THE ECONOMIC IMPLICATION OF OIL BOOM ON AGRICULTURAL EXPORTS TRADE INSTABILITY IN NIGERIA: AN EMPIRICAL STUDY

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ABSTRACT
The central issues with which this study is concerned revolve around the major determinants of agricultural export instability in Nigeria. Specifically, the study examined the relationship between oil export and the agricultural export performance in Nigeria. In trying to achieve this objective, an ordinary least square multiple regression approach was adopted for the data analysis. Some statistical tools were employed to determine the statistical significant relationship between these variables. The analysis started with the test of stationarity and co-integration of Nigeria’s time series data. The empirical study found that the data were stationary and co-integrated. The multiple regression results showed a significant but negative relationship between oil export and the agricultural export performance in Nigeria. These results were robust to a number of econometric specifications. Our findings and conclusion support the need for the government to diversify the oil sector and encourage agriculture through incentives to farmers, mechanization and positive policy measures. In complement of the above, it is important for the government to consolidate and maintain export incentives comprising a duty draw-back scheme, explicit export bonuses, currency retention scheme and other direct fiscal incentives (such as the exemption of export transactions from stamp duties).

Keywords: Agricultural export, oil export, oil price shocks, trade openness, Exchange rate, Export prices and Dutch disease.

INTRODUCTION
Export instability is defined as the year to year fluctuations in exports figures. Quantitatively, it can be defined as the difference between the actual and estimated value of exports, expressing this difference as a percentage of average value of exports. According to the United Nations Secretariat in its 1952 study," Instability in export markets of underdeveloped countries", instability index is the absolute difference in the value of export from year to year, expressing this difference as a percentage of larger of the two annual values. The agricultural exports have been unstable in Nigeria over the past four decades. Prior to the discovery of oil and the oil boom of 1973, agriculture was the dominant sector of Nigerian economy, contributing about 70% of the Gross Domestic Product (GDP), employing about the same percentage of the working population, and accounting for about 90% of foreign earnings and Federal Government revenue. During this period, Nigeria was a major exporter of cocoa, cotton, palm oil, palm kernel, groundnuts and rubber, and in the 1950s and 1960s, 3% – 4% annual output growth rates for agricultural and food crops were achieved. Government revenues also depended heavily on taxes on those exports. Thus, during the period, the current account and fiscal balances depended on the agricultural sector. With the advent of oil, the share of agriculture in GDP declined to 24% by 1987, before increasing to 27% in 1990 Consecutively, between 1970 and 1974, agricultural exports as a percentage of total exports declined from about 43% to slightly over 7%. The major cause of this development was the oil price shocks of 1973 – 1974 and 1979, which resulted in large receipts of foreign exchange earnings by Nigeria and the neglect of agriculture (World Bank 1989).

Despite this downward trend, the sector still plays a leading role in the economy. About 75% of the active labour force is engaged in agriculture, and 85% of the total population of the country derives their livelihood from it. This strength comes principally from the export crop subsector, which is based on cocoa, cotton, palm...
oil, palm kernel, groundnuts and rubber. The first three of these cash crops account for the lion’s share of agricultural export earnings. Before 1973, they contributed 65% of total exports and 88% of agricultural export revenue, with 45% for cocoa, for 23% cotton and 13% for palm oil. After 1973, their contribution declined drastically. In summary, in the first decade after independence (i.e. 1960s), Nigeria experienced considerable growth in production and in earnings from agricultural exports. Between 1970 and 1980, agricultural output declined by 24.2% (World Bank, 1989). However, since 1980, this performance has not only slowed down, but has been highly unstable. The oil price shocks of 1973 – 1974 and 1979, the collapse of export commodity prices, distorted macroeconomic and agricultural policies prevailing in the environment, world recession, and production bottlenecks all acted negatively on output and agricultural export performance in Nigeria. However, oil’s dominance of the country’s export basket which began in 1973/74 was greatly magnified during the 1980s. The crux of the problem was that while oil export was growing, non-oil exports were declining making the dominance much more rapid and pervasive (Osuntogun, Edordu, Oramah 1998). Teal (1983), for example, estimates that the output of export crops grew at an average annual rate of 4.7% in 1950 – 1957 and 7.4% in 1960 – 1965, then declined by 17.3% in 1970 – 1975. These events led to the transformation of Nigeria from a net exporter of agricultural produce to a large-scale importer of the same commodities. According to Oyejide, (1986) the nominal non-oil export earnings fell from N363.5 million in 1973 to N203.2 million in 1982. The decline was even more dramatic in real terms. Oil exports in contrast rose phenomenally, from about N2 billion to about N8 billion in nominal terms during the same period. The efforts to reverse these trends (begun in 1986) seem to be yielding very few results, as oil continues to dominate the country’s exports. This situation has been worsened by macroeconomic policy adopted in Nigeria in 1986. Since the introduction of structural adjustment programme (SAP) the non-oil exports share of Nigeria’s total exports have remained under 5% for most years. The only noticeable improvements are that the decline of the non-oil sector seems to have been arrested and that a number of non-traditional exports seem to have emerged in Nigeria’s export basket including horticultural products, garments, textiles, furniture components and other manufactures.

In compliment to the above, the government sequentially put in place a number of policy reforms and incentives to encourage the production and export of non-oil tradable as well as broadening Nigeria’s export market. Nominal naira exchange rate devaluation, strict fiscal discipline, controlled monetary expansion and a more liberal trade policy were initially introduced to ensure a depreciation of the real exchange rate facing exporters. These were followed by the introduction of export incentives comprising a duty draw-back scheme explicit export bonuses, currency retention scheme and other direct fiscal incentives (such as the exemption of export transactions from stamp duties). Having ensured that appropriate macroeconomic and sectoral incentives had been instituted, the government established the Nigerian Export-Import Bank (NEXIM) in 1991 to provide necessary financial and risk management support to the export sector (Osuntogun, Edordu, Oramah 1998).

The foregoing description of various agricultural policies during the period under consideration represents an approximate measure of the degree of government concern for the domestic agricultural export commodity markets. But despite the enormous macroeconomic reforms, the output and export of agricultural crops have not yet regained a straight and sustained upward growth trend. This suggests big challenges for agriculture export subsector in Nigeria.

The Problem and the Objective of the Study

The consequent decline and instability in the agricultural exports as a result oil boom in Nigeria can be described by the term ‘Dutch disease’. The Dutch disease phenomenon used to analyze the effects of commodity booms in terms of “spending” and “resource movement” effects (Harberger, 1983). According to Pinto (1987), the “spending effect” operates as follows: in the non-oil economy, both tradable and non-tradable are produced (tradable are used here to refer to tradable other than oil). Let $r$ denote the relative price of tradable to non-tradable (the real exchange rate). Assuming tradable and non-tradable are normal goods, the demand for both increases following a rise in real income associated with the oil boom. Equilibrium can be described solely in terms of market clearing for non-traded goods, for which domestic demand must equal domestic supply. The excess demand for non-traded goods that arises following the boom can be eliminated by a rise in their relative price, that is, a fall in $r$ (real exchange rate appreciation). This draws resources out of the tradable sector into the
non-tradable sector, so that non-tradable output rises and tradable output falls. As pointed out by Pinto (1987), there is, strictly speaking, a “Dutch disease” in Nigeria since the oil boom has swallowed up the roles and the contributions of agricultural subsector. The “Dutch disease” effects is however linked to the crowding-out of agricultural exports which was amplified by the upward trend of crude oil’s world price from the 1980s, and considerably increased the oil share in the country’s total export earnings. Available data show that Nigeria is now a large-scale importer of the agricultural produce it used to export in the past. The fact that the circumstances has led to the transformation of Nigeria from a net exporter of agricultural produce to a large-scale importer of the same commodities is all the more worrisome.

Nevertheless, the possible solution to these phenomena will depend, among others, on the knowledge of determinants of agricultural export instability. Accordingly, a better understanding of the determinants of past performance compared to the present decline and the direction and magnitude of the relevant elasticities is desirable. This is particularly important considering the fact that the industrial sector of the country is not prosperous. Also, it has been noticed by many cocoa and cotton producer forums that the consumption of these crops is not saturated in the world, contrary to common belief. China and other Asian countries constitute an important source of demand for these products. The overall objective of the study is therefore to assess empirically the oil boom as the major determinants of agricultural export instability in Nigeria. The paper is therefore organized as follows. Following the introductory section, Section 2 reviews the literature. The methodology of the study is discussed in Section 3. An econometric analysis of the major determinants of agricultural export instability in Nigeria is considered in Sections 4. Finally, Section 5 presents the summary and conclusions of the paper.

LITERATURE REVIEW
The central issues with which this study is concerned revolve around the major determinants of agricultural export instability in Nigeria. In connection with this, we review some theoretical and empirical issues relevant to this core objective.

It is generally agreed that, excessive fluctuations in export trade originate from variations in supply or demand or other economic and non-economic factors. But most of the recent studies based on statistical evidence conclude, though inclusively that instability index of exports are largely correlated with the quantity of agricultural produce for exports; with the proportions of exports receipts obtained from the sales of primary goods; with per capita income; with the concentration of exports by geographical area of destination and with the exchange rate prevailing in a country. Furthermore the oil price shocks, export commodity prices, macroeconomic and agricultural policies prevailing in the environment, world recession, and production bottlenecks all determine output and agricultural export performances. Some empirical studies which are reviewed here for the purpose of study, such as those of Murray, (1978) Osuntogun, Edordu, Oramah (1998), Macbean (1966), Coppock (1962) and Voivodas (1973) questioned, supported and even refuted some of these determinants and cast serious doubt about their general applicability both in the long and short run. Osuntogun, Edordu, Oramah (1998) studied the causes of export instability in Nigeria. He found that the oil price shocks of 1973 – 1974 and 1979, the collapse of export commodity prices, distorted macroeconomic and agricultural policies prevailing in the country, world recession, and production bottlenecks all acted negatively on output and agricultural export performance in Nigeria. He stressed further that the oil’s dominance of the country’s export basket which began in 1973/74 was greatly magnified during the 1980s. The crux of the problem was that while oil export was growing, non-oil exports were declining making the dominance much more rapid and pervasive. Macbean, on the basis of a cross sectional study of 35 less developed countries, covering the period 1950 to 1958 and using Coppock's data, e.g., finds that there is no evidence of systematic significant association between: i. The magnitude of fluctuations in national income and exports, and ii. The growth rate of gross domestic product (GDP) and export instability, and hence concludes that instability of exports, in general, is not detrimental to the stability and the long run growth of LDCs. Macbean's findings are in close conformity with those obtained by Coppock who found an insignificant relation between the export instability index and the rate of growth of GNP. Stern (1969) did a time series study in the context of Pakistan economy. Using data covering the year’s 1957/58 to 1967/68, he regressed commodity concentration on instability index of exports, and found
the coefficient of commodity concentration to be positive and statistically significant. The commodity as well as the geographic concentration index of exports is the Gini-Hirschman coefficient of concentration on exports. These can be calculated by using the formula given in the methodology of this study. Thus, this time series study at least supports the positive relationship between instability of export earning and commodity concentration. Paudyal (1988) by using the data from year 1956/57 to 1981/82 of Nepalese economy, attempt to analyzed export instability in Nepal in terms of export concentration by commodity and country of destination. In this study, he found the positive relationship between export instability and commodity and geographic concentration. However, due to the very low value of coefficient of determination, adjusted $R^2=0.135$, these variables cannot be considered as strong explanatory variables for instability index of export of Nepal.

In the large volume of literature on export instability, there are divergence views and there is no consensus. This is basically because export instability is peculiar to the environmental factors prevailing in a country rather than general factors. Thus case by case study of each country is preferred. This study therefore delves deeply into Nigeria as a case study and examines the major macroeconomic variables that explain export instability.

**METHODOLOGY AND MATERIALS**

This section presents the sources of data used in this study and the analytical techniques.

**Research Design and Strategy**

Research design is the structure and strategy for investigating the relationship between the variables of the study. The research design adopted for this work is the experimental research design. The reason is that experimental research design combines the theoretical consideration with empirical observation. It enables us therefore to observe the effects of explanatory variables on the dependent variables.

**The Model**

To determine the model for the major determinants of agricultural export instability in Nigeria, we first consider an aggregate supply model of an economy normally written as:

$$y = y(L, k, R; T) \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ldots \ld
AGREI = Agricultural Export Instability
TROP = Trade Openness
OILEXP = Oil Price Shocks
NEXR = Nominal Exchange Rate
EXP = Export Prices
CLIM = Climatic Conditions

Equation 3 could be expressed in a linear form as
AGREI = \rho_0 + \rho_1 TROP + \rho_2 OILEXP + \rho_3 NEXR + \rho_4 EXP + \rho_5 CLIM ……………………..4

Econometrically, to include random term, the model is expressed as:

AGREI = \rho_0 + \rho_1 TROP + \rho_2 OILEXP + \rho_3 NEXR + \rho_4 EXP + \rho_5 CLIM + \mu_t ……………………..5

Where \mu_t = Error Term.

This model implies that the Agricultural Export Instability will negatively or positively be related to trade openness, Oil Price Shocks, nominal exchange rates, agricultural export prices and Climatic conditions in Nigeria.

**A Priori Expectations**

From the model, the a priori expectation may be mathematically denoted by:

\rho_1 > 0, \rho_2 < 0, \rho_3 > 0, \rho_4 < 0 and \rho_5 > 0

In line with national income model, trade openness is the policy parameter that to a large extent; theoretically determine the Agricultural Export Instability. Thus trade openness is expected to have positive impact on Agricultural Export Instability. Thus we expect the coefficient of trade openness to be positive i.e. \rho_1 > 0. Oil Price Shocks is expected to decrease the nation’s capacity to produce agricultural crops and consequently make negative impact on agricultural Export. Thus we expect the coefficient of Oil Price Shocks to be negative i.e., \rho_2 < 0. Also, in line with classical theory of trade, when exchange rate deteriorates against the local currency, it makes export cheaper and reduces the supply of agricultural crops. Thus we expect the coefficient of exchange rate to be negative i.e., \rho_3 < 0 and vice versa. According to the law of supply, the higher the price, the greater the quantity that will be supplied. When the price of tradable export rise, its supply tends to increase. Thus we expect a positive relationship between Agricultural Export and export prices i.e., \rho_4 > 0. Finally good climatic condition is expected to boost the production Agricultural produce. Thus we expect the coefficient of climatic condition to be positive i.e., \rho_5 > 0.

**Type and Sources of Data**

**Data sources**

Secondary data were used for this study. The Secondary data were obtained from Nigerian Export-Import Bank, Federal Office of Statistics, Central Bank of Nigeria, African Development Indicators, website, Journals and Newspapers, Food and Agriculture Organization of the United Nations, International Monetary Fund, and World Bank publications.

**Data Processing Technique**

Since the study make use of time series secondary data, our data analysis involves: (i) checking the temporal properties of the variables in the model via unit root tests in order to determine the stationarity of the variables (e.g. Augmented Dickey-Fuller (ADF) or Phillips-Perron (PP) tests); (ii) determination of a meaningful long-run equilibrium relationship among the variables, that is, determine if the variables in the equation are co integrated (e.g., Engle-Granger’s single equation or Johansen’s multi-equation methods) test; (iii) estimation of the dynamic (short-run and long run) regression equation for the model (i.e., the error correction model estimated by OLS, Instrumental Variables test, etc.) and (iv) the application of a series of diagnostic tests to determine the sturdiness and significance of the empirical model (i.e standard error test, correlation coefficient test, serial autocorrelation test.)
The secondary data used for the study were processed using E-view for windows econometric packages. The E-view is preferred to the SSPS because it enables us to have data corrected. It involves the use of Error Correction Mechanism (ECM) to overcome the problem of spurious regression. The ECM reveals that the change in a variable at time $t$ is not only dependent on lagged changes in its independent variables, but also on its own lagged changes. It is appealing due to its ability to induce flexibility by combining the short run and long run dynamics in a unified system. Also, the estimates of the parameters of the ECM are generally consistent and efficient.

DATA ANALYSIS, RESULTS AND DISCUSSIONS

Stationarity and co integration Test

Table 1 shows the summary of the unit root test of the variable used for empirical study. The test shows that; agricultural export, trade openness, nominal exchange rate, export prices and climatic conditions were stationary in levels at 10 percent, 1 percent, 1 percent, 5 percent and 5 percent level of significance respectively. Oil prices were stationary in the second difference and at 1% level of significance.

<table>
<thead>
<tr>
<th>Variable</th>
<th>Test statistics</th>
<th>Critical Value</th>
<th>Level of significance</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>AGREI</td>
<td>-2.696100</td>
<td>-2.6381</td>
<td>10%</td>
<td>1(0)</td>
</tr>
<tr>
<td>TROP</td>
<td>-3.918358</td>
<td>-3.7497</td>
<td>1%</td>
<td>1(0)</td>
</tr>
<tr>
<td>OILEXP</td>
<td>-2.658348</td>
<td>-2.6457</td>
<td>1%</td>
<td>1(2)</td>
</tr>
<tr>
<td>NEXR</td>
<td>-4.970275</td>
<td>-3.7856</td>
<td>1%</td>
<td>1(0)</td>
</tr>
<tr>
<td>EXPP</td>
<td>-3.177209</td>
<td>-2.9969</td>
<td>5%</td>
<td>1(0)</td>
</tr>
<tr>
<td>CLIM</td>
<td>-3.316625</td>
<td>-3.0038</td>
<td>5%</td>
<td>1(0)</td>
</tr>
</tbody>
</table>

SOURCE: Computed by the Author June, 2011

A variable is stationary (has no unit root problem) if the test statistics is greater than the critical value in absolute terms. The term 1(0) indicates at levels, 1(1) indicates first difference and 1(2) represents second difference.

The next step after finding out the order of integration was to establish whether the non-stationary variables are co-integrated. Differencing of variables to achieve stationarity leads to loss of long run properties. The concept of co-integration implies that if there is a long run relationship between two or more non-stationary variables, deviations from this long run part are stationary. To establish this, Engel Granger’s two-step procedure was used. This was done by generating residuals from the long run equation of the non-stationary variables, using DF and ADF tests. The residuals were found to be stationary for the model which confirmed that the variables were co-integrated.

Discussions

The Statistical Significance of the Parameter Estimate

The statistical significance of the parameter estimate can be verified by the standard error test; the adjusted R-squared, and the Durbin-Watson statistics.

- For the model, when compared half of each coefficient with its standard error, it was found that the standard errors are less than half of the values of the coefficients of the variables. This shows that the estimated values are all statistically significant.
- The value of the adjusted R-squared ($R^2$) for the model is high, pegged at 96%. It implies that trade openness, crude oil exports, nominal exchange rates, agricultural export prices and Climatic conditions
in Nigeria explained about 96% systematic variations in agricultural exports over the observed years in the Nigerian economy while the remaining 4% variation is explained by other determinant variables outside the model.

- The value of Durbin Watson is 2.4 for the model. This falls within the determinate region and implies that there is a negative first order serial autocorrelation among the explanatory variables in the model.

Table 2: Regression Results
Dependent Variable: AGEX
Method: Least Squares
Date: 08/08/07 Time: 11:56
Sample(adjusted): 1990 2010
Included observations: 21 after adjusting endpoints

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-Statistic</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>C</td>
<td>5.580420</td>
<td>0.814480</td>
<td>6.851512</td>
<td>0.0010</td>
</tr>
<tr>
<td>TROP</td>
<td>-0.009963</td>
<td>0.001329</td>
<td>-7.495309</td>
<td>0.0007</td>
</tr>
<tr>
<td>TROP (-1)</td>
<td>-0.013101</td>
<td>0.001337</td>
<td>-9.801459</td>
<td>0.0002</td>
</tr>
<tr>
<td>TROP (-2)</td>
<td>-0.003155</td>
<td>0.001471</td>
<td>-2.144446</td>
<td>0.0848</td>
</tr>
<tr>
<td>OILEXP</td>
<td>0.085079</td>
<td>0.026057</td>
<td>3.265102</td>
<td>0.0223</td>
</tr>
<tr>
<td>OILEXP (-1)</td>
<td>-0.118292</td>
<td>0.053188</td>
<td>-2.224034</td>
<td>0.0767</td>
</tr>
<tr>
<td>NEXR</td>
<td>-0.075994</td>
<td>0.028901</td>
<td>-2.629443</td>
<td>0.0466</td>
</tr>
<tr>
<td>NEXR (-1)</td>
<td>0.200773</td>
<td>0.047907</td>
<td>4.190924</td>
<td>0.0086</td>
</tr>
<tr>
<td>EXPP</td>
<td>-0.007387</td>
<td>0.007263</td>
<td>-1.017042</td>
<td>0.3558</td>
</tr>
<tr>
<td>EXP(2)</td>
<td>0.016161</td>
<td>0.006226</td>
<td>2.595611</td>
<td>0.0485</td>
</tr>
<tr>
<td>CLIM</td>
<td>-1.628718</td>
<td>0.554924</td>
<td>-2.935026</td>
<td>0.0324</td>
</tr>
<tr>
<td>CLIM(-2)</td>
<td>4.988129</td>
<td>1.748779</td>
<td>2.852349</td>
<td>0.0357</td>
</tr>
<tr>
<td>ECM(-1)</td>
<td>-0.672890</td>
<td>0.397525</td>
<td>-1.692699</td>
<td>0.1513</td>
</tr>
</tbody>
</table>

R-squared 0.992144 Mean dependent var 9.966667
Adjusted R-squared 0.968577 S.D. dependent var 3.156158
S.E. of regression 0.559473 Akaike info criterion 1.765083
Sum squared resid 1.565052 Schwarz criterion 2.560910
Log likelihood -2.533375 F-statistic 42.09905
Durbin-Watson stat 2.477025 Prob(F-statistic) 0.000308

SOURCE: Computed by the Author June, 2011

In summary, since all the econometric test applied in this study show a statistically significant relationship between the dependent and independent variables in the model. Thus, we accept the alternative hypothesis which states that: oil boom and crude oil price shocks have significant economic implications on the agricultural export instability in Nigerian economy.

The Theoretical Significance of the Parameter Estimate
For the theoretical significance of the overall estimates, we evaluated the signs and the sizes of the coefficients of the variables. According to the results, trade openness has negative coefficients both in the short run and long run and it is statistically significant. This result is contrary to a priori expectations. One expects that trade openness should boost agricultural export but it does not in Nigeria. Similarly the coefficients of both foreign
exchange rate and oil price shocks have positive coefficients in the short run and negative coefficients in long run and are statistically significant. This implies that the long run effects of both foreign exchange rate and oil price shocks on agricultural export are negative. Furthermore both the export prices and climatic condition demonstrate similar results. They both have negative coefficients in the short run and positive coefficients in long run and are statistically significant. These findings demonstrate a great deal of fluctuations, instability and distortions in export trade in Nigeria and explain the reasons why the coefficient of error correction parameter is negative and insignificant.

Most important for the objectives of this paper, the regression results support the idea that the oil discovery and boom has crowded-out agricultural exports which was amplified by the upward trend of crude oil’s world price and considerable increase in the oil share of the country’s total export earnings. The result equally suggested that trade liberalization otherwise call trade openness is not effective in Nigeria; the policy has not been properly implemented and sustained. Though contrary to our a priori expectation, the result is expected. This is simply because, despite the policy, the agricultural export prices continued to fall from year to year while the exchange rate also demonstrate downward trend. This result is in agreement with the findings of Osuntogun, Edordu, Oramah (1998) which stated that the oil price shocks of 1973 – 1974 and 1979, the collapse of export commodity prices, distorted macroeconomic and agricultural policies prevailing in the country, world recession, and production bottlenecks all acted negatively on output and agricultural export performance in Nigeria.

CONCLUSIONS
Specifically, this study examined the relationship between oil export and the agricultural export performance in Nigeria. In trying to achieve this objective, an ordinary least square multiple regression approach was adopted for the data analysis. From the previous arguments in this paper and from the empirical results, it is clear that there is a significant relationship between oil export and the agricultural export performance in Nigeria. With 96 percent of the changes in economic growth being explained by the model, it is only logical to summarize that other factors, for which a major share are qualitative factors, explain the minor 4 percent of the variability in agricultural export performance in Nigeria. The study has therefore brought out in clear terms the macroeconomic variables that contribute to and those that do not contribute to agricultural export instability in Nigeria. It shows in simple terms that trade openness did not contribute to an increase in agricultural output and export in Nigeria. In other words trade openness is not productive in Nigerian economy. The policy did not fulfill its target and goals.

One major conclusion emerges clearly from the regressions results. The oil boom parameter explains the presence of ‘Dutch disease’ in Nigeria. As pointed out by Pinto (1987), there is, strictly speaking, a ‘Dutch disease’ since with the oil boom, the agricultural output and export have deteriorated sharply. And as pointed out by Ross (2004) ‘Dutch disease’ occurs in terms of the distributive consequences of oil revenues. According to him, the most important Dutch disease effects can be linked to the crowding-out of agricultural output and exports.

Our findings and conclusion support the need for the government to diversify the oil sector and encourage agriculture through incentives to farmers, mechanization and positive policy measures. In complement of the above, it is important for the government to consolidate and maintain export incentives comprising a duty drawback scheme, explicit export bonuses, currency retention scheme and other direct fiscal incentives (such as the exemption of export transactions from stamp duties). More generally; the Nigerian experience shows that although the negative impacts of trade liberalization policy on agricultural output and export are indisputable, positive results will be achieved on the long run if the conditions needed for the policy to work properly are set in place. Finally, a strong will by government is required to concentrate efforts on increasing output and productivity of agriculture.

REFERENCES


