

OIL REVENUES AND THE 'DUTCH DISEASE' IN NIGERIA.

A thesis submitted for the degree of Doctor of Philosophy

by

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IN MEMORY OF MY BROTHER AND FRIEND,  
MR. EDMUND OBIOMA KEJEH, WHO WOULD  
HAVE UNDERSTOOD.

## ABSTRACT

This study discusses the performance and prospects of the Nigerian economy in the wake of the oil euphoria. It produces some empirical evidence for the rapid destruction of Nigerian agriculture in the past ten years or more and it demonstrates that the plight of the Nigerian economy in general and the rural sector in particular was in part a direct consequence of the increase in oil revenue which pushed up the exchange rate and made it unprofitable to grow crops for export. It concludes that unless a radical change in government policy is effected to revive the agricultural sector, Nigeria will experience a depletion of both her oil and her agricultural resources to the extent that the economy could eventually face a food crisis like those recently experienced in Ethiopia, Sudan, Mali or Chad, and without an industrial base. The study argues that contrary to the view commonly held in Nigeria, the benefits in the medium and long term of devaluing the Nigerian currency(naira) will greatly outweigh the costs which are likely to be only temporary. We use the term "Dutch disease", as it was in the Netherlands, that the phenomenon of the adverse effects on the rest of the economy of a rise in the exchange rate, brought about by the discovery of natural gas, was first observed.

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1.

INTRODUCTION

The oil price revolution of 1973 suddenly changed the balance of political and economic power and threw the limelight on the relatively small number of countries that had reserves of oil - many of them Third World countries. These countries suddenly saw themselves, and were seen by others as having found a short cut to the Golden Era. However, while this represented a great problem to oil importing countries of the west, the oil producing countries themselves welcomed the sudden rise in their material fortunes.

Among the OPEC countries that welcomed this sudden change in their fortune was Nigeria. Between 1958, the year Nigeria first exported crude oil, and 1973 Nigeria earned over N5 bn from petroleum exports; but between 1974 to 1982 she earned over N70 bn, making a total of more than N75 bn. since oil first started to be exported. The thesis examines whether or not Nigeria made the most of the opportunities presented by the fact that Nigeria was one of the few sub-saharan African countries which had oil. Shakespeare's Julius Caesar provides an apt quotation to set the scene:-

"There is a tide in the affairs of men, which taken at the flood, leads onto fortune; omitted, all the voyage of their life is bound in shallows and in miseries. On such a full sea are we now afloat, and we must take the current when it serves, or lose our ventures."

SHAKESPEARE; JULIUS CAESAR

As the oil revenue started to flow it should have immediately started to raise the standard of life for Nigerians. Unfortunately, successive governments pursued policies which have reduced the beneficial impact which oil should have had on the economy and society of Nigeria and which have had undesirable consequences for the longterm development of her political economy. The most direct and destructive result of this impact [although by no means the only one] has been its devastating effect for the agricultural sector.

Prior to the advent of oil in Nigeria, life was mainly rural and agriculture was the dominant economic activity. About 70-80 per cent of the population lived in the rural areas and were engaged in one kind of agricultural activity or another. Though relatively poor by today's standards, the populace had both cheap and plenty of food. In 1960, the country's GDP, valued at 1977 constant prices, amounted to N11369.5 million, the equivalent of N220 (U.S \$341.5) per head. Of this total, agriculture accounted for 56 per cent while Transport and Communication, the second largest sector contributed about 5 per cent. Mining, including Petroleum, contributed 4

per cent. Construction accounted for 3 per cent while manufacturing accounted for 2 per cent. Agriculture therefore was the largest single activity. It also made a significant contribution to exports. Until the late sixties and early seventies agricultural produce accounted for about 80 per cent of the total volume of exports. In 1965 for example, groundnuts exports was 986 thousand metric tons, palm oil was 600 thousand metric tons, palm kernel was 416 thousand metric tons, etc. From the 1970's, oil started to play an ever more important role in exports, though agricultural exports continued to increase. But from 1973 onwards the volume of agricultural exports started to decline in absolute terms. By the mid '70's most agricultural produce like palm oil, cotton, groundnuts, etc, had virtually disappeared from the export scene(see Table 6.6). Some of them now represent significant import items as Table 6.3 shows. Agricultural exports had been completely displaced from the pre-eminent scene they had occupied at the time of Independence. While the growth in population and the recent drought in the northern parts of Nigeria may partly be blamed for this disappearance, the fundamental reason (and by far the most important in our view) is the effects petroleum, and the use made of it, has had on the production of these commodities.

It all started in 1956 when Shell-BP discovered oil at Oloibiri and Afam in the Eastern part of Nigeria. It was



then thought by most experts that Nigeria had at last found a huge resource with which to initiate industrial expansion, and to provide additional resources to agriculture which had been the corner stone of the economy. It was also thought that petroleum would transform the Nigerian balance sheet and her entire economy, and hence provide a short cut to economic development. Within a few years of the discovery, oil revenues started to flow in and the consequences of increased earning from oil are what this thesis sets out to explore.

In our view, what happened resulted from a combination of economic and non-economic factors. The economic factors relate to inappropriate economic policies and planning, while the non-economic factors have more to do with mismanagement of public funds.<sup>1</sup>

On the economic front, the petroleum export sector led to the creation of a dual economy by giving rise to a new enclave which was only loosely tied into the rest of the economy but exerted a very undesirable influence as we shall argue. The expansion of Nigeria's petroleum exports, as we shall see, squeezed other parts of the economy. It

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1. This study, however, paid particular attention to the Dutch disease syndrome created by increased oil revenue.

produced a negative impact on the domestic " terms of trade " favouring petroleum and squeezing agriculture. The oil sector generated an exchange rate drift upwards that culminated in a fatal drop in the competitiveness of exports and of import- competing industries. It also brought about a regional imbalance created by large migrations to the new oil towns or centres. Employment increased in protected industries such as construction, internal trade and other private services, and decreased in export industries such as metals, and pulp and paper and in import- competing industries such as textile and clothing. Consumption of domestically produced goods declined, so did agricultural employment and output. The rise in the exchange rate caused Nigeria to become an ever larger importer of food in which previously she had been largely self-sufficient, and it also led to a large increase in imports of industrial goods, thus compounding the negative aspects of the scenario. Nigeria became the " Mecca of the salesmen of the industrial world " <sup>2</sup> . Rice imports rose dramatically from 35 thousand metric tons in 1970 to 7 million metric tons in 1975 and 313 million metric tons in 1983. So did wheat, maize and vegetable oil (See Table 6.3). The dependence of Nigeria on externally

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2. Stevens, C. (1982) Nigeria: Economic Prospects to 1985; After t  
oil glut, Economic Intelligence Unit (EIU) Special Reports No.

produced staples grew markedly after 1972. As Nigerian agriculture stagnated, so previous self-sufficiency gave way to ever increasing imports of food and the payment for imported food was less of a problem, at least for a time because of increased oil revenue and the highly valued currency it engendered. The high valued naira was consumer- biased as it became apparently cheaper to import food than to grow it. In any case, cheap imports depressed local food production, and the low prices offered by the marketing Boards had all but quashed export commodity production. With too much of imports and almost a single export item, petroleum, Nigeria started to develop a current account balance of payments deficit in 1982. As imports continued unabated, Nigeria incurred more and more foreign debt. In order to remedy the current account deficit, import controls were instituted which precipitated a black market economy. The theme of this study is the squeeze on the tradeable sector (other exports apart from oil) of the Nigerian economy since the early 1970s brought about by the combination of nominal appreciation of naira and continuous neglect of the rural sector. We call this the "Dutch disease" syndrome. Our aim therefore is to provide a theoretical and empirical framework for analysing this type of phenomenon. The name "Dutch disease" was derived from the rapidly growing natural gas sector of the Netherlands economy and the damage it inflicted on the entire structure of the economy. The Netherlands is small and densely populated,



and one of the most highly developed countries in the world. She also depends very much on foreign trade and has one of the highest living standards in Europe. In the late 1950s, the Netherland discovered a very large natural gas in north of the country and started rapid development of the resource in 1963. Since then some new finds have been made both onshore and offshore. By the 1970s, what was originally a natural gas importing country, started to export gas and by 1976, which represented a peak year for natural gas exports, she exported about 51 billion cubic metres or about 44 million tonnes of oil equivalent (mtoe). In addition, massive long-term export contracts were drawn up, with prices linked to the oil price. The balance of payments current account benefited accordingly. Apart from natural gas earning foreign exchange to the Netherlands as a result of increased exports, it also made a lot of contributions to the national budget. (see Table 1.1).

But the euphoria started to wane in the late 1970s and early 1980s. The balance of payments surplus generated by the export of gas pushed up the value of the guilder in relation to other currencies. As the guilder appreciated (see Table 1.2), imports became cheaper and subsequently rose dramatically.

The exchange rate rose steadily over the period 1971-78. Initially many Dutch policymakers welcomed the appreciation because of the benefits of cheap imports. It was thought that a drastic fall in the price of imports

would dampen inflation so long as domestic costs (predominantly wages) fully adjust to the higher external values.

Table 1.1: Natural Gas and the State Budget

Central government income from Natural Gas sales

Year	as Percent of the total of the Central Government income	as Percent of National Income
1974	4.4	1.4
1975	8.6	2.8
1976	11.0	3.6
1977	11.0	3.8
1978	9.9	3.4
1979	8.8	3.1
1980	11.3	4.2
1981	14.5	5.5

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Source: Barker, T and Brailovsky, V (eds) 1981, 'Oil or Industry?' Academic Press.

Table 1.2: Changes in the value of the guilder  
 1971-78  
 (per cent changes over previous year )

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	1971	1972	1973	1974	1975	1976	1977	1978	Cumulative
Relative to supply	1.0	1.5	3.0	4.5	2.0	1.0	4.0	5.5	24.5
Relative to Competitors in foreign markets	1.5	2.5	5.5	6.0	2.5	1.5	6.5	3.5	33.5

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Source: Barker and Brailovsky (eds) 1981

But unit wage costs rose faster than import prices (in guilder terms), pushing up real incomes and lowering profit margins. Prices of Dutch goods became significantly less competitive, which caused industrial exports and output to decline. As industrial output declined, unemployment rose rapidly. Government spending had grown very rapidly too and was now taking a larger share of GDP than in most West European countries. The great bulk of this increase went on transfer payments (pensions, unemployment benefits etc), while public



investment has actually been taking a smaller slice of the national income. In view of this, it was argued, the benefit of natural gas, instead of being put into more productive use, was being wasted. Natural gas became a major export sector squeezing the 'traditional' sector such as manufactures and food exports. In other words, the improvement in the gas balance was matched by an equal or worse deterioration in the manufacturing trade of the Netherlands.

The 'Dutch disease' phenomenon is not confined to any particular country, be it developed or developing. In short many oil producing countries have suffered from the so called disease in one way or another. However, one cannot completely deny the fact that oil brought some benefits to each of the countries in one way or the other. Indeed it has. For example, oil transformed the Nigerian economy during its heydays in many respects. It provided employment, albeit small compared with agriculture, it provided some infrastructural development and increased Nigeria's Gross domestic Product from what it was in the 1960s and early 1970s (see chapter 4). But these benefits were very patchy and short lived indeed.

It is important to note that the principles and symptoms of the "Dutch disease" are the same in every economy. What are different are the structural ramifications. While we talk about "de-industrialization" in the industrial countries like the Netherlands and Britain, it is a case of "de-agriculturalization" in

Nigeria. This study attempts to translate what happened in the Dutch industrial economy to the Nigerian agricultural economy. Therefore, the object of the research has been to examine the impact of the oil export sector on the traditional export sector, agriculture, particularly for the period 1973 to 1982. The reason for choosing 1973 is that it coincided with the period that Nigeria joined the Organisation of the Petroleum Exporting Countries (OPEC) (Nigeria actually joined OPEC in 1971) and started to earn huge increases in foreign exchange. Nigeria's oil, now account for over 95 per cent of total export earnings, and for over 35 per cent of its GDP. Hence, the role of oil, which forms the material base of the export sector, is examined, using Nigeria as a contemporary example of a developing country depending primarily on the export resource sector for economic growth.

#### METHODOLOGY

This study employs both descriptive and statistical analysis. The descriptive method will be used to analyse the international aspect of the oil industry, the historical development of the oil industry in Nigeria, the direct contribution of oil to the economy, the theory of Dutch disease and application of the Dutch disease syndrome in Nigeria. Statistical methods are used to analyse the aftermath of the Dutch disease syndrome in Nigeria, by using multiple regression techniques. The

regression analysis will be used to investigate the following;

1. whether or not relative price changes have had a significant impact on the Nigerian external trade
2. whether or not the Marshall-Lerner Condition for successful devaluation can be satisfied in the Nigerian case.

#### SOURCES OF DATA

The main sources of data for this study are the Central Bank of Nigeria, the Federal Ministry of Agriculture and Natural Resources, the Nigerian National Petroleum Corporation, Federal Ministry of Finance, International Financial Statistics and various other publications and periodicals of international nature. The data are limited to the period 1960-82.

#### CHAPTER OUTLINE

Chapter 2 will review some of the activities of the oil companies up to the formation of the Organization of Petroleum Exporting Countries (OPEC). The chapter will also include the causes of the oil price rises in the 1970s and the response of the consuming countries.

Chapter 3 will present a historical review of the Nigerian oil industry up to the formation of the Nigerian National Petroleum Corporation and the relationship between Nigeria and the oil companies thereafter.

Chapter 4 will present the direct contribution of oil exports to the economy. This includes the contribution of



the oil industry to total exports, employment in the oil sector, retained value added in the oil sector, and government revenue from oil. Chapter 5 will discuss the theory of Dutch disease in terms of spending and resource movement effects. Chapter 6 will examine the impacts of exchange and other central government policies on the macro-economy of Nigeria. Chapter 7 will examine what Nigeria might have done to protect the agricultural sector. Chapter 8 will analyse the Nigerian foreign sector by employing multiple regression techniques and by using time-series data for the period 1960-82 with the view to investigating the significance of relative prices to the Nigerian foreign sector; and also to examine whether or not the Marshall-Lerner condition for a successful devaluation is satisfied in the Nigerian case. Chapter 9 will conclude the study.

2.1      Introduction

The effect of oil on the Nigerian economy must be put into a world context of the organization of the oil industry and also requires a brief account of the history of world market oil prices since the early 1970's and their effect. That is what the present chapter sets out to do.

Over the past 30 years, crude oil has become the single most important raw material traded in the world, both in volume and in value. It is the world's most important energy resource and as such holds a strategic position near the centre of the world economy, contributing about half of all commercial energy consumption. It is sold by petroleum companies which vary both in size and type and which are usually classified as follows:-

Major petroleum companies: these are the very large oil companies like Standard Oil of New Jersey (sometimes called EXXON, ESSO or Jersey), Royal Dutch/shell, British Petroleum, Texas oil Company (or Texaco for short), Gulf, Mobil, and Standard Oil of California (sometimes called Socal or Chevron). These seven big oil companies are sometimes known as the "Seven Sisters".

Large Independents: these are large private petroleum companies which are generally integrated (operating in all

phases of the petroleum industry from exploration to marketing and operating on a worldwide basis, such as Atlantic Richfield, Conoco, or Petrofina.

Small Independents: these are small private petroleum companies that specialize in certain aspects of the petroleum industry's activities such as exploration, production, or marketing.

Financing Companies: these are companies which specialize in investing in the petroleum industry such as drilling fund companies.

Promoters: these are small, sometimes one-man, companies which specialize in the acquisition and transfer of prospective oil fields.

National Petroleum companies: these are owned by individual oil producing countries (or state) governments. Besides the above classifications, companies can also be classified according to their areas of specialization such as refining, pipeline, or gas distribution companies.

However, the major petroleum companies (the "Seven Sisters") are the largest and most influential in the world. They represent some of the largest commercial enterprises the world has ever seen. At the peak of their power, no other international commercial enterprises could match the kind of control that a handful of these companies were able to maintain over the world's oil industry. Sampson(1985) puts it this way;



" Their supranational expertise was beyond the ability of national governments. Their incomes were greater than those of most countries where they operated, their fleets of tankers had more tonnage than any navy, they owned and administered whole Cities in the desert. In dealing with oil they were virtually self-sufficient, invulnerable to the laws of supply and demand, and to the vagaries of the stock markets, controlling all the functions of their business and selling oil from one subsidiary to another."<sup>1</sup>

Until the early 1970s the industry was dominated by these seven international majors who were able to maintain control through a well developed and sophisticated vertical integration of their operations. This vertical integration covered the full range of upstream and downstream activities, extending all the way from exploration and production, through transportation and refining to the marketing and retail outlets for products. Despite the large volume of international trade in oil, little crude oil was actually traded. Most of the oil produced and refined was turned over to the parent companies or to affiliates under their control. Thus, the operating companies rarely sold any oil in the open market. It was estimated that, until recently, over 90 per cent of oil exports by the major companies were composed of transfers from the parent companies to their

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1. Sampson, A. (1985), The Seven Sisters: The great oil Companies and the World they made, (Coronet Books).

respective subsidiaries. Less than 10 percent of the oil produced was sold in the open market. The highly concentrated structure of the oil industry was characterized as a perfect case of oligopoly.<sup>2</sup> For the world crude oil production shares of the majors in 1972 see appendix Table 2.1.

However, while we acknowledge the crucial role played by these companies in discovering the resource in the first place, they did little, if anything, to help their host countries in terms of technological and manpower developments. Like most businesses, their primary concern was their own financial balance sheets, the satisfaction of their shareholders and the continued growth and strength of their firms world-wide. The allocation of benefits between them and their host countries was gravely unbalanced and oil prices remained continuously low. The continuous low prices of crude oil resulted in low oil revenues for the host countries. In 1960 Iraq issued a call for action and a number of producing countries formed themselves into The Organisation of petroleum Exporting Countries (OPEC). The original members were Venezuela, Saudi Arabia, Kuwait, Iran, and Iraq, to which have been

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2. Penrose, E. (1968) The International oil Industry in the Middle East, Middle East Economic Survey (supplement) August p.6

added Indonesia, Libya, Qatar, Gabon, Nigeria, Algeria, Ecuador and United Arab Emirate.

At a meeting of the Organization held in June 1962 a call was made to abandon the low crude oil price policies, and a recommendation was made instead for an administrative price system which links crude oil prices to an index of the prices of goods which the member countries need to import. With this in mind, OPEC member nations exploited every opportunity to push up prices in the 1970s. The opportunities were available through recurring supply disruptions during the 1970s.

Some OPEC members, like Libya, Iran, etc, thought that the formation of OPEC meant taking control of their own destiny as far as oil prices were concerned. OPEC was able to take advantage of the increasing hostilities in the Middle East. This subsequently led to a fundamental change in the history of international oil pricing.

It all started during the "Yom Kippur" war on October 6, 1973 as a result of the Egyptian and Syrian invasion of Israel. Members of the Organisation of Arab Petroleum Exporting Countries (OAPEC)<sup>3</sup> in support of Egypt and Syria

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3. OAPEC is an Organization in existence before OPEC and consists mainly of Arab Countries.



agreed to cut oil supplies by 5 per cent each month and to impose a total embargo on friends of Israel. The embargo and supply reduction would only end when Israel withdrew from all occupied territories and restored Palestinian rights. They also agreed to increase posted prices from \$3 to \$5.12 per barrel; an increase of 70.6 per cent. In November of that year, OPEC reduced production by 25 per cent by changing the lifting rule from September levels. The reduction precipitated an unprecedented spot market price increase.

Similarly, when report came to the OAPEC countries of leakages in the embargo, they decided to plug the holes by introducing new production cuts that affected all countries. In consequence, world production levels declined from 47.8 million barrels a day during September to 46.2 million barrels a day in October, and then to 43.2 million barrels a day in November. Spot values of Arab light on the Rotterdam market increased from \$6.71 per barrel on the 1st of October to \$11.53 per barrel on the 1st of November and to \$19.35 per barrel on the 1st of December.<sup>4</sup> The two reasons advanced for such a dramatic increase were; first the sudden nature of the cutback which produced an air of uncertainty in the market. The

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4. Danielsen, A.L.(1982), The Evolution of OPEC, Harcourt Brace Jovanovich, Inc.



second reason was the fact that oil stocks in Europe were low. The Organization for Economic Corporation and Development (OECD) countries only had about sixty-five days of supply which was considered pretty low for the coming winter.

The steep nominal increase in oil prices in 1973 had been largely eroded in real terms by 1978 because of the unprecedented inflation that the 1973/74 oil price increase is thought to have precipitated.

## 2.2 Winter 1978-9 The Iranian Revolution:

This crisis came just when experts in the West were actually forecasting a further fall in oil prices in real terms. Nobody had ever thought of problems in the Middle East other than the perpetual conflict with Israel. It was not until the Iranian oil field strike of October 1978 which lasted for three weeks that refiners and consumer countries alike became concerned. The strike led to the fall of the Shah of Iran. The strike was followed by an unrelated loss of 500,000 barrels per day of productive capacity in Iraq due to a pipeline fire. Almost immediately, world production dropped by about 4 million barrels a day (from 62.9 to 58.9 million barrels a day) over a period of two months. The effect of such a loss in reserves was immediately shown in spot price value. Spot prices of the "marker" Arabian light jumped to \$13.20;

some quoted prices were as high as \$15.36 per barrel<sup>5</sup> (versus the official price of \$12.70), and Iranian light was at a similar level. Extreme Scarcity pushed up prices of high quality Emirate crudes like Abu Dhabi Murban to \$13.75.<sup>6</sup> Others sold as high as \$17.33<sup>7</sup> (versus \$13.26). Even heavy Arabian crude enjoyed premiums of up to 5c over the official price, with spot sales at \$12.07 and higher. The demand was particularly intense for light low-sulphur African and North Sea crudes, with premiums running at about \$1 per barrel. Nigeria particularly benefited from the episode because of greater demand for her low-sulphur crude. She sold more crude than she was able to deliver. Buyers were willing to pay \$14.70 for Libyan ES Sider when its official price was \$13.68 and as much as \$14.90 for Nigerian Bonney lights and \$14.95 for Algerian Saharan (premiums of 85c to 93c.). One of the main reasons why prices rose to that unprecedented level was that many customers of Iran were deprived of crude due to the cessation of supplies from Iran. Countries in that category were Japan and India. In order to meet their own

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5. Verleger Jr. P.K. (1982) Oil Markets in Turmoil, Ballinger publishing company Cambridge, Massachusetts.

6. Petroleum Intelligence Weekly (PIW), Nov.6.1978.

7. Verleger, op. cit. p.34.

obligations to their customers they had to turn to the spot market for supplies.

In January 20, 1979 Saudi Arabia who was covering the production loss from Iran, suddenly announced a production cut. Before this announcement, Saudi Arabia was producing a maximum of 9.8 million with the extra going to the Iranian customers but the announcement of a production cut reduced and placed a production ceiling of 8.5million barrels a day. The cut lasted about three to four weeks which brought the total world production down by approximately 500,000 barrels a day during February of that year only to be restored in March. The effect was immediately felt on the spot value, with a rise of 64.5 per cent of the Arab light crude from \$19.09 to \$31.40 per barrel during the month of February. The value later dropped to \$25.04 per barrel by the end of March.

### 2.3 Mid-May 1979 episode:

What happened this time was a result of the coincidence of events on both the demand and supply sides. The demand side event was the action of the U.S. Department of Energy to introduce in June a \$5.00 a barrel 'entitlement' on imports of heating oil from the Carribbean. This was interpreted outside the U.S as a subsidy on imports which drove spot values up by \$1.00 to \$2.00 within twenty-four hours.



The supply side event was triggered by a statement of intention from Saudi Arabia to sell more oil by direct sales and less through Aramco partners. Without notice to the U.S companies about possible cut back of their entitlements, Saudi Arabia reduced their liftings by 300,000 to 400,000 barrels daily, reducing their lifting from 7.3 to 6.8 million barrels a day. As a result spot value of Arab light rose from \$28.09 per barrel in early May to \$34.47 in early June and to \$34.72 in early July.

#### 2.4 November 1979:

In November 1979, Iranian militant students seized the U.S embassy in Tehran because of the U.S support for the Shah of Iran. In response, the U.S government placed an embargo on Iranian oil. As a result, the Iranian crude went to the spot market. The U.S action slightly reduced the world supply of oil. As the Iranians became more pre-occupied with their internal revolution, oil production dropped in October and December by 500,000 barrels a day. Almost immediately, the spot value of Arab light increased from \$33.27 to \$37.09 per barrel between October and November and then increased further to \$37.61 per barrel in December<sup>8</sup> In October - December 1980, the war on the Shatt-at-Arab broke out between Iraq and Iran. The war

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8. Verleger, op. cit. p.37.



resulted from border disagreements. The Iraqi president made unspecified claims to the Arab speaking Iranian oil province of Khuzistan, in addition to the long-standing claims of his country to the control of both banks of the Shatt-al-Arab - the water way leading from Iraqi Basra and Iranian Abadan to the open sea. Iran not quite comfortable with the Iraqi claim, made a counter claim of the area and fighting broke out. It may also be argued that the Iraqi President wanted to take advantage of the apparent Iranian internal crisis to 'cut Khomeini down to size ' and to discourage his agitation amongst the population of the Shia holy cities of Nejaf and Kerbela. In our view, it is immaterial whichever argument is right, what concerns us primarily is the immediate effects of the hostilities. All exports from Iran stopped because of the fighting and the subsequent blockage of the Shatt-al-Arab water way by the Iranians. There followed also the bombing of the main loading port of Kharg Island. This phenomenon added to a loss of an extra 1 million barrels a day and saw a dramatic increase in spot prices from \$30.38 to \$38.23 a barrel.

OPEC member countries enjoyed quite a substantial increase in oil revenues. As Table 2.1 shows, by 1973 the world's trade balance with OPEC was \$23.00 billion in OPEC's favour and by 1974 it had reached well over \$103 billion. However, the OPEC countries' fortune brought with it massive misfortune for the entire world.

## 2.5 The Consuming-Countries' Response.

The unprecedented increases in oil prices that dominated the early 1970s caused the consuming countries, mainly the West, to try to forestall further actions by the OPEC countries. It was Henry Kissinger on December 12, 1973 - the evening of a Common Market Summit meeting in Copenhagen - who called for the nations of Western Europe to join the United States in an Energy Action Group that would collaborate on conserving energy, developing new sources of oil, giving oil-producing countries incentives to increase supply, and common research efforts.

Kissinger said that;

" while the United States could solve the energy problem alone, albeit with great difficulty, it was a problem Europe can not solve in isolation at all."<sup>9</sup>

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9. Wall Street Journal, Dec. 13, 1973, p.2 Extracts from Dr. Henry Kissinger's memoirs on this subject were published in the London Times 4 March 1974.

TABLE 2.1 : World Trade Balances in 1973 and 1974

(millions of U.S dollars)

	Industrial*	OPEC**	Non-oil
	Countries	Countries	LDCS
	-----	-----	-----
1973 :			
Export (f.o.b)	391,884	44,900	87,816
Import (c.i.f)	401,035	21,900	111,165
	-----	-----	-----
Trade balance	-9,151	+23,000	-23,349
1974 :			
Export (f.o.b)	521,380	138,900	121,840
Import (c.i.f)	567,600	35,800	177,490
	-----	-----	-----
Trade balance	-46,220	+103,100	-55,650

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\*Seventeen countries consisting of the Group of Ten member countries, plus Austria, Australia, Denmark, New Zealand, Norway, South Africa, and Switzerland.

\*\* Including a few other small oil-exporting LDCS such as Brunei and Trinidad and Tobago.

Source:- International Financial Statistics, IMF, Washington, D.C., August 1975.

Later, Kissinger warned that unless immediate steps were taken to overcome the crisis, the world would be threatened with a vicious cycle of competition, rivalry



and depression such that led to the collapse of the world order in the thirties. In 1974, the International Energy Agency (IEA) was formed which comprises the United States and the European countries except France.

The formation of the IEA actually did little to stop the oil price increases. As the world economy recovered, so did the demand for oil and prices continued to be high. However, some may argue that without the formation of IEA and its subsequent actions, world oil prices would have been still higher. Whilst the first oil price increase of 1973/4 is thought to have precipitated an unprecedented world inflation that has continued until quite recently, the second oil price increase of 1978/9 heralded a major world recession which led to a steep decline in the demand for oil. Many doubt whether the demand for oil will ever return to pre-1973 levels, because one result of the steep increase in the price of oil is that there has been a great deal of research into ways of burning oil more efficiently. New oil driven machinery uses much less oil and the same is true of motor cars and aeroplanes. There has also been a switch to other sources of energy, especially nuclear and hydro-electric energy, wherever possible in order to economize on oil.

In the past year there has been a steep drop in the price of oil to levels in real terms below those prevailing before the 1973/4 increase. This is attributed in part to the continuing sluggish world demand for oil, despite the resumption of economic growth in most



industrial countries. But the main reason is that it has proved impossible to hold down supplies. There are now many more oil producing countries than before 1973 - some of them, like the UK, not members of OPEC. But OPEC itself which worked so well in the 1970's, appears to be losing control over its members. Prices may well recover from their present very low levels, but it may be a long time before there is a return in real terms to the prices that ruled in 1978/9.

### 3. THE DISCOVERY AND DEVELOPMENT OF OIL IN NIGERIA.

#### 3.1 Introduction

This chapter traces the discovery and development of oil in Nigeria, and describes the present structure of the industry in Nigeria. Foreign oil companies started to explore in Nigeria from the turn of the century. Nigeria at that time lacked the technological know-how and financial resources to undertake such risky ventures. Therefore, it is not surprising that the petroleum industry in Nigeria was developed mainly by foreign capital and expertise supplied by the multinational oil companies. It is only very recently that the Government started to actively get involved in production activities by acquiring majority share holding and by nationalisation.

The petroleum industry is capital intensive; it requires large amounts of investment to pay for heavy capital equipment like rigs, tankers, refineries, etc. The industry can be seen from two aspects and each of these is capable of standing on its own. We have in effect the "up" and "down" streams. The "upstream" operations are concerned with the initial aspect of exploration, and exploitation up to production stages. "Downstream" operations deal with all aspects concerned with the transformation of petroleum resources into final products

as well as all aspects of the petrochemical industry. All these activities Nigeria could ill afford at the time the oil industry came.

However, the story of oil in Nigeria started with the very first attempt by a German company, the Nigerian Bitumen Corporation to search for hydrocarbons in the southern part of the country in 1908. The company was unsuccessful and decided to call off their search in 1914, the year the first world war started. The reason for the unsuccessful search by the Nigerian Bitumen Corporation was three-fold. Firstly, the company had insufficient financial resources at their disposal; secondly, qualified manpower was limited and lastly inadequate understanding of the geology and geography of the country. The failure of Nigerian Bitumen Corporation brought with it a major set-back in the search for oil in Nigeria. It created an air of uncertainty as to the prospects of finding oil by any other oil company in Nigeria. And investment in oil prospecting in Nigeria became unattractive.

However, two decades later, another oil company, this time the Anglo-Dutch Consortium, decided to break the ice. Anglo-Dutch Consortium came to Nigeria as Shell D'Arcy (the forerunner of the present Shell Petroleum Development Company of Nigeria). This company started its operations in Nigeria in 1937 and was awarded the sole concession rights covering the entire country. The second world war in effect interrupted the activities of Shell D'Arcy and

work did not resume until 1947.

Shell D'Arcy, forewarned by the mistakes of the Bitumen Corporation left no stone unturned, so to speak, and was rewarded with crude oil at Oloibiri in the Niger Delta areas of Nigeria in 1956. In 1958, Shell started oil production and exports from the Oloibiri field in the present Rivers State at a rate of 5,100 barrels per day.

### 3.2 The importance of Oloibiri Discovery

The discovery of crude oil at Oloibiri and Afam in 1956 and subsequent exports of 5,100 barrels per day opened a new chapter in the economic history of Nigeria. It also brought with it renewed hope for other oil companies who previously were very sceptical of finding oil in Nigeria. As other oil companies showed interest in Nigerian oil search, Nigeria was forced to review her concession rights already granted to Shell and extended exploratory rights to companies of other nationalities. The reasons given for this was that Nigeria wanted the acceleration of exploration and at the same time avoid over-dependence upon a single company. The increased number of concession holders enhanced both the financial and negotiating positions of the government with the oil companies.<sup>1</sup> The newcomers were able to obtain concessions

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1. Schatzl, L.H. (1969) Petroleum in Nigeria, Oxford University press. Ibadan.



in areas abandoned by Shell-BP. Such newcomers were Mobil Exploration Nigeria Ltd., an affiliate of the American Socony-Mobil oil company in 1961; Gulf, Agip, Safrap (now Elf), Tenneco and Amoseas (now Texaco/Chevron) both in the onshore and offshore areas of Nigeria.

Gulf made the first offshore discovery on the Okam structure of Bendel State in 1964, and many of the newcomers were also successful. The exploratory activities of the newcomers were greatly enhanced by the presence of Shell-B.P. They were able to purchase from Shell some geological and geophysical reports and drilling analyses already prepared by Shell for their concession areas and Shell, on the other hand, was willing to sell because she had already abandoned those areas.

To the Nigerians, the Shell-BP success at Oloibiri brought a wind of hope that Nigeria, like most Gulf States, was now on the threshold of a great oil wealth. Also, February 17, 1958 was regarded as a very important date in the history of the Nation, namely the date that precipitated the first shipment of crude oil. This first shipment of oil from Port Harcourt Harbour for Holland was received in a ceremony by the then Nigerian representative in the United Kingdom, Mr. Mathew Mbu. And so the

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quantity of crude oil exported doubled every year and attained its all time peak in 1979 at the rate of 117 million metric tons per annum.

### 3.3 Quality of Crude Oil in Nigeria

Nigeria is not only blessed with crude oil, she is also blessed with a good quality crude. The high quality comes from the high American Petroleum Institute (API).

It is common practice in refining petroleum to produce fuel oils complying with several specifications prepared by the American Society for Testing and Materials (ASTM) and adopted as a commercial standards by the U.S. Bureau of standards such as the API. API grades crude oil according to gravity and viscosity, the lightest being No.1 and the heaviest No.6. Grades 5 and 6 generally require heating for satisfactory pumping and burning.<sup>2</sup> Nigeria has for a long time derived a lot of advantages from her high quality oil. For instance, high gravity crudes yield more of the light end- products (fuel oil) during processing and the light end- products command the highest prices in the products market, especially in the warm seasons. The low sulphur content meets the pollution

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2. Steam: Its generation and use, (1975) p.5.17, published by Babcock and Wilcox.

standards in major markets like U.S.A; Japan etc and it is not surprising why the U.S.A. is Nigeria's major customer for oil. High gravity and low sulphur content reduces the cost of processing considerably, as no extra cost is incurred for "cracking" (i.e. subjecting the crude to an intense heat) and "desulphurization" (i.e. removing sulphur from crude oil) facilities to meet basic requirements of designated markets. The quality of crude oil, especially with regard to viscosity, affects its flow through pipelines. If the oil is very waxy and/or very heavy like the Serir crude oil in Libya, its flow has to be aided by heating the pipe, which tends to raise the cost of pipeline transportation. The Nigerian crude's wax content is low compared with those of some fields in Libya and the Middle Eastern countries. The high quality is reflected in oil prices because they attract premiums which are added to the marked crude price. The level of such premiums is better appreciated when it is realised that some of the Nigerian crude streams command the highest prices in the global oil market. Another crude that has a similar advantage is the U.K. North Sea oil.

With a view to maximizing the benefit accruing from her oil resource, Nigeria established a national oil company named the Nigerian National Oil Corporation (NNOC) by Decree No.18 in 1971. Also in June the same year, Nigeria joined the Organisation of the Petroleum Exporting Countries (OPEC) as the 11th member country. In order to



create a more virile oil agency, and optimise the scarce human and infrastructure resources available to Government, the NNOC and the Ministry of Petroleum Resources were merged to form the Nigerian National Petroleum Corporation (NNPC) in 1977. The functions of NNPC necessarily combined the commercial objectives of the NNOC (namely, exploration, production, transportation, refining, processing oil, marketing of crude oil and products). NNPC's main function is to conduct research relating to the petroleum industry and the results of such undertaking made public. This function, the NNPC has to do in addition to the general functions of NNOC which it inherited.

At different stages in the evolution of the country's oil industry, Government has successfully negotiated and taken over increasing levels of participating interests in oil producing companies. By 1977 when NNPC was established, Nigeria had acquired majority participating interest in all the oil producing companies. The state of Government participation in each company is shown in appendix Table 3.1.

#### 3.4 Production sharing Arrangement/contract (PSA/PSC)

In the early seventies, some OPEC member countries particularly, Indonesia pioneered a production sharing arrangement which vested 100 per cent control in the host



Government. In view of the success of that arrangement, Nigeria followed suit in 1973 with the Ashland oil company. The rationale for entering into this kind of agreement with the oil companies is for the host countries to safeguard themselves from technological, manpower and financial inadequacies confronting them. PSA is where a company, in this case Ashland, is required to put up the necessary funds to explore, develop and produce oil on behalf of the Government. Thereafter, their proceeds would be 40% of the production for the recovery of costs and payment of royalties, and 55% of the rest to offset Petroleum Profit Tax (PPT) while the balance, 5%, defined as "Profit oil" is shared 65/35% between Government and the company for production up to 50,000 b/d; and 70/30% when production topped 50,000 b/d. PSA is said to have a number of shortcomings. For example, the foreign oil company may wish to limit its exploratory activities once it strikes oil in commercial quantities in order to minimize risks. That means that she has to concentrate her activities on such oilfields where no further exploratory investments are required.

Between January, 1978 and July, 1979, the Government increased its participation interests in the oil producing companies to 60% and in August 1979, the Government nationalised all British Petroleum (BP) interests in Shell-BP because of her alleged involvement with South Africa, thus increasing her participation interest in

Shell to 80%. As a result of this, the Federal Government has a right to about 70% of total oil produced in the country.

### 3.5 Risk Service Contract (RSC)

September 1979 witnessed another experiment in the petroleum industry as NNPC moved from the production sharing contract to a Risk Service Contract in the unallocated acreage areas of the country. Agip Africa, Elf Aquitaine and Nigus Petroleum companies had entered into Risk Service Contracts with NNPC. To them, it is "a more specific form of contract than a production sharing Contract/Agreement and offers more concrete advantages than those of the PSA".<sup>3</sup> Under a Risk Service Contract, the company provides all funds for exploration, development and production of oil. Each service contract is related to a separate block or contract area; the primary term is between two or five years, after which, if there is no discovery, the contractor forfeits all rights in the contract area. If a commercial discovery is made, the contractor will be repaid his investments, and as an incentive for the risk taken, be paid a remuneration based on an agreed formula. It also has the first option to purchase a fixed quantity of crude oil produced from the

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3. Onoh, J.K. (1983) The Nigerian oil Economy, Croom Helm .

contract area.

### 3.6 Crude oil sales

NNPC is also bestowed with the responsibility of selling the government's own 70% share of total oil produced by the international oil companies and with the proceeds paid directly into Federal Government accounts. As a matter of policy, NNPC sells oil to customers without any intermediaries. The customers are mostly direct oil users, and include all Government joint venture partners. Oil sales are made to all customers at exactly the same price i.e the Official Selling Price (OSP). There is a non-discrimination policy in customer relations. The Government sometimes directs NNPC to extend credit facilities of 90 days instead of the commercial 30 days to some neighbouring African countries for whom oil sales are approved. This 90 days' credit to governments of poor developing countries is the only area of preferential or unequal treatment given to other customers. All oil sold by NNPC is on long term contract. Speculation in the spot markets is not part of Nigerian sales activities.

### 3.7 Setting of oil prices

Nigeria is a member of OPEC which fixes both quantities to be produced by each member, as well as prices. Prices are fixed relative to the OPEC Marker crude



price to which other crudes are linked according to their respective qualities. The marker crude price is arrived at by examining all the factors of supply and demand. Among the demand factors that are considered are the competitive standing of oil vis-a-vis other energy sources, rates of inflation in general but particularly in so far as they affect the imports of member-countries. The supply factors considered are, the cost of production, and transport costs. Decisions concerning the quantity to be produced take account of the individual member countries financial needs. For example, Nigeria may be allowed to increase production if she faces some major financial problems. But that increased production would be counter-balanced by a decrease in production by another member willing to help Nigeria out. In most cases Saudi Arabia has always made this sacrifice. Nevertheless, whatever prices these factors indicate, OPEC still allows considerable political consideration to depress the price level indicated for the welfare of all nations. As a result, OPEC fixes only the prices for the marker crude and the other forty-two different crudes produced in member countries are assessed to take account of deviations in quality and freight.

As we saw earlier, Nigerian oil has a high premium because of its low sulphur content. The premium varies from time to time, but for instance in ealy 1981, it was about U.S.\$8 when the Saudi marker price was U.S.\$32<sup>4</sup>.

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Its quality is comparable to that of Britain's. If prices are to be maintained, there is need for discipline amongst members in maintaining both the price and production allocations. Otherwise the market collapses in a price war as has been happening recently.

In Nigeria the joint venture partners of the Government normally put their 30% oil share through their own systems for downstream operations. Like most oil producing countries, what the producing company gets on each barrel of its equity oil in Nigeria is:

- a: recovery of the Actual Technical cost of production and
- b: a profit margin.

Currently, the profit Margin is \$1.6 per barrel while the theoretical technical cost is also \$1.6 per barrel. The Government gets 70% of the 100% crude production plus royalties. The Government can either tax the 100% crude before or after taking her share of the crude.

In summary, therefore, it could be seen that joining the OPEC in July 1971 brought two important benefits for Nigeria. First, it shifted the government's interests away from the mere collection of royalties and other dues

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4. Platt's oil Price Service, 1981.

which the oil companies offered to pay to it, to active involvement in the oil industry by the establishment of national oil Corporation, which was immediately charged with responsibilities for all upstream and down stream activities in the industry and actually introducing Decrees binding the oil companies. Nigeria's involvement in the oil production activities herself is beneficial because that was the only way she could acquire the oil technology. Second, Nigeria also benefited from the oil price increases which resulted from the collective actions of OPEC members.

4.1                      Introduction

Oil has been described as the pillar, engine and lifeline of the Nigerian economy.<sup>1</sup> The reliance on oil has increased enormously since petroleum was first produced in commercial quantities in 1958. We shall examine the contribution of the petroleum sector, under the following headings; its contribution to -

- a) The Gross Domestic Product (GDP)
- b) Government revenues
- c) External transactions; that is
  - Foreign exchange earning, and
  - Balance of payments (BOP);
- d) Linkage with other domestic industries
- e) Employment
- f) Provision of basic Infrastructure

Its effect on Nigerian agriculture and agricultural exports will be properly examined in Chapter 6.

4.2      Oil sector's contribution to GDP:-

Historically, Nigeria had depended on the rural sector -agriculture for her exports and for much of her internal consumption. The reason for this was obvious. Nigeria had a clear comparative advantage in agricultural

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1. Concord Weekly, 6 May 1985, p.7

production for export. The Colonial Government promoted the production of cash crops for export - both as a means of paying for manufactured imports and to generate a cash income that could be taxed to pay for government services. The dominant role of agriculture in the Nigerian economy at the time of independence can be seen in its share in terms of percentage contribution to the Gross Domestic Product as shown in Table 4.1. As Table 4.1 depicts, the agricultural sector started slowing down from 1965 from its high of 60% of GDP in 1960. In 1965, the agricultural contribution fell to 48 %. In 1977 it fell to 25 % and in 1980 it recorded an all time low of 22 %. The data represents how by the late 1960s and early 1970s oil transformed the economy of Nigeria and made very significant increases in the economy's GDP.

TABLE 4.1: GDP BY INDUSTRIAL ORIGIN AT CONSTANT 1977

	<u>PRICES (N.MILLION).</u>									
	1960	%	1965	%	1970	%	1975	%	1980	%
Agric.	6352.5	60	6927	48	7255	38	7639	28	7149	22
Oil	441.5	4	2223	16	4221	22	6276	23	7658	24
Manuf.	241.7	2	286	2	743	4	1186	4	2245	7
<u>others</u>	<u>4333.8</u>	<u>34</u>	<u>4910</u>	<u>34</u>	<u>7117</u>	<u>36</u>	<u>12070</u>	<u>45</u>	<u>15121</u>	<u>47</u>
Total	11370	100	14346	100	19336	100	27171	100	32173	100

Source:-Simplified version of Appendix Tables 4.1and 4.1A.

Crude oil occupied the commanding heights of the



nation's economy, making agriculture less significant than it used to be within relatively few years of its discovery. It is equally important to notice that, since 1960, the yearly share of crude petroleum has consistently surpassed that of manufacturing in GDP terms and narrowed the gap between it and the share of agriculture although GDP contribution in manufacturing has been on the increase except during the civil war years (1965-1969).

#### 4.3 The Oil sector's contribution to Government Revenue

Legally and constitutionally, the Federal Government of Nigeria has an uncontestable right of possession of all commercial minerals within Nigeria's territorial boundaries.

As a result it is the Federal Government alone that is allowed to either directly exploit the minerals or grant permission to whomever she wishes to do so, while charging such royalties, rents, fees, premia that may pertain. Also it is the Federal Government that allocates some of these sums to the state Governments in terms of annual allocations depending, of course, on how much was collected. The amounts of such contributions to Government revenue are listed in Appendix Table 4.1 for the years 1958 to 1984. As can be seen in Appendix Table 4.1, oil revenue rose from a mere N80 million in 1969 to N219 million in 1970. From then on, the revenue rose astronomically to more than N13 billion in 1980 but fell

to nearly half that figure in 1984. Its percentage contribution to Federal Government revenue also rose progressively to dominate all other sources of the Federal Government revenue.

The contribution of oil to government revenue accrues in a number of ways, ranging from profit taxes, royalties, premia for the acquisition of concessions to rental charges. Following the rapid development of exploration and production, total oil revenue paid to the government also rose from N3 million in financial year 1960 to N5187 million in financial year 1976 as Appendix Table 4.3 shows.

"Royalty and profit taxes accruing to the government per barrel of crude oil produced were substantially increased in May 1971. This was due to revised agreements between the Nigerian Government and the Petroleum Companies, which became effective retroactively from March 20th 1971."<sup>2</sup>

This, however, is not surprising because if we recall, from Chapter 3, Nigeria joined the OPEC in 1971 and since then, her oil policies have been in line with those of all OPEC member nations. As can be seen in Appendix Table 4.3, oil profit tax still makes the highest contribution with 79.5% of the government's domestic oil revenues in 1976. This figure, however, fell to 59.0% in 1983 and to 57.3% in 1984.

#### 4.4 Oil sector's contribution to External

##### Transactions:

##### 4.4.1 Foreign Exchange Earnings:- For most developing

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2. World Bank country economic Reports  
Nigeria, Options for Long-Term Development, 1974

countries, the inadequacy of foreign exchange earnings constitutes a serious bottleneck in the process of development. But Nigeria has only recently begun to be faced with that kind of problem; thanks to petroleum exports. The foreign exchange earnings have, for a long time, been a vital aspect of the petroleum contribution and therefore deserves proper attention. As shown in Table 4.2 Nigeria started oil exports in 1958 with a meagre value of N1.8million. Some years after 1958 and 1960, Nigeria started witnessing a dramatic increase in crude oil export earnings. While oil export earnings in 1958 represented less than 1% of the total export of N265.4 million, they rose to 32% in 1964, 79.4% in 1970, 93% in 1975 and 98% in 1981 respectively. Although, until 1980 the value of traditional (agricultural) exports also increased, they came to constitute an ever smaller proportion of the value of total exports. Since 1969, even before the big oil price increases, crude oil has come to dominate exports not only in value, but in volume too. Table 4.3 shows the relationship between quantity of petroleum produced and that exported from 1960-1982. While the quantity of petroleum produced and exported before 1965 were negligible, from 1970 oil started making a significant impact in Nigeria's foreign sector. In 1965, total oil exports was less than 4 million metric tons, by 1976 it rose to 107million metric tons with an all time high of 117 million metric tons in 1979. It declined in 1980, 1981 and 1982. The relationship between total exports and oil exports in Table 4.2 is expressed as a



graph in Fig. 4.1. It shows how reliant the Nigerian economy has become on crude petroleum for her foreign exchange earnings.

However, it is important to point out at this stage that the figures referred to are only gross and do not give an accurate account of oil's net contribution to foreign exchange earnings. This is so because they do not take into account what was actually repatriated. As was stated in Chapter 2, the petroleum industry was until recently largely owned by foreign companies. As part of the incentives to attract them, the Federal Government of Nigeria made special arrangements with the oil companies to allow them to retain abroad part of the foreign exchange proceeds of the export of crude. This is partly amortization and transfer of profits but a part of it is also needed to pay for imports of machinery used by the industry. The mere fact that some of the foreign exchange earned are repatriated abroad reduces the impact of the oil industry on Nigeria's balance of payments. It is therefore prudent to consider the net impact of the oil sector by examining its overall contribution to the balance of payments.



Table 4.2 -- Crude Oil Export as a Percentage of Total Exports in Nigeria (₦ million)

Year	Traditional Export Commodities	Crude Oil Exports	Total Export	Percentage of Crude Oil to Total Export
1958	263.5	1.8	265.5	0.7
1959	315.8	5.2	321.0	1.6
1960	110.3	8.4	118.7	7.0
1961	112.3	22.6	134.9	16.7
1962	115.1	34.4	149.5	23.0
1963	129.3	40.4	169.7	23.8
1964	135.6	64.0	199.6	32.0
1965	150.0	136.2	286.2	47.5
1966	132.5	184.0	316.5	58.1
1967	125.0	142.4	267.4	53.2
1968	123.1	77.6	200.7	38.6
1969	125.4	301.6	427.0	70.6
1970	131.7	509.6	641.3	79.4
1971	245.7	1,053.0	1,298.7	81.1
1972	162.4	1,176.2	1,338.6	87.8
1973	363.0	2,006.0	2,369.0	84.6
1974	435.0	5,671.0	6,106.0	92.9
1975	350.0	4,766.0	5,116.0	93.2
1976	425.0	5,918.0	6,343.0	93.3
1977	523.0	7,454.0	7,977.0	93.5
1978	627.0	6,005.0	6,632.0	90.5
1979	670.0	9,437.0	10,107.0	93.4
1980	554.0	12,247.0	12,801.0	95.8
1981	189.0	10,247.0	10,436.0	98.2
1982	121.0	8,584.0	8,705.0	98.6

SOURCE: NNPC, Petroleum Economics and its impact on National Plans; Document produced by the Economic Research Unit 1982 (unpublished).

Table 4.3

Nigeria Crude Oil Production and Exports 1960-1982  
(000 Metric Tons)

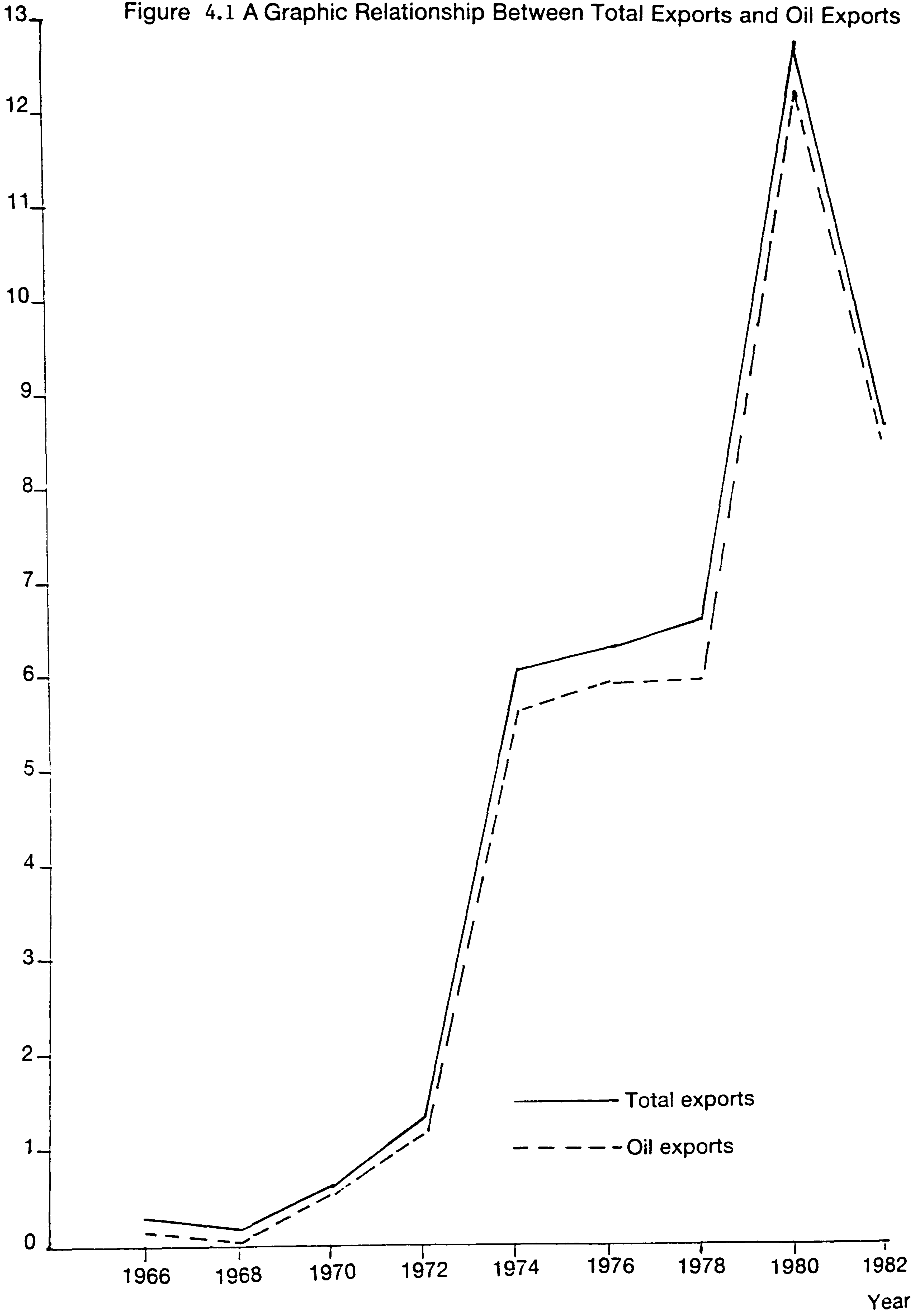
Year	Production	Exports	% of crude oil exports
1960	n	n	n
1965	14,000	3,640	30
1966	22,000	7,260	33
1967	17,000	5,270	31
1968	8,000	1,520	19
1969	29,000	13,050	45
1970	57,000	54,000	97
1971	81,000	79,000	97
1972	93,000	92,000	99
1973	109,000	105,000	96
1974	119,000	115,000	97
1975	94,000	90,000	96
1976	110,000	107,000	97
1977	111,000	108,000	97
1978	100,000	96,000	96
1979	122,000	117,000	96
1980	109,000	101,000	93
1981	74,000	64,000	85
1982	56,000	44,000	78

Note: n = negligible.

Source: NNPC (1982), Progress of Public Sector Participation in the Nigerian Oil Industry; NNPC document (unpublished).

Billion Naira

Figure 4.1 A Graphic Relationship Between Total Exports and Oil Exports



Source: Table 4.2.



#### 4.4.2 Contribution to Balance of payment (BOP):

Recall that the reason for looking at the contribution to the balance of payments differently was because the figures shown previously give a false impression. What we then intend to do here is to focus attention on that proportion of the foreign exchange receipts from oil which the companies had to retain in Nigeria to finance their local expenditures and to meet their statutory obligations. Local expenditures mainly include wages and salaries, and statutory obligations such as the payments of rents, royalties, profit tax and other fees like harbour dues and port charges from 1960 to 1982. Table 8.1 shows Nigeria's balance of payments position from 1974 to 1982. The Table reveals that the oil sector has substantially dominated the export sector.

It can therefore, be concluded that the oil sector has for a very long time enhanced the position of Nigeria's balance of payments considerably.

#### 4.5 Oil Sector's linkage with other domestic industries:-

Even though Nigeria's Gross Domestic Product has increased over the years (as Appendix Tables 4.1 and 4.1A reveal) due to increased value added in the oil industry, this does not necessarily imply that there was real economic development as will be explained later. The oil industry's value added increased as a result of increased crude oil production since the end of the Nigerian civil

war, and the two major increases in price in 1973 and 1978/9. These are in no way true reflections of economic development of the local economy. Similarly, a great amount of the industry's value added are subsequently taken out of the economy in the form of factor payments abroad, which severely reduces its contribution to GNP. A more important yardstick of measuring the industry's lasting contribution to economic development is the case of its linkages with the local economy. That is, how the presence of the oil industry precipitates the establishment of other industries to supply inputs into the oil industry itself and derive their expansion directly from the oil industry's increased activities. On these points, the oil industry's contribution has been minimal. Take Appendix Table 4.4 for instance, which shows the Nigerian oil industry's expenditure on goods and services between 1938 and 1974. It shows the extent of the oil industry's reliance on imported goods and services. This reveals the lack of domestic factors of the right kind; so that Nigeria was not able to supply the inputs needed for expansion and the oil industry continued to rely on imported inputs. Indeed one might use columns 4 and 5 as a basis for reasoning and to observe an inverse relationship between oil output and the proportion of the oil industry's local outlay. Appendix Table 4.4 also suggests that in the period 1938-1962 through 1974, with a single exception of 1963 when 48% of total factor payments were made locally, the normal proportions have ranged from 25 percent to 42 percent. The locally supplied goods and

services consist mainly of such things as electricity supply, telephone and postal services and the use of land. Local outlays also comprised customs duties and various grants and subventions. (see Appendix Table 4.5). In other words, the locally supplied goods and services do not include any of the industry's basic requirements of such technically complex inputs as onshore and offshore drilling rigs (including submersibles and semi-submersible), production platforms, concrete and steel structures and a host of other materials and equipment of advanced technology. The provision for forward linkage is equally not there. Businesses to make use of the oil industry's products as inputs such as petrochemical have only recently been sited in Nigeria with locations at Kaduna, Warri and Port Harcourt.<sup>3</sup> The only source of forward linkage which Nigeria to date has utilised is the petroleum refining. There are three refineries now in Nigeria and the fourth is being sited in Port Harcourt. Another source of forward linkage is the exploitation of the natural gas in Nigeria and its use as inputs in other industries. Until quite recently natural gas in Nigeria has been flared, but the Federal Government is now actively pursuing the idea of establishing a liquified Natural Gas (LNG) plant.<sup>4</sup> We have seen that the oil

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3. Petrochemicals Phase 11 projects scaled down; The United Bank for Africa Monthly Business and Economic Digest Vol.8 Nos and 2 Jan/Feb.1985. 'Petrochemicals Industry, a key to development plan in Nigeria', Financial Times Nov. 29, 1982. See also Nigerian National Petroleum Corporation: The structure of Finance packages for Major Petrochemical Project, Sept., 1982.

4. The 1985 Budget and oil projects: The United Bank for Africa



industry has made important contributions to the economy.

#### 4.6 Oil sector contribution to local Employment:-

In the sphere of local employment, the oil industry's record is no more encouraging. The oil industry as a whole had 2,896 Nigerians in their employment at the end of 1960. This number rose to 3,578 at the end of 1970 and increased to only 19,634 in 1977, (see Appendix Table 4.7).

Part of the reason is that there is a scarcity of appropriately trained and qualified local manpower which limits effective Nigerian participation. Nigerian entrepreneurs, and Nigerian directors of the foreign oil companies need to press for more rapid and effective training of Nigerian technicians for the oil industry. Unfortunately due to lack of official statistics on the total number of people in employment for a number of years, comparison with other sectors is greatly hampered. But to illustrate the small amount of employment created in the mining sector as a whole, we use the estimated 1975 and 1980 figures presented in Table 4.5 to compare the amount of employment created in this sector.

TABLE 4.4:- ESTIMATED TOTAL EMPLOYMENT IN DIFFERENT SECTORS 1975 AND 1980 .

Sector	(N.million)					
	Estimated Employment		Estimated Employment		Additional Employment	
	1975	% share	1980	% share	1975-1980	% share
Agriculture	17.86	64.0	19.44	61.2	1.58	41.1
Mining& Quar.	0.11	0.4	0.13	0.4	0.02	0.5
Manuf.& Crafts	4.69	16.8	6.03	19.0	1.34	34.8
Building& Const.	0.25	0.9	0.51	1.6	0.26	6.8
Electricity, Gas and Water	0.03	0.1	0.03	0.1	-	-
Distribution	3.41	12.2	3.75	11.8	0.34	8.8
Transport and Communication	0.17	0.6	0.19	0.6	0.02	0.5
Services	1.39	5.0	1.68	5.3	0.29	7.5
Total (%)	27.91	100	31.76	100	3.85	100

Source:- Nigeria-Third National Development Plan.

However, it must be noted that, because of high capital intensity in the oil industry, any expansion in operations will in general reflect an increase or expansion of

capital investment rather than employment of labour. This means that oil industry employment as a whole is not likely to increase significantly in the future, though one can expect a gradual increase in the number of jobs of technician and above which will be held by Nigerians.

#### 4.7 Provision of basic infrastructure:-

The first direct advantage which Nigeria derived from the operations of the oil industry was in the form of useful geological information covering large parts of the country. For example, through information obtained from its operations, Shell-BP was able to produce for the Government a number of geological and topographical maps covering large parts of the country. The most important aspect of this is the access given to formerly inaccessible and what most people at that time thought to be dangerous areas like the Niger Delta.

Shell-BP built roads and bridges that at that time aided local transportation. These roads and bridges were initially built by Shell-BP to facilitate the movement of their materials to the oil wells. Although the oil industry is thought to generate very insignificant amount of local employment, Shell-BP nevertheless assisted in the area of human resource development. Shell with its pioneering initiative established local schools, on-the-job training schemes, scholarship awards, and other forms of educational grants to the government. In 1959, Shell established a Training school for junior technicians in



Port Harcourt to provide three-year full-time courses to selected students.<sup>5</sup> The school had an annual intake of about 100 and trained students to the level of the intermediate certificate of the London City and Guilds Institute. Also in 1960, another Training Centre was established by Shell in Port Harcourt where short-term courses were provided for the company's supervisory and executive staff. By so doing, about 2,000 Nigerians received training of one sort or another by the end of 1965.<sup>6</sup> The kind of students Shell was interested in and actually to whom it gave scholarships were engineers, oil technologists, other scientists and accountants. An official of Shell-BP had this to say;

" It is as appropriate to the field of manpower development as it is to farming to say that you only reap where you have sown, and it is with confidence that Shell-BP looks forward to the harvests of tomorrow".<sup>7</sup>

However, there were two basic reasons why Shell-BP undertook this kind of activity. One of them was that when the company arrived Nigeria, there was no ready made manpower adequate for her operations, and in order to carry out some of the activities some personnel had to be trained. The second reason was that some of the local residents of the affected

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(UBA) Monthly Business and Economic Digest Jan/Feb.1985, p.4.

5. Shell-BP; Petroleum Development Company, Training in Nigeria (1962) p.17.

6. Shell-BP;(1966), Shell-BP School Programme p.9.

7. The Shell-BP Petroleum Development Company of Nigeria, The Shell-BP story (Port Harcourt) March 1965, p.34.

areas requested that Shell-BP entered into an agreement, albeit on a small scale, to provide those amenities as compensation for the land given to Shell-BP.

In summary, when one moves away from the question of immediate gain to the longer-lasting impact - that of real economic development - the oil industry in Nigeria made a small direct contribution despite big increases in oil revenues. A World Bank report described the presence of petroleum in Nigeria as follows:

"At present, petroleum remains a typical enclave industry whose contribution to the Nigerian economy is limited largely to its contribution to government revenue and foreign exchange."<sup>8</sup>

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8. World Bank, Nigeria-Options for long-term Development, John Hopkins.

## 5. THE THEORIES OF THE DUTCH DISEASE SYNDROME

" Many oil exporters now seem to think, and some even publicly admit, that the "oil bonanza" has not been a clear or unmitigated blessing for them. A disenchanted statesman among OPEC insiders goes as far as to say that history may show that the oil exporting countries have gained the least, or lost the most, from the discovery and development of their resources".<sup>1</sup>

### 5.1 INTRODUCTION

The purpose of this chapter is to analyze the impact of an export boom in a small open economy. The essence of the discussion is to describe how an economy can react to the emergence of a new major export industry, or, alternatively to a significant rise in the international price of one resource, in this case oil. Here we would be able to argue that the emergence of the oil sector in most oil exporting countries has had negative repercussions on the rest of the economy, and has particularly affected the export competitiveness of the "other tradeable goods" sector. This phenomenon has been associated with the theory of 'Dutch disease'<sup>2</sup>. The Dutch disease syndrome is where an increase in the export of a particular commodity, in our case oil, results in a real appreciation of the

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1. Attiga.A.A.(1981)' Economic Development of oil producing countries' OPEC Bulletin, Nov.p.7

2. For the origin of 'Dutch disease' see chapter 1.



exchange rate, and in a loss of competitiveness of the traditional (non-oil) tradeable goods sector. Where this has occurred in industrial countries, the phenomenon has also been called de-industrialization; the term 'tradeable-squeeze effects'<sup>3</sup> is also sometimes used. We hasten to add that the term 'de-industrialization' was originally used in Britain to describe the alleged effects of a growth of the oil sector on manufacturing.<sup>4</sup>

## 5.2 THE MODEL

We begin first by arguing that an increase in the price of oil will result in a higher disposable income, and in an increase in the domestic demand for tradeables and nontradeable goods. This income effect will result in a higher relative price of nontradeables, and in the appreciation of the real exchange rate. This is known as the spending effect.<sup>5</sup> Secondly, and perhaps more

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3. Corden, W.M. and Neary, J.P. (1982). 'Booming sector and De-industrialization in a small open Economy, Economic Journal 92, December.

4. Corden, W.M., (1984) Booming sector and Dutch disease Economics: Survey and consolidation, Oxford Economic Papers 36 p.359-380.

5. Corden, W.M. and Neary, J.P. (1982). p.826.

important, an increase in the price of oil will tend to generate a balance of payments surplus, and an accumulation of foreign reserves (see chapter 4). If this increase in foreign reserves is not fully sterilized, the monetary base will also increase and inflation will result.

There is also a 'resource movement' effect.<sup>6</sup> The export boom pulls labour away from the 'lagging' sector into the non-tradeables and the booming sectors. Thus, the net effect is that the output of the lagging sector will fall. For the purpose of this analysis the oil sector is known as the 'booming' sector, the tradeables or the lagging sector includes traditional exports and import substitutes in both agriculture and in manufacturing( but in this case we talk more about agriculture because of the rural nature of the Nigerian economy ) and the non-tradables, include construction and services such as public utilities, transportation, and so forth.

In making this investigation we consider a small open economy, with a fixed exchange rate,<sup>7</sup> that produces three

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6. Ibid. p.826.

7. This assumption is made to suit some oil exporting developing countries that operate a fixed rate with respect to the U.S.dollar (i.e.Indonesia, Ecuador, Venezuela,etc.)

goods, oil (O), other tradables (agriculture and manufactures) (T) and non-tradables (N). Also we assume, for simplicity, that the exchange rate is equal to one. (This assumption is relaxed later). The excess demand for nontradeables is assumed to depend on prices and income. We also assume that domestic residents do not consume oil - or consume negligible amounts relative to exports - and that factors used in the production of oil are sector-specific both in the short and long run. This is a reasonable assumption because of the capital intensity of oil production. These assumptions will be relaxed later. We assume that the oil sector is owned by the government. Again, this assumption is not unreasonable in view of what pertains in most oil exporting countries particularly the developing countries. However, if the initial excess demand for nontradeable goods depends on prices and income as stated in our assumption, we would expect this excess demand to be equal to zero in equilibrium. This is written as:

$$N = N(q^T, Y) = 0 \dots\dots\dots (5.1)$$

(+)

(+)

where N is excess demand for nontradeables,  $q^T$  is the



relative price of tradeables to non-tradeable goods (i.e.  $q_T = P_T/P_N$ ), and  $Y$ , is real income in terms of non-tradeables. The relative price of oil is excluded here since we assumed a negligible domestic consumption of oil and the factors used in the production of oil are sector-specific both in the short and long run. The signs in parentheses below the functions indicate our assumption of the partial derivatives and because the signs are positive means an assumption of gross substitutability between the tradeable and non-tradeable goods. Because the non-tradeables are in equilibrium excess demand will be equal to zero.

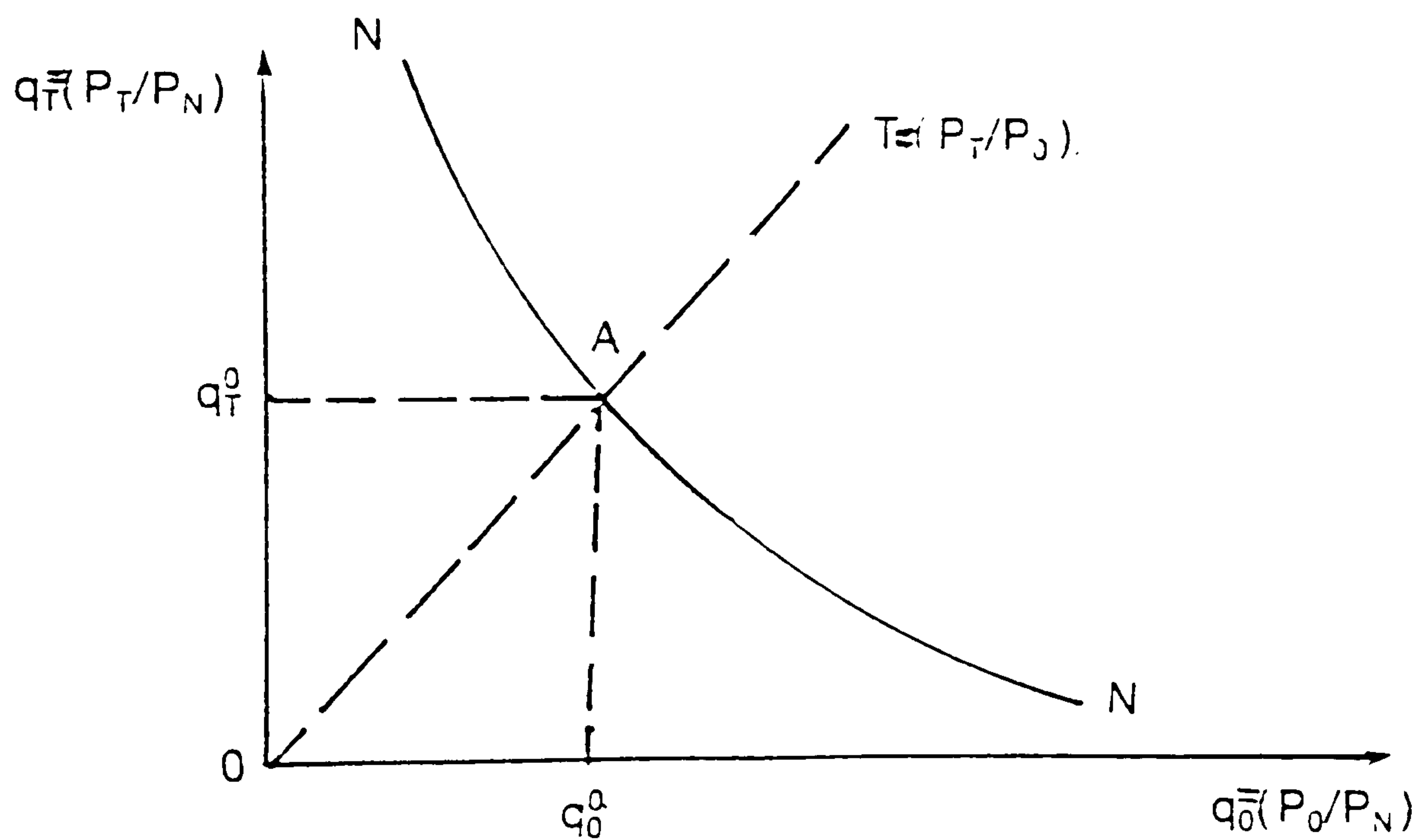
In (5.1),  $Y$  is expressed in terms of non-tradeable goods and is given by

$$Y = H_N^S + q_T + H_T^S + q_o \bar{o} \dots \dots \dots (5.2)$$

where  $H_N^S, H_T^S$  and  $\bar{o}$  are supplies of the non-tradeables, tradeables and oil, respectively, and where  $q_o$  is the relative price of oil in terms of non-tradeable goods. For simplicity we hold the supply of oil as fixed. We denote the price index as  $P_I$  which depends on the nominal prices of non-tradeables ( $P_N$ ) and tradeables ( $P_T$ ). Our intention here is to find out what happens to the relative price of traditional tradeables with respect to non-tradeables ( $q_T$ ) in the event of an increase in oil price. Maintaining the assumption of gross substitutability, the equilibrium situation in the non-tradeables market can be depicted as in Figure 5.1

Although Edwards and Aoki<sup>8</sup> did not provide any explanation as to what determines  $P_T/P_O$  or why  $P_T/P_O$  must cut NN where it did, a possible explanation for that could be the "law of one price." The law of one price states that, ignoring transport costs, traded goods command the same prices everywhere. This explanation may be only applicable to countries that export primary materials like cocoa, rubber, groundnut etc. that are traded internationally with prices fixed. However, this is only an assumption that may be over simplified.

Figure 5.1: The price of oil and other tradeables in relation to the price of non-tradeables.



The NN schedule describes the combination of  $q_T$  and  $q_O$

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 8. Edwards, S. and Aoki, M. (1983) Oil Export Boom and Dutch disease, Resource and Energy, Vol.5 219-242. This analysis is based on their work.

that is compatible with equilibria in the non-traded goods market. The slope of this curve is given by

$$\frac{d_{q_T}}{d_{q_0}} = - \frac{(d_N/d_Y)\bar{0}}{[(d_N/d_{q_T}) + (d_N/d_Y)H_T^S]} < 0$$

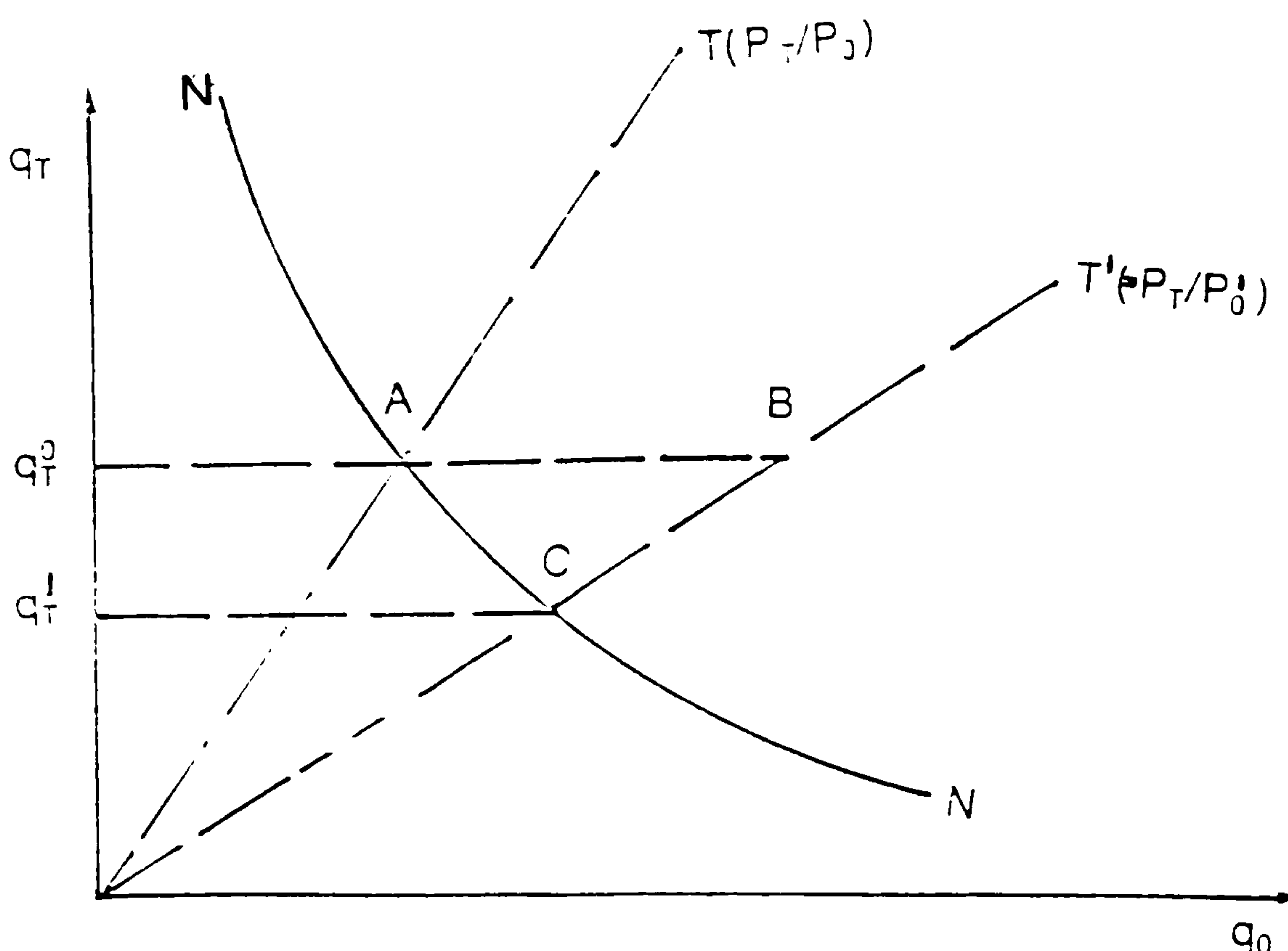
The ray OT, on the other hand, measures the relative price of both tradeable goods - traditional tradeables to oil ( $P_T/P_0$ ). The initial equilibrium position is given by A with equilibrium relative prices being equal to  $q_T^0$  and  $q_0^0$ , respectively. Consequently, in the event of an exogenous increase in the price of oil, the OT ray will then rotate clockwise toward OT', as in figure 5.2. If the (nominal) price of non-tradeables was constant, the new equilibrium would be given by B, with a constant relative price of traditional tradeables with respect to non-tradeables. As long as the slope of the NN is different from 0, at B there will be an excess demand for non-tradeables that will require an increase of the relative price of these goods, both with respect to the price of oil and traditional tradeables with a final equilibrium at C. Therefore, an increase in the price of oil has resulted in a decrease in the relative price of traditional tradeables both with respect to oil (i.e;  $P_T/P_0' < P_T/P_0$ ) and with respect to non-tradeables (i.e.  $q_T^0 > q_T'$ ). Because of this reduction in the relative price of traditional tradeables, resources will then be encouraged to move out of the traditional tradeables sector (i.e agriculture in the Nigerian case) into the other sectors of the economy - "the resource movement effect". This has also been termed



the de-industrialization effect of an export boom.

It is, however, important to notice that the extent of reduction of  $q_T (= P_T/P_N)$  will depend on the slope of the NN curve. If the NN curve is a vertical line, the negative effect on  $q_T$  of an exogenous increase in the price of oil will be maximum, while there will be no effect if the NN curve is a horizontal line. This situation would result if all the additional income earned from higher oil prices is spent on tradeables. Alternatively, suppose for example, that government spending were cut, and the naira devalued, two things are likely. One, the rate of money supply would decrease and inflation would slow down, and the real exchange rate would tend to depreciate. The signals to investors and wage earners would tend to reverse themselves, leading to more resources flowing into non-oil traded goods sector.

Figure 5.2: An exogenous increase in the price of oil.



5.3 The Resource movement effect theory:- In an attempt to probe further into the resource movement effect we use the Salter (1959) model as explained by Corden and Neary.<sup>9</sup> The central theme of the resource movement effect is that the boom in the energy sector raises the price of the marginal products of the mobile factors employed there (such as labour), and so draws resource out of the lagging sector (i.e agriculture) This results to various adjustments being made in the economy, one such adjustment being the real exchange rate.

We begin our analysis by assuming a pre-boom equilibrium condition of point U in figures 5.3. Figure 5.3 represents the labour market, with the wage rate measured on the vertical axis and the total labour supply given by the horizontal axis  $O_S O_T$ . The input of labour into the non-traded goods sector is measured by the distance from  $O_S$  and the distance from  $O_T$  measures labour inputs into the two traded goods sectors. We assume here that the demand for labour in each sector is a decreasing function of the wage rate relative to the price of that sector's output. Thus  $L_A$  represents the labour demand schedule for agriculture and by including the initial labour demand schedule for the oil sector give us  $L_T$ ,

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9. Corden and Neary, (1982), Op. cit. The analysis in this section is based on their article.

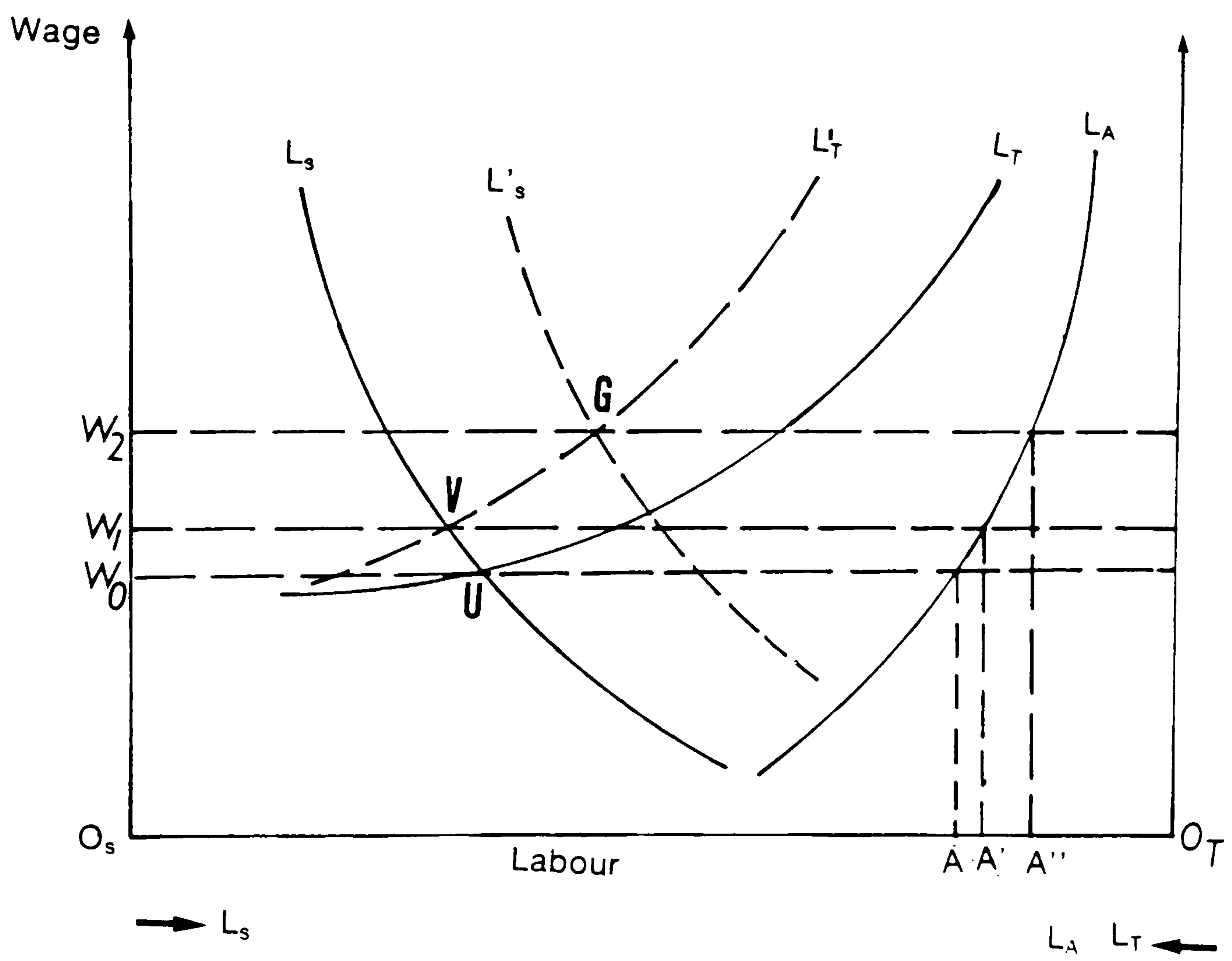
which is the sum total of the pre-boom labour demand schedule for both traded goods sectors combined. Also,  $L_S$  is the initial labour demand schedule for the service sector, drawn for the initial price of output. Initial full-employment equilibrium is at  $U$ , where  $L_t$  intersects  $L_S$ , and so the initial wage rate is  $W_0$ .

Consequently, an increase in the price of oil, will shift upwards the labour demand schedule in the oil and service sectors (less in the oil than the service sector due to the capital intensity of the oil sector ) raising profitability and the demand for labour at a given wage rate. Equally, the composite labour demand schedule  $L_t$  shifted upwards to  $L'_T$  giving a new equilibrium at  $V$ . However, we assume here that the initial real exchange rate is held constant, and later will be allowed to vary to bring back equilibrium in the market. The attainment of a new equilibrium at  $V$  would mean resources being reallocated in favour of non-tradeables and with government spending concentrated in urban centres, wage rates are raised to  $W_1$  at a constant real exchange rate. Labour which is a mobile factor, moves out of agriculture in the face of declining income which resulted to rural-urban labour migration. Hence employment in agriculture fell from  $O_{TA}$  to  $O'_{TA}$ , therefore affecting agricultural output. It could then be said that the resource movement effect gave rise to direct de-Agriculturalisation.<sup>10</sup>

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 10. Cordon, W.M. (1984) Booming sector and Dutch Disease Economics: survey and consolidation, Oxford Economic Papers 36 359-380.



Figure 5.3: Effect of the boom on the labour market



However, to provide a complete picture of the Dutch disease model we must also incorporate the spending effect engendered by the boom.

5.4 The Spending Effect:- The theory behind the spending effect is that an increase in the price of oil, will affect both the supply and the demand for money. Since the increase in oil prices gives rise to an initial balance of payments surplus, money supply also increases, particularly if the revenue so generated leads to increased government expenditure at home. If we assume here that the capital account is closed, then the increased supply of money would result in an increased demand for both traded and non-traded goods. This is in accordance with the Walras' Law which states that given  $n$  markets, if  $n-1$  markets are in equilibrium then the last one must also be in equilibrium, because there can not be a net excess of demand or supply for all goods (including money). This gave rise to the overshooting of the nominal price of agricultural products beyond their long-run equilibrium. This phenomenon combined with the resource movement effect resulted in a loss of competitiveness in agriculture which is measured in this case by the decrease of  $qT$ . Formalizing the discussion, the increased supply of money in nominal terms ( $M^E$ ) is presented as follows;

$$M^E = M^S - M^D \dots\dots\dots(5.3)$$

where  $M^S$  is the nominal (inflation related) supply of money, and  $M^D$  is the demand for money in nominal terms. Expressing the demand for money  $M^D$  as a function of real income and the price level, we can then write  $M^E$  as

$$M^E = M^E (M^S, P_N, P_T, Y) \dots \dots \dots (5.3')$$

where  $P_N$  is the price of non-traded and  $P_T$  the price of traded goods, and  $Y$  is income.

If we assume that  $M^E$  is equal to zero only in the long-run (since the increase in  $M^S$  will in the short-run result to excess supply of money which will in turn be slowly eliminated through the balance of payments) again according to Walras Law, an excess supply of money will be reflected in an excess demand for non-tradeables and an excess demand for traditional tradeables. We therefore, have to modify equation (5.1) to incorporate the fact that in the short-run, an excess supply of money will be translated into an excess demand for goods and services.

$$N = N (q_T, M^E, Y) \dots \dots \dots (5.1'')$$

(+)(+)(+)

Coming back to figure 5.1, an increase in  $M^E$  will shift downward the  $NN$  schedule (movement left the  $NN$  curve) and we can therefore complete the model by specifying the balance of trade and the money supply equations. We define balance of trade here as;



$$B = P_o \bar{o} - P_T E_T \dots\dots\dots (5.4)$$

where  $E_T$  stands for excess demand for traditional tradeables, and  $O$  is the amount of oil exported. We also assumed here that  $d_B/dP_o > 0$ ; that is, that the increase in the price of oil results to an initial improvement in the balance of trade. Again it is assumed that an increase in the price of oil will result in a short-run excess supply of money. This is because, as Harberger<sup>11</sup> has argued, an increase in  $P_o$  will result (through 5.4), in a balance of trade surplus, and this, in turn, will positively affect the supply of money.<sup>12</sup> If we assume that this increase in  $M^S$  is greater than the increase in MD resulting from the income and price effects, this will result in excess supply of money which will be slowly eliminated through the trade account. On the other hand, if the capital account is assumed to be open, this excess

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11. Harberger, A.C. (1983) 'Dutch disease- How much sickness, how much boon?' Research and Energy, 5 pp.1-20.

12. In order to simplify the discussion we are assuming a closed Capital account. This is the case of most developing countries whose exchange controls do not allow for free capital mobility. But in the case of Nigeria, ME disappeared quicker because the laws were relaxed.

supply of money will be eliminated very quickly.<sup>13</sup> Under this assumption, the short-run effects of exogenous increase in the price of oil is depicted in fig.5.4.

The exogenous increase quickly resulted in a downward shift of the NN curve to  $N' N'$  (as a consequence of the excess supply of money), and in a rotation of the OT ratio to  $O'_T$ . The NN curve shifted downward because of the excess demand for goods that accompanied the excess supply of money, with the new short-run equilibrium at s, and final equilibrium attained at c.

The dynamics are characterized by shifts of the  $N' N'$  curve to the right towards the NN curve. The speed of this adjustment depends on how fast the excess supply of money is eliminated. As could be seen, the relative price of traditional tradeables undershoots its final equilibrium level. This meant that in this particular case, the loss of competitiveness of the traditional tradeables sector (as measured by the decline of  $q_T$ ) was greater in the short-run than in the long-run.

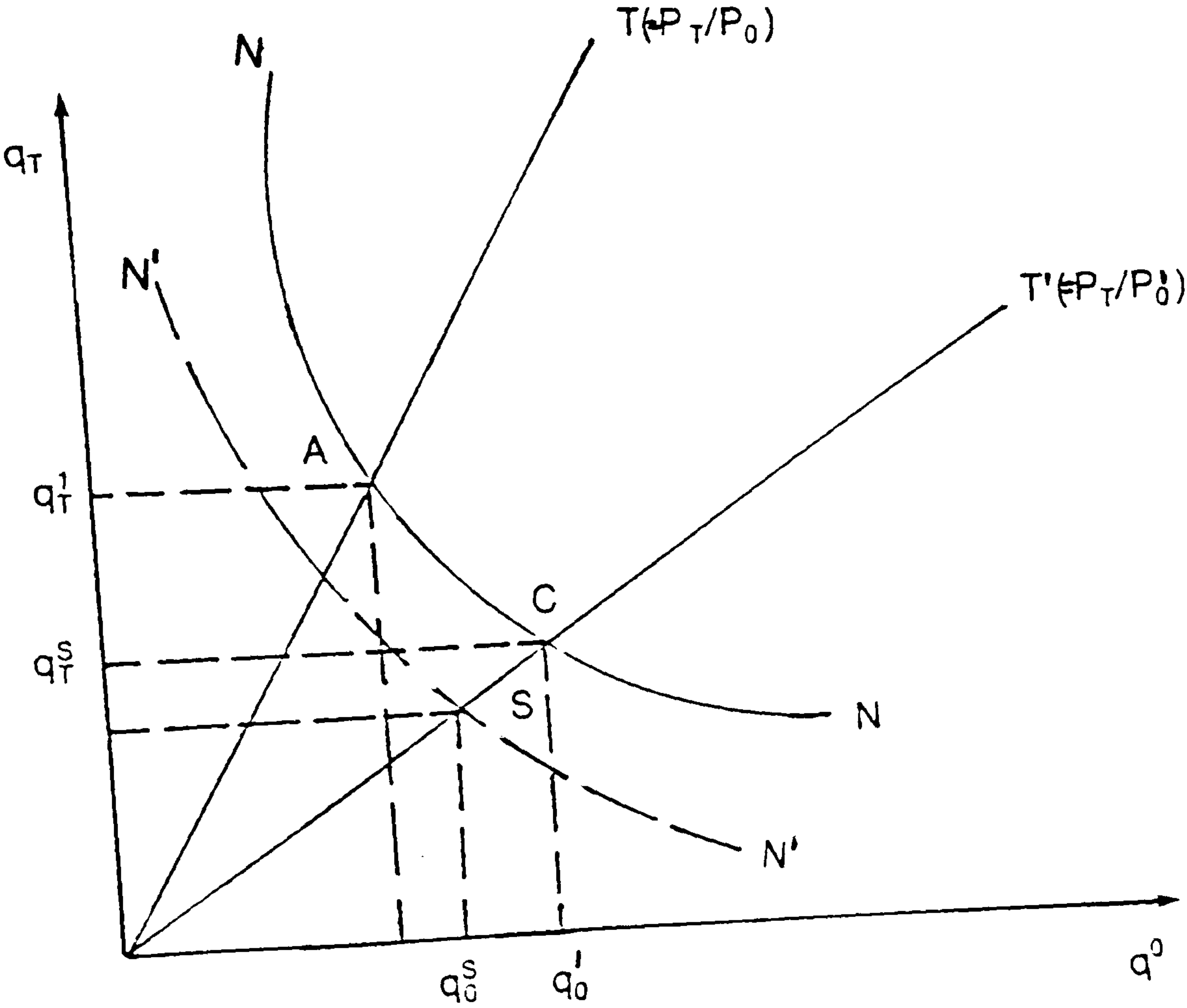
Recall that previously we mentioned that the oil sector's use of labour is negligible; that is, it is capital intensive. On the basis of this assumption, at the initial real exchange rate the boom had little or no

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13. This was typical of Nigeria in the 1970s because of illegal transfers abroad.

effect on the oil sectors labour demand in figure 5.3.

Figure 5.4: The short-run effect of an exogenous increase in the price of oil.





But the service sector's labour demand schedule shifts upward to L'S because of the rise in the price of services, hence a final equilibrium at point G in Figure 5.3. As a result the wage rises still further to W2 (and drawing more labour), which reduces agricultural employment from OTA to OTA". Therefore, the boom gave rise to both direct de-agriculturalization, shown by the fall in agriculture employment from OTA to OTA', and now also to indirect de-agriculturalization, shown in the additional fall to OTA". While the former was as a result of the resource movement effect alone,<sup>14</sup> the latter was as a result of the real appreciation due both to reduced output of agriculture (at the initial real exchange rate) because of the resource movement effects, and from increased demand for services because of the spending effects.

#### 5.5 Why Treat the Disease?

Some economic commentators may question why the Dutch disease should be termed a disease. After all, it

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14. Movement of labour out of agricultural employment may not necessarily lead to a decline in output because of the application of technology. But in the case of Nigeria, output fell following movement of labour due to lack of technology to replace human labour.

could be argued that a shift in relative prices or in the "domestic terms of trade" in most cases favours certain sectors of the economy at the expense of others. If, however, such a shift favoured the oil sector against agriculture, as in the case of Nigeria, there is no rationale in calling the phenomenon a disease; rather it is a normal economic mechanism. Our view is that if a sector of the economy squeezes other sectors so much so that the squeeze results in a decline in output, such a phenomenon is a disease and should be treated. This is particularly serious if the resource is an exhaustible one. Similarly, if the resource is to be short lived as is the case of petroleum in Nigeria, Venezuela, Mexico and so forth, there is a great and urgent need for diversification into a more broadly based and sustainable economic development for when the resource eventually runs out. In Nigeria, for example, the last barrel of oil would be produced in 25 years' time at the current rate of production.<sup>15</sup> Even if the export resource boom is expected to last for a very long time, the government of the day may still need to diversify, especially if the resource is capital intensive (as in the case of petroleum) and has no prospect of providing substantial employment. Whatever the arguments about making the most of the booming sector

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15. Anyadike, N.(1985), 'Nigeria - A future without oil'West Africa, 26 August p.1745.

and using the income as a transfer payment, most governments see employment as an end in itself and therefore would find it extremely difficult to see unemployment rising. Governments placing a high premium on equity will also find it tempting to protect the lagging sector, which is likely to employ a large share of low-income earners, especially in small-scale farming and labour-intensive manufacturing. A more compelling reason why the lagging sector must be protected in the case of Nigeria is that since Nigeria is a rural economy, any temporary halt in the growth of the agricultural sector could delay the "learning by doing experience"<sup>16</sup> that would improve the comparative advantage ( or lessen a comparative disadvantage) in that sector.

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16. Wijnbergen, S.V. (1984) 'The Dutch disease: A disease after all.' Economic Journal, 94 March pp.41-55.



6. THE DUTCH DISEASE SYNDROME AND CENTRAL GOVERNMENT  
POLICIES: EFFECTS ON THE MACRO-ECONOMY OF NIGERIA.

6.1 Introduction

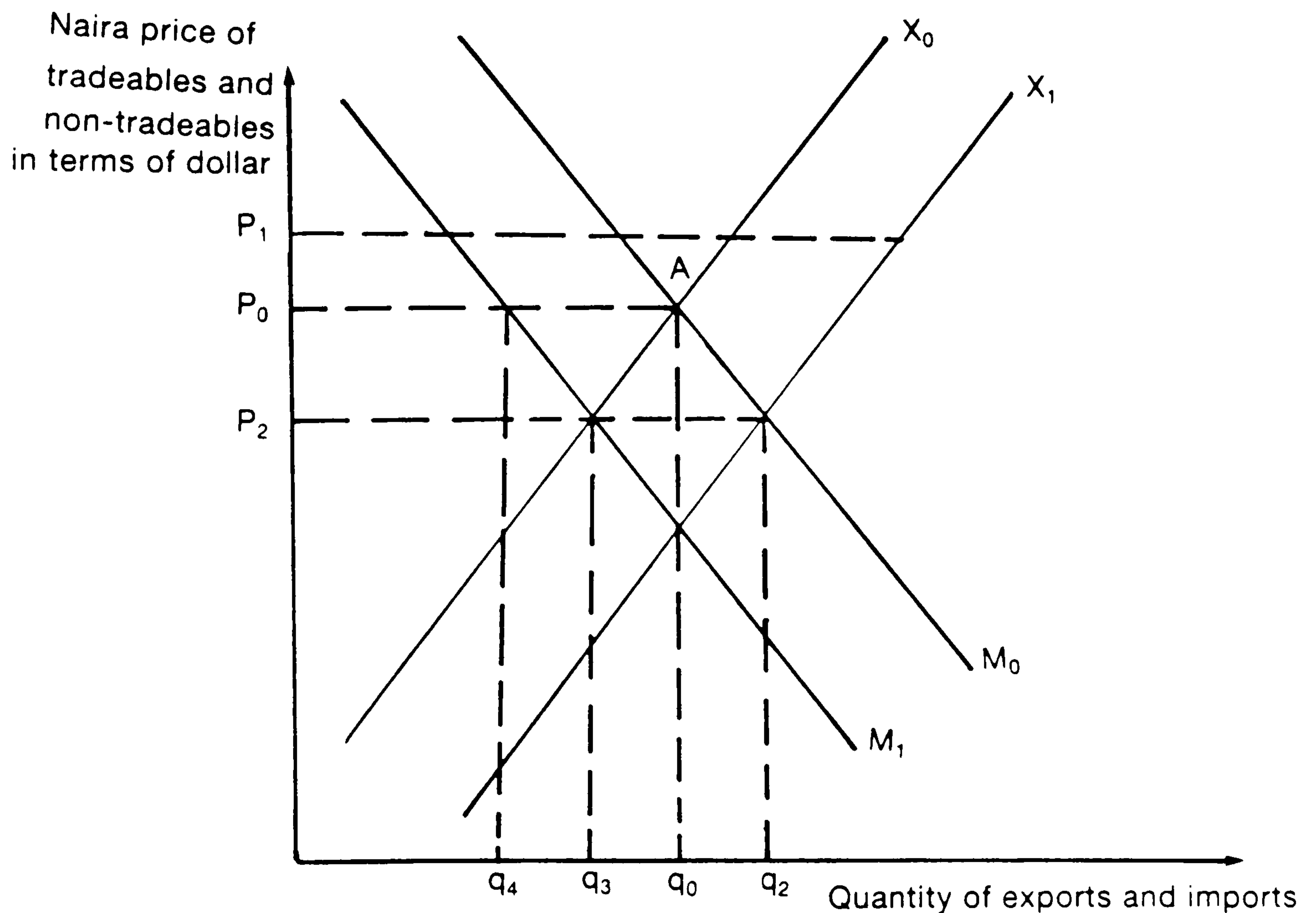
Dutch disease implies that the exchange rate has risen as a result of a new natural resource which greatly augments the country's foreign exchange earnings. As will be discussed in this chapter, a large inflow of foreign exchange (and large balance of payments surplus in most oil exporting countries), causes the domestic currency to appreciate, and the oil based rate to be higher than desirable for the non-oil sectors, with a harmful impact on the competitiveness of domestic production and to the objective of diversification. Oil greatly raised the value of Nigeria's currency, the naira, between 1973 and 1982. But before we examine the effect of this exchange rate appreciation, we shall briefly define what an exchange rate is.

A nominal exchange rate is the price of one currency in terms of another. For example, it is the price of naira in terms of the U.S. dollar (and other convertible currencies).

The value of the Nigerian naira has been very high since the early 1970s, partly also because of the vast sum of capital which flowed into the country from abroad. This

was attracted by the improved prospects for the balance of payments particularly after the 1973/74 oil price increases. The increased demand for oil created a direct benefit to the current account, to the extent that the output of oil increased exports, which in turn resulted in current account surpluses. The exchange rate, however, is assumed to move upwards to maintain equilibrium on the capital and current account of the balance of payments. The mechanism of this process is represented in Figure 6.1.

Figure 6.1: The mechanism of exchange rate adjustments.



In Figure 6.1, we label the naira price of tradeable goods relative to non-tradeable goods in terms of U.S. dollar on the vertical axis and the quantity of exports

and imports on the horizontal axis.

The curves  $X_0, X_1$  are the export supply curves while  $M_0$  and  $M_1$  are the import demand curves. The initial equilibrium A, represents the relative price  $P_0$  and quantity  $q_0$  of imports and exports. However, should the position change, e.g. the exports supply curve shifts to the right, either the exchange rate would change to change the price of tradeables ( $P_t = P_w/e$  where  $P_t$  is the foreign price of tradeables,  $P_w$  the world price of tradeables and  $e$  the exchange rate). At  $P_1$  with the valued exports exceeding imports, the exchange rate would tend to rise, bringing down the foreign price of tradeables  $P_t$ . "Or domestic inflation would change the price of non-tradeables while the price of tradeables is held constant at world prices"<sup>1</sup>. Also in  $P_1$  domestic non-tradeable prices would increase until the supply curve  $P_0$  was

reached. But our main concern here is to show that the exchange rate would move to adjust the trade balance.

Increased oil exports would move the export supply curve from  $X_0$  to  $X_1$  and the horizontal distance  $X_1 - X_0$  represents the increase in oil exports at a given rate of exchange.

However, we are in this case assuming  $M_0$  to be constant.

The movement of  $X_0$  to  $X_1$  gives a new equilibrium at  $P_2 q_2$  where both total exports and imports are larger, the relative price ratio is smaller (and the dollar value of

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1. Atkinson, F. and Hall, S. (1983) Op. cit. p.84.



naira is lower). Exports, apart from oil, would have fallen. Previously, exports were  $q_0$  but with the oil resource and a price ratio  $P_2$ , the non-oil exports falls to  $q_3$ . "So there has been a rise in the exchange rate causing a decline in the level of non-oil exports and a rise in the level of imports"<sup>2</sup>. This process of a fall in the exports of non-oil sector is termed the Dutch disease.

## 6.2 How the exchange rate is determined in Nigeria.

In Nigeria, the exchange rate policy during the late 1970s and 1980s was mainly used to dampen domestic inflationary pressures. It is not a freely floating rate like the sterling or the U.S. Dollar, but it fixed administratively by the Central Bank. In the early years after the first oil price rise, the Central Bank was happy to let it rise in line with market forces. With the vast accumulation of foreign reserves, Nigeria's more or less fixed exchange rate policy was managed through reserve intervention. Thus, if privately generated foreign exchange was less than that demanded for current transactions at the going official rate, private excess demand was satisfied by official reserve depletion. But when the price of oil started to fall in the early 1980's and with it foreign exchange earnings, the Bank should have devalued the currency, but was unwilling to do so

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2. Ibid, p. 85.

because of the effect which that would have had on import prices. Instead it resorted to rationing of foreign exchange via an import licensing system designed to protect official reserves.

At the point in time when the value of naira was rising due to increased crude oil exports, the naira may not be described as overvalued in the real sense of the word, but the naira became overvalued when, as a result of falling exports and rising imports the Government (i.e. the Central Bank of Nigeria) neither allowed the naira to fall in value on a free market nor devalued it.

Taking the nominal value of naira against the U.S.dollar, the naira may not have appreciated very much. But when that is converted into changes in the real exchange rate by taking account of the relative changes of export and import prices, the appreciation proves to have been substantial. Table 6.1 shows the consumer price indices in Nigeria and her major trading partners from 1970 to 1984. Table 6.1 reveals that right from 1976, Nigeria's domestic price level has consistently risen more than that of her trading partners. Taking into account changes in prices we define an effective or real exchange rate as a weighted average of the exchange rates between Nigeria's domestic currency and the currency of her most important trading partners, with weights given by the relative value of Nigeria's trade with each of these trade partners. Similarly, the exchange rate movements in real terms against the currencies of Nigeria's trading partners can

Table 6.1

Consumer Price Index in Nigeria and Her Major  
Trading Partners (1975=100)

	<u>Nigeria</u>	<u>U.S.</u>	<u>U.K.</u>	<u>Netherlands</u>	<u>Japan</u>
1970	52.8	72.1	54.2	66.0	58.0
1971	61.3	75.2	59.3	70.9	61.6
1972	62.9	77.7	63.6	76.5	64.3
1973	66.5	82.6	69.4	82.6	71.9
1974	74.8	91.6	80.5	90.5	89.4
1975	100.0	100.0	100.0	100.0	100.0
1976	124.3	105.8	116.5	108.8	109.3
1977	148.3	112.7	135.0	115.8	118.1
1978	176.0	121.2	146.2	120.5	122.6
1979	195.6	134.9	165.8	125.6	127.0
1980	215.9	153.1	195.6	133.8	137.2
1981	260.8	169.0	218.9	142.7	143.9
1982	280.9	179.5	237.7	151.1	147.6
1983	346.1	185.2	248.6	155.3	150.2
1984	483.2	193.2	261.0	160.4	153.6

Source: International Financial Statistics Year-Book, 1985.



be accomplished by constructing an index of the real exchange rate with respect to a basket of currencies of those countries taking into account their rates of inflation.

6.3. Measurement of Real Exchange Rate in Nigeria.

There are many ways of computing a real exchange rate. One exhaustive study by Pinto, (1985)<sup>3</sup> presents no fewer than five different measures for Nigeria. For the sake of simplicity we shall use the figures produced by the World Bank. Table 6.2 shows that from the purchasing power parity point of view, the real effective exchange rate in which the relative rates of inflation in Nigeria and its principal trading partners are taken into account appreciated by 87 percent in the period 1973-81, reflecting the higher rate of inflation in Nigeria than in the economies of its trading partners. During the period 1976-81 the appreciation was 30 percent - an 8 percent appreciation in 1976-77, a depreciation of 5 percent in 1978 and a 26 percent appreciation between January 1979 and December 1981.<sup>4</sup> Another World Bank<sup>5</sup> estimate puts

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3. Pinto, B. (1985), Nigeria during and after the oil boom: A policy comparison with Indonesia. World Bank publication october.

4. World Bank, (1983) Nigeria- Macro Economic policies for structural change, Report No.4506-UNI August 15, Unpublished.

5. World Bank Research News Vol.7 No.1 summer 1986

Table 6.2 -- Exchange Rate Movements December 1973 - June 1982 (Monthly Averages)

	U.S. dollar/Naira			Real Effective rate <sup>1)</sup>				
	Rate	Index <sup>2)</sup>	Index <sup>2)</sup>	Rate	Index <sup>2)</sup>	Index <sup>2)</sup>		
1973	December	1.5200	100.00	100.00	March	1.7468	114.00	183.39
1974	December	1.6229	106.77	100.99	April	1.7328	114.00	188.06
1975	December	1.5980	105.13	134.58	May	1.6683	109.75	194.07
1976	December	1.5845	104.25	144.29	June	1.5629	102.82	188.40
1977	December	1.5352	101.00	156.45	July	1.5238	100.28	193.02
1978	December	1.5444	101.61	147.92	August	1.4970	98.49	189.96
1979	March	1.5715	103.39	149.22	September	1.4989	98.61	187.77
	June	1.6726	110.04	160.87	October	1.5131	99.46	185.27
	September	1.7396	114.45	162.47	November	1.5418	101.91	187.22
	December	1.7528	115.32	161.85	December	1.5731	103.49	186.99
1980	March	1.7884	117.66	168.13	1982	1.5534	102.12	-
	June	1.8372	120.87	161.45	February	1.5246	100.30	-
	September	1.8718	123.15	172.79	March	1.5054	99.03	-
	December	1.8452	121.40	177.15	April	1.4803	97.38	-
1981	January	1.8737	123.27	187.12	May	1.4878	97.88	-
	February	1.8282	120.28	192.31	June <sup>3)</sup>	1.4895	97.99	-

Note: 1) Import-weighted; 2) December 1973=100; 3) Average of the first 14 days.

Source: World Bank (1983), Nigeria-Macro Economic Policies for Structural Change, Report No.4506 - UNI August 15, (unpublished). Using data provided by the Central Bank of Nigeria; and IMF calculations.

the appreciation to 1984 at 187 percent. The two are not strictly speaking comparable, but both indicate a sizeable appreciation. It is however, important to point out here that the nominal value of the naira remained unchanged at 0.72 naira to U.S.\$1.00 from 1960-1972.

Solong as the export proceeds from oil continued to increase, Nigeria had no problem in paying for the increasing volume of imports engendered by the high rate of exchange. But in the early 1980s, Nigeria's oil revenue started to fall and the high exchange rate could be maintained only by increased borrowing and by ever stricter import controls. Even when oil revenues were high and rising, Nigeria incurred a balance of trade deficit because all the world was willing to lend to her (especially in support of investment projects from which foreign contractors stood to benefit by the sale of their equipment), Nigeria was only too willing to borrow whatever anyone was willing to lend her. Then, when oil revenue started to decline, foreign lending ceased abruptly and Nigeria faced a very serious shortage of foreign exchange at what had now become a grossly overvalued currency. All this will be more fully discussed in chapter 8. The high value of the naira has affected Nigeria in the following ways: First, it has resulted in increased imports (even though the government has frequently imposed import bans on particular items). Secondly, it has caused agricultural exports to fall. Thirdly it has had other socio-economic effects.



#### 6.4 Effects on Imports:-

A high rate of exchange makes imports of all kinds cheaper than they would otherwise be. Partly for that reason food imports rose dramatically. For example, the importation of rice rose from 35 thousand metric tons in 1970 to 7 million metric tons in 1975 and 313 million metric tons in 1983. On average, rice imports showed an annual growth rate of 231 percent between 1970-75, 248 percent between 1975-80 and 15 percent between 1980-83 respectively( see Table 6.3 ).

In 1984 the Federal Military Government issued import licences worth N2 billion for food items. Among them rice alone took N121 m between January and September, milk N55 m, vegetable oil N42 m, sugar N27 m, wheat N6 m, fish N15 m, salt N9 m, baby food N3 m and tomatoe paste N1 m. Similarly out of about one million tonnes of palm oil consumed in Nigeria in 1984, domestic production accounted for only 710,000 tonnes. The remaining 300,000 tonnes were imported, a third of it from Malaysia. This is the more remarkable since palm oil was once Nigeria's principal export. Also in 1984, the United States alone exported 1,540,000 metric tonnes of wheat grains worth \$245 m to Nigeria. Wheat imports showed an average annual growth rate of 208 percent between 1970-75, 9 percent between 1975-80 and 3 percent between 1980-83. Vegetable oil imports showed an average annual growth rate of 151 percent between 1970-75, 322 percent between 1975-80 and

Table 6.3 -- Nigeria - Import of Selected Commodities ('000' Metric Tons) 1960-1983

Commodity	1960-1969	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Rice	NIL	35	51	116	1,000	5,000	7,000	45,000	463,000	565,000	570,000
Wheat	NIL	5,000	7,000	11,000	109,000	318,000	407,000	733,000	720,000	879,000	805,000
Maize	NIL	175	173	147	1,000	2,000	2,000	10,000	37,000	66,000	41,000
Vegetable Oil	NIL	2	2	17	12	17	51	128	291	2,000	9,000
Commodity	1980	1981	1982	1983	Average Growth Rate (%)						
					1970-75	1975-80	1980-83				
Rice	126,000	257,000	396,000	313,000	+231	+248	+15				
Wheat	272,000	368,000	499,000	493,000	+208	+9	+3				
Maize	86,000	98,000	195,000	173,000	+130	+127	+53				
Vegetable Oil	59,000	124,000	138,000	103,000	+151	+323	+156				

Source: Nigeria Trade Summary 1970-1980 Trade Tabulations 1982.

156 percent between 1980-8. Maize imports showed an average annual growth rate of 130 percent between 1970-75, 127 percent between 1975-80 and 53 percent between 1980-83.

Table 6.3 reveals that up to 1969 Nigeria did not import any rice, vegetable oil, maize or wheat. She was essentially self-sufficient in food, though what was eaten was predominantly yams, cassava, cocoyams and only fairly small quantities of rice were grown as this was not part of the staple diet. In the case of vegetable oil, she not only produced enough palm and groundnut oil, but was also a major exporter of these. After 1973, when oil exports had begun to shoot up, food came to be imported in increasing quantities, as we have seen in Table 6.3.

The reliance on one export commodity, oil, which came to account for more than 95 per cent of export earnings made Nigeria very vulnerable, the more so as she had become so dependent upon imported food. The traditional foods - yams, cassava, cocoyams and millet - have, of course continued to be grown, but only for self-consumption by farm households. The imported food has gone principally to feed the rapidly growing urban populations. Farmers who had once grown surplus food to sell to the towns have stopped doing so in the face of competition from cheap imported food. This is a very serious matter.

Statistics of non-marketed food production in Third World countries are notoriously unreliable, but the evidence



suggests that in the face of population increasing by about 3 % a year, food production may actually have declined by 2 % a year. This decline has been both cause and effect of the large volume of food imports which, in turn, is directly attributable to the high exchange rate.

#### 6.5 Effects on Agricultural Exports.

At the same time that imports increased, the export of Nigeria's staple agricultural products declined apparently almost to vanishing point, having become uncompetitive at the high exchange rate. We shall argue that high exchange rate has been an important contributory factor in the decline of agricultural exports and of agricultural production as a whole.

First, the exchange rate determines how much in local currency a farmer receives for his exports. Therefore the higher the exchange rate the less a he receives in local currency. Take for example, the Marketing Board sells her purchases at an appreciated naira therefore earns less than it would otherwise have earned. On top of her reduced earning, she also has to make the following deductions; wages for its large number of staff, export taxes paid to the Government and reserves for its stabilization policy(see discussion on Marketing Board's activities below). All these contribute to much less of the Board's income being paid to farmers in form of prices as Table 6.4 shows. The figures in Table 6.4 represent the prices

Table 6.4 -- Nigeria - Value Received By Farmers For Crops They Produce For Export, 1960-1977

Percent of Sales Realization by Farms by Crops:					
Year	Cotton	Cocoa	Groundnuts	Palm Oil	Palm Kernel
1960-1961	25	62	54	63	47
1961-1962	20	52	58	59	60
1962-1963	18	59	51	53	54
1963-1964	19	57	48	54	48
1964-1965	21	89	48	48	46
1965-1966	21	51	47	45	45
1966-1967	23	45	50	54	51
1967-1968	24	43	46	55	48
1968-1969	27	38	41	91	45
1969-1970	32	45	40	91	51
1970-1971	36	50	37	49	52
1971-1972	46	62	37	56	74
1972-1973	43	58	35	-	41
1973-1974	-	50	-	-	40
1974-1975	-	63	-	-	52
1975-1976	-	72	-	-	150
1976-1977	-	66	-	-	130

Note: (-) indicates that foreign exports ceased from those years.

Source: Bates, R.H. (1981), Markets and States in Tropical Africa, University of California Press, pp.137-145.

offered to domestic producers expressed as a percent of the f.o.b. price at Lagos, Port Harcourt or Warri ports. In some cases, the figures show that the producers have almost invariably received a price lower than the world market price<sup>6</sup>. Bates noted that;" in most instances, they obtain less than two-thirds of the potential sales realization, and in many cases they received less than one-half"<sup>7</sup>. Consequently, the above policies have affected farmers' incentives to produce for export. Alternatively, if more favourable prices obtain in neighbouring countries they may continue to produce export crops, but smuggle them across the border.<sup>8</sup> This has clearly happened. Exports may therefore not have declined quite as dramatically as the official statistics seem to indicate. Secondly, as was mentioned above, a highly valued currency makes food imports cheap which is not favourable for domestic food producers therefore output declines.

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6. Bates, R.H. (1981) Markets and States in Tropical Africa; University of California press.

7. Bates, (1981), p.29.

8. Cleaver, K.M. (1985) 'The impact of price and Exchange rate policies on Agriculture in Sub-Saharan Africa', World Bank Staff Working Papers, No.728. Also Rimmer, D. (1984) The Economies of West Africa, International Economies Series.



Table 6.5 -- Nigeria -- Average Food Production Costs and Returns 1975-1979

	1	2	3	4	5	6	7	8	9	Economic Retail price of Imported goods with ex- change rate ₦0.625= \$1.00 10	Govt's Final Retail Prices ₦/Ton	Govt's Budgetary Consumer Price Subsidy
	Producer prices ₦/Ton	Total domestic cost of Production ₦/Ton	Cost of Imports ₦/Ton (Current Exchange rate) ₦0.625 = \$1.00	Difference between Production cost and cost of imports ₦/Ton	If ex- change Rate is adjusted to ₦0.813 =\$1.00 (30% de- valued)	Difference between production cost & cost of imports ₦/Ton	Dome- stic open market price ₦/Ton	Market- ing Boards Surplus ₦/Ton	Farmers domestic deficit for selling to the M.B. ₦/Ton			
CROPS	1	2	3	4	5	6	7	8	9		11	12
				(2-3)	(2-5)	(3-1)	(7-1)					(10-11)
Rice	240	264	248	16	322	-58	272	8	-32	292	204	88
Cassava	82	87	NTI	-	-	-	90	-	-8	-	-	-
Yams	200	206	NTI	-	-	-	218	-	-18	-	-	-
Ground Nut/Oil	550	559	552	7	718	-159	562	2	-12	652	456	196
Average Food Production Costs and Returns 1980-1984												
Rice	287	330	293	37	381	-51	350	6	-63	346	242	104
Cassava	96	124	NTI	-	NTI	NTI	128	-	-32	-	-	-
Yams	252	272	NTI	-	NTI	NTI	276	-	-24	-	-	-
Ground Nut/Oil	561	615	565	50	734	-119	669	4	108	666	466	200

NOTE: NTI = Not Traded Internationally

1. Economic retail price of imported goods consists of original cost of imports at the official exchange rate plus 3 percent handling charges plus 5 percent distribution charges plus 10 percent profit margin.
2. Government budgetary consumer price subsidy is 30 percent of the economic retail price at official exchange rate.

Source: (1) Nigerian Observer, several issues.

(2) Central Bank of Nigeria, Annual Reports and Statements of Account.

(3) The Federal Ministry of Agriculture and Natural Resources. Lagos (unpublished figures).

The effects of the high exchange rate becomes clearer when we examine Table 6.5. Table 6.5 Column 2 shows the average total domestic cost of production per tonne of each crop, Column 3 shows the c.i.f cost of imports into Nigeria and Column 4 shows the difference between total domestic cost and cost of imports. As Table 6.5 shows, it is far cheaper to import the various items than to produce them in Nigeria due to high exchange rate. This situation brought about increases in imports. Farmers became better off trading imported food stuffs than actually producing them. But as Column 5 suggests, if the exchange rate were devalued to N0.813 = \$1.00 (a devaluation of 30 per cent) the entire picture changes. It would then becomes cheaper to produce domestically than to import as Column 6 suggests.

However, as the evidence on Table 6.5 suggests, exchange rate alone cannot be blamed for Nigeria's agricultural decline. Another reason for this is the activities of the Marketing Boards.

#### 6.6 State Marketing Boards and their functions:-

Marketing Boards are trading agencies established by governments to control the marketing of primary and processed agricultural commodities. They act as monopsonies.<sup>9</sup>

Prior to the establishment of the West African Produce Control Board following the recommendations made by the Nowell Commission,<sup>10</sup> commodity marketing of West Africa's export crops was undertaken by private traders. Large enterprises like the United Africa Company (general merchants) and more specialized dealers and processing manufacturers such as the British Cotton Growing Association (cotton growers) and Cadbury Bros. (cocoa manufacturers) maintained extensive buying stations, using local brokers or middlemen, as they were called, to collect small loads and to settle cash payments with producers. In 1937 the price of cocoa fell to a very low level so much so that the farmers and the big foreign firms were badly affected financially. The immediate reaction of the big export companies was that they evolved an agreement among themselves on the regulation of the export trade, especially through the prices paid to farmers. The farmers reacted by refusing to sell their

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9. Bates, R.H. (1985) Markets and States in Tropical Africa, University of California press.

10. Bauer, P.T. (1964) West African Trade, London: Routledge and Kegan Paul.



cocoa to these firms. They also organised a boycott of imported goods. To avoid a complete dislocation of the export and import trade, the British Government appointed the Nowell Commission to examine the problem. The Commission's report was published in 1938. Based on this report, the West African Produce Control Board was set up. It was to be responsible for the grading, purchase and sale of the crops exported by Nigeria, Ghana, Sierra Leone and Gambia. The Control Board paid lower prices to West African farmers than it received from the world market. The difference between what it received and what it paid to farmers was kept as a reserve.

In Nigeria, the Nigerian Cocoa Marketing Board was established in 1947. The Nigerian Groundnut Marketing Board and the Nigerian Cotton Marketing Board were established in 1949 while the Nigerian Oil Palm Produce Marketing Board was established in 1950. These were known as commodity marketing boards and each of them, through licensed buying agents( who were paid commissions for their services) was to arrange the purchase and marketing of a particular product for the whole country. In 1954, there were constitutional changes which gave more powers to the three regional governments in Nigeria. The result was that the existing commodity marketing boards were replaced by four regional marketing boards. These were the Northern Regional Marketing Board which handled all the cocoa, benniseed, cotton, soya beans and groundnuts in the North,

the Eastern Regional Marketing Board which dealt with the copra, soya beans, palm oil and kernel from the then Eastern region and the Western Regional Marketing Board which organised the purchase and sale of all the cocoa, palm oil, palm kernels, coffee, cotton and other products from the West.

The Boards fixed prices at which the various grades of cocoa, palm oil, palm kernel, cotton, groundnuts, etc would be bought by their licensed buying agents. They are fixed at the beginning of the season so that farmers know in advance what they can expect to be paid for their crops. The prices thus announced are usually maintained throughout the season. The Boards will cut the link between the price of cocoa in West Africa and the day to day price in the world market. Accordingly, in some seasons when world market prices are high, the price paid to the producers will be less than the average realisation on overseas sales. The Boards will, on such occasions, show a 'surplus'. There will however be other seasons in which the average world price is below the price paid to producers. On these occasions the Boards will make a 'loss', which will be financed from the 'surpluses' which accrued in years of high world prices. The intention was that 'profit' should be utilized primarily to maintain the maximum possible stability in the price paid to the producer.<sup>11</sup> In practice, the marketing boards have largely

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failed to carry out this stabilization function and, have almost invariably paid growers less than the world market price warranted. As a result, they have accumulated large surpluses or reserves. These reserves really constitute a kind of indirect taxation of the producers of the exported farm products, especially when they have been diverted to public developments outside the agricultural sector from which they were obtained, as has often been the case.

By using the available market power at their disposal, the Marketing Boards keep the prices paid to the farmers constantly below world market prices and below free market determined domestic open market prices as shown in Table 6.5 . As can be observed from Table 6.5, Column 1 is constantly below Column 7. These undesirable circumstances resulted in decreased production for export as Table 6.6 shows. From 1973, export products like groundnuts gradually disappeared from the Nigerian export Table. Palm oil disappeared from 1972 . Cotton disappeared in 1974, while the volume of cocoa and palm kernel, the only Nigerian exports apart from petroleum, have been fluctuating and showed a real decline since 1980 for cocoa and 1978 for palm kernels.

Equally striking is the pricing policy adopted by the government itself. As well as paying farmers producer

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11. Baur, P.T. (1964) P.269.



Table 6.6 -- Nigeria - Export of Major Commodities ('000' Tons) 1960-1983

Commodity	1960	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Palm Kernels	316	416	82	242	212	192	186	171	152	167	56	50
Palm Oil	400	600	550	-	-	-	-	-	-	-	-	-
Cocoa	226	225	193	271	228	213	194	174	218	135	191	217
Groundnuts	500	986	900	389	58	-	-	-	-	-	-	-
Groundnut oil	98	192	52	-	-	-	-	-	-	-	-	-
Cotton	24	26	36	22	14	5	-	-	-	-	-	-
Petroleum	n	3,640	54,000	79,000	92,000	105,000	115,000	90,000	107,000	108,000	96,000	117,000

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Commodity	1980	1981	1982
Palm Kernels	49	21	12
Palm Oil	-	-	-
Cocoa	157	113	102
Groundnuts	-	-	-
Groundnut oil	-	-	-
Cotton	-	-	-
Petroleum	101,000	64,000	44,000

NOTE: n = Negligible

SOURCES: (1) Figures supplied by the Federal Office of Statistics, Lagos, except petroleum.  
(2) Petroleum figures were obtained from Petroleum Inspectorate Annual Report, various issues.

Table 6.7 -- Estimated Annual Total Production of Foodcrops ('000' Tons) 1960-1982

Crops	1960	1965	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979
Yam	12,000	15,000	16,000	12,000	7,000	7,000	7,000	8,000	7,000	7,000	6,000	5,000
Cassava	6,000	8,000	9,000	4,000	3,000	3,000	4,000	4,000	2,000	2,000	2,000	1,000
Rice	150	234	280	270	440	480	830	510	210	280	160	150
Groundnuts	660	2,000	2,000	2,000	900	870	760	680	450	460	700	500
Palm Oil	669	988	990	380	330	320	310	300	280	260	220	210

Crops	Average Annual Growth (%)	
	1960-70	1970-80 1977-82
Yam	+4	-8
Cassava	+5	-15
Rice	+8	+0.7
Groundnuts	+20	-10
Palm Oil	+5	-13

SOURCES: (1) Figures for 1978-92 were obtained from the Annual Abstract of Statistics 1985 published by Federal Office of Statistics, Lagos.

(2) The rest of the figures were supplied by the Federal Ministry of Agriculture, Lagos (unpublished).

prices lower than the world market prices, the government embarked on a budgetary consumer price subsidy (Col. 12 Tables 6.5). This is done by making final retail prices of imported goods (Col. 11), substantially lower than economic retail prices of imported goods (col.10), the domestic open market prices (Col. 7) and total domestic cost of production (Col. 2). In other words it is costing farmers far more to produce a tonne of goods at home than even the price at which the government is prepared to sell them. This situation was as a result of political pressures at home to make food cheap. The political pressures came from two main sources one of which is the urban dweller and the other is the employer who, when his employees are faced with the high cost of food, is forced to pay higher wages. The government itself, being a major employer in Nigeria (over 80 per cent of wage and salary employment is provided by the public sector) joins hands with workers and industry in seeking low cost food.

The government's response to higher wage demands by its employees is not by way of wage increases but by way of reducing the cost of living, hence reducing the cost of food in particular. This situation

was well illustrated by Bates when he wrote;

"... Pricing policy finds its origins in the struggle between urban interests and their governments; and in the political reconciliation of that struggle, it is the rural producers who bear the costs; they are the ones who bear the burden of policies designed to lower the price of food"<sup>12</sup>

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Cheap food and the growth of population, as well as the growth in real income, have combined to cause domestic consumption to increase to an unprecedented level. While the average annual population growth rate 1960-83 was 3 percent, Table 6.7 shows that the annual domestic production rate for yam declined by 8 percent, cassava by 15 percent, rice by 11 percent, groundnuts by 10 percent and palm oil by 21 percent respectively. But for the high level of imports, Nigeria would now be very short of food indeed.

#### 6.7 Socio-Economic Effects:-

As incentives to sell were eroded, farmers came to grow ever less for the market, though they continued to produce for self consumption. As a result the eating habits of those who had to buy their food started to change. Those who grow their own food continued to grow and eat the customary food crops like cassava and yams. Those who bought their food (mainly the city dwellers) have become accustomed to a totally different diet because what was imported was not cassava and yams but wheat and rice. People not only came to buy wheat and rice because they were cheaper, but also because they are easier to cook. Especially in an urban environment it is a great

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12. Bates, R.H. Op. cit. p.35.

TABLE 6.8 : FERTILIZER IMPORTS IN NIGERIA

Year	Import Value (N.million)	Import Quantity ( '000 'MT)
1970	1.6	34.1
1971	1.8	52.0
1972	4.0	83.0
1973	3.1	84.4
1974	6.1	83.7
1975	12.3	150.6
1976	20.4	207.8
1977	58.7	298.2
1978	58.1	315.7
1979	67.5	339.9
1980	108.1	423.1
1981	317.5	1,044.5
1982	393.9	1,380.6

Estimates

Source:- 1970-76 International Bank for Reconstruction and Development; Nigeria -An informal Survey Lagos.

1977-82 Aribisala, T.S.B. (1983) Nigeria's Green Revolution: Achievement, problems and prospects; Nigerian Institute of Social and Economic Research Ibadan.

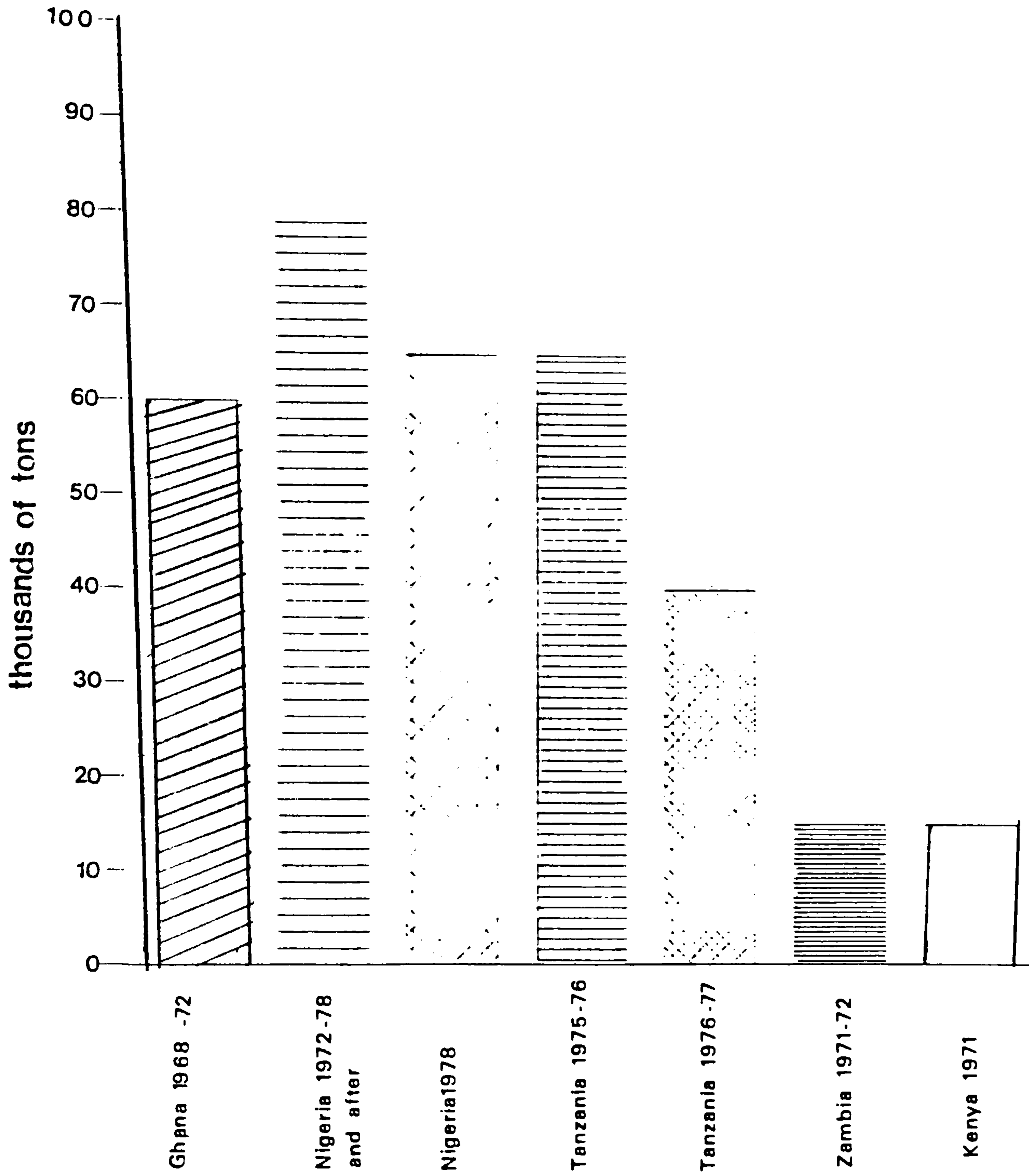
convenience to be able to buy wheat bread provided by a baker, especially if one only has a short break for lunch. So, with the duty on the imported rice reduced from 20 percent to 10 per cent during the Obasanjo regime, and the total abandonment of import duties during the Shagari regime, demand shifted to foreign sources and imports surged. But a devaluation of, say, 30 per cent, would so increase the price of wheat and rice that it might cause people to go back to eating the locally produced traditional foodstuffs.

This would restore farmers' incentive to produce for the market and might even cause some town dwellers to go back to farming. But this will take time.

Another socio-economic consequence of the highly valued naira was its effects on the price of local farm inputs. It totally distorted the market mechanism to the disadvantage of the local farmer. Undoubtedly, the high value of the naira would result in imported inputs like fertilisers becoming cheaper to the farmers, but as we shall argue below, local farmers have not benefitted as much from these cheap imported fertilisers as many people would think. Table 6.8 shows Nigeria's fertiliser imports from 1970 to 1982. Quite apart from cheap imports due to the rate of exchange, the government also subsidises fertilisers directly at a relatively high level. Although the level of subsidy fell after 1978, it is still fairly high compared with some



Figure 6.2 The Supply of Fertilizer Inputs .



Source: Bate, R.H. (1985) Markets and States in Tropical Africa; University of California Press

other African countries (see Figure 6.1). Similarly, assisted by the influx of revenue from oil, duties on all agricultural inputs including fertilisers were removed. But in practice, small-scale farmers often in remote areas, rarely obtain these inputs at the intended low prices.

If they can buy them at all it is from middle men who sell them at much higher prices. The real beneficiaries of low priced inputs are the government owned large scale farms which are inefficient and represent only a tip-of-the-iceberg as far as farm production is concerned. Most (90 per cent) of the country's agricultural output comes from about 13 million small and medium scale farmers. This fact, a former agriculture minister, Bukar Shuaib, conceded when he said:

"No doubt, most of the state-owned institutions involved in agricultural and livestock development are making heavy losses, adding little or no contribution to the economy".<sup>13</sup>

All this, despite the fact that unlike most of agriculture, the state-owned farms have the lion's share of the cheaply imported and subsidised fertilizers.

In summarising this section therefore, it is evident that a high exchange rate does agriculture no good. Similarly, while currency depreciation will have a significant part to play in revitalising the non-oil

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13. Newswatch, Nov.25, 1985

export sectors of Nigeria, other factors like change in marketing board policy resulting in higher producer prices are equally important.



7. WHAT NIGERIA MIGHT HAVE DONE TO PROTECT HER AGRICULTURE.

A large proportion of the revenue from mineral exports tend to accrue to the governments of the exporting country. A rational economic policy is therefore central in determining their ultimate benefits to the producing countries. This chapter looks at the economic policies that Nigeria might have pursued in order to ensure full protection of the agricultural sector.

The analysis in chapter 6 showed that the Nigerian government over the years has got her oil policies wrong. With the benefit of hindsight therefore, we think that Nigeria would have done better had a more rational policy for protecting the lagging sector, agriculture, been adopted. However, whether or not a particular policy works will always depend to an extent on how it is applied. One can not therefore be certain that the following suggestions would in fact have worked.

But perhaps the first solution for minimizing any disruptive effect of the rapidly growing revenue from oil exports should have been to sterilize part of it, by accumulating enough foreign reserve and enough investments abroad to prevent too much of the revenue from filtering into the domestic economy. By so doing, the government could have prevented the exchange rate from an excessive

appreciation. In this way, the government would have saved the lagging sector, agriculture, from being faced by an appreciated exchange rate. This would also have reduced any problem of absorptive capacity in other parts of the economy and been a safeguard against inflation. Reserve accumulation and sterilization is particularly appropriate when a boom is likely to be short-lived and/or when export earnings are likely to be unstable. Examples of countries that adopted this policy are Saudi Arabia, Iraq and most other Gulf countries. In 1981, for example, the estimated Saudi foreign assets amounted to between \$160-\$170 billion with an estimated return on investment of between \$18-\$20 billion<sup>1</sup>. The Saudis had good reason to do this since Saudi Arabia is much smaller than Nigeria and therefore correspondingly more at risk of overheating. But, as Roemer<sup>2</sup> argued, the prospects for successful sterilization are not always very bright. In Africa, for example, and indeed most countries, a

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1.

Fesharaki, F. and Isaak, D.T. (1986) Opec, the Gulf, and the World petroleum market p.43.

2.

Roemer, M. (1983). Dutch disease in developing countries: Swallowing bitter medicine; Harvard Institute for International Development, oct. p.21.

political party is elected to satisfy constituency demands and/or that of party supporters. It is therefore very difficult for any government to resist spending its way towards short-term political stability by using newly found export revenues, especially when the tenure of office tends to be measured in months rather than years. Revenue sterilization therefore, as argued by Roemer;

" requires a longer political horizon than many governments have, or feel they can afford. This short horizon also helps to explain why the seemingly more tractable problems of cyclical exports are almost as difficult to solve as those of the more sustained booms in products like oil and diamonds."<sup>3</sup>

Nigerian might still have avoided real exchange rate appreciation if she had adopted the following related policies.

First, Nigeria could have maintained a dual exchange rate policy which pays an appreciated rate to the booming sector and a devalued rate to all other tradeables. This policy was very common among Latin American countries after the second World War as a way of protecting the non-traditional export and import substitution sectors.

Nigeria could also have used the taxes levied on the oil export sector to subsidise the agricultural sector. The benefit of this would have been that the agricultural sector would probably have expanded and consequently

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3. Roemer, M. (1983) p.21.



contributed to an increase in GDP. This might have left Nigeria with a buoyant agricultural sector as well as a booming oil sector. A typical example of this is Norway. The Norwegian government realising that the oil and gas revenues would not last forever, rightly decided to tax the oil sector, like a private sector, and then used the tax revenue to expand the manufacturing sector. By so doing, Norway today has both expanding oil and gas sectors and a healthy manufacturing sector. Although Nigeria like Norway did tax the oil sector heavily, she did not follow Norway's example of using the proceeds to support the lagging sector- in Nigeria's case, agriculture. Nigeria unlike Norway, spent her oil tax revenues on non-productive investments and imports of consumer goods. The only real way Nigeria could have minimized the Dutch disease syndrome would have been to pay more attention to the agricultural sector. This is because since more than 70 percent of the entire population are non wage earners or live in the rural areas and depend on agriculture, the only means of transferring some of the oil wealth to such a large section of the population would have been through increased state expenditure on rural development and especially agriculture. If, at the same time, the Government had paid farmers much higher prices for their produce the unfortunate consequences of the export of oil for agriculture might have been avoided, as also the need to import food.

However, there are some technical problems with

subsidizing lagging sectors. One such problem is the question of whether or not factors of production ought to be subsidized. Atkinson and Hall have argued that subsidization of factors of production may simply mean supporting hidden unemployment and protecting industries from having to make painful but necessary structural adjustments.<sup>4</sup>

If the lagging sector is protected or subsidised, there may be a danger of it becoming increasingly inefficient.<sup>5</sup>

Also where there is a dearth of management and administrative capacities, payments of subsidies may be mishandled. Similarly, the temptation to use subsidy schemes as political tools in developing countries abound. Subsidies might be given to political favourites at the expense of others, so that, the basis for allocation becomes one of political support rather than the production of goods and services.

The fourth policy instrument is the use of an appropriate incomes policy. The government might have used an income policy to restrain the growth of wages and other forms of income. Wage restraint as a means of both

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4.

Atkinson, F. and Hall, S. (1983) Oil and the British Economy; Croom Helm p.106

5. Atkinson and Hall (1983) p.108.

employment creation and economic stabilization has been used at various times by most governments. The trouble is that such a policy will almost certainly not be welcomed by organized unions that represent important political forces. But Nigeria has been fortunate in not having strong and militant unions which would have made an incomes policy easier to apply.

On the whole, Nigeria made poor use of her oil windfall. She did not necessarily consume all that she earned from oil. Much was invested but the investment was often in non-productive projects; such as the construction of new airports, a new capital city, etc, which did little to increase the supply of goods and services. One consequence of this increased spending was an acceleration of inflation. This could be held at bay so long as there was no balance of payments constraint on imports. Once that ceased to be so because of the fall in the price of oil, inflation became a major problem.

#### 7.1 WHAT CAN NIGERIA DO NOW.

In the face of decreasing oil revenues, Nigeria needs more than ever to pay particular attention to agriculture. This is because it is in agriculture that Nigeria has greater comparative advantage. As discussed above, this particular sector has suffered severely partly because the exchange rate was allowed to rise which decimated exports and farmers' incomes. Many abandoned farming and went to look



for work in the towns. A recovery in agricultural production should therefore form a major part of a general economic recovery programme.

The Babangida government is in fact taking some steps in the right direction by providing a package of incentives for non-oil exports, including agriculture. Such incentives include; retention of 25 percent of the foreign exchange earnings, the establishment of free export zones in certain parts of the country, refund of import duty paid by exporters for raw materials imported into the country for their products, preference in import licence allocation, rebate of the mandatory 30 percent import levy on all imports so long as they are used to promote exports, and the establishment of export credit guarantee and insurance scheme. Although only some of these measures benefit farmers. To insure the success of this policy, the government has recently promulgated the export (incentives and miscellaneous provisions) decree, 1986. Both indigenous and foreign owned companies are already bracing up for the challenge to earn Nigeria foreign exchange through exports. Big concerns like the United African Company, John Holt and Lever Brothers, have gone into large-scale mechanised agriculture. Volkswagen's subsidiary is rearing to start exporting its products to countries in the Economic Community of West African States (ECOWAS) sub-region, SCOA Nigeria plans to export its Peugeot 404 pick-up vans and Inlaks Nigeria is nursing similar moves. None of this is of much help to small scale

agriculture where the majority of Nigerians earn their livelihood. For small farmers an important measure has been the recent abolition of the commodity Marketing Boards and a return to a free market in the buying and selling of most crops. This can be expected to provide farmers with a better return to efforts to increase production for sale.

A devaluation policy is another option that the government should seriously consider. For details about devaluation and its likely effects on Nigeria's balance of payments see chapter 8.

## 8. THE AFTERMATH OF THE DUTCH DISEASE SYNDROME IN

### NIGERIA:-

#### 8.1 Introduction

This chapter examines the likely effects of a currency devaluation. After assessing previous studies, it reports our own attempt at an empirical analysis. As a matter of fact, since this chapter was written, the naira has been greatly devalued, but it is as yet far too early to know what consequences will have ensued from the devaluation.

The high exchange rate which initially resulted from the great increase in oil revenue, soon caused the balance of payments to deteriorate. This deterioration was the consequence of the high level of imports (government and individuals taking advantage of cheap imports due to the exchange rate appreciation), the erratic behaviour of oil exports and the decline in non-oil exports resulting from the exchange appreciation (see Table 8.1). In 1978, the deficit on current account reached N2.4 billion which for the first time had to be financed by borrowing from the Eurodollar market on a large scale, as well as by drawing down foreign exchange reserves, the level of which fell below two months' imports. Thanks to the stabilization measures of 1978, imports declined, though only marginally in 1979, and increased oil exports (both in volume and price terms) helped to reverse the trend of declining



Table 8.1 -- Nigeria - Balance of Payments (Millions of Naira)

	1974	1975	1976	1977	1978	1979	1980	1981 (a)	1982 (a)
Exports of Goods \$ NFS	6,244	5,323	6,593	8,520	7,189	10,726	13,531	10,937	9,021
Oil	5,671	4,766	5,918	7,454	6,005	9,437	12,247	10,247	8,584
Non-Oil	435	350	425	523	627	670	554	189	121
NFS	138	207	250	543	557	619	730	501	316
Imports of Goods \$ NFS	2,743	5,031	6,573	8,703	9,260	9,213	11,326	13,773	13,564.7
Goods	1,666	3,629	5,050	6,423	7,374	7,139	8,716	10,813	12,127.7
NFS	1,077	1,402	1,523	2,280	1,886	2,074	2,610	2,960	1,437
Resource Gap	3,501	292	20	183	-2,071	1,513	2,205	-2,836	-4,543.7
Factor Service	- 372	- 173	- 189	- 346	- 145	- 270	- 277	- 259	- 939
Interest	24	283	241	209	156	- 149	202	431	- 437
Other Investment Income	- 396	- 456	- 430	- 555	- 301	- 121	- 479	- 690	- 502
Transfers (net)	- 62	- 78	- 89	- 119	- 171	- 234	- 315	- 357	- 251
Balance on Current Account	3,067	41	258	648	-2,387	1,009	1,613	-3,452	-5,733.7
Direct Foreign Investment	182	252	213	246	134	184	186	18	241
Net MLI Borrowing	75	45	20	22	896	593	545	481	493
Disbursements	108	66	38	61	911	616	622	839	814
Amortization	- 33	- 21	- 18	- 39	- 15	- 23	- 77	- 358	- 321
Other Capital (net)	- 263	- 156	- 283	- 84	- 96	6	44	- 24	304 (b)
Other terms	24	15	37	31	54	234	261	23	- 345
Increase in Reserves (-)	-3,085	- 167	271	433	1,507	-2,026	-2,649	2,967	1,512
Net Reserves	3,500	3,667	3,396	2,963	1,456	3,482	5,131	3,164	1,652
Memo Items:									
Current Account Balance/GDP(%)	26.3	-	- 1.3	- 2.6	- 7.1	2.2	3.5	-7.8	n.a.
Term of Trade (1977=100)	93	65	94	100	85	94	130	120	n.a.
Reserve Level (equivalent of months of imports)	15.6	8.9	6.2	4.1	1.9	4.6	5.9	2.3	n.a.

SOURCE: Central Bank of Nigeria, Economic and Financial Review, several issues.

- (a) Official estimates; (b) Includes commercial borrowing and trade arrears; (c) Residual:  
(d) Change in assets.

reserves. 1979, saw a sharp increase in the world market price of oil. By the end of 1979, the reserve level reached the equivalent of four and a half months of imports. Although the growth of imports was rather high at almost 23 percent in 1980, the current account was in surplus to the tune of N1.6 billion. The level of foreign exchange reserves stood at more than N5.1 billion (5.9 months of imports) at the end of 1980. This was made possible by large drawings on previously committed loans as well as on new loan commitments. In 1981, export revenues declined rapidly, whereas imports of goods and non-factor services continued to grow, reaching nearly N13.8 billion. As a result, the current account incurred a deficit of more than N3.4 billion, which was financed mainly by drawing down foreign exchange reserves. The level of foreign exchange reserves declined to N3.2 billion at the end of 1981 (equivalent of two months of imports). Until 1978, Nigeria's recourse to external borrowing had been quite limited and the major part of Nigeria's external debt consisted of concessional borrowings. Although the balance of payments situation improved in 1979 and in 1980, Nigeria continued to borrow mostly for project financing by the state governments.<sup>1</sup>

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1. In Nigeria, at that time, individual state were free to borrow money abroad, as well as the Federal Government, for capital projects.

According to the World Bank, Nigeria's outstanding external debt rose to \$12 billion by the end of 1981 and in 1983, it was \$20 billion. By the end of 1983, interest payments on loans was seriously eroding the foreign reserve with about \$1.1 billion per annum being spent on interest payments alone<sup>2</sup>.

With the choking debts, the fall in foreign earnings, the refusal of foreign creditors to extend more loans and with the debt servicing accumulating, Nigeria was left with no other option but to go to the International Monetary Fund (IMF) for assistance. This approach was first made in April 1983 for a balance of payments support loan of N1.9 billion to N2.4 billion under its extended fund facility (EFF) programme.

In February 1984, the Minister of Finance, Dr. Onaolapo Soleyé said that the loan was needed because of the disequilibrium in the nation's economy

"caused by the vicissitudes of the international oil market which had a devastating impact on the nation's exports"<sup>3</sup>

In response, the IMF placed devaluation, among other things, as the single most important item in their negotiation with Nigeria. This made the IMF very

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2. World Bank, (1985), World Debt Tables.

3. Nigerian Tide, Saturday April 7 1984 p.5.



unpopular among Nigerian leaders. Both President Shehu Shagari's administration and the subsequent Military rule under Major General Mohammedu Buhari refused to budge on the issue of devaluation because of what they alleged to be the economic and social ramifications. In their view devaluation would not help Nigeria in any significant way, and their view was based on the findings of, amongst others, Osagie,<sup>4</sup> Olayide and Olatunbosun,<sup>5</sup> and Owosekun<sup>6</sup> and Olayide.<sup>7</sup> Osagie estimated the price elasticities of Nigerian foreign trade and their response to exchange rate

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4. Osagie, E (1970) Price Elasticities in Nigerian foreign trade and Exchange rate flexibility Nigerian Institute of Social and Economic Research (NISER) University of Ibadan 1970.

5. Olayide S.O. and Olatunbosun, D; An Econometric Analysis of Nigeria's Export Demand, Indian Journal of Agricultural Economics, Vol.xxv, No.1 (Jan-March 1970) pp.59-73.

6. Owosekun, A.A. (1980) "Prospects for Nigeria's Major Export commodities in the Expanded E.E.C.," NISER University of Ibadan, 1980.

7. Olayide, S.O. "Some Estimates of supply and Demand Elasticities for selected commodities in Nigeria's Foreign Trade," The Journal of Business and Social Studies, Vol.1 No.1, Sept. 1968.

flexibility. He concluded that the hypothesis that exchange rate flexibility would solve the problem of external imbalance in Nigeria had to be rejected

" The empirical analysis shows that the price elasticities of demand for Nigerian exports and imports are quite small and statistically insignificant."<sup>8</sup>

His study covered the period 1955-1965.

However, Osagie's study suffered from some limitations. Firstly, the estimation of price elasticities were complicated by distortions in the price of both imports and exports brought about by the imposition of import tariffs, quotas etc., which were not taken into account. Secondly, his data were only for a few years therefore providing few degrees of freedom. Observers should therefore consider his conclusions in the light of the above limitations.

Olayide and Olatunbosun in their study of "An econometric analysis of Nigeria's export demand" concluded that exports were not sensitive to prices during the period under study; therefore relative price changes cannot help Nigeria's foreign trade. The most serious problem experienced by them was the wrong sign exhibited by most of their price elasticities. Olayide and Olatunbosun, like Osagie, warned however, that in interpreting the statistical results, the appropriate

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8. Osagie, E. (1970), Op.cit.p.12.

limitations like the few degrees of freedom and the

"inability to specify, in a more detailed fashion, the structural components of the export demand."<sup>9</sup>

had to be taken into account.

Quite apart from the above mentioned limitations which had given Osagie, Olayide and Olatunbosun studies little credibility, the fact still remains that Nigeria has undergone some structural changes since the 1960s. During the 1960s, the Nigerian economy was newly independent and to a very large degree an agrarian economy. Petroleum development was only in its infancy and exports were dominated by agricultural products which accounted for about 90 percent of total exports.

Now Nigeria has seen the most dramatic turnaround in her foreign trade sector. Agricultural exports have fallen, giving way to petroleum, which now accounts for about 95 percent of total exports.<sup>10</sup> Imports, including food, have surged, due partly to a fall in domestic agricultural production, changing what used to be until the mid 1970s a balance of

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9.

Olayide, S.O. and Olatunbosun Op.cit. p.69.

10. This is by far the most important difference between the studies and the present one.



payments surplus into a deficit in the 1980s.<sup>11</sup>

Bearing in mind these major changes in the structure of Nigeria's economy, we have undertaken a new study of the phenomena examined in the studies just referred to. In doing so we have tried to avoid the pitfalls of the earlier studies and to improve on them.

## 8.2 SCOPE OF THE STUDY

The scope and construction of a study of the foreign sector of the Nigerian economy depends on the answers to two questions:-

First, which of the variables occurring in the main macro-economic structure are to be explained in the foreign sector study? Secondly, what are the policy problems to whose solutions the study is expected to contribute?

With these in mind, the objective of the study is to investigate the determinants of the imports of Nigeria at the aggregate level and exports

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11. The Central Bank of Nigeria reported that for the first time since 1980, the current accounts balance of payments position improved, with external assets increased by 67.9 percent to about \$1,700m. at the end of 1984, while the balance of trade surplus totalled \$2,200m; West African Magazine, 22 July 1985 No.3543 p.1503.

at both aggregated and disaggregated levels and to estimate the export and import demand functions during the period 1960-82. This will enable us reach the following conclusions:-

1. whether or not relative prices have any significant impact on the Nigerian import and export flows.
2. whether or not the Marshall- Lerner condition for successful devaluation could be satisfied in the Nigerian case.

The Marshall-Lerner condition stipulates that for a devaluation (revaluation) to improve (worsen) the trade balance, the sum of the elasticities of the domestic import demand,  $\eta_m$  and the foreign demand for exports,  $\eta_x$  must exceed unity:  $|\eta_m + \eta_x| > 1$  other things remaining the same.

The Marshall- Lerner condition assumes that:- 1. the current account is initially balanced. 2. the elasticity of export supply is infinite. 3. the elasticity of supply for imports is infinite.

4. the general level of prices remain constant between the countries and that changes in relative prices are the result of changes in the nominal exchange rate.

5. trade is the only component of the balance of payments, that is, no capital mobility is involved.

6. the exchange rate is determined by an administrative decision by the Central Bank rather

than by market forces.

But is the Marshall-Lerner condition likely to hold in Nigeria ?

Exports from Nigeria, as indeed most other developing countries, are predominantly raw materials and it has been argued that these kinds of exports face an inelastic demand curve. Therefore, the argument goes, a devaluation will not improve the balance of payments.

However, the standard Marshall-Lerner condition argues that once  $|\eta_m + \eta_x| > 1$  is satisfied, no matter the kind of economy, a devaluation would necessarily improve the balance of payments provided some of the above assumptions are met.<sup>12</sup>

To find out whether the Marshall-Lerner condition could be satisfied in the Nigerian case, we decided to estimate the import and export demand functions of the Nigerian foreign sector. The exports covered were petroleum, cocoa, palm kernel, rubber and groundnuts.

### 8.3 THE SPECIFICATION OF THE EQUATIONS:-

The approach used here is similar to that of Khan<sup>13</sup>

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12. Williamson, J. (1983) The Open Economy and the World Economy  
Basic Books Inc. New York.



and Hauthakker and Magee.<sup>14</sup>

#### 8.4 THE IMPORT DEMAND FUNCTION

Imports are significantly related to domestic aggregate economic activity; they rise rapidly during booms and decline during recessions. The price of imported goods relative to domestic goods is likely to be also an important determinant of imports. The price of imported goods in foreign currency is taken to be exogenous to the system, which is probably quite true, because there is likely to be very little short-run relationship between movements of prices in Nigeria and prices abroad; except possibly for exogenous disturbances such as a world war. We therefore can relate the quantity of imports demanded by Nigeria to a ratio of Nigeria's import prices to her domestic prices (assuming that the goods involved could be substituted) and to the level of domestic real income. Expressed in terms of

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13. Khan, M.S. (1974), 'Import and Export Demand in Developing countries' IMF Staff Papers, November.

14. Houthakker, H.S. and Magee, S.P. (1969) 'Income and price Elasticities in World Trade,' Review of Economics and Statistics vol.51, May, pp.111-125.

logarithms the equation can be written in linear form as;

$$\text{Log } M_{it} = \alpha_{0i} + \alpha_1 \log \left( \frac{e P_{Mi}}{P_{Di}} \right) + \alpha_2 \log Y_{it} + U_t \dots \dots \dots (8.1)$$

Where

$M_i$  = quantity of Nigeria's imports

$P_{Mi}$  = Unit value of imports of Nigeria (world export unit values).

$e$  = Exchange rate.

$P_{Di}$  = domestic consumer price index

$Y_i$  = real gross domestic product of Nigeria

The superscript  $d$  refers to demand,  $u$  is the error term, and  $t$  refers to time trends. The equation is specified in logarithms; therefore  $\alpha_1$  and  $\alpha_2$  are the relative price and income elasticities of demand for imports with expected signs of

$$\alpha_1 < 0; \quad \alpha_2 > 0.$$

When estimating import and export equations, all sorts of problems arise and in the case of developing countries, the problems of misspecifications abound. This is so because all too frequently no account is taken of quantitative restrictions placed on the movements of imports which might give rise to the elasticity estimates of  $\alpha_1$  and  $\alpha_2$  being biased and inconsistent.<sup>15</sup> In order to

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15. Khan, M.S. (1974) Op.cit p.680.

take cognisance of this problem we introduce "the possibility of behaviour out of equilibrium by specifying a partial adjustment mechanism for imports in which the change in imports is related to the difference between the demand for imports in period  $t$  and actual imports in period  $t-1$ ".<sup>16</sup>

$$\Delta \log M_{it} = \gamma [\log M_{it}^d - \log M_{it-1}] \dots \dots \dots (8.2)$$

$$0 \leq \gamma \leq 1$$

where  $\Delta \log M_{it} = \log M_{it} - \log M_{it-1}$

This kind of adjustment mechanism means that the price of imported goods relative to the domestic price is taken to be exogenous to the importing country  $i$ . Another reason is that since the free flow of imports is generally distorted by contracts and licensing of imports, supply in most cases does not respond to increased demand immediately.

If equation (8.1) is substituted into equation (8.2) and imports in period  $t$  is solved for, we get the following results:

$$\log M_{it} = \gamma \alpha_0 + \gamma \alpha_1 \log \left( \frac{e^{PM_i}}{PD_i} \right) + \gamma \alpha_2 \log Y_{it} + (1-\gamma)$$

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This brings to light the problems faced by Osagie and Olayide Olatunbosun.

16. Ibid. p.680



$$\log M_{it-1} \dots\dots\dots(8.3)$$

where  $\gamma\alpha_1$  and  $\gamma\alpha_2$  are the short-run price and income elasticities respectively. For the equilibrium case, the demand function can be rewritten as

$$\log M_{it} = \alpha_0 + \alpha_1 [\log P_{Mit} - \log P_{dit}] + \alpha_2 \log Y_{it} \dots(8.4)$$

Similarly, equation (8.3) (the disequilibrium import equation) can be rewritten as;

$$\log M_{it} = \gamma\alpha_0 + \gamma\alpha_1 [\log P_{Mi} - \log P_{dit}] + \gamma\alpha_2 \log Y_{it} + (1-\gamma) \log M_{it-1} \dots\dots\dots(8.5)$$

However, as mentioned earlier, because of quantitative restrictions that are common in developing countries, we thought that autocorrelation might be present. For this reason we decided to allow for autocorrelation in the error term. But it is important to point out that our indicator here is correct if and only if our assumption that simple equations (8.4) and (8.5) are the "true" equations is correct, and that the only misspecification is the restrictions which we do not know about. If the model is static, autocorrelation does not cause bias, only inefficiency. If the model is dynamic, then auto-correlation will cause bias and inconsistency. Therefore any adjustment for autocorrelation, no matter what was the cause, may improve the estimate.

We can then specify a first-order autoregressive process for the error terms in equation (8.4) and (8.5) as

$$U_t = P_1 U_{t-1} + \varepsilon_{1t}$$

$$\gamma U_t = \gamma (P_1 U_{t-1} + \varepsilon_{1t})$$

$$|P_1| < 1$$

The errors are assumed to be normal and independent, with zero mean and constant variance, that is

$$\varepsilon_{1t} \sim \text{NID} (0, \sigma^2)$$

The equations were estimated subject to these linear restrictions.

## 8.5 THE EXPORT DEMAND EQUATIONS

Exports are sometimes thought to be totally unrelated to other domestic activity, since they depend on income of other countries; however, this needs to be modified in two respects. First, exports (like imports) depend on relative prices, so that the price of domestic goods and services produced for export relative to the price of other countries' goods (approximated here as the world price index) is an important variable in the export function. As in

the import demand equation, the export demand equation for Nigeria in an aggregate form could be specified in the following log-linear term;

$$\text{Log } X_{it}^d = \beta_0 + \beta_1 \log\left(\frac{PX_i}{PW}\right) + \beta_2 \log W_i + U_t \dots \quad (8.6)$$

where,

$X_i$  = Export volume index of Nigeria

$PX_i$  = Nigeria's Export unit value index

$PW$  = World gross domestic product deflator index  
(a proxy for world price level).

$W$  = real world income index

$\beta_1$  and  $\beta_2$  are the price and income elasticities respectively with the expected signs

$$\beta_1 < 0; \beta_2 > 0$$

Also just as we did for imports, we can test for incorrect specifications, which may result from estimating an equilibrium relationship when indeed the true relationship is in disequilibrium, "by specifying an adjustment function relating the change in exports to the difference between the demand for exports in period  $t$  and actual exports in the previous period  $(t-1)$ "<sup>17</sup>

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17. Khan, M.S. (1974) Op.cit.p.684.



$$\Delta \log X_{it} = \lambda [\log X_{it}^d - \log X_{it-1}] \dots \dots \dots (8.7)$$

$$0 \leq \lambda \leq 1$$

where  $\lambda$  is the coefficient of adjustment. This adjustment function assumes that Nigeria's export price is related to domestic activities and that the demand for exports depends on how competitive prices are internationally. By substituting equation (8.6) in equation (8.7) and solving for exports in period  $t$ , the following equation is arrived at

$$\log X_{it} = \lambda \beta_0 + \lambda \beta_1 \log \left( \frac{P_{X_i}}{P_W} \right)_t + \lambda \beta_2 \log W_t + (1 - \lambda) \log X_{it-1} + \lambda V_t \dots \dots \dots (8.8)$$

where  $\lambda \beta_1$  and  $\lambda \beta_2$  are the short-run price and income elasticities, respectively. As was the case for the imports, equation (8.6) was rewritten as

$$\log X_{it} = \beta_0 + \beta_1 [\log P_{X_{it}} - \log P_{Wt}] + \beta_2 \log W_t + V_t \dots \dots \dots (8.9)$$

We specified Nigeria's export supply as a log-linear function of the price of exports, the domestic price level, and domestic real income;

$$\log X_{it} = b_0 + b_1 \log P_{X_{it}} + b_2 \log P_D + b_3 \log Y_{it} \dots \dots \dots (8.10)$$

Khan specified what he called an export disequilibrium equation as;

$$\text{Log } X_{it} = \gamma\beta_0 + \gamma\beta_1[\log P_{Xit}-\log P_{Wt}] + \gamma\beta_2 \log W_t + (1-\gamma) \log X_{it-1} + \gamma V_t \dots \dots \dots (8.11)$$

With the price of exports specified as adjusting to excess supply.

8.6 DISAGGREGATED EXPORT DEMAND EQUATIONS

In the same manner we can specify our Equilibrium disaggregated export equations as;

PETROLEUM

$$\text{Log } \text{PET}X_{it} = C_0 + C_1[\log P_{Pit}-\log P_{Wt}] + C_2 \log W_t + V_1 \dots \dots \dots (8.12)$$

Similarly, the disequilibrium disaggregated export equations are specified as;

PETROLEUM

$$\text{Log } \text{PET}i_t = J_0 + J_1 [\log P_P - \log P_{Wt}] + J_2 \log W_t + (1-\gamma) \log \text{PET}X_{it-1} + \gamma V_2 t \dots \dots \dots (8.13).$$

and so on for other export products.

where

PETX = Petroleum Exports

PP = Price of Petroleum

PW = World Prices

W = World Income

c estimated coefficients. V is the error term.

Again as was the case of imports, there are quantitative restrictions placed on exports of primary products from developing countries by potential customers i.e. the industrial countries. Therefore, the role of these restrictions in the determination of exports was tested in the same manner as the restrictions on imports. This was done by specifying a first-order autoregressive process for the error terms in equation (8.6) to (8.10).

$$V_t = P_1 V_{t-1} + W_{1t}$$

$$\gamma V_t = \gamma (P_1 V_{t-1} + V_t)$$

$$|P_1| < 1 \quad \text{and the } W_i \text{'s have the}$$

properties

$$W_{1t} \sim NID(0, \sigma_1^2), W_{2t} \sim NID(0, \sigma_2^2).$$

## 8.7

### METHODS OF ESTIMATION

All the equations were estimated using two-stage least squares by means of instrumental variables. The instruments used were as provided by Khan.



Eq.(8.4) was estimated by using  $LPDi$ ,  $LYi$ ,  $LPW$ , and  $W$   
 Eq.(8.5)  $LPDi$ ,  $LYit$ ,  $LpWt$  and  $LWi$ ,  $LMit-1$  and  $LPMit-1$   
 Eq.(8.9)  $LPDi$ ,  $Lyit$ ,  $LPWt$  and  $LW$   
 Eq.(8.11)  $LPDit$ ,  $LYit$ ,  $LPWt$ ,  $LWt$   $LXit-1$  and  $LPXit-1$   
 $LPD$ , and  $LYit$  may have been chosen by Khan because they are exogeneous to the export supply equation, while  $LPWt$ ,  $LWit$ , and  $LPMit$  were chosen because they are exogeneous to the import demand equation. In the disaggregated equation, since only the export sector was disaggregated, we had to use  $LPD$ ,  $LY$ ,  $LPW$  and  $LW$  for each equilibrium equations. In the case of the disequilibrium equations we only had to place individual endogeneous variables in each case. Taking petroleum for example, we use the following  $LPD$ ,  $LY$ ,  $LPW$ ,  $LW$  and  $LPETXt-1$ . In the case of cocoa we use  $LPD$ ,  $LY$ ,  $LPW$ ,  $LW$  and  $LCoaxt-1$  and so forth.

## 8.8 RESULTS OF THE ESTIMATIONS

The aggregated import equations (8.4) and (8.5) and the aggregated export equations (8.9) and (8.11) were estimated. Similarly, disaggregated export equations were also estimated. The results of our estimation is presented in Table 8.2. For the following, discussions however, the equation with the lagged import and exports term (style the disequilibrium estimates) will be concentrated upon because these allow time for adjustment in the long-

run reflecting what is known about habits in consumer behaviour and purchasing patterns of individuals and business men alike. Estimates and elasticities taken from the equilibrium equations are also presented. The t- statistic was used as a test of significance of individual coefficients.

#### 8.9 THE IMPLICATIONS OF THE RESULTS FOR NIGERIA

As was stated earlier, our discussion here will focus on whether or not relative price changes can significantly influence trade flows in Nigeria and also to find out whether the Marshall-Lerner condition for successful devaluation is satisfied. In discussing this section, we shall make use of Tables 8.2 and 8.3. Table 8.2 presents the estimated coefficients with the standard errors in parentheses. The sample observations extend from 1960-82 periods. It can be seen from Table 8.2 that there is a considerable degree of variation in the coefficients of determination ( $\bar{R}^2$ ). But they also exhibit good degree of  $\bar{R}^2$ , the lowest being Rubber with 68 percent. Thus we could say that the independent variables account very well for the variation in the dependent variables. The evidence contained in Table 8.2 suggests that relative prices are quite significant in determining changes in the volume of

Table 6.2 --

DEPENDENT VARIABLE	EQUILIBRIUM TWO-STAGE LEAST SQUARES ESTIMATES						DISEQUILIBRIUM TWO-STAGE LEAST SQUARES ESTIMATES						
	R <sup>2</sup>	CONSTANT	PRICE	ELASTICITY	INCOME	$\rho$ <sup>1</sup>	R <sup>2</sup>	CONSTANT	PRICE	ELASTICITY	INCOME	LAGGED IMPORTS/ EXPORTS	$\rho$ <sup>2</sup>
TOTAL IMPORTS	0.945	-0.649 (1.235)	-0.959 <sup>*</sup> (0.529)	0.775 <sup>***</sup> (0.369)			0.932	-2.171 <sup>*</sup> (1.238)	-1.296 <sup>*</sup> (0.739)	1.207 <sup>**</sup> (0.454)			
TOTAL EXPORTS	0.706	-9.744 <sup>**</sup> (3.935)	-0.211 (0.276)	3.055 <sup>**</sup> (0.868)	0.730 <sup>***</sup> (0.152)		0.903	-3.851 (2.751)	-0.275 <sup>*</sup> (0.138)	1.072 (0.727)	0.748 <sup>**</sup> (0.173)	0.875 <sup>**</sup> (0.237)	
DISAGGREGATED EXPORTS													
PETROLEUM	0.786	-14.360 <sup>**</sup> (7.273)	-0.894 <sup>*</sup> (0.471)	4.040 <sup>**</sup> (1.600)	0.757 <sup>**</sup> (0.155)		0.888	-9.202 (5.916)	-0.441 <sup>*</sup> (0.250)	2.341 (1.439)	0.631 <sup>**</sup> (0.195)		
COCOA	0.691	7.191 <sup>**</sup> (2.644)	-0.227 (0.300)	0.575 (0.558)	0.506 <sup>**</sup> (0.246)		0.664	2.794 (2.675)	-0.141 (0.222)	0.257 (0.404)	0.613 <sup>*</sup> (0.310)		
RUBBER	0.689	28.327 <sup>**</sup> (11.381)	-0.786 <sup>**</sup> (0.313)	8.808 <sup>**</sup> (2.948)			0.936	3.402 <sup>**</sup> (1.348)	-0.373 (0.312)	0.521 <sup>**</sup> (0.196)	0.785 <sup>**</sup> (0.155)	0.443 <sup>**</sup> (0.220)	
ALM KERNEL	0.881	21.049 <sup>**</sup> (5.750)	-0.536 <sup>**</sup> (0.217)	-4.232 <sup>**</sup> (1.492)			0.973	26.514 <sup>**</sup> (7.199)	-0.380 <sup>*</sup> (0.218)	-5.766 <sup>**</sup> (1.876)		0.630 <sup>**</sup> (0.206)	
ROUND NUTS	0.842	4.294 (2.630)	-3.278 <sup>**</sup> (0.535)	-0.205 (0.601)			0.876	4.248 (3.209)	-2.719 <sup>**</sup> (0.825)	-0.418 (0.731)			

NOTE: Figures in parentheses are the standard errors

period of sample 1960-1982.

Using a two-tail test with 18 degrees of freedom;

\*\*\* are significant at 5 percent,

\* are significant at 10 percent.



8.3:- THE ESTIMATED PRICE AND INCOME ELASTICITIES OF DEMAND  
DISEQUILIBRIUM TWO-STAGE LEAST SQUARES ESTIMATES WITH  
LAGGED IMPORTS AND EXPORTS

	<u>Short Run</u>	<u>Long Run</u>
Total Imports		
Price	-1.3	-1.7
Income	1.2	1.4
Total Exports		
Price	-0.3	-1.1
Income	1.1	4.3
<u>Disaggregated Exports</u>		
Petroleum:-		
Price	-0.5	-1.2
Income	2.4	6.3
Cocoa:-		
Price	-0.2	-0.4
Income	0.3	0.7
Rubber:-		
Price	-0.4	-1.7
Income	0.5	2.4
Palm Kernel:-		
Price	-0.4	-0.5
Income	-5.8	-7.3
Groundnuts:-		
Price	-2.7	-3.6
Income	-0.4	-0.5

TABLE 8.4: THE ESTIMATED PRICE AND INCOME ELASTICITIES  
EQUILIBRIUM TWO-STAGE LEAST SQUARES ESTIMATES WITHOUT  
LAGGED IMPORTS AND EXPORTS

	Short Run
Total Imports	
Price	-0.9
Income	0.8
Total Export	
Price	-0.2
Income	3.0
<u>Disaggregated Exports</u>	
Petroleum	
Price	-0.9
Income	4.0
Cocoa	
Price	-0.2
Income	-0.6
Rubber	
Price	-0.8
Income	-8.8
Palm Kernel	
Price	-0.5
Income	-4.2
Groundnuts	
Price	-3.3
Income	-0.2

TABLE 8.5 : OVERALL CHANGE IN EXPORT VALUE OF  
NON-OIL SECTOR DUE TO DEVALUATION

(N MILLION)

CHANGE DUE TO 10% DEVALUATION:-

SHORT RUN SITUATION

	1977	1978	1981	1982
Exports (Non-oil)	15.69	18.81	5.67	3.63
Over-all Imports	1131.4	1203.8	1790.5	1763.4

LONG-RUN SITUATION

	1977	1978	1981	1982
Exports (Non-oil)	57.53	68.97	20.79	13.31
Over-all Imports	1479.5	1574.2	2341.4	2306.0

CHANGE DUE TO 30% DEVALUATION

	1977	1978	1981	1982
Exports (Non-oil)	47.1	56.4	17.1	10.9
Over-all Imports	3394.2	3611.4	5371.5	5290.2

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imports and exports and that there are considerable possibilities of substitution between domestic and foreign sources of supply. Looking at the import and export elasticities, the Marshall-Lerner condition for successful devaluation is satisfied as presented in Table 8.3; but the elasticities are greater in the case of imports than exports. The long-run adjustments are also slower in export with -1.1 than imports with -1.7. The income elasticities are generally high in total imports, total exports and



exceptionally high in petroleum exports as one would expect. A long run income elasticity of 6.3 is quite high for petroleum. Similarly, the income elasticity for cocoa is low in the short-run with 0.3 but slowly adjusting in the long run to 0.7. In the case of Rubber it adjusts from 0.5 in the short-run to a good 2.4 in the longrun. Problems only exist in the cases of palm kernel and groundnut.

These two products exhibit unexpected signs with -5.8 and -7.3 in the short run and long runs for palm kernel and -0.4 and -0.5 in the short and long run for groundnut respectively.

The estimated price and income elasticities are significantly different from zero at the 5 percent level with the exception of the following; short run price elasticities for cocoa, palm kernel and short-run income elasticities for cocoa, and groundnuts. The aggregated export equation has  $\rho^1$  and  $\rho^2$  of 0.730 and 0.875. Petroleum has 0.751, Rubber has 0.443 and palm kernels 0.630 all with significantly higher than zero. For further results of significance tests see Table 8.2. As indicated at the bottom of Table 8.2, \*\* represents figures significant at 5% level, \* figures significant at 10% level while the rest are not significant at any levels.

One possible reason for this high value of  $\rho$  in some of the equations may be the quantitative restrictions frequently imposed in the export demands. It may

those cases. A possible reason for this failure could be due to misspecification of the model. The misspecification of a model may take one of many forms. For example, if one has specified a linear model when the 'true' relationship is non-linear, the residuals may signal the presence of autocorrelation and this is unlikely to be removed by the transformation and vice versa. The other case that arises frequently is when variables have been omitted and their impact is relegated to the errors in the model. If that happens, the equilibrium estimates with lower  $\rho$  is always preferred. The lagged imports value of 0.238 indicates that imports adjusts more rapidly than the exports with 0.748.

#### 8.10 IMPLICATIONS FOR THE BALANCE OF PAYMENTS

The term balance of payments is used by economists in two different ways. It could be used narrowly, to refer to the system of accounts which depicts a country's economic transactions with the outside world. It could also be used when economists wish to express the relationship between the effective demand for and supply of a country's currency. In this case, a country is referred to as being in balance of payments equilibrium when (in the absence of Government interventions) the amount of

Table 8.6 -- Adjusted Balance of Payments - Selected Years

(Millions of Naira)

SHORT RUN SITUATION (10% DEVALUATION)				
	1977	1978	1981	1982
Exports of Goods	8535.69	7207.81	10753.67	9024.63
Imports of Goods	7868.0	8056.2	11982.51	11801.3
Balance on Current Account	667.69	- 848.39	- 1228.84	- 2776.67
<u>LONG RUN SITUATION (10% DEVALUATION)</u>				
	1977	1978	1981	1982
Exports of Goods	8577.53	7257.97	10957.79	9034.31
Imports of Goods	7223.49	7685.8	11431.59	11258.7
Balance on Current Account	1354.04	- 427.83	- 473.8	- 2224.39
<u>30% DEVALUATION - LONG RUN</u>				
	1977	1978	1981	1982
Exports of Goods	8692.6	7396.0	10999.4	9061.0
Imports of Goods	4264.5	4537.4	6748.77	6646.7
Balance on Current Account	4428.1	2858.6	4250.63	2414.3

Table 8.7 -- Estimated Current Account Position in 1983, 1984 and 1985 had Nigeria Devalued in 1982

BY 10%:			
		<u>ESTIMATES</u>	
	1983	1984	1985
Exports of Goods	9034.31	9049.1	9065.5
Imports of Goods	11258.7	9344.72	7756.12
Balance on Current Account	- 2224.4	- 295.62	+1209.4



its currency demanded at a given exchange rate is just equal to the supply coming on to the market. Similarly, it is referred to as being in deficit when the demand for its currency is less than supply, and in surplus when demand is greater than supply. Defined in this fashion, we can then refer to the balance of payments here as an analytical concept that could be used to examine such economic problem as exchange rate policy. We shall use it to analyse the implications for Nigeria of an eventual devaluation of the naira. If purchases of goods and services are sensitive to relative price changes which our regression results show that they are, a devaluation would encourage foreigners to buy from Nigeria and at the same time, discourage Nigerian residents from making payments abroad, whether in respect of visible or invisible transactions,

However, much of this depends on the elasticity of demand conditions in Nigeria and the outside world. According to our regression results, a 1 percent decrease in price will lead to a 1.1 percent increase in total exports while a 1 percent increase in price will lead to a 1.7 percent decrease in imports all in the long-run .

In practical terms, using our balance of payments table (Table 8.1), a devaluation of 10 percent would lead to some reduction in imports penetration of N835.0 million and mildly stimulate non-oil exports

by N15.7 million in the shortrun in 1977. The outcome is an improvement of the current account; turning what was a balance of payments deficit to a surplus of N667.7 million in 1977. It also reduced the amount of deficits in 1978, 1981 and 1982 by N1222.6, N1607.2 and N1767 million respectively. In the long-run, the situation improved with a larger surplus in 1977 and a much reduced deficits in 1978, 1981 and 1982. But with a 30 percent devaluation, the balance of payments position could be expected to improve considerably according to our studies (see Tables 8.5 and 8.6). Table 8.5 and 8.6 indicate that quantity exported would have actually increased and imports decreased if Nigeria were to devalue and that the increase in export is likely to be larger in the long-run than in the short-run. Table 8.6 and 8.7 represent a J-curve for Nigeria's current account. The Tables indicate that if Nigeria had devalued in 1982 by 10%, in the period immediately following, she would have experienced a balance of payments deficit in 1983 and 1984. But these deficits would have been eliminated and the current account slowly moved back into surplus in 1985. However, this is subject to the following assumptions:

- 1) That there will be a constant 10% reduction in the level of total imports from 1982 levels.
- 2) That non-oil exports increase by 10% every year

from 1982 levels while all other exports like oil and NFS remain the same.

Our results also indicate that for a quicker adjustment of the current account, Nigeria needs to devalue by about 30 percent or more. But the income elasticity of demand of less than 0.5 shown by cocoa in the short run could be a conclusion in line with a generalized version of Engel's law for crude foodstuff exports. Engel's law states that if prices and demographic variables (family size and composition) are held constant, a rise in income will lower the share of consumer expenditures spent on food and raw materials.<sup>18</sup> Palm Kernels and groundnuts both exhibit negative signs in their income values. A possible reason for this may be that some oil seed alternatives may have been found for these products which our analysis did not take into account. But according to our analysis, in spite of Engel's law widely associated with most primary exports, a devaluation would improve Nigeria's balance of payments position albeit in the long run. At least Nigeria can draw some comfort from Ghana, whose economy is reported to be responding well to the IMF-induced reform programme. The Ghana

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18. Elkan, W. (1973) An introduction to Development Economics,  
Penguin Books Ltd., p.47.



Secretary for Finance and Economic Planning, Kwesi Botchwey, disclosed that the GDP rose by 7.6 percent in 1984, thereby reversing 5 consecutive years of decline in the real per capita income. Inflation was reduced from 123 percent in 1983 to 40 percent in 1984 while agricultural production recorded an impressive 10 percent increase.<sup>19</sup> In the Nigerian case, for revenue to rise, agricultural output has to increase and more exported. This is not bad for Nigeria because it will mean high growth in the agricultural sector, which is having a difficult time at the moment, and will mean increased employment in that sector too. Oil is priced in U.S dollars and is therefore not affected by the devaluation of the naira. But a devaluation of the naira increases the government's naira revenue from oil exports, much of which is spent by the states and local authorities. This argument, Rimmer (1985) succinctly put when he stated;

".....A 60 percent devaluation against the U.S dollar would raise the naira equivalent of a dollar by 150 percent. The naira equivalent of the oil earnings of 1984 (for example) would have been about N20 billion instead of N8 billion."<sup>20</sup>

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19. ' Economic Sun Shining in Ghana again

United Bank for Africa (UBA), Monthly Business and Economic Digest Vol.8 No.5, May 1985 p.8.

If we assume that the gap between supply and demand of traded foodstuffs like maize, rice, wheat and palm oil are bridged by increased imports, a devaluation will not only result in Nigeria looking inwards as imports become more expensive and therefore increase domestic production to bridge these gaps, but may equally result in Nigeria actually exporting these products. In this case, a devaluation may bring about the export of a wider range of goods; with the response greater in products with a shorter gestation period like maize. A realistic exchange rate would enhance the export of products like rice with high domestic labour cost content. Similarly, although evidence suggests that the aggregate demand for agricultural exports in a given export market in the world as a whole might be fairly inelastic, but if the depreciating country supplies only a small proportion of that commodity in the world market as is the case with Nigerian cocoa, rubber, palm oil and kernels, the elasticities of demand for these products will be higher. The importing countries will buy less from the other major producing countries and more from Nigeria. The quantity demanded for groundnuts, of which Nigeria used to be a major world supplier may not improve very much, but at

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20. Rimmer, D; (1985) 'The overvalued currency and over-administered Economy of Nigeria; African Affairs, Vol.84No.336 July.

least Nigeria will resume exports again after a long stoppage. In the case of cocoa, Nigeria will probably gain from depreciation at the expense of say the Ivory Coast and Ghana who are major suppliers. Following a devaluation of the naira, the total world imports of cocoa may not rise very much, if at all, but Nigeria's share in providing cocoa might increase considerably. Accordingly, in estimating the effects of devaluation, sufficient time should be allowed for adjustments to take place.

Our conclusion therefore is that since relative prices do influence trade flows in Nigeria, as was evident in our analysis, and the Marshall-Lerner Condition for successful devaluation is satisfied, Nigeria may not be worse off if she were to devalue contrary to the fears of most commentators.<sup>21</sup> However, we quite appreciate that, depending on the percentage of devaluation, the volume of exports and imports respond only slowly to the change in relative prices that the devaluation may engender, therefore imports remain high and exports low in the immediate post-devaluation period. Time is needed for full adjustment. Our empirical analysis shows that with 10 percent devaluation it probably will take Nigeria four to five years to correct a balance of payments deficit to a surplus while with a 30 percent devaluation it may take about two years. Our strongest case for a devaluation is

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21. See Osagie (1970), and Olayide and Olatunbosun (1970).



its effects on import reduction in the medium and long term. While a devaluation may help Nigeria recover, equally important are other recovery programmes like improved producer prices for agriculture and cautious monetary policies.

#### 8.11 SUPPLY-SIDE ASSUMPTIONS

The above demand-side analysis is based on the following supply-side assumptions:

1. It is assumed that the government would respond to the above criticisms by increasing producer prices and dismantle some of the institutional bottlenecks that have for so long inhibited agricultural production.
2. That farmers themselves would respond to the above policy reforms (i.e. increased producer prices) and increases in demand due to devaluation by making use of excess capacity available such as fertile land and rural labour. Farmers can switch from domestic to export crops. This assumption is not unreasonable because empirical evidence in Nigeria and indeed other developing countries has shown that export volumes can actually increase following a devaluation and/or higher producer prices. Oni (1969)<sup>22</sup> set out to investigate the effect of the

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22. Oni, S.A. (1969), Production response in Nigerian agriculture case study of palm produce 1949-1966, Nigerian Journal of Economic and Social Studies, March.

Marketing Board price-fixing policies on the level of production of palm produce in Nigeria. His hypothesis was that the supply of palm produce would respond positively to an increase in producer prices. Oni postulated two models, one for palm oil and the other for palm kernels. The general structure of the two models is the same; the only difference lies in pertinent independent variables affecting the production decisions for either palm kernel or palm oil. For palm oil production, the factors selected "a priori" as the pertinent independent variables affecting production decisions are actual producer prices of palm oil, world price index for oil seeds, acreages of oil palm in production, a weather variable, and a time trend variable representing changes in technology.

A standard multiple regression model in which the quantity of palm oil purchased by the Marketing Board<sup>23</sup> is the dependent variable and the independent variables are those mentioned above was constructed and the final mathematical model utilized was implicitly represented as follows:

$$\begin{aligned} \text{Log } Y_{ot} = a_0 + a_1 \text{Log } P_{ot} + a_2 \text{Log } P_{St} + a_3 \text{Log } W_{t-2} \\ + a_4 \text{Log } A_t + a_5 T \end{aligned} \quad \dots\dots\dots(8.14)$$

where

$Y_{ot}$  = the amount of palm oil purchased in year t

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23. Oni, S.A. used Marketing Board purchases as a proxy for total production figures.

- $P_{ot}$  = Actual producer price of palm oil in year t  
 $P_{st}$  = World price index for oil seeds in year t  
 $A_t$  = Acreages of oil palm in production in year t  
 $W_{t-2}$  = Weather index for year t  
 $T$  = Time trend measured in years.

The model for palm kernel was constructed on the same basis as that of palm oil and the final equation utilized written in implicit form as follows :

$$\begin{aligned} \text{Log } Y_{kt} = & a_0 + a_1 \text{Log } P_{kt} + a_2 \text{Log } P_{st} + a_3 \text{Log } A_t \\ & + a_4 \text{Log } W_{t-2} + a_5 T \quad \dots\dots\dots (8.15) \end{aligned}$$

where

- $Y_{kt}$  = the amount of palm kernels purchased in year t  
 $P_{kt}$  = Actual producer price for palm kernel in year t and  $W_{t-2}$  and T are the same as in palm oil model in equation 8.14.

The analysis was done first for the Eastern Nigeria only and later extended to the whole federation. The computed elasticity coefficient between producer prices of palm oil and aggregate level of palm oil production for the former Eastern Nigeria in equation 8.14 is 0.7. This means that, with the effect of other independent variables remaining constant at their sample mean values, an increase of one percent in producer price for palm oil by the Marketing Board was associated with 0.7 percent increase in the aggregate level of palm oil production in the Eastern



States and 0.4 percent in the entire Federation. For palm kernel, it was 0.4 percent for the Eastern Nigeria and 0.3 percent in the entire Federation. The absolute values of the coefficients of the elasticity as computed from the various equations for producer prices for palm oil and palm kernel are less than unity. However, the calculated elasticity of acreage response is in every instance greater than unity. The signs of the elasticity coefficients conform with "a priori" knowledge. Oni finally concluded that the results of the regression analyses indicate that oil palm farmers react positively to increases in producer prices of palm produce. Whilst the weather index is found to be a significant factor affecting aggregate production, the net relationship between time and time squared variables and aggregate production was positive and negative respectively, suggesting the declining influence of technology over the period studied. Oni also concluded that even though the calculated elasticities for both palm oil and palm kernel indicated an inelastic relationship for the supply of these commodities over the period studied, supply still responded to increased prices.

In a study conducted by Bhagwat and Onitsuka (1974)<sup>24</sup>

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24. Bhagwat, A. and Onitsuka, Y. (1974), Export-import responses devaluation: experience of the non-industrial countries in the 1960s', IMF Staff Papers, July.

of post-devaluation export performance in a number of non-industrial countries, it emerged that in the majority of cases export earnings and volumes did grow following devaluation. Where little or no expansion in exports resulted, or where a decline occurred, special circumstances were usually found to exist. They also found that for the more developed non-industrial countries which exported agricultural goods with shorter gestation periods, minerals or manufactured goods, the supply response of exports to devaluation appears to be somewhat greater. This is consistent with our argument on above which says that following a devaluation, exports in Nigeria may be greater in products like maize with a shorter gestation period. In another study by DeWilde (1980)<sup>25</sup> about supply response to an increase in producer prices in Kenya, Tanzania and Ghana, he observed that producers can switch from one crop to another depending on price incentives. DeWilde stated that;

" The rapid adoption of cotton cultivation in Sukuma-Land seems to have been considerably stimulated during the 1940s and early 1950s by a rising trend in buying prices. Changes in the rate of adoption of tobacco as a cash crop also appear to have been influenced by

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25. De-Wilde, J.C. (1980), Agricultural Development in Africa, (ed) by Robert H. Bates, and Micheal F. Lofchie.

prices."<sup>26</sup>

DeWilde observed that for the price incentive to achieve its purpose (i.e. increase production), farmers must see it as a permanent and enduring incentive rather than a temporary aberration.

3. In view of the fact that changes in agricultural production are not, of course, solely attributable to price changes, manpower availability and increased demand for output, but also result from changes in the weather or from the need to bring less fertile land into cultivation because population is increasing, we have therefore, for the purpose of our analysis, assumed that these variables are constant. This is not an unreasonable assumption, since apart from the weather these other factors affect output only very gradually. Even the weather in Nigeria can be largely ignored for our purposes since Nigeria has largely escaped the terrible droughts that have in recent years afflicted other parts of Africa.

Only parts of Northern Nigeria has experienced rainfall shortages, but the North has never contributed more than marginally to Nigeria's agricultural exports, except for groundnuts.

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26. De-Wilde, J.C. (1980) p.126.



8.12 THE PRESSURE OF DOMESTIC DEMAND AND THE BALANCE OF PAYMENTS : A POLICY OF DOMESTIC DEFLATION.

A devaluation accompanied by pressures on domestic demand via increased money supply would only make Nigeria's balance of payment position worse. To avoid this kind of situation happening, Nigeria requires an effective demand management policy such as a deflation of the domestic economy.

Deflation of the domestic economy has three effects on the balance of payments, relating to relative prices, imports and exports. First, a deflation will reduce the relative rate of increase of costs and prices for Nigerian goods and services. The magnitude and length of the domestic deflation will depend upon the time required for the costs and prices of foreign goods to rise and restore Nigeria's competitive position by re-establishing relative equality between domestic and world prices. Secondly, through its effects on the level of domestic income, a deflation will reduce imports. Thirdly and most importantly, a deflation will release goods and resources from supplying the domestic market and so permit a short-run expansion of exports.

The argument is that in a period of peak domestic demand, goods and resources which would otherwise be used to supply export markets will be diverted to domestic sales. In these circumstances, it is argued that government domestic deflationary measures ( for exmple, credit

squeezes, tax increases, wage restraint, cuts in public expenditure ) will release goods and resources from supplying the home market so allowing firms to increase their exports. At the same time, it is maintained that a domestic deflation will encourage firms to seek overseas outlets for the products which can no longer be sold at home. In other words, a deflation predicts an inverse or negative relationship between the pressure of domestic demand, on the one hand, and short-run variations in export performance, on the other : high pressures of domestic demand will reduce exports below their trend value and vice versa.

CONCLUSIONS

Until the early 1970's, agriculture has been the cornerstone of the Nigerian economy. Not only has agriculture provided over 97 percent of Nigeria's foreign exchange by way of exports of agricultural produce, but the expansion of the non-agricultural sector has strongly relied on domestic agriculture for both sustained increase in the domestic supply of food and for raw materials used in manufacturing of all kinds of products. Agriculture was also seen as the principal source of capital for investment elsewhere in the economy. Thus the development process involved the transfer of a surplus from the agricultural sector to the other sectors. The coming on stream of oil in Nigeria has had serious effects on the economy. These effects have made themselves felt in two ways: first via increased government revenue from oil and secondly, via the Dutch disease syndrome. But this study has largely concentrated on the second part of these effects. Since 1970, oil exports have dominated Nigeria's economic development, and have brought about several fundamental changes in the economy. Table 6.6 gives data on the composition of exports in recent times. Although total export earnings have risen rapidly over the past two decades, the expansion has been almost entirely due to the rise in oil exports. Of the earlier exports, only cocoa and cocoa products and palm kernels have registered sustained increases, but this was rather on account of price rises than an increase in volume as Table 6.6 shows. All



other exports declined in volume except petroleum. Groundnuts, groundnut oil, palm oil and cotton exports all disappeared completely from 1974. To get the best deal out of the oil sector, Nigeria joined the Organization of Petroleum Exporting Countries in July 1971 and therefore benefited from the concerted action of OPEC members in 1973 to push oil prices up. In 1973, oil prices quadrupled. As a result, there was a very large increase in oil revenues, both in the sense of export earnings and of government revenues.

Secondly, the oil export boom brought with it a trail of negative impacts that retarded growth in other part of the economy, particularly agriculture. The phenomenon has been termed the Dutch disease. The term Dutch disease was coined from the observed impact of North Sea gas production on the Dutch economy. With increased export revenues from gas, the guilder appreciated against other currencies, making Dutch exports of manufactures uncompetitive internationally, and causing export to decline and increasing unemployment. 'Dutch disease' manifests itself in three ways; first, the oil export creates an expanding surplus in the external account, which pushes up the exchange rate. As the exchange rate appreciates in real terms, the non-oil sector is squeezed. Secondly, we have the spending effect; the expansion of the oil sector increases domestic spending on non-tradeables (i.e. construction, transport services, trading, etc.). This increased spending raises the price of non-tradeables in the short run, which also induces a real appreciation of the domestic currency the real exchange rate, ( defined as the

nominal price of foreign currency deflated by an index of domestic cost) falls. Although the oil revenue is also spent in the lagging sector, which includes agricultural exports, import-competing food production, and manufacturing import substitutes, it does not lead to a rise in prices of tradeables whose prices are controlled by the government and are determined in the world market. Excess demand for tradeables, generated by lower prices, is therefore met through additional imports enhanced by high exchange rate. As prices rise in both the non-tradeables and oil sectors, labour is drawn from the lagging sector (Agriculture) into the non-tradeables and oil sectors thereby, causing a decline in output of the lagging sector. Similarly, when the increase in prices of the oil and non-tradeable sectors raise the marginal product of labour in these sectors, it causes labour to move from the lagging sector into the oil and non-tradeable sectors. Therefore, both the spending and resource movement effects pull labour out of the lagging sector. This movement of labour out of the lagging sector into the booming sectors and the squeezing of agriculture due to the appreciation of currency, Cordon called the "de-agriculturalization".

However, while currency appreciation, the spending and resource movement effects all have played crucial roles in agricultural decline, they are not the only factors responsible. Other factors like the low prices paid to local farmers by the Marketing Boards and other government agencies have also contributed to the decline. The government, on the



other hand encouraged unrealistic increases in demand through the use of consumer price subsidies. With big increases in demand in the wake of a decline in domestic production combined with a high exchange rate, imports of cheap food flooded the domestic market. Nigerians in the city had acquired a taste for rice, a food much tastier and easier to prepare than the traditional yam or cassava. The rise in the value of the currency meant a falling price in naira terms of imported rice. For a fairly long time, Nigeria has been able to pay for these imports with the oil money. But since early 1982, oil has faced a difficult time in the world market, so much so that the revenue accruing from oil is now almost one-half of what it used to be in 1979/80. In 1984 for example, oil revenue was N7 billion while in 1980 it was N14 billion. But until quite recently the earlier high exchange rate was maintained so that the naira became substantially overvalued. As oil revenues continued to fall, Nigeria plunged herself into a serious balance of payments problem which necessitated her going to the IMF for a loan of \$2.0 billion in 1983. One of the conditions prescribed by the IMF was that Nigeria should devalue her currency. In view of this, we decided to investigate empirically the implication of a devaluation of the naira on the Nigerian foreign sector. The empirical analysis was conducted with the following objectives:

1. To investigate whether or not relative price changes do have a significant influence on the import and export flows in the Nigerian foreign sector.
2. To investigate whether or not the Marshall-Lerner



conditions for successful devaluation could be satisfied in the Nigerian case.

Our results, suggest that both conditions are met and that the devaluation of naira would improve the Nigerian balance of payments. There is strong evidence to suggest that a successful devaluation could redeem Nigeria from being a mono export economy. This study also acknowledges that a devaluation is a necessary but not a sufficient condition for quick agricultural recovery. Given the extent of the oil shock on the economy, other measures like improved producer prices or the dismantling of the marketing boards system may help a quick recovery.

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Appendix Table 2.1

## The Seven Sisters' Shares of World Crude Oil Production - 1972

Company	(1) Production in U.S. (Thou.b/d)	(2) % of total U.S. Prod- uction	(3) Production in Middle East <sup>2</sup> and Libya (Thou.b/d)	(4) % of Total M.E. <sup>2</sup> and Libya Production	(5) Production in all OPEC (Thou.b/d)	(6) % of total OPEC Prod- uction	(7) Production <sup>1</sup> World Wide (excluding E. Europe and China) (Thou.b/d)	(8) % of World Production (excluding E. Europe and China)
Exxon	1,114	9.9	2,527	12.9	4,050	15.2	6,145	14.7
Texaco	916	8.1	2,155	11.0	2,674	10.0	4,021	9.6
Socal	528	4.7	2,155	11.0	2,614	9.8	3,323	7.9
Gulf	651	5.8	1,887	9.7	2,409	9.0	3,404	8.1
Mobil	457	4.1	1,178	6.0	1,477	5.5	2,399	5.7
BP	-	-	3,903	20.0	4,506	16.9	4,659	11.1
Shell	726	6.5	1,372	7.0	2,877	10.8	5,416	12.9
Total	4,392	39.1	14,165	77.6	20,607	77.1	29,367	70.0

1. Taken from company annual reports

2. Excludes Bahrain

Source: Sampson, A. (1985): The Seven Sisters -- The Great Oil Companies and the World They Made  
(Coronet Books).

Appendix Table 3.1 --- Joint Venture Participation Interests of the Nigerian Government in the Exploratory and Exploitation Sector of the Oil Industry

COMPANY	PARTICIPATION %	DATE ACQUIRED	NO. OF LICENCES
ELF	35	1/4/71	4
	35	1/4/74	4
	60	1/7/79	4
AGIP/PHILLIPS	33 $\frac{1}{3}$ <sup>a</sup>	1/4/71	4
	55	1/4/74	4
	60	1/8/79	4
SHELL/BP	35	1/4/73	58
	55	1/4/74	58
	60	1/7/79	58
	80	1/8/79	58
GULF	35	1/4/73	10
	55	1/4/74	16
	60	1/7/79	16
TEXACO	55	1/5/75	6
	60	1/7/79	6
MOBIL	35	1/4/73	4
	55	1/4/74	4
	60	1/7/79	4
PAN OCEAN	55	1/1/78	1
	60	1/1/79	1
ASHLAND <sup>b</sup>	Not applicable	June 1973	2

NOTES: a. Equity participation  
b. NNPC/Ashland arrangement is a production sharing agreement.

SOURCE: NAPETCOR, quarterly magazine of the Nigerian National Petroleum Corporation, Vol. 2, No. 1, January-March, 1981.

Appendix Table 4.1 -- Gross Domestic Product By Industrial Origin At Constant 1977 Prices  
(Millions of Naira)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Agriculture	6352.5	6161.7	6384.3	6909.1	6883.7	6927.1	6289.4	5399.5	5320.0	6074.6	7255.0	7633.0
Mining	441.5	643.0	800.0	871.1	1179.3	2223.2	3122.6	2431.0	1261.5	3769.6	4221.0	5930.0
Manufacturing	241.7	263.1	295.9	343.5	365.8	286.4	287.2	246.2	259.7	341.3	743.0	720.0
Construction	331.3	349.2	373.7	392.2	424.1	536.8	530.2	449.4	387.2	463.3	727.0	1027.0
Transport and Communication	508.1	572.4	559.9	584.9	666.2	584.9	568.1	453.7	502.5	510.5	507.0	620.0
Electricity, gas and water	10.2	12.2	14.8	17.3	19.9	23.1	25.4	19.1	22.1	26.4	31.0	37.0
Wholesale and Retail Trade	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Public Administration and defence	238.9	238.4	247.1	249.5	284.6	292.6	315.1	266.0	378.3	622.6	996.0	1060.0
Other branches	3245.3	3583.1	3800.3	3939.0	4415.0	3472.8	3914.0	3171.4	3503.4	4027.6	4400.0	4685.0
TOTAL	11369.5	11823.1	12476.0	13306.6	14239.1	14346.9	15052.0	12436.3	11634.7	15835.9	18880.0	21712.0

SOURCE: World Table, vol.1, supplied by the Economist Intelligence Unit.



Appendix Table 4.1 -- continued

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Agriculture	7077.0	7708.0	8475.1	7639.4	7597.4	8073.7	7465.4	7285.6	7149.1	6971.4	6972.2
Mining	7015.0	6435.3	7967.3	6276.5	7696.2	7905.0	7241.6	8271.4	7658.1	5443.9	4898.4
Manufacturing	892.0	992.9	960.2	1186.5	1463.6	1555.0	1778.4	1908.6	2244.8	2508.4	2594.9
Construction	1265.0	1921.3	1935.9	1932.9	2560.8	2990.8	2875.9	2778.8	3056.0	3204.1	2903.2
Transport and Communication	757.0	919.8	926.7	964.2	1006.5	1039.3	1103.6	1183.8	1311.4	1458.0	1409.3
Electricity, gas and water	43.0	78.4	79.0	86.0	85.2	98.7	116.3	134.6	156.1	185.3	202.4
Wholesale and Retail Trade	N.A.	5047.7	5556.5	6458.4	6902.5	7631.3	7137.3	7882.6	7942.1	7975.9	6716.5
Public Administration and defence	1017.0	889.0	943.0	1581.0	1640.6	1676.6	1441.7	1511.0	1564.6	1617.6	1682.4
Other branches	4682.0	857.9	999.5	1047.5	1065.6	1081.4	1074.4	1077.2	1091.5	1105.9	2435.9
TOTAL	22748.0	24850.3	27843.2	27172.4	30018.4	32051.8	30234.6	32033.6	32173.7	30470.5	29815.2

SOURCE: World Table, vol.1, supplied by the Economist Intelligence Unit.

Appendix Table 4.1A -- Gross Domestic Product By Industrial Origin At Constant 1977 Prices

(Percentages)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Agriculture	55.9	52.1	51.2	52.0	48.3	48.3	41.8	43.4	45.7	38.4	38.4	35.2
Mining	3.9	5.4	6.4	6.5	8.3	15.5	20.7	19.5	10.9	23.8	22.4	27.3
Manufacturing	2.1	2.2	2.4	2.6	2.6	2.0	1.9	2.0	2.2	2.2	3.9	3.3
Construction	2.9	3.0	3.0	3.0	3.0	3.7	3.5	3.6	3.3	2.9	3.8	4.7
Transport and Communication	4.5	4.9	4.5	4.4	4.7	4.1	3.8	3.7	4.3	3.2	2.7	2.9
Electricity, gas and water	0.1	0.1	0.1	0.1	0.1	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Wholesale and Retail Trade	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.
Public Administration and defence	2.1	2.0	2.0	1.8	2.0	2.0	2.1	2.1	3.3	3.9	5.3	4.8
Other branches	28.5	30.3	30.4	29.6	31.0	24.2	26.0	25.5	30.1	25.4	23.3	21.6
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Same as Appendix Table 4.1.

Appendix Table 4.1A -- Continued

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	1982
Agriculture	31.3	31.0	30.4	28.1	25.3	25.2	24.7	22.7	22.2	22.9	23.4
Mining	30.8	25.9	28.6	23.1	25.6	24.7	24.0	25.9	23.8	17.9	16.4
Manufacturing	3.9	3.9	3.4	4.4	4.9	4.8	5.9	6.0	7.0	8.2	8.7
Construction	5.6	7.7	7.0	7.2	8.5	9.3	9.5	8.6	9.5	10.5	9.7
Transport and Communication	3.3	3.7	3.3	3.5	3.4	3.2	3.6	3.7	4.1	4.8	4.7
Electricity, gas and water	0.2	0.3	0.3	0.3	0.3	0.3	0.4	0.4	0.5	0.6	0.7
Wholesale and Retail Trade	N.A.	20.3	20.0	23.7	23.0	23.8	23.6	24.6	24.7	26.2	22.5
Public Administration and defence	4.5	3.7	3.4	5.8	5.5	5.3	4.8	4.7	4.8	5.3	5.6
Other branches	20.6	3.5	3.6	3.9	3.5	3.4	3.5	3.4	3.4	3.6	8.3
TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Same as Appendix Table 4.1.



Appendix Table 4.2 -- Oil Revenue Contribution to Government Revenue

YEAR	TOTAL REVENUE	OIL REVENUE	PERCENTAGE OF OIL TO TOTAL REVENUE
1958	154.6	0.2	0.08
1959	177.6	3.4	1.01
1960	223.6	3.0	1.01
1961	229.7	2.4	7.46
1962	231.6	17.1	7.30
1963	249.2	17.0	4.05
1964	299.1	15.1	5.38
1965	321.9	18.0	9.07
1966	339.2	30.0	13.27
1967	300.2	45.0	13.96
1968	300.0	42.0	13.53
1969	435.9	80.0	17.30
1970	755.6	219.1	29.0
1971	1,410.9	635.0	44.16
1972	1,379.9	752.6	54.5
1973	2,156.2	1,461.0	67.8
1974	5,159.4	4,184.3	81.1
1975	5,832.6	4,613.6	79.1
1976	7,042.7	5,493.3	78.0
1977	8,070.0	5,971.8	74.0
1978	6,362.7	4,282.1	67.3
1979	13,805.7	11,362.0	82.3
1980	15,815.6	13,221.8	83.6
1981	12,476.0	11,340.7	90.9
1982	11,016.0	9,815.3	89.1
1983	9,306.8	7,620.4	81.9
1984	11,331.7	7,797.0	68.8

SOURCE: (1) 1958-1981 figures were obtained from: NNPC, Petroleum Economics and its Impact on National Plans; Document produced by the Economic Research Unit 1982 (unpublished).  
(2) 1982-1984 figures were obtained from: Central Bank of Nigeria, Economic and Financial Review, several issues.

Appendix Table 4.3 -- Government Oil Revenues 1960-1984 (N Million and %)

Year	Rentals		Royalties		Premium		Profit tax		Other fees		Others		Total			
	Nm	%	Nm	%	Nm	%	Nm	%	Nm	%	Nm	%	Nm	%		
1960	1.4	47.5	0.04	1.5	1.5	51.0	-	-	-	-	-	-	2.9	100.0		
1961	1.75	72.1	0.07	27.9	-	-	-	-	n	-	-	-	2.42	100.0		
1962	3.38	19.8	2.37	13.9	11.31	66.3	-	-	n	-	-	-	17.07	100.0		
1963	4.59	27.1	3.54	20.9	8.81	52.0	-	-	n	-	-	-	16.94	100.0		
1964	6.04	60.2	4.0	39.8	-	-	-	-	n	-	-	-	10.04	100.0		
1965	7.72	48.0	6.7	41.6	1.3	7.9	0.04	0.3	n	-	-	-	16.08	100.0		
1966	8.71	29.9	14.5	49.7	0.02	8.2	5.72	19.6	n	-	-	-	29.17	100.0		
1967	9.9	22.0	23.27	51.7	1.0	2.2	5.72	12.7	5.09	11.3	-	-	44.98	100.0		
1968	11.04	26.4	26.4	40.0	-	-	12.03	28.7	2.51	6.0	-	-	41.88	100.0		
1969	12.3	15.4	30.17	37.8	5.0	6.3	23.12	28.9	9.29	11.6	-	-	79.88	100.0		
1970	12.8	5.9	73.04	33.6	0.06	n	111.72	51.3	20.03	9.2	-	-	217.65	100.0		
1971	16.69	2.6	148.25	23.4	7.2	1.1	441.54	69.6	21.0	3.3	-	-	634.85	100.0		
1972	17.17	2.4	168.59	23.7	7.2	1.0	506.81	71.2	11.78	1.7	-	-	711.56	100.0		
1973	13.19	1.1	221.93	18.7	-	-	943.88	79.3	10.91	0.9	-	-	1189.91	100.0		
1974	15.5	0.4	983.5	24.4	-	-	2920.1	72.4	96.4	2.4	-	-	4032.3	100.0		
1975	15.46	0.4	1008.3	24.4	-	-	3092.19	75.0	0.05	n	-	-	4124.92	100.0		
1976	14.77	0.3	1029.45	19.8	-	-	4123.72	79.5	12.0	0.2	-	-	5186.94	100.0		
1983	-	-	-	-	-	-	-	59.0	-	-	-	-	-	-		
1984	-	-	-	-	-	-	-	57.0	-	-	-	-	-	-		
TOTAL	172.41	1.0	3734.01	22.8	43.4	0.3	12186.6	74.5	258.76	1.6	-	-	32.87	0.2	16349.49	100.0

NOTE: n = negligible ranging from .001 to .002 million naira.

Figures for 1977-1982 are not available.

SOURCES: Annual Reports of the Mines Department Lagos for 1960-1961; Annual Reports of the Petroleum Division of the Federal Ministry of Petroleum Resources, Lagos, for many years; and data supplied by the Federal Ministry of Petroleum Resources, Lagos.

Appendix: Table 4.4 -- Nigeria - Oil Industry Production and Expenditure on Goods and Services (1938-1974)

Year	Imports of Goods and Services (₦m) (1)	Local Expenditure on Goods & Services (₦m) (2)	Total Expenditure (₦m) (3)	$\frac{(2)}{(3)} \times 100$ (4)	Oil Production (MMT) <sup>a</sup> (5)
1938-62	120.2	81.4	201.6	40.4	n
1963	21.2	19.6	40.8	48.0	n
1964	48.0	27.0	75.0	36.0	n
1965	71.4	46.4	117.8	39.4	14
1966	116.0	66.6	182.6	36.5	22
1967	98.0	58.4	156.4	37.3	17
1968	72.2	25.0	101.2	24.7	8
1969	121.6	57.8	179.4	32.2	29
1970	133.6	96.8	230.4	42.0	57
1971	164.2	113.2	277.4	40.8	81
1972	184.3	129.6	313.9	41.3	93
1973	252.1	121.7	373.8	32.6	109
1974	305.5	105.1	410.6	25.6	119

NOTES: (a) MMT = Million Metric Tons

(b) n = negligible

SOURCES: (i) Columns (1)-(3) for 1938-1974: CBN: Annual Reports, various years

(ii) Column (3) for 1977; NNPC Annual Report, (1977).

(iii) Column (5) same as text Table 4.5.



Appendix Table 4.5 -- Oil Industry's Local Expenditure On Goods And Services: Selected Financial Years (Naira)

	1967-68	1968-69	1969-70
Materials and supplies	5,481,336	2,865,444	6,951,192
Fuel and Power	2,586,806	2,111,814	4,099,138
Transport (Railway freight, etc.)	2,766,224	887,838	1,357,706
Telecommunication changes	158,800	170,966	221,458
Wages and Salaries	3,728,728	6,259,558	9,696,120
Compensation on farmland, etc.	819,120	459,860	494,520
Local rents	608,606	744,844	1,519,870
Scholarships and Training	100,650	118,334	197,998
Donations and Subventions	5,930	81,860	78,686
Harbour and related dues	2,780,726	2,524,108	7,164,600
Local Payments to Contractors:			
Nigerians	2,733,564	3,169,506	2,459,948
Non-Nigerians	16,128,000	10,968,738	21,775,328
Other Local Expenditure *	10,158,718	1,346,646	6,249,128
TOTAL	48,056,718	31,709,516	62,265,692

\* Excluding direct payments to the Government.

SOURCE: Federal Ministry of Mines and Power, Petroleum Division: Annual Reports.

Appendix Table 4.6 -- Employment in Nigerian Oil Industry 1960-1977

Categories	1960	1961	1962	1963	1964	1965	1966
TOTAL : Nigerians	2896	2601	2422	2391	2751	2798	3085
i. Management							
ii. Supervisory & professional	104	130	160	170	185	226	242
iii. Skilled workers							
iv. Unskilled workers	2792	2471	2262	2221	2566	2572	2843
v. Others							
TOTAL : Expatriates	416	348	314	335	324	337	353
i. Management							
ii. Supervisory & professional	416	348	314	335	324	337	353
iii. Skilled technicians							
iv. Others							
GRAND TOTAL	3312	2949	2736	2726	3075	3135	3438
Categories	1967	1968	1969	1970	1972	1974	1976
TOTAL : Nigerians	3252	2261	3567	3578	3886	4686	5621
i. Management	16	8	24	24	24	33	63
ii. Supervisory & professional	606	283	543	634	992	1304	1887
iii. Skilled workers	1043	750	1178	1182	2158	2621	3158
iv. Unskilled workers	969	734	1026	1220	649	622	487
v. Others	618	486	796	518	63	106	26
TOTAL : Expatriates	649	627	825	583	658	583	482
i. Management	47	61	74	97	82	65	79
ii. Supervisory & professional	564	556	736	466	358	517	402
iii. Skilled technicians	38	1	15	20	212	-	-
iv. Others	-	9	-	-	6	1	1
GRAND TOTAL	3901	2888	4392	4161	4544	5269	6103

SOURCE: Shell-BP Petroleum Development Company for Nigerians in Management, Supervisory and Professional and Skilled workers and expatriates 1960-1966; Annual Reports of Petroleum Division of the Federal Ministry of Mines and Power, Lagos; Data supplied by the Ministry of Petroleum Resources and the Nigerian National Petroleum Corporation Publication.

## APPENDIX B

### DATA SOURCES

Import quantity Index= Value of imports in nominal Terms

World export unit value index

value of imports figures were obtained from the Central Bank of Nigeria, Economic and Financial Review, several issues. World export unit value index was obtained from the IMF International Financial Statistical Yearbook 1984.

Export quantity Index= Value of exports in nominal Terms

Nigeria's Export unit value index

The value of all exports were obtained from the Central Bank of Nigeria, Economic and Financial Review, several issues, while the figures for Nigeria' Export unit value index were obtained from IMF International Financial Statistics Yearbook, 1984.

The export prices for the disaggregated agricultural commodities were obtained from the World Bank; Commodity Trade and Price Trends, August 1981 and figures adjusted to 1977=100.

The volume of petroleum exports were obtained from the International Financial Statistical Yearbook 1984 while the petroleum export prices 1960-1974 were obtained from the Oil Economists' Handbook by G.Jenkins and 1975-82 quoted by Shell-BP Statistical Review of World Energy, June 1984.

The World Income: The world income figures



(percentage increases) were obtained from the IMF International Financial Statistical Yearbook 1984 p.120.

The Exchange Rate figures; naira per U.S. dollar annual averages were obtained from the World Table Vol.1 Edition 3 supplied by the Economists Intelligence Unit.

Consumer price Index:- The Nigeria consumer price (or retail price) index 1960-64 was obtained from the U.N. Statistical Yearbook 1964 p.524, quoted by Osagie. 1965-69 from the Central Bank of Nigeria, Economic and Financial Review Vol.10, No.2 Dec. 1972, p.4. 1970-82 from the World Trade Vol.1 edition 3 supplied by the Economist Intelligence Unit (EIU).

World Price Indices:- These are prices reported by the organization for Economic Cooperation and Development (OECD) Paris.

The Nigerian real Gross Domestic Product:- Nigeria's real Gross domestic product at factor cost, 1960, 1965 and 1970-82 were obtained from the World Table vol.1 Edition 3, while the intervening years were calculated from figures provided by the Federal Office of Statistics, Lagos.