The Pakistan Development Review
44 : 2 (Summer 2005) pp. 159–175

The Primary Sectors of the Economy and the Dutch Disease in Nigeria

J. O. OLUSI and M. A. OLAGUNJU

This study examines whether the Dutch Disease—a resource boom leading to the decline of the erstwhile tradable sector—is present in Nigeria in the light of the rejection of the Dutch Disease thesis in other studies on Nigeria. Quarterly data for our variables of interest were predominantly sourced from the International Financial Statistics of the IMF. The data are analysed through the use of vector autoregressive (VAR) modelling consisting of impulse response functions and variance decomposition analyses. Our results show that the Dutch Disease was diagnosed, albeit, as a delayed occurrence. This suggests that the government should lay more emphasis on the agricultural sector hitherto not given deserved attention.

I. INTRODUCTION

The Shell D'Arcy (later known as Shell BP) company made Nigeria's first commercial discovery of crude oil in the tertiary area of the Niger Delta in 1956, and exported the first consignment of crude from the country in 1958 [World Bank (1975)]. However, it was after the thirty-month civil war in the country in 1970 that the crude oil sub-sector of the mining sector became the growth pole of the economy. Indeed, as a result of unrest in the Persian Gulf in 1973, which led to a four-fold hike in the per barrel price of crude and an increase in the country's export, crude oil exports not only rendered insignificant the export of solid minerals but also relegated the other sectors of the economy, especially agriculture, to the background.

Prior to 1970, agriculture was the mainstay of the Nigerian economy. Between 1960 and 1970, on the average, the sector accounted for about 50 percent of the GDP and employed 72 percent of the labour force [World Bank (1975) and CBN (2000)]. Perhaps more significant was the sector's foreign exchange earning capacity. In the 60s, Nigeria was the world's largest exporter of groundnut, the second largest exporter of cocoa and palm produce and an important exporter of rubber, cotton, and

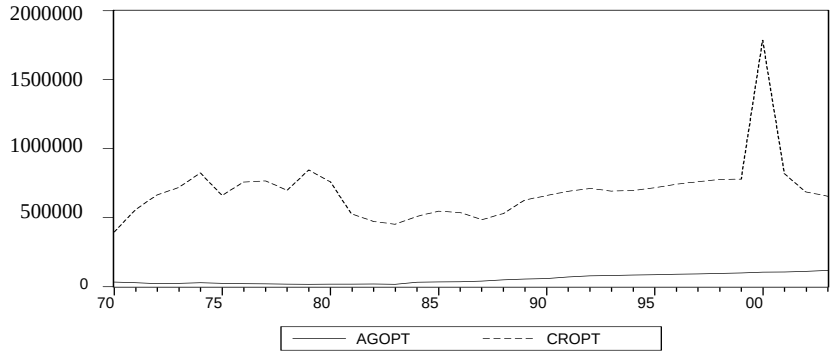
J. O. Olusi and M. A. Olagunju both teach in the Department of Economics, Obafemi Awolowo University, Ile-Ife, Nigeria.

hides and skin [World Bank (1975)]. In real terms, in 1970, the country produced 305,000 tonnes of cocoa, 800,000 tonnes of palm oil and Kernel and over one million tonnes of groundnut [CBN (2000)]. Well over 50 percent of the country's total export earnings came from the agricultural sector prior to the 70s.

Thus, in the first decade of independence primary agricultural produce were the main exports. But as from the 70s, exports have been dominated by crude oil. From 1974 to date there had been no year when the proportion of crude oil exports in total export earnings fell below 91 percent. Indeed, between 1992 and 2003, the only year when it fell below 97 percent was in 1998 when it was 95.5 percent of total export earnings [CBN (2000)].

From the foregoing it is clear that while the crude oil sub-sector has been growing, the traditional agricultural sector has been declining relative to agriculture (see Figure 1 where agricultural output declined further from its weak base in 1970 until 1983 when it started to record a small measure of improvement, but still insignificant compared to crude oil output). These are symptoms of the Dutch Disease. The Dutch Disease (DD) refers to the paradoxical deleterious consequence of natural resource booms on the countries where they occur. The concept was coined from the experience of Netherlands in the 60s when, as a result of the exploitation of the newly discovered large deposits of natural gas in the North Sea, the non-oil tradable sector became less competitive and declined, with a ripple effect on the whole economy which also declined. This paper seeks to examine the presence of the DD in Nigeria, taking the agricultural sector as the traditional tradable sector as against earlier studies that took the manufacturing sector as the declining tradable sector in the LDCs. The rest of the paper is divided into five sections. Section II examines the DD theory and literature. Section III looks at the methodology of the study. Section IV contains the empirical aspect. The paper is concluded in Section V.

Fig. 1. Nigeria: Agric and Crude Output 1970–2003.



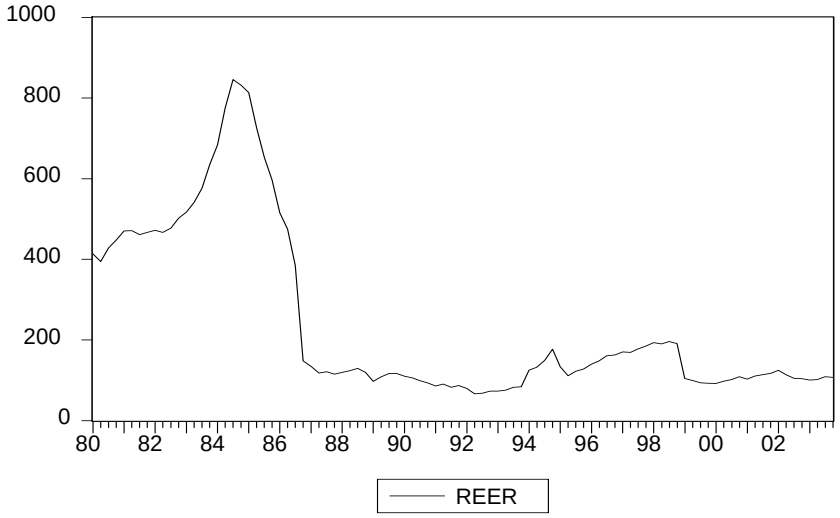
II. THE DUTCH DISEASE—THEORY AND LITERATURE

Even though Meade and Rusell (1957) were credited with the first paper on resource boom paradox, what is now regarded as the core model of the DD theory is found in the seminal work of Corden and Neary (1982), [see also Roca (1999); Kuralbayeva, *et al*. (2001); Stijns (2003)]. In their core model, Corden and Neary divided the economy to three sectors—the booming export sector, the lagging export sector both of which are the traded goods sectors; and the non-traded goods sector that may be services. They then showed that the traditional tradable sector is crowded out by the other two sectors as a result of an appreciation of the real exchange rate (REER) of the domestic currency, which makes the traditional exports less competitive and therefore less attractive to importers.

Ebrahim-Zadeh (2003) notes that the weakening of the competitiveness of the traditional tradable sector is irrespective of the exchange rate regime the country operates. This is because either way (fixed or floating) the REER appreciates. [See also Chen and Rogoff (2002)]. This is partially corroborated by evidence from Nigeria as could be seen in Figure 2 showing the country's REER from 1980:1 to 2003:4. It would be seen that the appreciation of the REER (downward sloping REER curve) started about the second quarter of 1984 when the country was still operating the fixed exchange rate regime. (The floating rate regime started at the end of the third quarter of 1986 when the Structural Adjustment Programme was introduced). It should also be noted that while in the developed countries (DCs), the industrial sector is the traditional tradable sector; in the LDCs, the traditional tradable sector, which is crowded out with a resource boom, is most often the agricultural sector. This is why Stijns (2003) talks of "de-industrialisation" in the DCs and "de-agriculturation" in the LDCs if the DD takes effect.

Similarly, while in the DCs, labour migrate from the traditional tradable to the booming tradable sector leading to a decline in the former; migration of labour in the LDCs is rather from the traditional tradable to the non-tradable small manufacturing sector also leading to a decline in the former. Except for the retail outlets in the booming tradable sector, the high skill required in the capital-intensive segments of the oil sector is in short supply in the LDCs. Indeed, with respect to Nigeria, FOS (1996) indicates that the proportion of the labour force engaged in the agricultural sector increased from 56.6 percent to 60.4 percent from 1984 to 1994. Ajakaiye (2001) also says that the oil sector is mainly extractive with little linkage to the domestic economy. The oil sector thus remains largely an enclave industry that it had been since independence. In the LDCs, labour rather migrates to the non-tradable sector of building and construction, services and the relatively small modern import substituting manufacturing sector.

Fig. 2. Nigeria: Real Effective Exchange Rate 1980:1– 2003:4.



Empirical Literature

There is a plethora of empirical literature on the DD which can be grouped into those relating to DCs and those on the LDCs including Nigeria. On the DCs, Ellman (1981) observes that as a result of the exploitation of large deposits of natural gas in the North Sea in the Netherlands, the textile and clothing industries almost vanished and others such as metal manufacturing, mechanical engineering, vehicles, ships and construction industries declined. Only the services (non-tradable) sector expanded. Though agreeing that those industries declined, Barker (1981) and Kremers (1985) however find it difficult to pin their decline on the discovery of gas since some other countries in Western Europe also experienced a similar decline without having energy boom.

Corden (1996) claimed that it was Meade's observation of the negative effect of the growth of Australia's resource exports that led, in the first place, to the identification of the DD as documented in Meade and Rusell (1957). Ross (1986) diagnosed the symptoms of the DD in the case of the UK. He noted that commercial exploitation of Crude Oil commenced in the UK in 1975. Between 1977 and 1980, the REER appreciated by between 51 percent and 55 percent, leading to a fall in manufacturing output, which was only 4 percent between 1973 and 1979 to 14 percent between 1979 and 1982. Forysth (1985) agrees that there is evidence of DD in the UK but asserts that it is impossible to measure the precise impact of the energy boom on structural changes in the economy.

Jimenez-Rodriguez and Sanchez's (2003) results are mixed. For the two oil producers they investigated, they found that while Norway benefited from oil price increases, similar increases in the UK had a significant negative impact on GDP growth. Though not a net oil exporter, even the US economy is not immune to the DD as Brown and Yucel (1999) find out that the impulse response to an oil price shock shows that the model responds to a temporary oil price shock with a decline in the real GDP.

Stijns (2003), who among other things did a comprehensive literature survey of the DD, did not limit his analysis to a particular set of countries. Rather, using the World Trade Data, he concluded that energy-price led booms have systematically tended to hurt energy exporters' manufacturing exports.

Coming to the LDCs, the case of Indonesia is unique because she prudently managed her exchange rate to render insignificant the effect of the DD. Warr (1985) notes about Indonesia that though energy boom has distinctive effects on domestic prices, it is not clear whether the structure of the economy has been affected at all. Roemer (1994) is even more categorical. He states that the Indonesian government avoided the worst impacts of the DD through careful exchange rate management. In the other studies available on the LDCs including Nigeria, authors generally reject the DD thesis. For example in Nigeria, Mexico and Venezuela [Roemer (1985)]; Saudi Arabia [Looney (1989)]; Kuwait [Looney (1991)]; Iran and Nigeria [Jazayeri (1986)] and Kazakhstan [Kuralbayeva, *et al*. (2001)], it was noted that though exchange rate appreciation followed oil boom, the appreciation caused contraction of industrial output. Indeed in the cases of Kuwait, Nigeria, Indonesia and Mexico, the growth rate of the manufacturing sector was actually greater than or equal to that of the non-tradables.

This is the point where this study differs from earlier ones on the LDCs, especially Nigeria. In the DCs, the tradables sectors could be manufacturing and energy. In the LDCs, the tradables sectors are rather the agricultural sector that had been the LDCs growth pole and the new energy sector. Energy export shocks should therefore have been related also to output in the declining agricultural sector.

Let us acknowledge, on a final note in this section other authors who find little evidence of the DD in their studies [Gelb (1988); Cuddington (1989) and Davis (1983)]; and those that attribute the DD to financial profligacy and counter-productive policies on the part of governments as a result of sudden oil wealth [Auty (1993, 1994); Collier and Gunning (1996) and Ojameruaye (2004)].

III. METHODOLOGY

Following the works of Sims (1980s), Blanchard and Watson (1986), Bernanke (1986), and Jimenez-Rodriguez and Sanchez (2003), we represent the reduced form of a standard open economy macroeconomic model as a multivariate dynamic system. We thus specify the following vector autoregression (VAR) model of order P (i.e VAR[P]).

$$\chi_0 y_t = K + \sum_{i=1}^{n} \beta_i y_{t-1} + U_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (1)$$

where y_t is a (n × 1) vector of endogenous variables being considered (real GDP, agricultural output, crude oil exports, real effective exchange rate (REER), inflation rate, and short- and long-term rates of interest); β_0 and β_i are (n × n) matrices of coefficients; K is a vector of constants; P is the number of lags; and U_t is a (n × 1) vector of uncorrelated white noise disturbances. The matrix β_0 is assumed to be lower triangular with 1's along its main diagonal thus guaranteeing that the model is just identified. The reduced form of the system of equations can be rewritten as:

$$y_t = Co + \sum_{i=o}^{n} c_1 y_t - 1 + \sum_t \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad \ldots \quad (2)$$

where Co= $\beta_0 K$ | $C_i = \beta_0\ \beta_i$ for | = | P | $\sum_t$ is an (n × 1) vector of uncorrelated white noise disturbances. The following variables are expressed in their log form: real GDP, crude oil exports, agricultural produce, and REER. The others—inflation rate, short and long term interest rates are defined in levels. Since we are interested in analysing the impact of oil exports shocks on GDP growth and the agricultural sector, it becomes necessary to include oil export growth, GDP growth and agricultural output growth. The other variables will help to capture the channels through which oil export shocks affect economic activities.

We next examine the time series properties of the variables by analysing their order of integration through unit roots tests. This will help to determine whether the subsequent estimation should use the level or first difference of each of the time series. We perform the Dickey-Fuller (DF), Augmented Dickey-Fuller (ADF) and the Phillips-Perron (PP) tests on each of the series [see Dickey and Fuller (1981); Phillips and Perron (1988)].

Using the three diagnostic tests—DF, ADF, and PP, all the variables were stationary only at first difference [i.e., I (1)] save for long-run interest rate, which was stationary at level [i.e., I (O)] (see Tables 1 and 2). The six variables that were I(1) were then differenced once. The non-stationarity of all the series at the same level informed the use of VAR, which involves analysing the impulse response functions and variance decomposition of the model.

The Data

Quarterly data predominantly sourced from the International Financial Statistics (IFS) of the IMF covering 1980:1 to 2003:1 were used. For the real GDP whose quarterly figures are not available in the IFS, annual real GDP figures sourced from the Central Bank of Nigeria (CBN) statistical Bulletin were disaggregated using the quarterly index of industrial production, also sourced from the IFS [see Akinlo and Odusola (2003)]. Quarterly agricultural output figures were also sourced from various volumes of the CBN Statistical Bulletin.

Table 1

Unit Roots Tests at Level

Series	DF	ADF	PP
Real GDP	–166020	0.376837	–0.406003
Crude Exports	–1.482038	–1.677210	–1.495707
Agricultural Output	–10449094	0.153003	–0.648115
Real Exchange Rate	1.114617	–1.692500	–1.363206
Inflation Rate	–1.361372	–2.666835	–2.090470
Short-run Interest Rate	2.210784	–2.058767	–2.486507
Long-run Interest Rate	–8.630957*	–3.274959*	–8.697098*
5 Percent McKinnon Critical Values	–2.8928	–2.8943	–2.8928

* Stationary at level.

Table 2

Unit Roots Tests at First Difference

Series	DF	ADF	PP
Real GDP	–12.82603	–5.832546	–15.02311
Crude Exports	–9.876736	–3.725955	–9.873100
Agricultural Output	–12.47513	–6.489518	–15.44685
Real Exchange Rate	–7.412648	–3.635476	–7.506395
Inflation Rate	–4.277243	–4.034398	–4.370319
Short-run Interest Rate	–6.749213	–5.403966	–6.691957
Long-run Interest Rate	–16.70069	–6.781492	–22.12969
5 Percent McKinnon Critical Values	–2.8932	–2.8947	–2.8932

IV. EMPIRICAL RESULTS AND DISCUSSIONS

Impulse Response Functions

Table 3 and Figure 2 show the impulse response functions (IRFs) of the variables real GDP (DLRGDP), crude oil exports (DLCXPT) agricultural produce (DLAGTP), inflation rate (DINFL), long run interest rate (LTIR), real exchange rate (DLREER) and short run interest rate (DSTIR).[1] They show the response of a particular variable to one standard deviation shock on each of the variables in the system. The interpretation of the IRFs takes into consideration the use of first differencing of the variables since a one-time shock to the first difference in a variable is a permanent shock to the level of that variable. The following conclusions could be drawn from the IRFs contained in Table 3 and Figure 3. The contractionary

[1]This ordering decidedly puts real GDP first to see it as the umbrella variable under which other variables operate.

Table 3

Impulse Response to One Standard Deviation Innovations

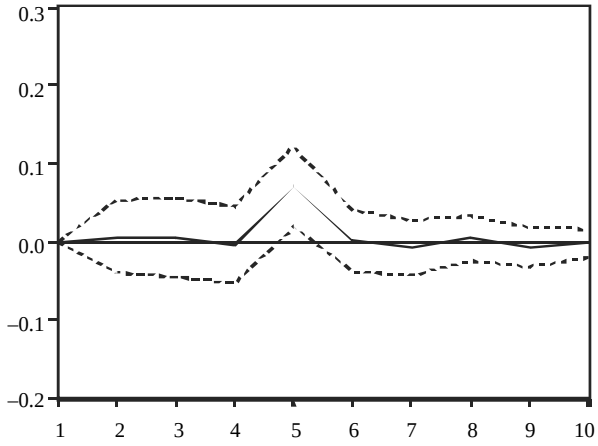
Type of Innovation	Qtrs.	DLRGDP	DLCXPT	DLAGTP	DINFL	LTIR	DLREER	DSTIR
DLRGDP	1	0.0449	0.0000	0.0000	0.0000	–0.0000	0.0000	0.0000
	3	–0.0127	0.0038	–0.0071	–0.0041	–0.0070	0.0005	–0.0007
	6	–0.0027	–0.0014	0.0006	–0.0014	–0.0024	0.0053	–0.0024
	9	0.0027	–0.0048	–0.0033	–0.0013	–0.0020	–0.0008	–0.0027
	10	9.57E–OS	0.0012	–0.0002	–0.0014	–9.55E–OS	0.0007	0.0007
DLCXPT	1	0.0489	0.2110	0.000	0.0000	0.0000	0.0000	0.0000
	3	–0.0311	–0.0209	0.0048	–0.0371	–0.1017	–0.0325	–0.0099
	6	0.0044	–0.0351	0.0007	–0.0093	–0.0257	–0.0012	–0.0182
	9	0.0076	–0.0086	–0.0072	–0.0021	–0.0009	0.0021	–0.0086
	10	0.0045	–0.0068	–0.0023	–0.0101	–0.0067	–0.0007	–0.0002
DLAGTP	1	0.386	–0.0029	0.0197	0.0000	0.0000	0.0000	0.0000
	3	–0.0116	0.0040	–0.0053	–0.0048	–0.0060	–0.0006	–0.0012
	6	–0.0019	–0.0009	0.0015	–0.0027	–0.0024	0.0061	–0.0019
	9	0.0028	–0.0045	–0.0035	–0.0010	–0.0023	–0.0008	–0.0037
	10	–0.0002	0.0015	–0.0002	–0.0009	0.0003	0.0005	0.0009
DINFL	1	–1.2974	0.1665	0.3835	3.2660	0.0000	0.0000	0.0000
	3	–1.0502	0.1243	–0.6941	1.5479	0.2859	–0.2038	–0.4459
	6	–0.0710	–0.0292	0.1351	–0.0289	–0.2809	–0.0558	–0.3090
	9	0.0128	–0.0121	0.0268	–0.2685	–0.1434	–0.0322	0.1795
	10	0.1587	–0.0366	–0.0498	–0.2063	–0.0788	–0.0630	0.1603

Continued—

Table 3—(*Continued*)

LTIR	1	–0.1945	2.9000	0.0302	1.5863	11.0670	0.0000	0.0000
	3	–0.0816	–2.8027	1.7078	0.0243	2.3019	0.7326	1.9936
	6	–0.8684	0.7811	–0.0735	0.2688	0.0026	–0.9442	0.5821
	9	–0.6074	0.2619	0.5167	0.2877	0.1458	–0.3408	0.2931
	10	–0.0877	–0.2994	0.1865	0.0648	–0.1493	–0.0798	0.0874
DLREER	1	0.0091	–0.0075	0.0102	–0.0061	0.0081	0.1153	0.0000
	3	–0.0034	–0.0079	–0.0002	–0.0167	–0.0434	0.0235	0.0116
	6	–0.0009	–0.0018	–0.0047	0.0081	–0.0061	–0.0036	0.0104
	9	–0.0100	0.0077	–0.0011	0.0109	0.0054	–0.0014	0.0016
	10	–0.0042	–0.0006	–0.0008	0.0067	–0.0041	–0.0034	–0.0059
DSTIR	1	–0.1633	0.3781	–0.0030	–0.0935	0.1664	–0.2141	1.2309
	3	0.1209	0.1740	–0.0918	0.0778	–0.1754	–0.0942	–0.2379
	6	–0.0957	–0.0874	0.0831	0.1788	–0.1336	–0.0853	–0.2342
	9	0.0825	–0.0351	–0.0473	–0.1702	0.0438	0.0173	0.1510
	10	0.0899	0.0122	–0.0367	–0.1528	–0.0208	0.0207	0.0600

Fig. 3. Response to One S. D. Innovations ± 2 S. E. Response of DLCXPT to DLAGTP.



impact of crude oil exports on agricultural output is established. This is seen from the response of agricultural output to innovations in crude oil exports. From the first to the ninth quarter, except in the third quarter, the signs are negative though the coefficients are weak. This tends to suggest that Nigeria is plagued with the DD. This is contrary to the finding of Roemer (1985) whose study was based on Nigeria, Mexico and Venezuela and Jazayeri (1986) who studied Iran and Nigeria among other studies on the LDCs who made similar findings. The problem with the studies, which did not find evidence of the DD in the LDCs, was that they assumed manufacturing and the crude oil sectors as the tradable sectors in place of agriculture, the traditional export sector of most of the LDCs and the relatively new crude oil sector.

Variance Decomposition

Table 4 and Figure 4 present the variance decomposition of the variables based on the model. They show the proportion of the forecast error variance for each variable that is attributable to its own innovations and to innovations in the other variables in the system. The first major finding is that in general, for all the variables except agricultural output, "own shocks" constitute the predominant source of variations. Variations in agricultural output are explained predominantly by real GDP (after the first quarter) followed by own shock. These are followed by crude oil exports. Thus, crude export is the next most important variable that explains variations in agricultural output after real GDP if own innovation is assumed away. This further confirms that crude export is an important source of variation in agricultural production. This is akin to the response found in the impulse response functions.

Table 4

Variance Decomposition from the Reduced Form Model

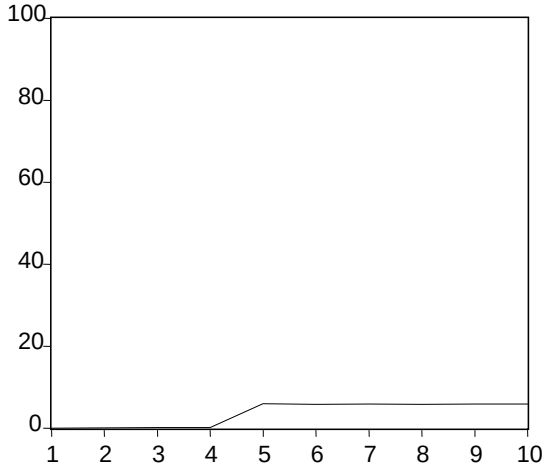
	Period	DLRGDP	DLCXPT	DLAGTP	DINFL	LTIR	DLREER	DSTIR
DLRGDP	1	100.00	0.00	0.00	0.00	0.00	0.00	0.00
	3	91.37	0.68	1.83	0.60	2.99	2.14	0.39
	6	77.97	6.20	3.97	0.64	2.92	4.53	3.77
	9	75.97	7.32	4.24	0.85	3.34	4.47	4.26
	10	75.52	7.35	4.23	0.90	3.33	4.48	4.27
DLCXPT	1	75.43	94.89	0.00	0.00	0.00	0.00	0.00
	3	5.10	63.12	0.99	2.47	14.73	13.53	0.14
	6	5.92	54.61	5.79	2.51	13.25	13.29	1.91
	9	8.64	54.48	5.86	2.57	13.12	13.15	2.06
	10	8.77	54.39	5.85	2.68	13.13	13.12	2.06
DLAGTP	1	8.77	0.44	20.61	0.00	0.00	0.00	0.00
	3	78.95	1.08	16.30	0.88	2.63	1.53	0.49
	6	77.09	8.96	14.33	0.98	2.53	4.84	3.55
	9	64.81	9.89	14.29	1.10	3.10	4.71	4.37
	10	62.55	9.94	14.27	1.12	3.10	4.71	4.39
DINFL	1	62.48	0.22	1.17	85.17	0.00	0.00	0.00
	3	13.44	0.31	2.79	75.34	0.49	0..21	2.52
	6	18.34	0.79	3.39	72.19	0.94	0.73	4.10
	9	17.87	0.85	3.71	71.33	1.63	0.74	4.14
	10	17.60	0.86	3.70	71.20	1.64	0.75	4.22

Continued—

Table 4—(*Continued*)

	Period	DLRGDP	DLCXPT	DLAGTP	DINFL	LTIR	DLREER	DSTIR
LTIR	1	17.63	6.30	0.00	1.89	91.78	0.00	0.00
	3	0.02	14.76	1.87	1.59	78.50	0.33	2.51
	6	0.42	16.94	1.99	1.64	74.35	0.99	2.89
	9	1.19	16.59	2.21	1.78	72.93	1.13	3.76
	10	1.60	16.62	2.23	1.78	72.87	1.13	3.76
DLREER	1	0.60	0.41	0.76	0.27	0.49	97.47	0.00
	3	1.01	0.75	0.56	1.69	11.93	80.26	3.80
	6	3.15	2.08	4.31	2.58	10.78	71.93	5.17
	9	3.88	4.02	4.11	3.95	10.39	68.55	5.11
	10	3.93	3.99	4.09	4.13	10.41	68.22	5.23
DSTIR	1	1.51	8.09	0.00	0.49	1.57	2.59	85.75
	3	2.03	8.51	0.92	0.84	3.65	4.80	79.25
	6	2.21	10.45	2.61	7.57	3.93	5.57	67.65
	9	2.52	10.42	2.82	8.52	3.95	5.42	66.35
	10	2.76	10.29	2.83	9.19	3.91	5.37	65.65

Fig. 4. Variance Decomposition Percent DLCXPT Variance Due to DLAGTP.



Granger Causality

Using the test of causality introduced by Granger (1969) and Sims (1972) we attempted to establish the direction of causation between the two variables—crude oil export and agricultural output using an appropriate lag. From the results in Table 5, it is seen that at 5 percent significance level, the hypothesis that crude oil export does not Granger cause agricultural output is rejected. This shows a unidirectional line of causation—that crude exports affect agricultural output.

V. CONCLUSION

This study has shown that contrary to earlier findings that Nigeria is not suffering from the DD, the disease is present in Nigeria, although in the long run. A possible explanation for earlier findings could be because hitherto, authors assumed that the tradable sectors are manufacturing and the new resource sectors as empirical studies on developed countries rightly assumed. But it is a known fact that agriculture and not manufacturing had been the traditional leading foreign exchange earner and therefore the traditional tradable sector of most LDCs including Nigeria. It is also a known fact that manufacturing in the LDCs has still not developed to the stage where their products will enjoy large foreign patronage and become tradables as is happening in the DCs.

The relegation of the agricultural sector in resource boom countries especially Nigeria arose from the sudden windfall from oil, a wasting resource. It is therefore incumbent on the government to de-emphasise the crude oil sub-sector and put more

Table 5

Pair-wise Granger Causality Tests

Null Hypothesis	Obs	*F*-statistic	Probability
DLCXPT does not Granger Cause DLRGDP	88	2.24860	0.07121
DLRGDP does not Granger Cause DLCXPT		2.37050	0.059446
DLAGTP does not Granger Cause DLRGDP	88	1.45810	0.22291
DLRGDP does not Granger Cause DLAGTP		1.34706	0.25998
DINFL does not Granger Cause DLRGDP	88	0.40303	0.80593
DLRGDP does not Granger Cause DINFL		0.64233	0.63390
LTIR does not Granger Cause DLRGDP	88	0.21321	0.93038
DLRGDP does not Granger Cause LTIR		0.08981	0.98540
DLREER does not Granger Cause DLRGDP	88	0.46849	0.75868
DLRGDP does not Granger Cause DLREER		0.87945	0.48018
DSTIR does not Granger Cause DLRGDP	88	1.28912	0.28143
DLRGDP does not Granger Cause DSTIR		0.15437	0.96050
DLAGTP does not Granger Cause DLCXPT	88	1.13467	0.34632
DLCXPT does not Granger Cause DLAGTP		3.08079	0.02064
DINFL does not Granger Cause DLCXPT	88	0.58414	0.67503
DLCXPT does not Granger Cause DINFL		0.31170	0.86937
LTIR does not Granger Cause DLCXPT	88	2.24765	0.07131
DLCXPT does not Granger Cause LTIR		2.38911	0.05785
DLREER does not Granger Cause DLCXPT	88	4.83157	0.00154
DLCXPT does not Granger Cause DLREER		0.29622	0.87960
DSTIR does not Granger Cause DLCXPT	88	0.48081	0.74972
DLCXPT does not Granger Cause DSTIR		2.21113	0.07525
DINFL does not Granger Cause DLAGTP	88	0.84799	0.49904
DLAGTP does not Granger Cause DINFL		0.98627	0.41999
LTIR does not Granger Cause DLAGTP	88	0.25192	0.90768
DLAGTP does not Granger Cause LRIR		0.44480	0.77586
DLREER does not Granger Cause DLRGTP	88	0.88767	0.47534
DLAGTP does not Granger Cause DLREER		1.95036	0.11028
DSTIR does not Granger Cause DLAGTP	88	1.45287	0.22454
DLAGTP does not Granger Cause DSTIR		0.17303	0.95160
LTIR does not Granger Cause DINFL	88	0.07988	0.98829
DINFL does not Granger Cause LTIR		0.00063	1.00000
DLREER does not Granger Cause DINFL	88	0.42653	0.78906
DINFL does not Granger Cause DLREER		0.36883	0.83017
DSTIR does not Granger Cause DINFL	88	0.61201	0.65521
DINFL does not Granger Cause DSTIR		1.23594	0.30248
DLREER does not Granger Cause LTIR	88	0.075229	0.98953
LTIR does not Granger Cause DLREER		3.81639	0.00689
DSTIR does not Granger Cause LTIR	88	0.90662	0.46431
LTIR does not Granger Cause DSTIR		0.24567	0.91148
DSTIRLTIR does not Granger Cause DLREER	88	1.04375	0.39009
DLREER does not Granger Cause DSTIR		1.02092	0.40176

money into agriculture, which holds a long term potential for food sufficiency and economic development. The recent rise in the prices of cassava derivatives consequent on the exportation of cassava products in the country is a welcome development for cassava cultivation in particular and the agricultural sector in general. The country's economic breakthrough is however not in the foreign exchange earning capacity of raw or even partly processed agricultural produce but rather in linking agriculture to the other sectors of the economy. This will bring about the much desired diversified and industrial economy, with less emphasis laid on the primary extractive sector to which crude oil belongs.

REFERENCES

Ajakaiye, O. (2001) Economic Development in Nigeria. Issues and Experience, in Proceedings of the First CBN Annual Monetary Policy Conference titled, *Growing the Nigerian Economy* (November), 12–36.

Akinlo, A. E., and A. F. Odusola (2003) Assessing the Impact of Naira Depreciation on Output and Inflation. *Applied Economics* 35, 691–703.

Auty, R. (1993) *Sustaining Development in Mineral Economics: The Resource Curse Thesis.* London and New York: Routeledge.

Auty, R. (1994) Industrial Policy Reform in Six Large Newly Industrialising Countries: The Resource Curse Thesis. *World Development* 22:1, 11–26.

Barker, T. (1981) Policy Issues in Energy-rich Economies. In T. Barker and V. Brailovsky (eds.) *Oil or Industry.* London: Academic Press.

Bernanke, B. S. (1986) Alternative Explanations of the Money-income Correlation. *Carnegie- Rochester Conference Series on Public Policy* 25, 49–100.

Blanchard, O. J., and M. Watson (1986) Are Businesses All Alike? In R. J. Gordon (ed.) *The American Business Cycle: Continuity and Change.* Chicago: University of Chicago Press.

Brown, S. P. D., and M. K. Yucel (1999) Oil Prices and US Aggregate Economic Activity: A Question of Neutrality. *Economic and Financial Review.* Federal Reserve Bank of Dallas.

Central Bank of Nigeria (2000) *The Changing Structure of the Nigerian Economy and Implications for Development.* Lagos: Research Department (August).

Central Bank of Nigeria (2003) *Statistical Bulletin.* Abuja: Research Department.

Chen, Y-C., and K. Rogoff (2002) Commodity Currencies and Empirical Exchange Rate Puzzles. February. (International Monetary Fund Working Paper No. 02/27.)

Collier, P., and J. Gunning (1996) Policy Towards Commodity Shocks in Developing Countries. Washington, D. C.: IMF. (Working Paper WP/96/84.)

Corden, W. (1996) James Meade 1907-1995. *Economic Record* 72, 217 (June), 172–174.

Corden, W., and J. Neary (1982) Booming Sector and De-industrialisation in a Small Open Economy. *Economic Journal* 92. (December), 825–848. Reprinted in W. Corden (ed.) (1992) *International Trade Theory and Policy. Selected Essays of W. Max Corden*, Aldershot: Elgar.

Cuddington, J. (1989) Commodity Export Booms in Developing Countries. *The World Bank Research Observer* 4:2, 143–65.

Davis, J. (1983) The Economic Effects of Windfall Gains in Export Earnings, 1975–1978. *World Development* 11:2, 119–139.

Dickey, D. A., and W.A. Fuller (1981) Likelihood Ratio Statistics for Autoregressive Time Series with a Unit Root. *Econommetrica* 49, 1057–1072.

Ebrahim-Zadeh, C. (2003) Dutch Disease: Too Much Wealth Managed Unwisely. *Finance and Development* 40:1, 1–4.

Ellman, M. (1981) Natural Gas, Restructuring and Reindustrialisation: The Dutch Experience of Industrial Policy. In T. Barker and V. Brailovsky (eds.) *Oil or Industry.* London: Academic Press.

Federal Office of Statistics (1996) *Socio-Economic Profile of Nigeria.* Lagos: FOS.

Forsyth, P. (1985) Booming Sectors and Structural Change in Australia and Britain: A Comparison. In P. Neary and S. Van Winbergen (eds.) *Natural Resources and Macroeconomy.* Oxford: Basil Blackwell Ltd.

Gelb, A. (1988) *Oil Windfalls: Blessing or Curse?* New York: Oxford University Press.

Granger, C. W. J. (1969) Investigating Causal Relations by Econometric Models and Cross-spectra Methods. *Econometrica* 37, 424–438.

IMF (2003) *International Financial Statistics.* Washington, D. C.: International Monetary Fund.

Jazayeri, A. (1986) Prices and Output in Two Oil-based Economies: The Dutch Disease in Iran and Nigeria. *IDS Bulletin* (October), 14–21.

Jimenez-Rodriguez, R., and M. Sanchez (2003) Oil Price Shocks and Real GDP Growth: Empirical Evidence for Some OECD Countries (Mimeographed.)

Kremers, J. (1985) Booming Sectors and Structural Change in Australia and Britain: A Comparison. In P. Neary and S. W. Van Winbergen (eds.) *Natural Resources and the Macroeconomy.* Oxford: Basil Blackwell Ltd.

Kuralbayeva, K., A. Kutan, and M. Wyzan (2001) Is Kazakhstan Vulnerable to the Dutch Disease? *Zentrumfur Europaische Integrations forschung Working Paper* B.29, 1–36.

Looney, R. (1989) Oil Revenues and Viable Development: Impact of the Dutch Disease on Saudi Arabian Diversification Efforts. *American Arab Affairs* 25–35.

Looney, R. (1991) Diversification in a Small Oil Exporting Country; The Impact of the Dutch Disease on Kuwait's Industrialisation. *Resources Policy* 17:1, 31–41.

Meade, J., and E. Russel (1957) Wage Rates, The Cost of Living and the Balance of Payments. *Economic Record* 33, 23–28. In J. Meade and S. Howson (eds.) *The*

Collected Papers of James Meade. Vol. 3. Winchester, Mass., London and Sydney: Unwin Hyman.

Ojameruaye, E. O. (2004) Managing the Dutch Disease in Nigeria. *World 11/8/04*, Ocnus. Net, File://A: Dutch Disease 1.htm.

Phillips, P. C. B., and P. Perron (1988) Testing for a Unit Root in Time-series Regression. *Biometrika* 75, 335–346.

Roca, A. (1999) Dutch Disease and Banana Exports in Colombian Caribbean, 1910-1950. Paper presented at the meeting of Latin American Cliometric Society (LACLIO) in Cartagena, Colombia. August 27-28. http://www.stanford.edu/group/sshi/lacse-papers.html.

Roemer, M. (1985) Dutch Disease in Developing Countries: Swallowing Bitter Medicine. In The Primary Sector in Economic Development: Proceedings of the Seventh Arne Ryde Symposium, 29-30 August 1983.

Roemer, M. (1994) Dutch Disease and Economic Growth: The Legacy of Indonesia, Harvard Institute for International Development. (June), pp. 1–14. (Development Discussion Paper No. 489.)

Ross, A. (1986) The United Kingdom's Experience with North Sea Oil and Gas. *IDS Bulletin* (October), 14–21.

Sims, C. A. (1972) Money, Income and Causality. *American Economic Review* 62, 540–552.

Sims, C. A. (1980) Macroeconomics and Reality. *Econometrica* 48:1, 1–48.

Stijns, J. (2003) *An Empirical Test of the Dutch Disease Hypothesis Using a Gravity Model*. Paper presented at the Congress of EEA, Stockholm, August 20–24.

Warr, P. (1985) Indonesia's Other Dutch Disease. In P. Neary and S. V. Winbergen (eds.) *Natural Resources and the Macroeconomy*. Oxford: Basil Blackwell Ltd.

World Bank (1975) *Nigeria: Options for Long-term Development*. Baltimore and London: The Johns Hopkins University Press.