^2 = variance of output and export for groundnut in the liberalization period.
$n_i + n_j - 2$ = degree of freedom.

ii. Data were also analysed using a regression model for the determinants of groundnut export performance in the pre-liberalization and liberalization periods were specified in its implicit form as;

$$\lambda_t = f(PPQ_t, Q_t, REXR_t, WPQ_t, DUQ_t, TREND_t) + e_i \quad (6)$$

Where,
λ_t = export quantity of groundnut in the current period t in (tonnes);
PPQ_t = average producer price of commodity *i* (Naira /tonne);
Q_t = output quantity of groundnut in the current period t in (tonnes);
$REXR_t$ = real exchange rate (₦/$) in period;
WPQ_t = world price of commodity *i* (Naira /tonne);
DUQ_t = domestic utilization of commodity *i* (tonne);
$TREND_t$ = linear trend time (T = 0, 1...15 in the pre-liberalization period and T = 0, 1--23 in the liberalization period), a proxy for technology, which measures productivity effect;
i = stance for groundnut;
e_i = error term.

3. Results and Discussion

Table 1: Test of significance of mean of groundnut output in the pre-liberalization and during liberalization periods

Samples	Mean	Std. Dev	Std. Error Mean	DF	t-statistic
Production/ Output Quantities of Selected Cash Crops (tonnes)					
Pre-Liberalization Groundnut[a]	999375.000	7.57065E5	1.54535E5		
During Liberalization Groundnut[b]	2.2459E6	1.14150E6	2.33007E5		
(a-b)	-1.24655E6	1.82267E6	3.72052E5	23	-3.350***

Note: ***, ** and * represent 1%, 5% and 10% significance levels respectively. a-b represents paired sample differences.

Evidence from the t-test results in the above table shows that the mean quantity of groundnut output varied in the two periods. The mean output quantity of groundnut increased by approximately 1.25 million tonnes during the liberalization period more than during the pre-liberalization period. There was a significant difference in the mean quantity of groundnut output between the two periods. This indicates that liberalization may have led to an increase in the production of groundnut in Nigeria. Also, there were variations in the average growth rate of groundnut output in the two periods. The mean average growth rate

of groundnut output in the liberalization period was higher than that in the pre-liberalization period; and, there was a significant difference in the mean average growth rate of groundnut production in the two periods. This indicates that liberalization may have led to an increase in the growth rate of groundnut production.

Table 2: Estimated trend equations for exports of groundnut pre-liberalization and during liberalization periods

Variables/Periods	**B_0**	**B_1**	**R^2**	**Adj.R^2**	**F-Ratio**
Trend in Groundnut Export					
Pre-Liberalization Period	13.1	0.038	0.846	0.839	71.289***
	(109.9)***	(11.0)***			
During Liberalization Period	13.5	-0.033	0.229	0.221	3.056**
	(81.8)***	(-1.8)*			

Note: ***, ** and * represent 1%, 5% and 10% significance levels respectively. Figures in brackets are t-values.

The above table shows significant changes in the quantities of groundnut exported within the two periods (pre-liberalization and during liberalization periods). The estimated coefficient of the time variable was positive and statistically significant at 1% with respect to quantity of groundnut export in the pre-liberalization period. This implies that time trend variable was a major factor in determining quantity of groundnut exports in pre- liberalization period and thus, quantity of groundnut significantly increased in the pre-liberalization period. Also, the coefficient of multiple determination is high (R^2=0.84) and significant ($p<0.01$) in the pre-liberalization period for significant growth in groundnut exports. This implies that growth in groundnut export was very time dependent in the pre-liberalization period. However, the estimated coefficient of the time variable was negative and statistically significant at 10% with respect to quantity of groundnut exports during the liberalization period, indicating significant decreases (or reduction) in groundnut export within 1986 – 2009 period. This implies that time trend variable may not solely be a major factor influencing the quantity of groundnut exports during the liberalization period. Thus, implementation of liberalization policies like the abolishment of the commodity boards and devaluation of naira may not have favoured groundnut exports as expected especially considering the increase in domestic utilization of these cash crops in the face of an ever-increasing Nigeria population. Other significant contributors to the decline in groundnut export could have been the consumption of more arable land for building of roads, houses, parks, universities; etc by the Government in regions of the country where these crops are domiciled as well as the environmental burden of other anthropogenic activities resulting from rapid population expansion and urbanisation, which ultimately lead to a reduction in arable land for the cultivation of these crops. The coefficient of multiple determinations is low in the above table (R^2=0.23) although, significant ($p<0.05$) during the liberalization period for significant growth in groundnut exports. This implies that growth in groundnut exports are weakly time dependent which could be suggestive of the impact of a surge in domestic demand pressure on groundnut production in the country. Therefore, low yield, inconsistent production pattern, low adoptive tendencies to improved technology in groundnut production, high rate of dissertation of groundnut farming caused by rural-urban migration, disease and pest incidence, aging of groundnut farms and the prevalence of redundant workers in groundnut farm sector may give justification to the decrease in groundnut export despite the implementation of liberalization policy in the country.

4. Conclusion and Recommendations

In conclusion, it was observed that the Nigeria's dominance on the agriculture during colonial era provided a recipe for the disaster that followed soon after their exit in the absence of vital structures to sustain focused commercial production of groundnut. The numerous policies of liberalization meant to turn around the fortunes of Nigeria's groundnut production but due to incompatibility of the policies with Nigeria's climate, social peculiarities, poor planning and implementation procedures of the government and implementing

partner could not sustain its dominance. Liberalization was noted not to alter the course of Nigeria's groundnut production and export as the growth of both accelerated significantly irrespective of the implementation of liberalization. Also factors such as real exchange rate, the world price of groundnut, government capital expenditure on agriculture, and population growth among other trend variables were found to be major players in determining the production performance and export of groundnut from Nigeria before the advent of liberalization while factors such as area harvested of groundnut, population, producer price of groundnut, real exchange rate among other trend variables combined with liberalization to impact on groundnut production and export. The result as shown by trends observed from this research is that production and export of groundnut in Nigeria is becoming weaker while domestic utilization pressure increases and soon Nigeria may be at the threshold of unfathomable groundnut insecurity and comparatively disadvantaged in world market for groundnut.

The current implementation process of liberalization needs to be reassessed for efficacy and compatibility with policy package restructured to target accelerated growth rates in groundnut production. There is need to advocate the removal or simplification of administrative controls and government interventions in the production and export of groundnut and efforts should be channeled to privatized commercial groundnut production to boost the output level of groundnut geometrically to keep pace with their domestic utilization occasioned by population growth.

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