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The effect of oil production on the agricultural economy of Nigeria, 1970-1980

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The effect of oil production on the agricultural
economy of Nigeria, 1970-1980

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by

Echeazu Jude Igbokwe

A Thesis Submitted to the
Graduate Faculty in Partial Fulfillment of the
Requirements for the Degree of
MASTER OF SCIENCE

Major: Economics

Signatures have been redacted for privacy

Iowa State University
Ames, Iowa

1983

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TABLE OF CONTENTS

	Page
I. INTRODUCTION	1
A. Preamble	1
B. Statement of Problem	5
C. Objectives of the Study	6
II. LITERATURE REVIEW	8
A. Agricultural Economy	8
1. Agricultural production and the state of the economy between 1960-1970	8
2. Agricultural production and the state of the economy between 1970-1980	19
B. Oil Economy	25
1. Oil production and the state of the economy between 1960-1970	25
2. Oil production and the state of the economy between 1970-1980	29
III. POLICY FORMULATIONS AND IMPLICATIONS	38
A. Government Policies on Agricultural and Oil Production	38
B. Implementation of Government Policies	47
C. Economic Analysis and Impact of Government Policies	51
D. Alternatives for Economic Revitalization	55
IV. DATA ACQUISITION	59
A. Materials and Methods	59
B. Test Procedure	60

	Page
V. PRESENTATION OF RESULTS	62
A. Gross National Product and Oil Production	62
B. Total Imports and Oil Production	66
C. Government Consumption and Oil Production	73
D. Private Consumption and Oil Production	76
E. The Consumer Price Index and the Oil Production Index	80
F. Cocoa Production and Oil Production	84
VI. SUMMARY AND CONCLUSIONS	87
VII. BIBLIOGRAPHY	90
VIII. ACKNOWLEDGMENTS	94

LIST OF TABLES

	Page
Table 1. Major agricultural production ('000 metric tons and '000 heads)	10
Table 2. Gross National Product	14
Table 3. Consumer Price Index	15
Table 4. Unemployment	16
Table 5. Total exports	17
Table 6. Total imports	18
Table 7. Crude petroleum production	27
Table 8. Crude petroleum	28
Table 9. Price of crude oil (\$s per barrel--monthly average)	30
Table 10. Government finance, deficit (-) or surplus (+) (millions of Naira)	31
Table 11. Steel consumption	34
Table 12. Government consumption	35
Table 13. Private consumption	36
Table 14. Nigerian railway deficits, 1969-74	49
Table 15. Anticipated source of high-level manpower supply, 1975-80	51
Table 16. GNP in current and 1975 prices for the years 1960-80	63
Table 17. Summary of statistical results	69

LIST OF FIGURES

	Page
Figure 1. Cocoa production in Nigeria, 1960-80	12
Figure 2. Gross National Products (millions of ₦)	14
Figure 3. Consumer Price Index	15
Figure 4. Unemployment	16
Figure 5. Total exports	17
Figure 6. Total imports	18
Figure 7. Crude petroleum production	27
Figure 8. Crude petroleum	28
Figure 9. Price of crude oil (\$s per barrel--monthly average)	30
Figure 10. Government finance, deficit (-) or surplus (+) (millions of Naira)	31
Figure 11. Steel consumption	34
Figure 12. Government consumption	35
Figure 13. Private consumption	36
Figure 14a. Gross National Product in current and deflated Naira	64
Figure 14b. Plot of Gross National Product and time	65
Figure 15. Plot of total imports and oil production	67
Figure 16. Plot of observed and predicted values of total imports	71
Figure 17a. Plot of government consumption and oil production	74
Figure 17b. Plot of observed and predicted values of government consumption	75

	Page
Figure 18a. Plot of private consumption and oil production	77
Figure 18b. Plot of observed and predicted values for private consumption	78
Figure 19a. Plot of consumer price index and oil production index	81
Figure 19b. Plot of the observed and predicted values for the consumer price index	82
Figure 20. Plot of cocoa production and oil production	85

SYMBOLS AND ABBREVIATIONS

CPI = Consumer Price Index
 GDP = Gross Domestic Product
 GNP = Gross National Product
 IFSY = International Financial Statistical Yearbook
 NAFP = National Accelerated Food Production
 NEPD = Nigerian Enterprises Promotion Decree
 NNPC = Nigerian National Petroleum Company
 OFN = Operation Feed the Nation
 OPEC = Organization of Petroleum Exporting Countries

y = GNP
 x = time
 M = total inputs
 G = government consumption
 C = private consumption
 A = consumer price index
 Q = cocoa production
 P_i 's = oil production
 S = variance
 r = correlation coefficient
 r^2 = coefficient of determination
 t = students 't' test statistic
 β_0, a = intercept
 β_1, b, c = slope
 E = error term
 SSE = sum of squares for error
 $\hat{}$ = estimate of a value
 H_0 = null hypothesis
 H_a = alternate hypothesis

I. INTRODUCTION

As the title of the thesis suggests, oil production in many countries that are dependent on it has had a tremendous impact in the shaping of the country's future. Whereas in some countries, the impact has been positive, in others, the news has not been so good. One such country is Nigeria, the subject of my inquiry. For a comprehensive analysis, I will break down Nigeria's Economic trend into three phases: Phase I--(Prior to 1960) The Subsistence Economy. Phase II--(1960-1970) The Agricultural/Plantation Economy. Phase III--(1970-present) The Oil Economy.

A. Preamble

There has been a series of research studies done by economists on the question of export expansion, diversification and stability in order to evaluate the situation whereby countries depend solely on exports for their economic development. The conclusion of such research have not gone unnoticed. James Love (28) concluded that export diversification led to a bigger increase in instability in earnings. Ann Seidman (40) on the other hand concluded that export expansion by itself is unlikely to contribute to higher standards of living for the broad masses of the population and has called on African countries in particular to restructure their economies and reduce dependence on exports in order to attain development. The reason given for such a conclusion is that growth of demand for Africa's main exports which employs millions of peasants and wage earners is likely to be limited in most cases to less than 3% a year, barely enough to permit export expansion to keep up with population growth rates.

Since oil production and exportation has been Nigeria's economic mainstay since 1970, there have been calls recently for wisdom in the utilization and dependence of such a resource. One of the reasons for this call, according to Fu (8), has been given as the world's present production practices and the stagnating economies of the major industrial countries, which has lead to the prediction that oil supplies will certainly continue to outstrip requirements and that oil prices will continue to drop. An example has been given with a decline in OPEC's (Organization of Petroleum Exporting Countries) output from 30.77 million barrels per day (bpd) in 1979 to 26.88 million bpd in 1980, almost a 13% decline within one year.

In trying to maximize the income from oil production and exportation, Nigeria has allowed the most important part of its economic activity-- agriculture--to suffer. Wen (53) tried to put the two problems together by saying that despite the current oil surplus, several West African countries are rapidly developing their oil production capacities. Approximately 1,000 oil and gas wells were developed in 1981 and the number of wells may reach 2,000 in 1982. Estimates indicate that the region's offshore oil deposits contain at least 3 billion barrels. Nigeria and Gabon have been singled out as the largest oil producers in West Africa who are also members of OPEC. Wen (53) also contends that though their petro income has steadily increased since 1967, the recent boom in oil exploration and production is having a negative impact on economic development. Agriculture has been particularly hurt. As a result, they are attempting to make adjustments which will provide a better balance between their

rapidly developing petroleum industries and other sectors of their national economies.

The general condition of things in Nigeria was poetically summarized by the Economist (16). "Nigeria is the giant of Africa, one of the world's ten most populous nations (approximately 80 million people), strategically vital, rich in natural resources (especially oil) and wooed by east and west, rich and poor alike. . . . Russians get stuck in the left with Taiwanese. Brazilians compete with firms to hire the only taxis with a working air conditioner. Americans paddle through fresh sewage to the headquarters of their own banks. Everywhere the British--Nigeria's former colonial masters, still its biggest overseas suppliers--struggle to modify their grammar to match that of West African pidgin. These foreigners from every quarter of the globe wear a baffled look, sweating as much from psychological stress as from the steaming outdoor heat. How can so much money and such high hopes engender such chaos? Why won't the telephones, or the bureaucrats, work? Why can't you turn on a switch, or a tap, or turn up for a scheduled flight, with any confidence that light, or a journey will result? Why, at almost every level of public and private administration, do people expect bribes? Why is almost everyone so infernally aggressive, and why when aggressive driving kills people, can't they at least clear the corpses off the streets?" In the Economist (17), the attitude of the people in Nigeria was brought out by an American visitor who said: "These guys are nature's capitalists." But if capitalism is about investment and production, "Capitalists they are not because everyone wants to buy and sell and nobody wants to make or grow

things." reiterated the Economist.

It has been widely echoed by researchers and the Economist (21) that oil speeded Nigerians rush from village to town as people opted for big salaries in booming coastal ports or government centers. Population increased rapidly, growing at about 3-3½% a year. Government held food prices down to quiet city dwellers. This situation gave farmers no incentive to produce or market their crops. Between 1972 and 1980, food production per head fell by approximately 35-50%. Food imports rose 250% and farming for exports--the traditional mainstay of the economy--virtually died. The showdown induced by the oil glut gives Nigeria a chance to ponder the madcap expenditures and gross overvaluation of the oil boom years.

It is important for the government and people of Nigeria to remember that there are great potentials in the country. In the words of Ekundare (6), "Nigeria has the largest concentration of natural and human resources on the continent of Africa. With a probable population of approximately 64 million in 1970 and an estimated 80 million by the end of the second United Nations Development decade in 1980, Nigeria is the most attractive single market in Africa." Nweke (33) on the other hand said: "Whereas the petroleum sector was greatly expanded and intensively exploited under military rule, the agricultural sector was allowed to dwindle. In the end, Nigeria's economy in the 1970s became dependent on oil." I cannot conclude this preamble without picturing the current situation in Nigeria in the words of Hill (14) who said: "The African landscape is littered with the remnants of failed agricultural schemes. . . . Agricultural

schemes are commonly overcapitalized, underplanned and poorly managed. . . . Even at their high cost, the settlements neither increased agricultural production nor reduced urban unemployment."

B. Statement of Problem

Nigeria was known as an agricultural country until the early 1970s, when it was noticed that oil production was available in commercial quantity. Being a developing nation, the problems that plague such countries when such wealth is discovered is one of the subjects of my inquiry. Nigeria was known for her exports of agricultural products, such as cocoa, palm-oil, palm-kernel, groundnuts, cotton, rubber, coffee, etc. These were predominantly cash crops and their production was organized in a plantation-type setting. This is one of the reasons why in Nigeria today there exists abandoned and large agricultural plantations.

Nigeria was successful in the exportation of these agricultural products and thus, earned a fairly handsome revenue from them. Since the subject of my inquiry and analysis occurred in phase II and III of the country's economic trend. I will not be dealing with phase I. Problems that characterized phase II include: inadequate manpower, technology, research and development and capital. These drawbacks affected the potential earning capability of the country. Although these problems existed, agriculture was still able to continue operating on a labor intensive basis. This was the situation before the 1970s.

With the discovery of crude oil in commercial quantity in 1970, Nigeria quickly moved to establish oil production as a major export commodity. This marked the beginning of the phase III period in the economy.

Although profitability was more evident in the oil exportation with minimum labor inputs, Nigeria was not adequately prepared to make such a switch in so short a time. The switch was nevertheless made, from an agricultural exporting and "fairly self-supporting" country to an oil exporting and "heavily dependent" country, with regard to feeding the masses of its population.

A lot of policy questions arise from this Switch and among them are the following: Why was such a move made in a hurry? Despite the fact that oil was found in a commercially available quantity, why was agriculture neglected and abandoned? What happened to the agricultural plantations that formally existed in the country? What of the manpower needs, the technological needs, and the capital needs of the economy. Were they satisfied or met before the switch was made? Was there any consideration that oil was a nonrenewable and exhaustible resource? What will happen to the economy when the oil is depleted? How were Nigerians affected by the switch? How has Nigeria fared with the oil economy? These and other questions that arise from the switch will be analyzed, especially how the switch affected the export and import structure and the overall economic trends in Nigeria. Finally, the economic stability in Nigeria will be looked at using the two periods as a reference point.

C. The Objectives of the Study

The main objective of the study is to examine the period of study which include 1960 to 1980 to see the trend of economic activities and policy formulations and implications as they affected the overall economy of Nigeria. This period was chosen because of the significant events that

occurred within the period. Agriculture boomed in the 1960s and was virtually abandoned by the people and government of Nigeria for oil production in 1970. By the middle of 1970, there were realizations of possible mistakes by the government in the policies that affected the decision to move to phase III period of the economy. Efforts to revive agricultural production in the name of "Operation Feed the Nation" (OFN) and later "the Green Revolution" proved futile.

Towards the end of the 1970 decade up to 1980, oil revenue started to decline as the world oil glut started and the world oil market began to be very turbulent, moving in a cyclical pattern, but with a constant and steady decline. There were also a lot of entries into the oil production market by many countries that discovered this natural resource. This situation helped the price of oil to decline and has led to the oil cartels fighting to restore initial equilibrium in the market. How far this will be a success is yet to be seen. It is because of these problems that Nigeria, within the phase III period, has moved from a fairly self-feeding nation to a massive importer of food for its people. The net effect on the total revenue has, therefore, been negative. This research, therefore, has as its ultimate goal the evaluation of policy formulations and implications as they have brought the country to the current economic crisis and how such problems can be avoided in the future.

II. LITERATURE REVIEW

A. Agricultural Economy

The contributions of agriculture to the overall economy are highlighted here. As I indicated earlier for simplicity, phase II and III will be analyzed separately and since phase I is not applicable to my research, it is not considered.

1. Agricultural production and the state of the economy between 1960-1970

Since agricultural production was the mainstay of the economy in Nigeria within this period, one would expect that it performed well. The fact is that within this period, Nigeria knew her capability and thus managed the economy as such. The major agricultural export products include: cocoa, cotton, palm-oil, palm-kernel and groundnuts. These products constituted the major exports for Nigeria. Although sensitivity to prices, as well as competition influenced these economic activities, they were not enough to drastically change the course of the economy if there were an international financial crunch.

Approximately 80% of West Africa's population is engaged in agriculture and the figure is about the same for Nigeria alone. The agricultural products that were the major exports were important to the country's position in the world market. According to Wen (53), in the 1960s, Nigeria was a leading exporter of cocoa, palm-oil, groundnut and cotton. The Economist (17) also echoed this trend by indicating that "farming for exports was the mainstay of colonial Nigeria, whose modest

viability was based on palm-oil, rubber, cocoa and groundnuts." These crops were plantation crops owned by expatriate firms and worked by sweated labor. At the same time, some of the export crops were grown by local peasants and marketed by local middlemen before they reached the trading companies on their way overseas. It should also be noted that some of the export crops like oil palms grew wild. Nigerian export agriculture, thus put money straight into the countryside, and was the mainstay of thriving indigenous communities. Thus, in the words of Ekundare (6) in the 1962-63 fiscal year, agriculture accounted for approximately 65% of Gross Domestic Product (GDP) and 63% in 1966/67 fiscal year. These agricultural products also include forestry and fishing. Adani (1) emphasized that out of ₦2493.4 million of GDP in 1960, mining and quarrying contributed a mere 1.2%, manufacturing and craft contributed less than 5%, utilities 0.5% and the rest was from agriculture.

Agriculture has always been the most important single activity in the Nigerian economy. According to Nweke (33), 80% of the total population is engaged in it, producing yams, cassava, plantain, rice, beans, sugar cane and citrus fruits for food and local consumption and cocoa, oil-palm produce, groundnuts, rubber, cotton and timber as raw materials for local industries and for exports.

A look at Table 1 will show a fairly stable agricultural production between 1960 and 1969 (48). A pictorial analysis of one of the data is shown in Figure 1 (48). Inasmuch as there were little fluctuations, they resulted from natural causes rather than a predetermined economic policy. Gross national product (GNP) rose steadily from 1960-1966 and declined in 1967 as

Table 1. Major agricultural production ('000 metric tons and '000 heads)

	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969
Cocoa	189.2	193.9	178.8	219.6	298.3	184.6	267.2	238	191.8	220.8
Coffee	--	--	--	--	--	--	2.0	3.1	3.2	3.0
Cotton	30	52	29	49	44	44	52	27	56	92
Groundnuts (in shells)	1150	1245	1515	1393	1251	1687	1693	1558	1813	1846
Cattle	--	--	--	7445	7470	7515	--	--	--	--
Maize	1143	900	1118	1105	1130	914	707	688	816	910
Palm-Kernel	430	437.1	368	420.3	407.9	456.4	421	241	214	255
Palm-Oil	552	541	509	510	515	530	551	320	336	418
Rice	360	340	350	330	400	350	200	301	275	282
Wheat	--	--	--	--	--	--	--	--	--	--

Source: 1979/80 Statistics yearbook, p. 724

1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
304.8	256.6	241.1	215.0	214	215.0	165	202	160	180	175
2.8	4.2	4.2	2.3	2.4	3.0	3.0	3.0	2.6	4.5	3.0
39	35	48	48	30	52	61	81	37	37	30
1581	1554	945	350	400	280	500	300	450	540	570
11183	11293	11103	10920	10918	11000	--	--	11800	12000	12300
1046	755	857	547	1215	1260	1300	1350	1480	1500	1550
315	307	270	231	310	300	295	302	239	335	345
488	500	460	590	600	640	655	660	670	650	675
343	388	310	487	525	515	387	408	515	600	725
19	20	20	15	18	18	20	21	21	21	21

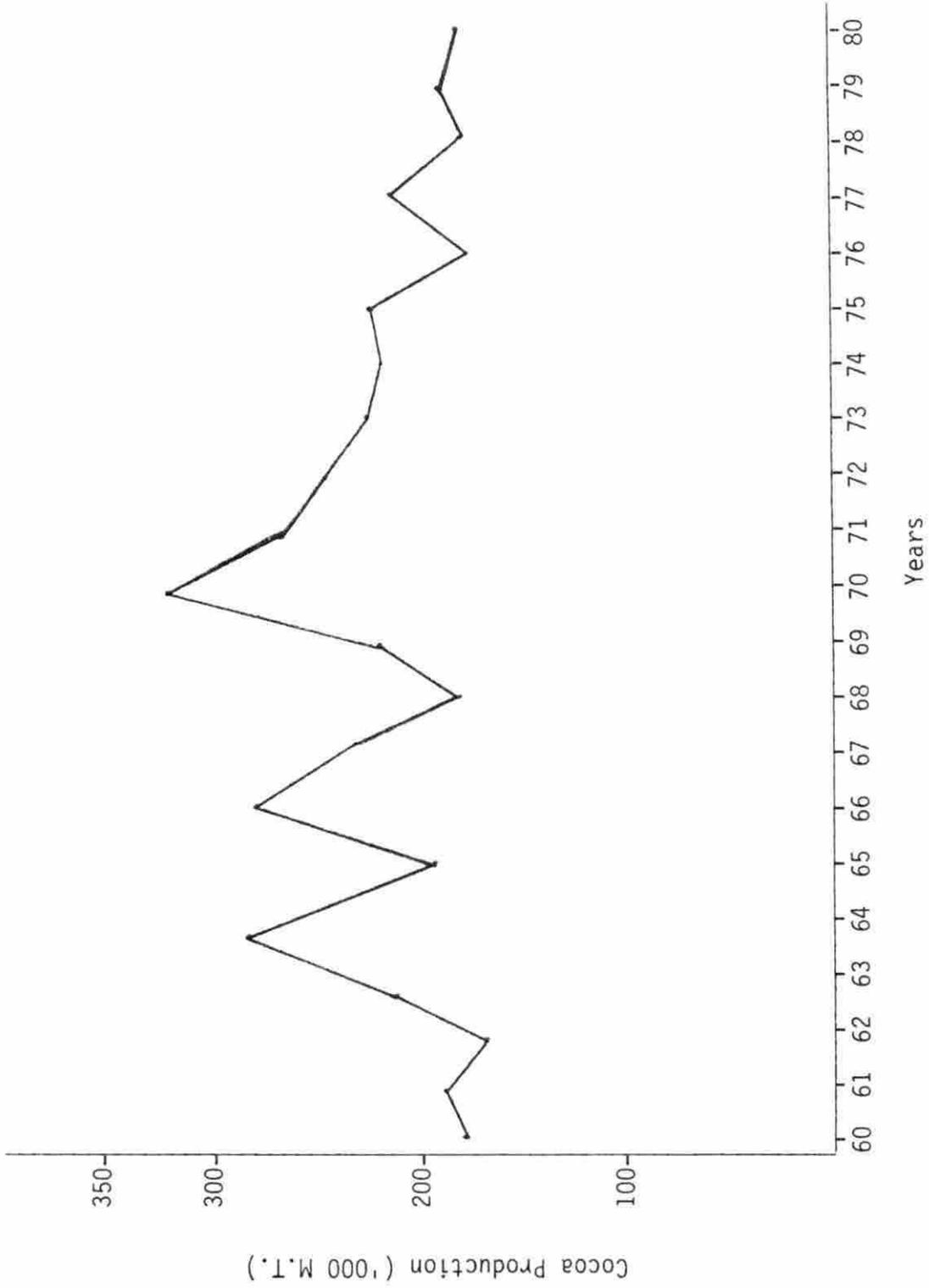


Figure 1. Cocoa production in Nigeria, 1960-80

a result of the Nigerian civil war. It picked up again towards the end of the civil war in 1969. The GNP data are shown in Table 2 (15) and graphed in Figure 2. Consumer Price Index (CPI) which is used as a factor to deflate GNP and other measures of economic wealth to "cancel out" the effect of inflation or deflation, shows that the index figures between 1960 and 1969 never exceeded 46.4% with 1975 as a base year. This is shown in Table 3 and Figure 3 (15). It should be realized however, that since CPI only measures a certain quantity and selection of a basket of goods, it might be a little misleading for the deflation of GNP, but since there is no available data for the GNP implicit price deflator, one would have no other choice than to use what is available. A look at the unemployment data and graph in Table 4 and Figure 4 (48) respectively will tend to be a little bit misleading. There were lots of causes for the high unemployment rate, which includes: illiteracy rate, overpopulation, inadequate capital and investment opportunities, lack of technological improvements for the farm sector, fragmented lands, and above all, corrupt public officials. The striking point in Figure 4 is the unemployment rate of 26.6% in 1966 which was one of the straws that led to the 1966 disturbance in Nigeria and eventually to the Civil War.

Exports in Nigeria ranged between ₦350 million in 1960 to ₦683 million in 1969. (Note: \$1.00 = ₦0.68) [See Table 5 and Figure 5 (15)]. Imports ranged from ₦487 in 1960 to ₦702 in 1969 (See Table 6 and Figure 6.). All these situations led to a negligible deficit which still left Nigeria economically viable. It is also because of the nature of the agricultural economy between 1960 and 1969 that both private and government consumption

Table 2. Gross National Product (millions of ₦)

1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	
2,401	2,373	2,526	2,912	3,127	3,302	3,532	2,869	2,802	3,682	
1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
5,125	6,853	7,133	8,400	16,581	20,059	24,522	27,772	28,716	--	--

Source: IFSY 1982, IMF Publications, p. 347.

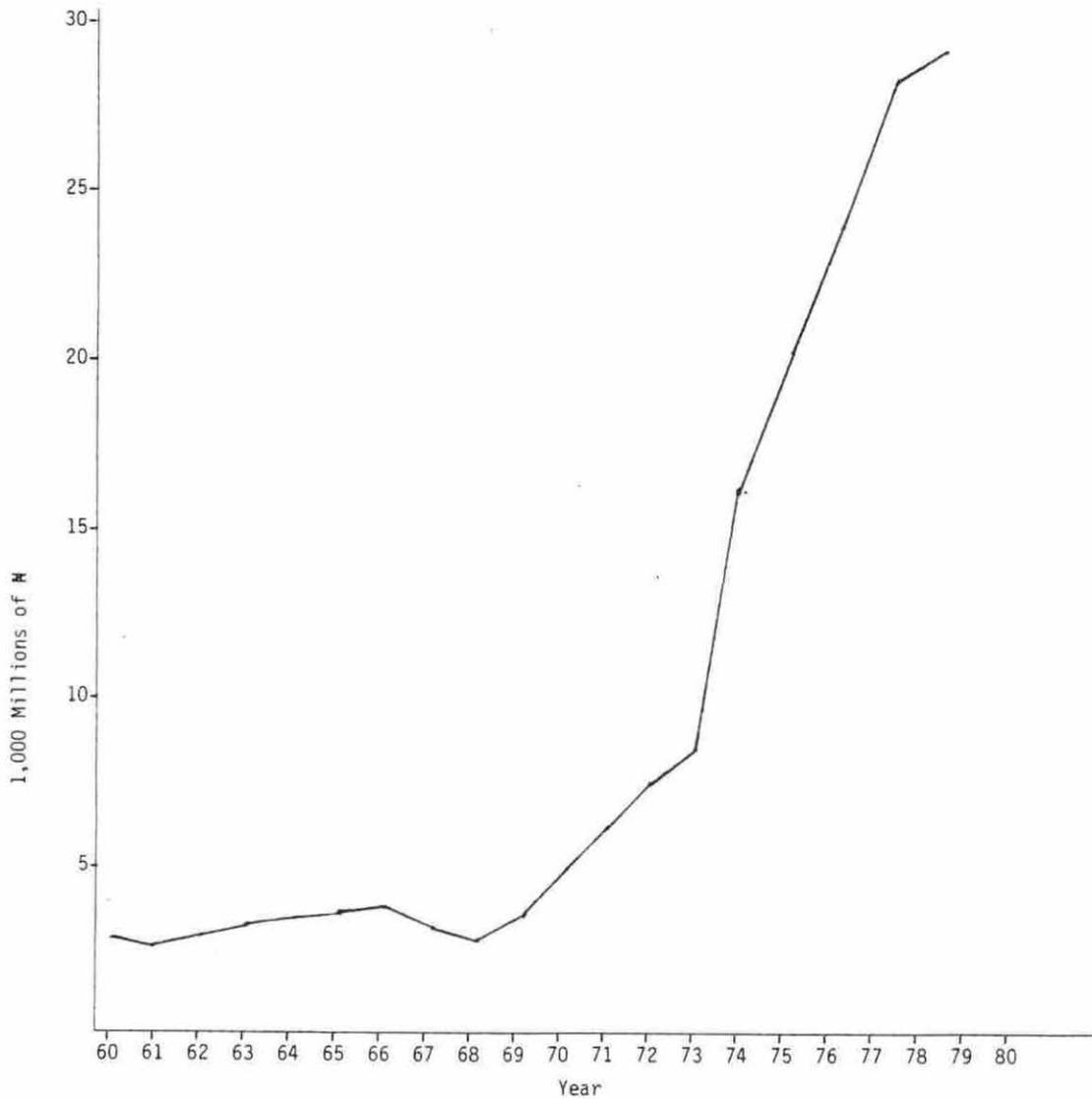


Figure 2. Gross National Products (millions of ₦)

Table 3. Consumer Price Index (period averages)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
35.0	37.3	39.2	38.2	38.5	40.1	44.0	42.3	42.1	46.4	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
52.8	61.3	62.9	66.5	74.8	100.0	124.3	148.3	176.0	195.6	217.9

Source: IFSY 1982, IMF Publications, p. 345.

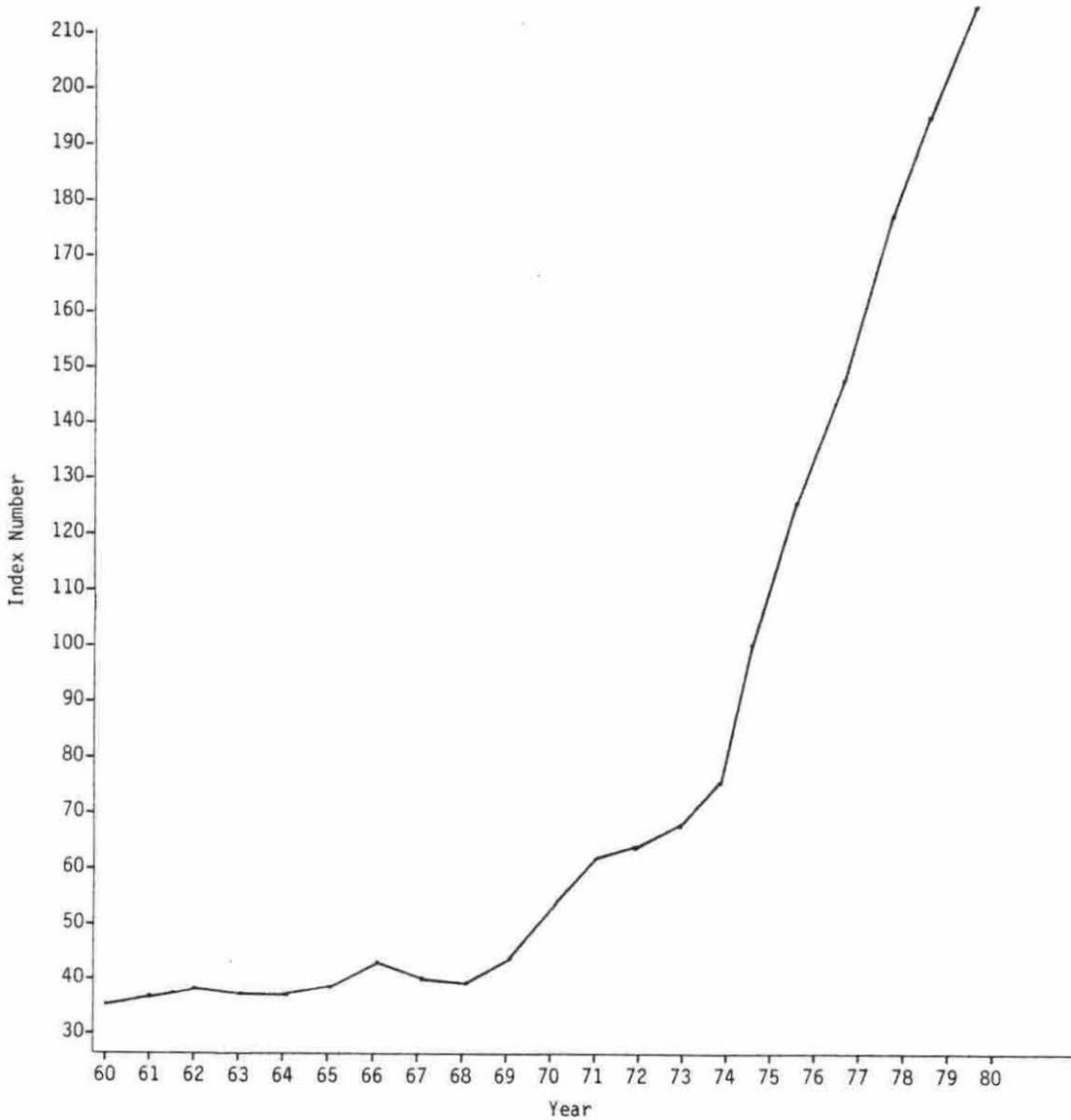


Figure 3. Consumer Price Index (period averages)

Table 4. Unemployment

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
6.9	13.7	15.1	16.8	20.8	20.9	26.6	20.0	12.9	12.2	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
13.5	14.4	15.4	19.1	20.5	20.0	19.0	15.8	16.7	--	--

Source: 1969 Statistics, p. 110.
1979/80 Statistics, p. 93.

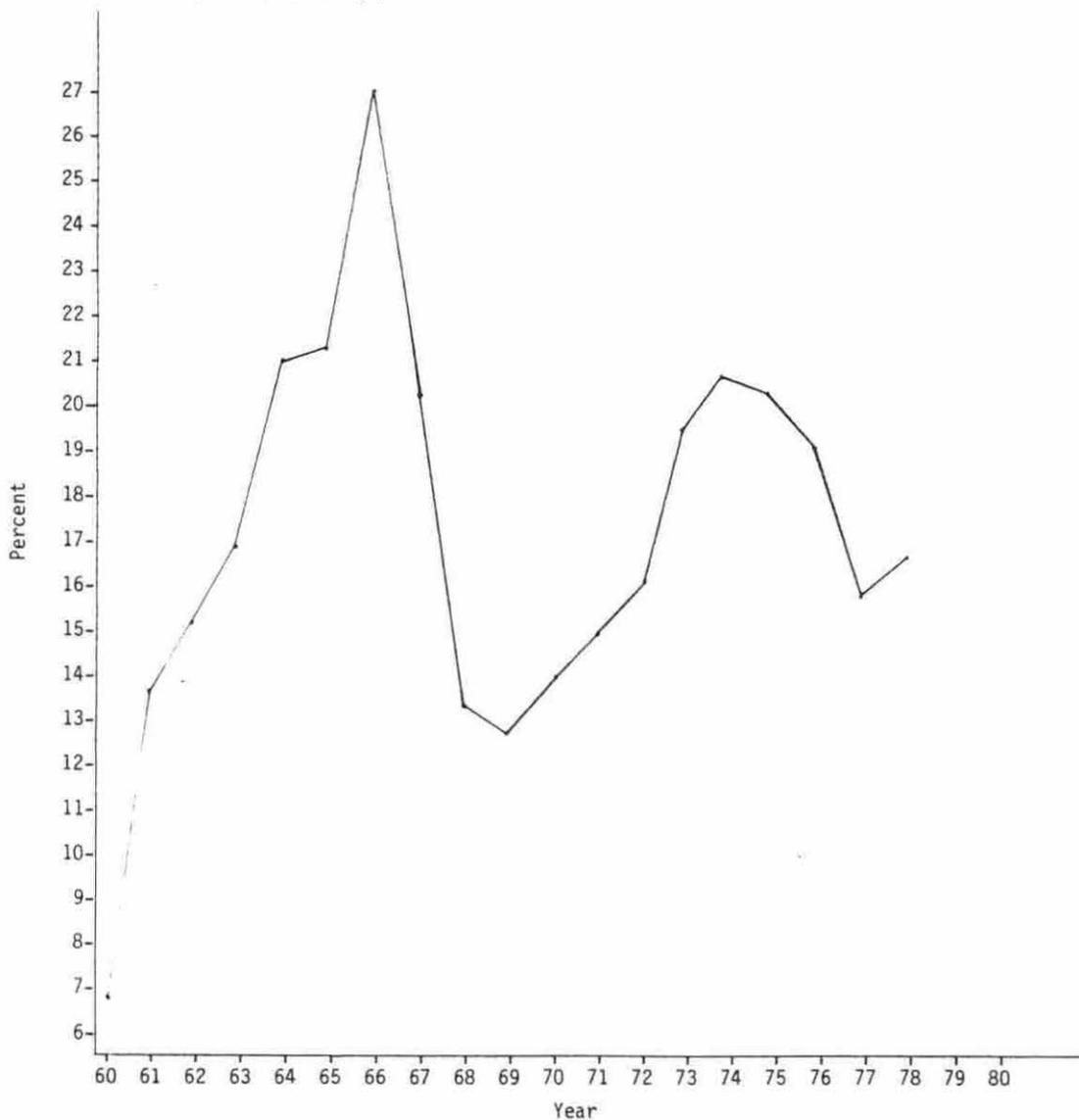


Figure 4. Unemployment

Table 5. Total exports (millions of Naira, \$1.00 = ₦0.68)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
350	346	364	410	462	578	599	521	467	683	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
954	1422	1522	2467	6244	5453	7840	8481	7373	--	--

Source: International Financial Statistics Yearbook 1982, IMF Publications, Washington, DC, p. 347.

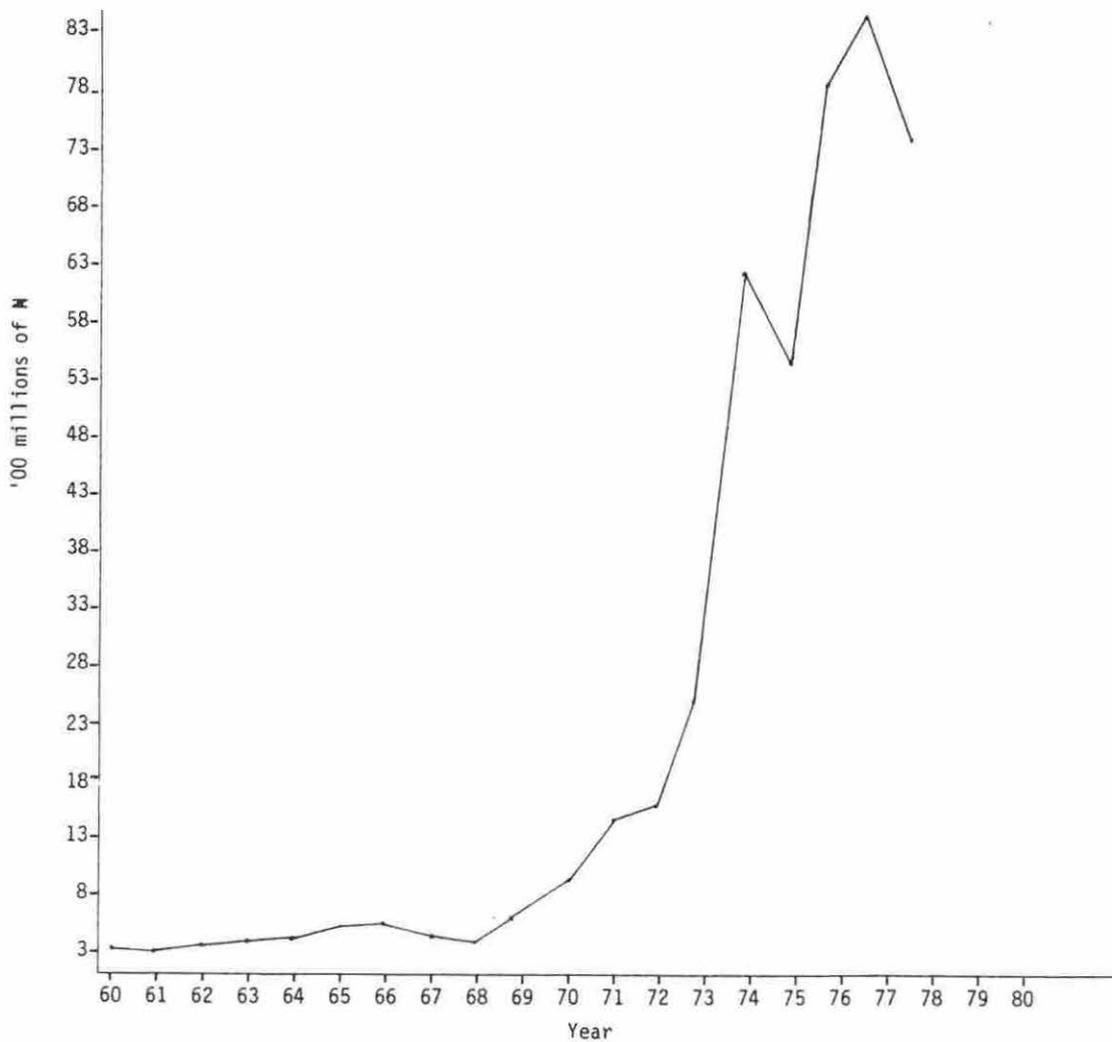


Figure 5. Total exports (millions of Naira, \$1.00 = ₦0.68)

Table 6. Total imports (millions of Naira, \$1.00 = N0.68)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
-487	-475	-486	-479	-587	-645	-639	-621	-561	-702	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
-937	-1328	-1286	-1828	-2743	-4988	-7074	-8787	-9590	--	--

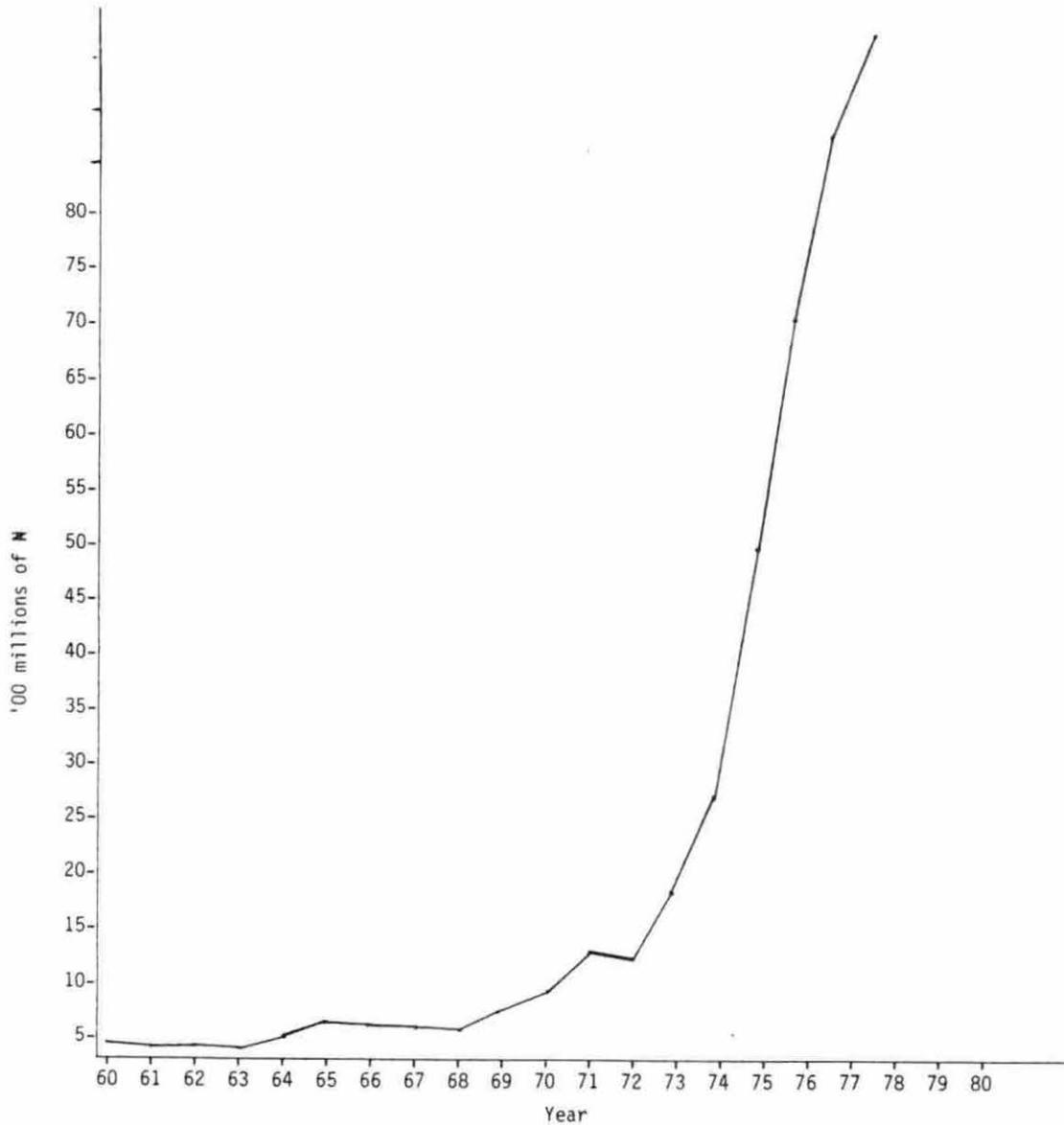


Figure 6. Total imports (millions of Naira, \$1.00 = N0.68)

was ₦2901 and ₦420, respectively.

Within this period in question, Nigeria imported little or no food items. In fact, they exported a lot of agricultural products. The booming agricultural production led the government to establish farm settlements and providing each community with an agricultural officer who supervised the progress in the area as well as serve as an information link between the farmers and the government.

2. Agricultural production and the state of the economy between 1970-1980

Agricultural production declined sharply during the 1970-80 period, as seen in Table 1 and Figure 1. The reason for this decline will be made known as I proceed in this analysis. With the passage of time, Nigeria and its people continued to aspire for the ultimate goal--development. Though while the government pursued a different course, the people pursued another. There was a large urban migration for better paying jobs that were located in the cities. This resulted in shortage of workers in the rural areas where agricultural production dominated the economy. The immediate result was a decrease in agricultural output. According to Wen (53), Nigeria, once a grain exporter, had to spend ₦1,050 million to purchase grain in 1980. Grain now accounts for approximately 60% of Nigeria's imports.

It is not only the action of the rural people that migrated the sole cause of the decrease in output, the government also helped to worsen the situation by adopting cheaper grain price policies in favor of consumers. This policy hurt the agricultural industry. The policy itself favors urban dwellers and farmers disliked them and in effect tried to retaliate by

producing smaller quantities of output. It is because of the low grain production that rice imports, for example, were up from 1,700 tons in 1970 to 700,000 tons in 1979 a whopping 698,300 tons increase with a drain on foreign reserve. Price supports were put into effect for the Nigerian agricultural producer. The price support limited grain imports, while raising the price of locally produced grain. The scarcity of grain forced the government to reopen importations and there was a massive increase in number of import licenses. For example, rice grown in Nigeria costs the consumer ₦1,600 a ton in Nigeria while the United States' Carolina rice was selling for ₦400 a ton in the world market. According to the *Economist* (17), protectionism for the Nigerian industries adopted by the government was very costly as can be seen from the price differential above.

Nigeria has become a net importer of almost every agricultural product it used to export. This is exemplified by the fact that one big palm-oil firm that established pipelines a quarter of a century ago to run its products on to ships has now reversed the pumps and brings out of ships the palm-oil it so profitably grows in Malaysia.

An alarming trend has been the rapid decline of the former thriving agricultural exports. The communities that depended on these exports for their livelihood are hit the worst. Optimists reckon that Nigerian food production is growing by approximately 0.5% a year while the population is growing much faster. In the words of the *Economist* (17), food now takes about 15% of total spending on imports and will be taking more each year. It should be recalled that in the last officially acceptable census in

Nigeria in 1963 estimated the population at 55.7 million. In 1979, the Nigerian estimate was 77.5 million and in 1981 most international organizations estimated Nigeria's population at 85.2 million people. Extrapolating, the officially estimated growth estimated at 2.5% would give a 1981 total of approximately 88 million. It should also be recalled that the 1973 census in Nigeria which put the population at 79.7 million was cancelled because of fraud of swollen numbers from some parts of the country.

Kolo (25) said that there have been efforts recently by the government to revitalise the agricultural sector by the establishment of agricultural credit banks, improved land use and agricultural education and improvements in livestock, fisheries and forestry, so as to increase domestic food production without relaxing export efforts. Ekundare (6) reported that in the second National Development Plan of 1970-74, agriculture's share of the total expenditure of ₦780 million was ₦132.7 million. This went to the National Agricultural Bank, land use improvements, etc. Despite all these efforts, the main obstacle to the much needed agrarian revolution--the land tenure system still remains. According to Ekundare (6) the government recognizes the fact that "the prevailing land tenure system in the country sometimes hinders agricultural development. . . . As a result of the system of inheritance, land owned by individuals or extended families also tends to become fragmented and scattered, leading to the loss of much valuable time in cultivation. If Nigeria's agriculture is then to develop very rapidly and have the desired impact on the standard of living, there must be a reform in the system of land tenure."

The Nigerian government, according to Thompson (46, 47) has been spending extensively in agricultural projects in order to speed up the production of food items. As part of the Green Revolution, the government spent ₦400 million on the Hadejia River Basin Project and also spent ₦152.4 million and ₦124 million in Gongola and Borno states respectively between 1980-82 to boost agricultural production. A ₦7 million fisheries terminal with a production capacity of 200 tons of fish daily has been planned for Borikori in Port Harcourt, Rivers state. Since 1979, the government has invested over ₦2 billion to boost the food scheme on the Green Revolution Program. Imo state farmers have received about ₦2.5 million in loans to support agricultural programs, to name only a few.

Agriculture contributed 64% of GDP in 1960; but in the 1977/78 financial year, agriculture was only 14% of GDP, a drop of 50%. This is due to a tilt in the balance between the former economy supported by agricultural production and the recent economy supported by oil production. It is also an indication that agricultural production has been neglected for a more profitable "short-term" oil wealth. In the words of Adejugbe, cited in Adani (1), "The decline in agricultural production and its falling contributions to GDP, reveals the gradual drop in income of the rural population." It is estimated that two-thirds of the country's population live in rural areas, so the income imbalance can be seen. In order to reverse the trend of the decline in agriculture, the government introduced programs such as "Operation Feed the Nation" (OFN) and later on, the Green Revolution. OFN was introduced by mid-1970s and the Green Revolution by April 1980. The objectives of both programs were similar and aimed at the

same goal. The objectives include: (1) To increase the self-sufficiency of the agricultural sector and to improve the welfare of the people in rural areas. (b) To boost agricultural production. (c) To ensure rural development of agro-based industries through the construction of feeder roads, the provision of housing, education and health facilities, water and electricity in the rural areas.

Commodity boards were formed for most crops. These include Rubber Board, Palm Produce Board, Cotton Board, Groundnut Board, Cocoa Board and Grains Board. A total of ₦864,000 was spent on the supply of inputs to rubber farmers and 66,000 hectares of land was earmarked for replanting or for new plantation. Over 184,000 palm seeds were supplied to farmers and 500 Malaysian harvesting/pruning knives were purchased and resold to farmers at subsidized rates. It is expected that 3,000 more knives are to be purchased. The government has also financed seed multiplication programs for cotton in order to promote rural entrepreneurship, but the problem here is that farmers are planting more food crops to feed themselves instead of cotton for cash. Producer prices of groundnuts were increased from ₦420 per ton to ₦450 per ton to encourage farmers to grow more groundnuts. For cocoa, a rehabilitation program was embarked upon and provision was made for spraying chemicals and other essential inputs. Grain projects which were undertaken include: "Adarice" in Enugu and "Riceco" in Jos. Trucks were purchased to transport grains, but the problem of inadequate financing remains.

Other agricultural projects within this period, according to Nweke (33), include Dairy Development Program (livestock) to improve pastures

and the adoption of new techniques to increase milk production and artificial insemination. Poultry projects have also been encouraged. Three hatcheries were established in Kano, Ogun and Cross River states with a total production capacity of 5.4 million day-old chicks annually. Plans have also been made to purchase and distribute battery cages and birds at subsidized prices to small scale farmers. Broiler-processing plants and cold storage facilities are to be constructed at Agege in Lagos state and Port Harcourt in Rivers state to provide custom processing services to broiler farmers to reduce their business risks.

The question to be asked is: What conditions led to these massive projects and programs. Looking back at Table 1 and Figure 1, the decline in agricultural production cannot be overemphasized. Cocoa, for instance, dropped 74% from 304.8 thousand metric tons (MT) in 1970 to 175 thousand metric tons in 1980. Groundnut declined 64% from 1581 thousand MT in 1970 to 570 thousand MT in 1980. Palm-kernel increased only modestly from 315 thousand MT in 1970 to 345 thousand MT in 1980 (a 9.5% increase). Despite all these declines in agricultural production, improvements have continued to be made in rice and cattle production. The limitation here, however, is that rice and cattle production are limited to certain monopolies of the areas of the country and large scale production of these items are basically government and foreign-backed corporations. Unemployment has continued to rise from 13.5% in 1970 to 16.7% in 1978, reaching an all time high for the decade in 1974 with a 20.5% unemployment rate. (See Figure 4.) Imports into the country were increasing on a geometric proportion as can be seen in Figure 6, from a debit of ₦937 million in 1970 to ₦9590 million in 1978--a whopping 923.4% increase, which signifies a drain in the foreign

exchange.

It is important to note that all these declines did not take place abruptly. It was a gradual decline which was knowingly or unknowingly allowed to continue till it got out of hand. This was the situation of agricultural production and its impact on the general economy within the phase III period of my analysis.

B. Oil Economy

In this section, I will elaborate on the part oil production has played in the Nigerian economy. It is without doubt that the oil economy has been one of the greatest blessings as well as the most devastating tragedies in the Nigerian economy. This dual effect will be examined as they apply to both the phase II, as well as the phase III periods in my analysis.

1. Oil production and the state of the economy between 1960-1970

Although oil production in Nigeria had started by this period, its commercialization was still not feasible. It should be noted that in Nigeria, oil belongs to the government and not to individuals. Oil money was paid to the government and not to the people. The immediate result of this system was a growth in government jobs and of offices for government servants. As a result, people are disinterested in working on the farms in Nigeria, rather they prefer to look for government or government related jobs for which they have little or no qualifications. According to the Economist (16), "Oil has monstrously speeded up the rush to the towns

to work for the government, on government contracts, or to service those so employed." The blessings of oil, the Economist continued is that it brings in lots of money and the curse is that it concentrates that money in few hands.

To put the condition into perspective, mining and quarrying (including oil production) contributed a mere 1.2% of GDP of ₦2493.4 million in 1960 financial year. It should be noted that the oil economy in Nigeria did not assume any importance before independence in 1960, although the first export of crude oil was shipped in 1958. The rate of export has grown considerably since then. In 1960, petroleum exports accounted for ₦8.82 million, making up 2.6% of Nigerian total exports. Its relative importance was, therefore, negligible in terms of Gross Domestic Product (GDP). In the words of Adani (1), during the 1960-61 fiscal year, petroleum production contributed ₦1.8 million or 1% of total government revenue. Crude oil thus accounted for 0.30% of GDP in 1960/61. Between 1937 and 1959, it was only Shell B-P Company (originally Shell D'Arcy) that was allowed to explore oil in Nigeria. By 1960, a liberalized policy was put into force, allowing other oil companies to participate in the oil exploration and to increase production for exports. These other companies include: Agip, Amoseas (now Texaco/Chevron), Gulf, Mobil and Safrap (now Elf). As a result of this policy, Nweke (33) contends that crude oil increased from a mere 857,000 metric tons in 1960 to 13.7 meillion MT in 1965, but with a minimal impact on the revenue.

Generally, the nation's economy did not change much because during this period, agriculture was still the mainstay of the economy.

As can be seen from Table 7 (15), the index number of period averages

Table 7. Crude petroleum production (index number of period averages)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
1.0	2.6	3.8	4.3	6.7	15.2	23.4	17.9	8.0	30.2	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
60.7	87.2	102.0	115.1	126.3	100.0	116.2	117.3	106.9	129.2	115.7

Source: IFSY 1982, IMF Publications, p. 345.

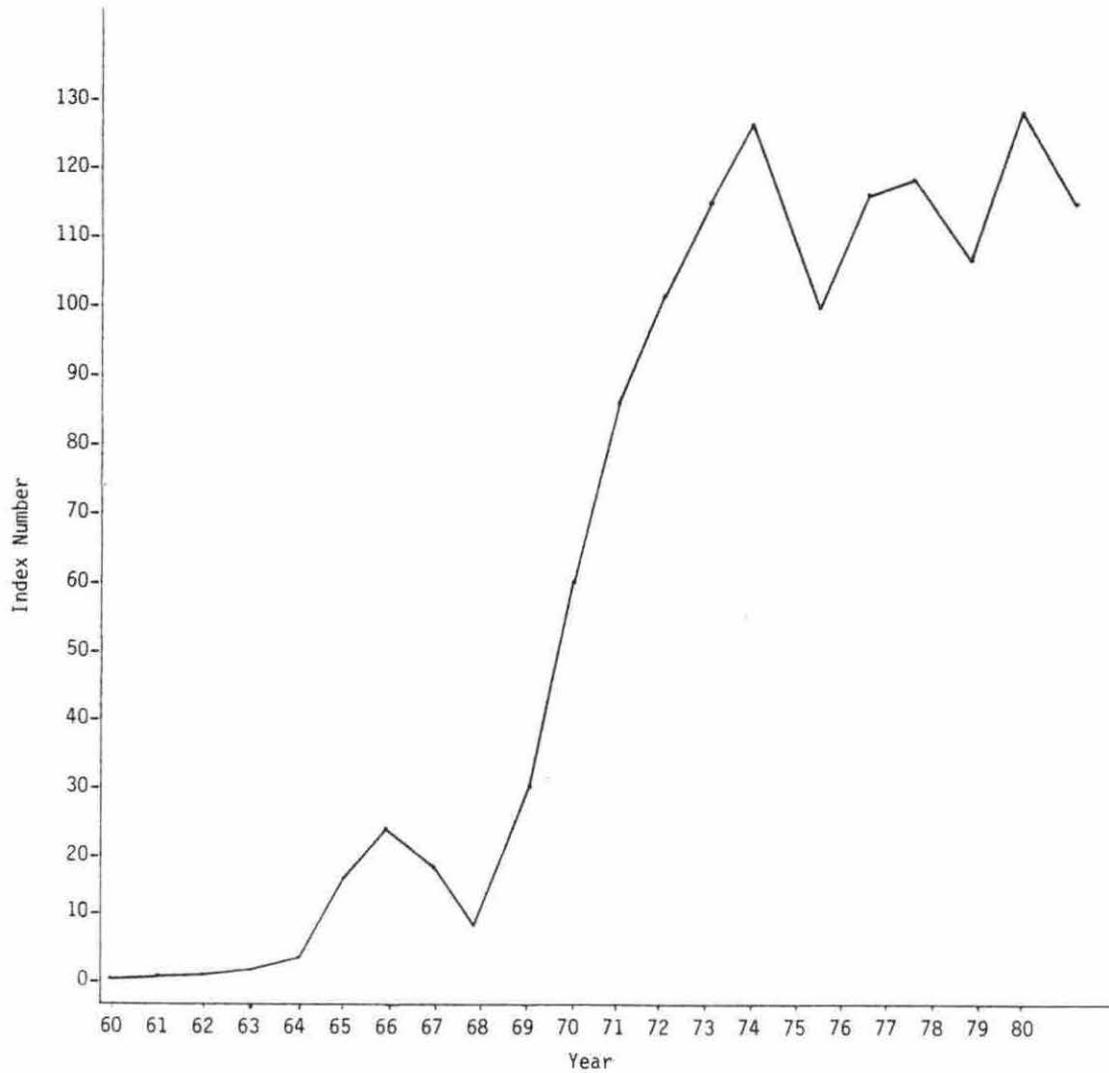


Figure 7. Crude petroleum production (index number of period averages)

Table 8. Crude petroleum (000 M.T. production)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
850	2,271	3,328	3,772	5,953	13,538	21,000	16,817	7,127	27,001	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
54,203	76,377	90,918	101,765	111,578	88,440	103,479	102,970	94,900	--	--

Source: 1979/80 Statistics, p. 212 and p. 201.

Average 1961-65 (5,772)

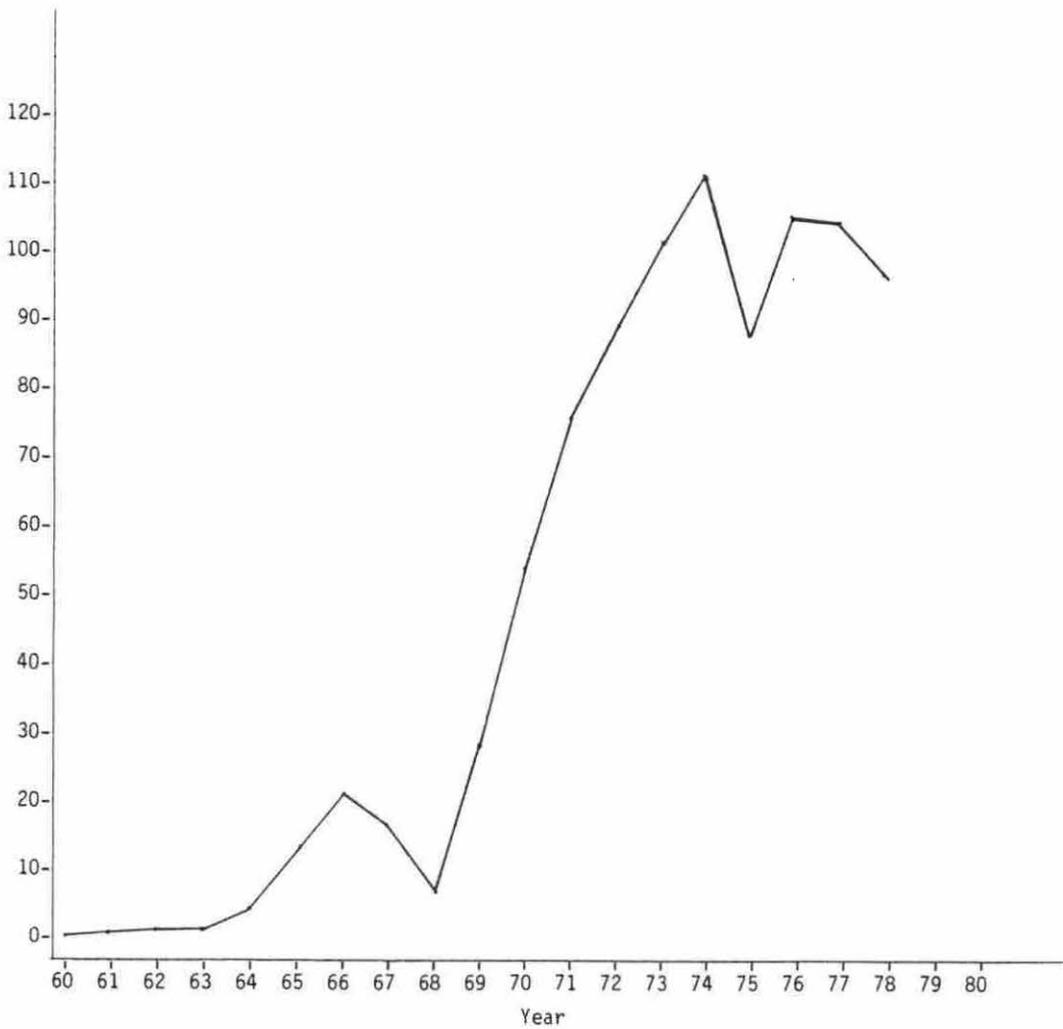


Figure 8. Crude petroleum (000 M.T. production)

using 1975 as a base year shows that crude petroleum production was 1% of 1975 in 1960, stagnated until 1965 when it reached 15.2% of 1975, dipped to 8% in 1968 and climbed to 30.2% of 1975 in 1969. The graph is shown in Figure 7. Productionwise, the data show that in 1960, Nigeria produced 850 thousand MT and with a gradual increase reached 27,001 thousand MT in 1969. This is shown in Table 8 and Figure 8 (15). With regard to the price of petroleum, between 1960 and 1970, the fact remains that crude petroleum could not command a worthwhile price, being sold at less than \$2.10 per barrel (see Table 9 and Figure 9). Thus, it is seen that petroleum production did not command much attention. Neither did it affect the economy much during the phase II period of my analysis.

2. Oil production and the state of the economy between 1970-1980

This was the oil-boom period in Nigeria. With the oil-boom came huge expenditures, huge revenues, corruption in a large scale and economic crisis in Nigeria. Nigeria joined the Organization of Petroleum Exporting Countries (OPEC). Oil enabled Nigeria to multiply its exports by 10 times in ten years and its imports by 11 times. In only two of the past ten years has Nigeria not recorded a surplus in its current balance of payments [see Table 10 and Figure 10 (15)]. According to the Economist (16), no country in the world has been so eager to buy more foreign goods and services and so well able to pay for them. During this period, the GNP composition reversed. In 1980 for instance, one quarter of the estimated GNP came from oil revenues. In 1970, oil accounted for 58% of exports and 93% in 1975. Oil provided over 90% of the exports in 1980 and all the oil money went

Table 9. Price of crude oil (\$s per barrel--monthly average)

1960-69	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980
---	2.1	2.65	2.8	4.47	12.23	11.62	27.94	14.48	14.1	20.08	33.91

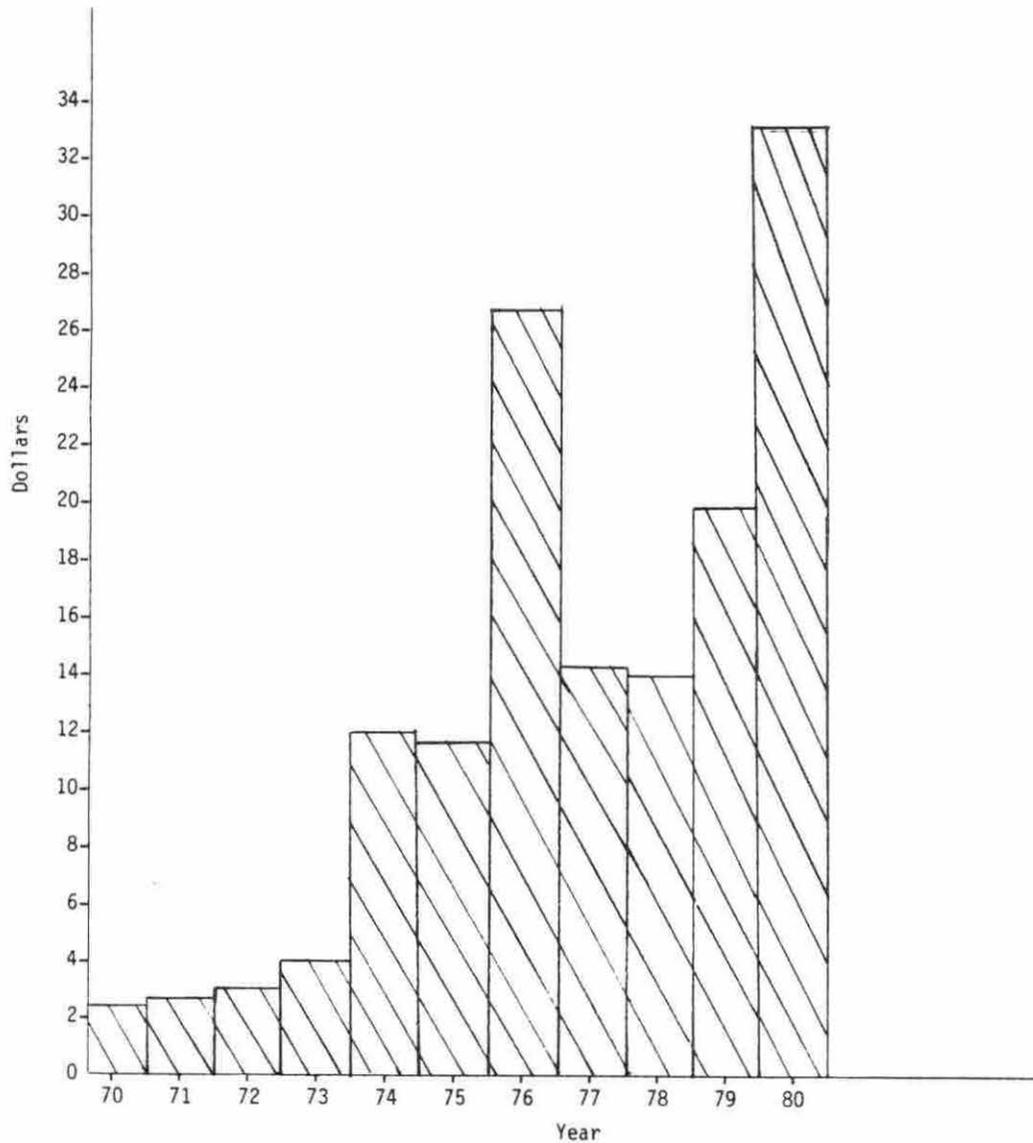


Figure 9. Price of crude oil (\$s per barrel--monthly average)

Table 10. Government finance, deficit (-) or surplus (+) (millions of Naira)

<u>1960-64</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>
---	-78.0	-47.0	-123.9	-177.5	301.7	-118.8	36.2	36.9
<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	
404.1	1,524.8	--	-1,513.4	-2,502.0	1,763.5	--	--	

Source: IFSY 1982, IMF Publications, p. 347.

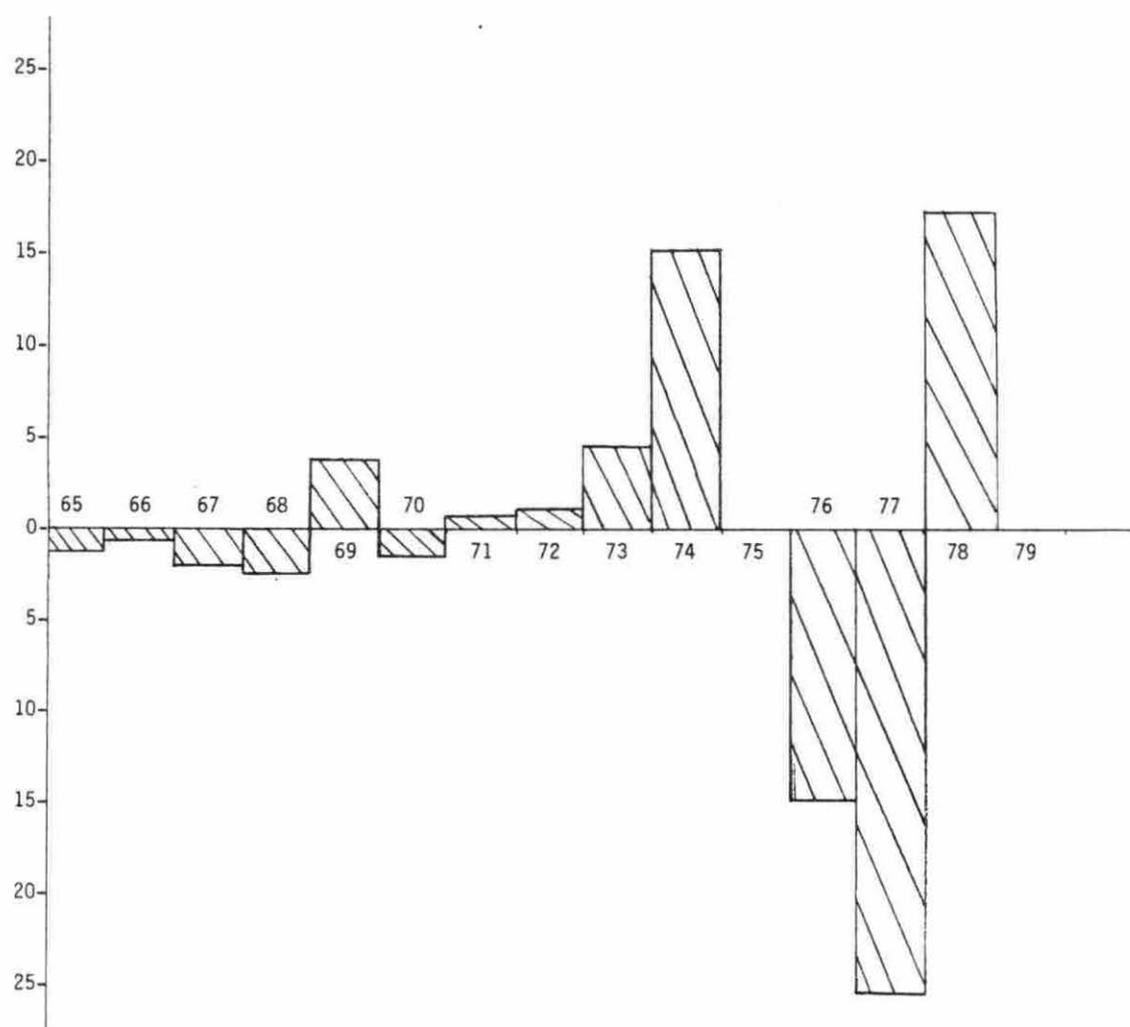


Figure 10. Government finance, deficit (-) or surplus (+) (millions of Naira)

straight to the government, forming 90% of its revenue.

There was a lack of competence in carrying out the ambitious programs which were undertaken as a result of the huge revenue from oil. Production licenses were given to foreigners and Nigeria was ineffectual as an OPEC member. There was a shortage of educated people to control the spending in Nigeria and there was also a lack of trained people to do the production work. Almost everything used in the construction of refineries, oil wells and other equipment was imported. It was also recorded that in 1972-73 fiscal year, revenue from oil accounted for more than 50% of the total federal government revenue. A peak was hit in 1973 and 1976 when oil accounted for 81% of total federal government revenue contributing ₦5177 million.

As of now, 80% of both state and federal revenue comes from oil. Contributions of oil to the GDP is, however, less important than its contribution to exports or government revenue. In 1977/78 fiscal year, crude oil component of GDP was 22.1%. According to Lubeck (29), out of a population of about 80 million people in Nigeria, less than 5,000 persons are engaged in oil production which is much less than 1% of the population. This is because the oil industry is highly capital intensive and requires highly specialized skills. Adani (1) contends that the actual employment figure for all categories of workers in Nigeria for 1974 stood at 4,838 people in the oil industry. The linkages with the rest of the economy is also very weak as a result of the low level of technology, of industrialization and the patterns of consumption.

With the benefits of the oil economy came some problems. Among them are: (1) inflation caused by the injection of high powered money

into the economy as could be evidenced by the CPI which climbed from 52.8% in 1970 to 217.9% in 1980--a whopping 165.1% increase in 10 years, using 1975 as a base year (see Table 3 and Figure 3); (2) unfavorable internal terms of trade for the rural sector vis-a-vis the urban sectors, (3) Urban labor migration, (4) Supply bottlenecks and financial management by public institutions and (5) Periodic salary increases for workers without commensurate productivity. Such periodic salary increases included the famous "Udoji Awards" and the "Williams Awards." It should also be realized that government spending in Nigeria has been inflationary since a substantial portion of the expenditure has been going to the construction of infrastructures such as bridges, roads and ports which needs the importation of almost every item used in such constructions, and also because of the number and size of such projects taken at a time.

GNP in Nigeria jumped from ₦5125 million in 1970 to ₦28716 million in 1978, an increase of about 460% (see Table 2 and Figure 2). Unemployment as can be seen from Table 4 and Figure 4 started rising rapidly from 13.5% in 1970 to 20.5% in 1974 and declining a bit to 16.7% in 1978. Steel consumption which serves as part of the construction items went from 650 thousand MT in 1970 to 1365 thousand MT in 1978, an increase of 110% (see Table 11 and Figure 11). Total exports rose from ₦954 million in 1970 to ₦8,481 million in 1977 and declining to ₦7,373 million in 1978 (see Table 5 and Figure 5). Imports as can be seen from Table 6 and Figure 6 jumped from a debit of ₦937 million in 1970 to a debit of ₦9,590 million in 1978. Crude petroleum production increased rapidly from 54,203 thousand MT in 1970, reaching an all time high in 1974 with 111,578

Table 11. Steel consumption

Year	1964	1965	1966	1967	1968	1969	1970	1971	1972
Total ('00 metric ton)	365	335	368	269	318	--	650	540	571
Per-capita (kilo)	6	6	6	4	5	--	12	10	10

Year	1973	1974	1975	1976	1977	1978	1979
Total ('000 metric ton)	710	884	1,380	1,327	1,799	1,365	--
Per-capita (kilo)	12	14	22	20	26	19	--

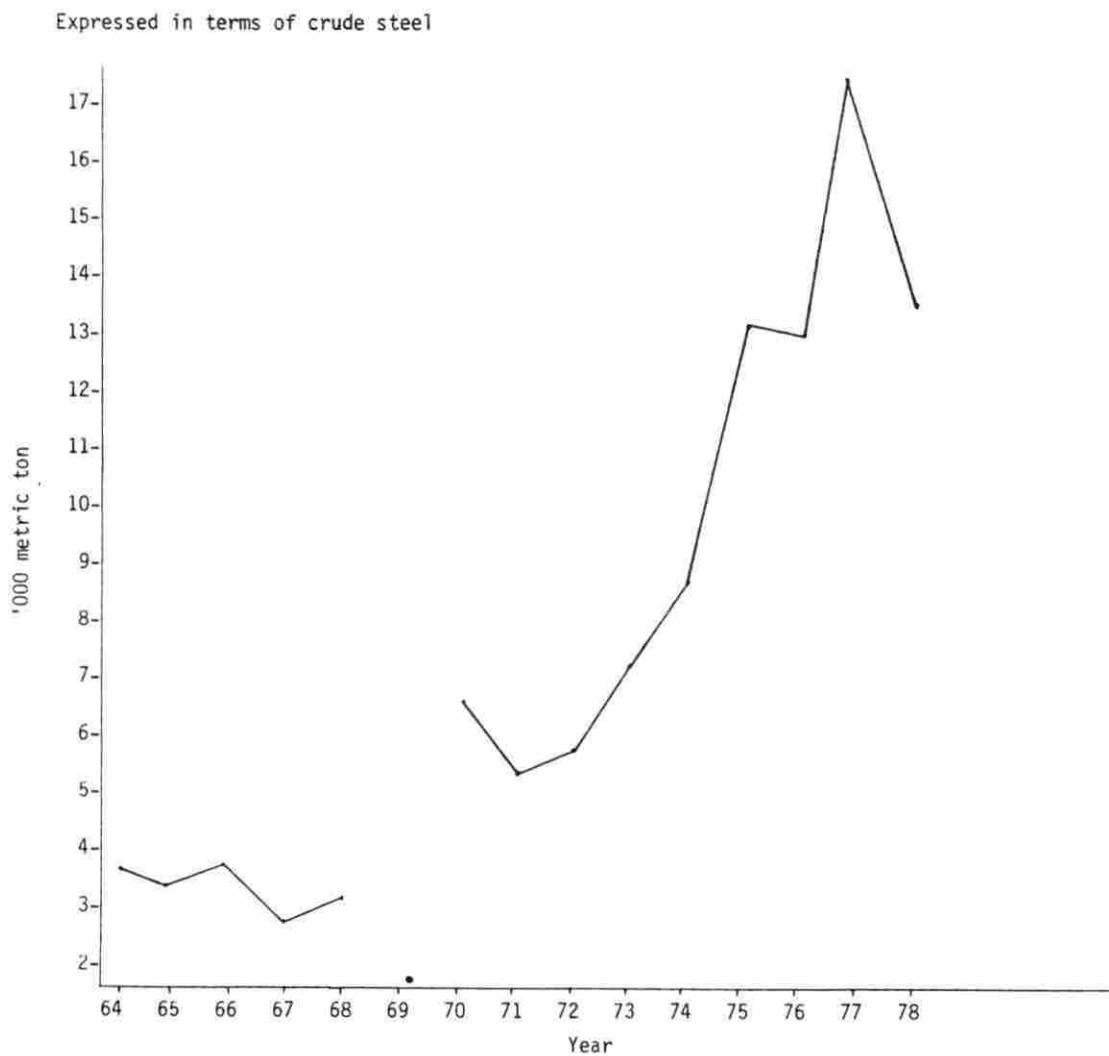


Figure 11. Steel consumption

Table 12. Government consumption (millions of ₦)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
141	154	169	165	192	222	225	215	252	420	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
578	631	798	819	1,122	2,623	3,083	3,587	3,634	--	--

Source: IFSY 1982, IMF Publications, p. 347.

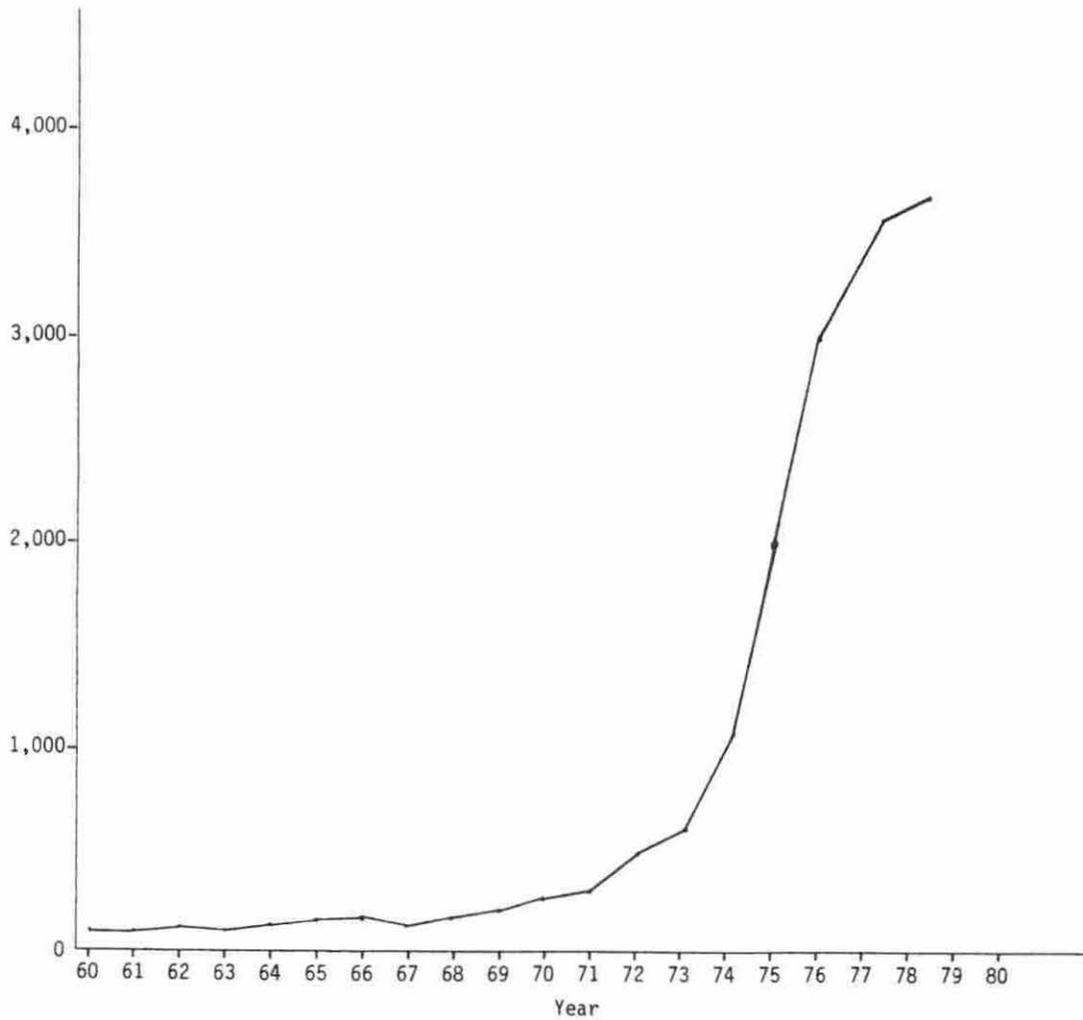


Figure 12. Government consumption (millions of ₦)

Table 13. Private consumption (millions of Naira)

<u>1960</u>	<u>1961</u>	<u>1962</u>	<u>1963</u>	<u>1964</u>	<u>1965</u>	<u>1966</u>	<u>1967</u>	<u>1968</u>	<u>1969</u>	
2,137	2,094	2,164	2,457	2,574	2,590	2,828	2,352	2,283	2,901	
<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>
4,143	5,090	5,267	6,018	9,109	12,378	15,265	16,491	18,289	--	--

Source: IFSY 1982, IMF Publications, p. 347.

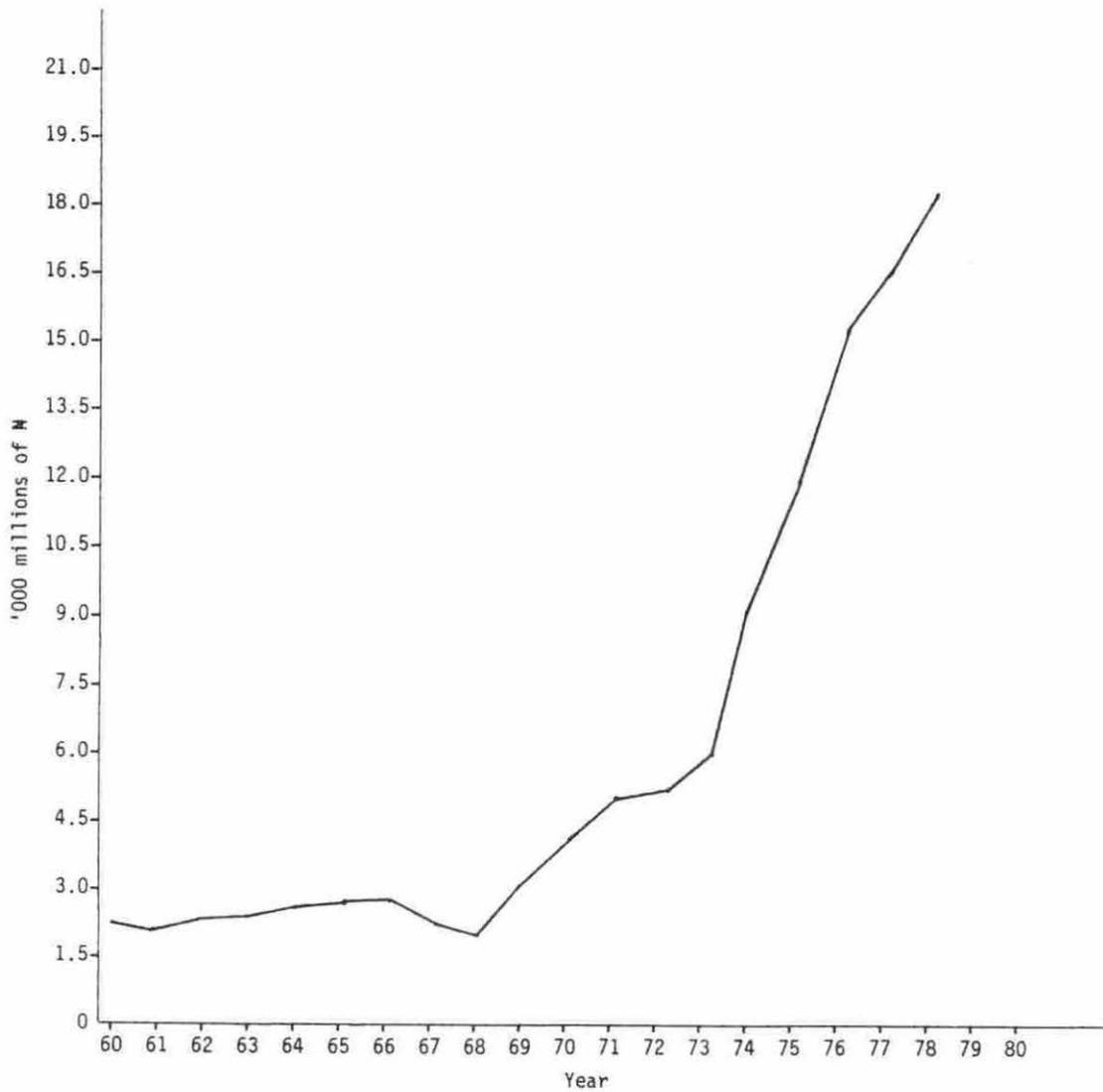


Figure 13. Private consumption (millions of Naira)

thousand MT and then declining to 94,900 thousand MT in 1978. Crude petroleum index (using 1975 as a base year) went from 60.7% in 1970 to 126.3% in 1974 and declined to 115.7% in 1980 (see Figure 7). Government, as well as private consumption shot up dramatically [see Tables and Figures 12 and 13 (15), respectively]. The price of oil as can be seen in Figure 9 fluctuated widely, peaking in 1976 and 1980.

The reduction in the price of crude oil caused OPEC to reduce production from 19 to 17.5 million barrels per day (bpd) and maintain a current price of \$34.00 per barrel. The reason that was given for such a move was to cope with declining price of oil caused by the imbalance of supply and demand on the world oil market. Other reasons, according to Fu (8), include: pressure from superpowers as well as from Western oil companies. This move did not normalize things as demand for oil on the world market declined approximately 26%, resulting in daily surplus of 5-7 million barrels. (OPEC oil output in 1975 was 30.77 million bpd in 1979 and declined to 26.88 million bpd in 1980.)

The revenue generated by oil in Nigeria was thus squeezed by foreign oil companies by cutting exports from Nigeria from a high of approximately 2 million bpd in 1980, to a low of about 500,000 bpd. Nigeria lost some of its markets as a result of this measure. There was no formal credit squeeze, no sharp rise in local interest rates. Instead, the Federal government simply put off paying its bills and delayed authorization of remittances abroad. So, as can be seen from the above analysis, the 1970-80 period was both a period of blessing, as well as a period of economic crisis in Nigeria.

III. POLICY FORMULATIONS AND IMPLICATIONS

In this chapter, I will examine the policies of the Nigerian government with regard to agricultural and oil production, how these policies were formulated, who were the key people involved in the formulation, the implementations of the policies in question, how the policies affected the masses of the people and the government itself and what would have been done differently. This chapter is, thus, trying to analyze the rationale behind those policies and to evaluate the most effective way of carrying them out, if they are economically justified.

A. Government Policies on Agricultural and Oil Production

As the period I am analyzing is a fairly continuous period, I decided to treat both periods together. Since the policies are a sort of overlapping to each other, this also gives me the advantage of treating them together as to find out what led to what. It will be noteworthy to keep in mind that Nigeria has had about five separate governments since 1960. Putting these five governments into three general categories, we have: (1) the civilian government of 1960-66 which was a parliamentary democracy, (2) the military government of 1966-1979 which was a sort of dictatorial form of government and, finally, (3) the civilian government of 1979 to the present, which is a "copycat" of the United States presidential system. These three categories of government have enacted varied policies regarding agricultural and oil production. The years in question will determine which government enacted what policy and help us to see the problem in its

entire perspective.

Nigeria operates on development plans. The plan period might take up to six years to elapse. The first national development plan, 1962-68, stated that "the basic objective of planning in Nigeria is not merely to accelerate the rate of economic growth and the rate at which the level of the population can be raised; it is also to give her an increasing measure of control over her own destiny." The second national development plan, 1970-74, emphasizes: "The present plan . . . recognizes explicitly the possibilities of using planning as a deliberate weapon of social change by correcting defects in existing social relations in various spheres of production, distribution and exchange." The emphasis, according to Ekundare (6), in both development plans is on social change and on achieving and sustaining of social and political equilibrium and not merely acceleration of economic growth.

The fundamental objective of the first national development plan is "the achievement and maintenance of the highest rate of increase in the standard of living and the creation of the necessary conditions to this end, including public support and awareness of both the potentialities that exist and the sacrifice that will be required." A 4% annual average rate of growth of GDP and a 2% to 2½% annual growth rate in population was projected. Overall performance was unsteady, going from 6.7% in 1963/64 to 3.8% in 1964/65, and 5.7% in 1965/66 to 4.2% in 1966/67.

In this plan, agriculture accounted for approximately 65% of GDP in 1962/63 fiscal year and 63% of GDP in 1966/67 fiscal year. This decline was caused by a faster growth in the nonagricultural sector (e.g. growth

in local industries, encouraged by imposition of import restrictions). The share of industrial production in the GDP grew from 5.3% in 1962/63 to 7% in 1966/67 fiscal year. The mining sector grew and contributed 1.9% to 3.4% to the GDP in 1962/63 and 1966/67, respectively. Major economic projects successfully completed within the plan period included: the oil refinery, the Niger dam, the Nigerian smelting and minting plant, the paper mill and the sugar mill. In the field of communications, the Niger bridge, port extensions and the construction of some major roads were successfully completed.

The second national development plan has as its objectives the fundamentals of social change. These include: (1) a united, strong and self-reliant nation, (2) a great and dynamic economy, (3) a just and egalitarian society, (4) a land of bright and full opportunities for all its citizens and (5) a free and democratic society. These rhetorics formed the basis of policy making and of the expenditure in the country. Of course, from these two development plans, one could see that the policies were more social and political in nature than economic.

Industries were sponsored by the government and the government gave itself the discretion as to what is in the public interest as far as agricultural or industrial locations are concerned. In the words of Ekundare (6), it means in effect that even if the siting of an industrial or agricultural project in a given area is uneconomical, but can help to promote political and social unity, the government may disregard those economic considerations which favor their establishment elsewhere. This policy is possible with government financed projects, but private projects

are not bound to follow this rule, especially those with foreign private capital. If incentives are introduced to lure firms to uneconomical locations, very high prices would have to be paid after production.

The second national development plan, which is a broad based objective and means of implementing development programs in the country according to Ekundare (6), recognizes the importance of education and manpower training for both agricultural and oil production. "Full employment of resources, especially of the labor force, is the necessary policy objective for any economy dedicated to rapid growth and social harmony. The essence of excess capacity means resource waste and lost economic opportunities which an economy like Nigeria's can ill afford. Vague plans as to what policy of full employment to pursue in all sectors of the economy including agriculture and oil characterize the policy formalizations in Nigeria within this period. Other problems associated with this vague policy were heightened by mobility of labor, caused by mistrust among various ethnic groups. Following regionalization policies of the 1950s, deliberate measures were taken, particularly down to 1956, to restrict the mobility of labor. The civil war and current political crisis seems to have worsened the situation.

As far as government policies on agriculture and oil are concerned, the aim of the federal government agricultural policies was to aid local farmers. The Green Revolution program of the federal government was established to assist the ordinary farmers to increase their rate of food production. As a result, according to Thompson (47), 15% of the budget was allocated to agriculture on a yearly basis. The revenue got from oil was

shared to states in the federation based on "derivation" principle. This principle states that the states where the oil is produced receives a larger share of the oil revenue. It has been echoed by Adani (1) that Nigeria's rural policy in the 1970s can be described as a policy of providing more for the able few, while the rural people go without. Fifty percent of the manufacturing establishments are concentrated in Lagos and the rest are found in about a dozen urban centers. Characterized by a high proportion of imported inputs, manufacturing and the oil economy are growing at a faster rate.

The results of all these policies are: (1) indirect income that the use of local raw materials can provide is considerably reduced, (2) the development of other industries is reduced, and (3) there is a high cost to the economy because of the capital intensive nature of the manufacturing and oil industries. An irony to this is that while growth in investments in these industries was more than 22% per year, annual growth in unemployment was about 12% per year. In 1972 and 1977, Nigeria enacted the "Nigerian Enterprises Promotion Decree" (NEPD) which spelled out economic activities of percentage of foreign owned ventures in Nigeria. The objective of this decree is to enable Nigerians to fully participate in the modern sectors of the economy, especially the oil economy. Nigeria has been having runaway inflation for the last 15 years because of policies that have been implemented. By 1975/76, inflation went into double digit figures. (From 1970, there was an acute shortage of essential commodities.) Price control was put into effect but proved ineffective. According to Adani (1), the country has been relying more and more upon the import of food stuffs and hence inadvertently imports additional inflation to reinforce the domestically induced one.

It should be realized that the size of the Nigerian labor force has steadily been rising since 1960. Today it is conservatively estimated at 32.7 million (about one-third of the entire population). The labor force is made up of people aged 18-40 years (with a generous cluster of children aged 7-17 years). The 18-40 year age bracket is based on the life expectancy of people in Nigeria. This does not preclude the fact that in reality the labor force might include the range of 18-60 year olds. According to Clinton (4), 1966 statistics showed that 73.27% of the labor force was illiterate, while only 0.88% was educated up to and above the school certificate level. This sapped the potentials of the labor force where great skills were needed. From all these statistics one would question the policies of the government especially with regard to education for the improvement of agricultural and oil production.

The military government made changes in policies which drastically reduced the capital allowance to oil companies in an attempt to obtain more revenue from oil. In January 1967, they issued a decree requiring oil companies to be incorporated under government control. In 1969, "petroleum decree" defined petroleum to include gas and reduced the length of concession period given to oil companies to 20 years. This decree also provided for a 51% state "participation" in all new concessions and required all producing companies not only to produce a master plan for oil exploitation, but also to accelerate the "Nigerianization" of their most senior positions and other cadres to 75% and 100%, respectively, within the next 10 years.

In 1971, a decision was made to offer no concessions to private interests whatsoever, but instead to encourage the public sector "participation" in the industry through negotiations. In October 1973, Nigeria took

advantage of the Arab-Israeli war and oil was supplied to those embargoed. This was a change in policy, though the price of oil quadrupled.

In 1978, "decree No. 6" was issued, otherwise known as "Land Use decree." This decree stipulates the conditions governing the control and use of land in every state or local government area of the country. It provides that land in every state in the federation is to be held in trust by the state government on behalf of the people of the state. It stipulates that the right of a member of the community to use land and to enjoy its fruits should be ensured, protected and preserved by the state or local government as the case may be. Other provisions of this decree include: management of land, resettlement of persons affected by the revocation of rights of occupancy on the grounds of overriding public interest, determination of disputes as to the amount of compensation payable under this decree. Powers to ensure this provision were given to the Land Use Allocation Committee.

As far as the agricultural policies in Nigeria are concerned, the objective was to increase agricultural output substantially as a weapon against malnutrition and as a means of improving the standard of living of the people. This would be done by: (1) providing farmers with fertilizers, pesticides and other agricultural inputs at heavily subsidized prices, (2) providing tractor hire services and land development schemes at government expense, (3) through the Nigerian Agricultural Bank (with the headquarters in Kaduna) by opening branches in various parts of the country, (4) providing bold schemes for storage facilities, particularly strategic grain reserves and farm to market roads in rural areas in every part of the country, (5) operating a commodity marketing system which

consists of price-fixing authority and seven commodity boards, covering the key food crops as well as the traditional export crops on a nationwide basis. The boards are to encourage production of crops it handles and organizes their marketing for local consumption and in some cases, for local processing before export and helps to stabilize the price of food grains while at the same time guaranteeing reasonable prices and incomes to the farmers.

The federal government also established the Nigerian National Petroleum Corporation (NNPC) and charged it with the responsibility for looking after the governments interests in the oil industry. It also engages in the exploration, drilling, production, refining and exploration of oil. According to Nweke (33), the NNPC is also responsible for the installation of depots at strategic points to facilitate the distribution of refined petroleum and minimize oil shortages. Two refineries have been established in Port Harcourt and Warri for production of motor oils, gasoline and kerosene. The third refinery is being built in Kaduna and there are plans to build more for the export market. It should be realized that Nigeria is the sixth largest producer of crude petroleum in the world and the second in Africa.

Another policy that directly affected the oil and agricultural economy is that of revenue allocation principles. This is a system whereby the entire revenue generated in the country is allocated to the 19 states of the federation. This revenue allocation system is based on three principles, viz., Principle of Derivation, Principle of Need and Principle of National interest (Phillips, 37):

Principle of Derivation This principle requires that all revenue which can be identified as having come from or can be attributed to a particular state should be allocated to it, based on adequate and reliable data.

Principle of Need This requires that revenue be allocated to states based on the urgency and the need for the revenue.

Principle of National Interest This is intended to achieve a delicate balance between equity on the one hand and the needs of national economic and political growth and stability on the other.

During the 1970-80 period, the federal government instituted policies that were very weak. They showed no understanding of the economy and how it works. The Udjoi and Williams awards which increased salaries favored only about 10% of the entire population. The policies also facilitated the rush to urban centers. It should be realized that the states have no significant revenue other than what the federal government gives them out of its oil takings. In February 1981, for instance, a revenue allocation bill was signed into law by the President. The formula was based on the following: (1) the federal government keeps 58.5% of the total. (2) the states get 31.5%, each state's share being based on its area, population and oil production. (3) local governments within the states would get 10%. This policy was thrown out by the courts. A more generous bill to the states has been passed, but the total to be shared is unknown. According to Knight (17), the Central Bank's annual report for 1980 wryly complained: "As was the case in calendar year 1979, the federal government's fiscal operations in 1980 could not be analyzed

due to the unavailability of actual revenue and expenditure statistics during the year."

Basically, agricultural programs that have been tried include: The National Accelerated Food Program (NAFP) in 1973, Operation Feed the Nation (OFN) in 1976 and The Green Revolution of 1980. These programs were all meant to increase agricultural production in the country, as well as help to curb the massive exodus of people from the rural areas. Banks were instructed to lend 8% of their total loans for approved agricultural projects. In 1978, a different land tenure system was introduced by the military government. Ownership of land was vested to state governments. This, in effect, means that farmers cannot use land as a collateral for loans. Large irrigation and land clearance schemes were initiated by the government. Minimum wage was raised from ₦70 per month in 1979 to ₦150 per month. The exchange rate of the Nigerian Naira was kept as near as is possible stable in terms of the U.S. dollar and the British pound sterling. (₦1 = £0.83 or \$1.59). In all, Nigeria engaged in gigantic projects and programs and committed a huge amount of funds to implement them.

B. Implementation of Government Policies

Most of the policies enacted by the government in Nigeria, especially with regard to agricultural and oil production seem plausible, one thing is to formulate and enact a policy and another thing is to implement the policies in question. With the formulation of the policies, a lot of bureaucratic structures were created. As the case is in Nigeria,

the more bureaucrats you have to go through to get something done, the higher the cost of the project. Bribery became, for Nigeria, a national pastime. It has been suggested that meeting the needs of the extended family system, including village and community links, are the major reasons for bribery in Nigeria. In the words of Knight (17), "the man who takes bribes sees himself as Robin Hood, not the wicked sheriff." Foreigners soon adopted and practiced this policy in their dealings with Nigerian government and contractors. The most threatening problem with regard to policy implementation in Nigeria is corruption. In 1975 alone, over 11,000 personnel ranging from state governors to cooks were dismissed because of widespread corruption. Ten out of twelve state governors of the Gowon military regime were found guilty of appropriating a total sum of \$16 million for their private use. Lubeck (29) also testified to this. The long-term implications of collective corruption are more worrying to the average citizen. This is a major problem to the implementation of the policies in question.

Other problems, according to Nwosu (34), to implementation include: (1) physical infrastructure, as the transportation network in Nigeria is still below standard for such economic growth and development; (2) organizational resources, since manpower development in Nigeria is still at the embryo stage; (3) corruption, since everyone thinks that it is a way of life and normal business practice; and (4) outmoded agricultural technology.

Physical infrastructure: In 1970, there was a total length of 55,000 miles of roads in Nigeria and only 10,000 miles were properly paved.

In turn, there were about 67,000-79,000 vehicles, 28,000-30,000 trucks and 31,000-38,000 motorcycles, excluding bicycles. This showed the inadequacy of the roads for the traffic, hence lots of traffic delays and jams on major roads.

The railway in Nigeria was established in 1898 and made a statutory corporation in 1959. It has operated on a deficit in all but one of the past 15 years. Its freight liftings declined substantially from 850,000 tons in 1958-59 to 350,000 in 1970-71. Operations further declined substantially between 1971-74, and deficits increased (see Table 14).

Table 14. Nigerian railway deficits, 1969-74

Year	Deficit ₦millions
1969-70	10.3
1970-71	15.8
1971-72	22.2
1972-73	21.8
1973-74	23.1

Source: The Federal Republic of Nigeria (45).

The causes of these deficits were attributed to poor management, the civil war whereby the corporation lost 6,000 employees of various skills, obsolete track system (the present route was built between 1898 and 1965), defects of diesel engines, a heavy backlog of repairs and maintenance work, extensive detention time at stations, poor facilities for passengers and

unreliable communication system.

The Port Authority and National Shipping Line, established as a statutory corporation in 1955, owns and manages six harbors with twenty-nine berths, with eighteen of them in Lagos, eight in Port-Harcourt, one each in Calabar, Burutu and Koko. Here also there is inadequate management. This can be shown by the data available that in October 1975 over 400 ships were awaiting offloading at Lagos as Lubeck (29) testified. This situation causes problems for exporters, importers and customs. Port delays averaged five to six weeks for cargo ships throughout 1975.

The Nigerian Airways Corporation established in 1959 has a monopoly of all domestic air services. It also operates internationally. The irony about the whole set up is that the corporation has only eleven aircrafts: five Fokker 27s, two Boeing 707s, two Boeing 737s and two Fokker 28 jets according to Lubeck (29). There are a lot of management problems within the corporation. One cannot imagine how important economic policies can be implemented with all this chaos. Transportation systems in a country help to facilitate economic progress by the time and bulk factor. When this element is missing, there is a question as to how development is to progress.

Manpower-wise, since only 0.88% Nigerians are educated up to and above the school certificate level, one would expect a massive education program to bridge the illiteracy gap. It is estimated that the total high level manpower supply for 1975-1980 would be 43,550 persons. The breakdown is shown in Table 15. For a five-year period, manpower supply was still very inadequate, taking into consideration the population of 80 million people

Table 15. Anticipated source of high-level manpower supply, 1975-80

Source	Anticipated Number
1. 1975-80 graduates from local universities	28,000
2. Supply from local non-university institutions	4,000
3. Supply of graduates from overseas institutions	1,900
4. Other external supplies of qualified Nigerians	3,000
5. Supply through upgrading from intermediate category	<u>6,650</u>
TOTAL	43,550

Source: The Federal Republic of Nigeria. Third National Development Plan, 1975-80, Vol. 1, Lagos, Federal Ministry of Economic Development, p. 378.

and the urgent work of taking over the high level positions in the oil and agricultural sectors of the economy, as well as engaging in a facilitated research and production of essential commodities in Nigeria.

The points mentioned above have been some of the drawbacks of policy implementation in Nigeria. The policies no matter how sound and excellent they are cannot proceed effectively without adequate implementation instruments. It is on this fact that Nigeria should reexamine her policy implementation instruments.

C. Economic Analysis and Impact of Government Policies

In this section, I will try to analyze the economic impacts of the policies which have been enacted by all the governments in Nigeria since 1960. Consider the revenue allocation principles for instance. When

fully applied, the principle of derivation is likely to lead to greater interregional economic disparity and to contribute to the instability of the federation. The principle of need is likely to divert resources in order to even out disparities between sections of the country. It might lead to resentment by richer regions who may complain at having to subsidize the poorer regions. It might harbor a politically destabilizing element and the poorer regions may lose the incentive to increase their tax efforts to raise revenue on their own. It is also very difficult to ascertain "need." The principle of national interest is weak because of uncertainty of its interpretations. It has, therefore, been suggested by Phillips (37), that a combination of the three principles would be preferable since none is particularly complete individually without bias.

It is because of government policies on oil production and the increasing number of oil exporting countries that has led to overproduction and price declines respectively. In the western oil market for instance, the price per barrel has decreased from \$40 a year ago to the present \$28 per barrel. The policies on oil induced the west, who is the major industrial consumers of oil to cut back on costs by saving energy. The west has also come up with alternative sources of energy (e.g., solar and nuclear), and this had led to cutbacks on imports. According to Fu (8), oil consumption in the seven major western countries declined 23% during the past three years.

With the spending autonomy given to states, especially on capital projects, the states have become big spenders on roads, offices, colleges, waterworks, etc. This was well put by the president's advisor on economic affairs whom Knight (17) quoted as saying that, "To draw up expenditure

plans that exceed a state's revenue resources by more than 100% is not only prodigal but is tantamount to fiscal irresponsibility." The problem of inefficiency in government hinges on the fact that Nigeria runs the American system of government but operates on the British colonial bureaucracy. This has caused a lot of chaos as to how the protocols are to be followed.

The agricultural programs and policies that have been introduced in the country like the National Accelerated Food Production (NAFP), the Operation Feed the Nation (OFN) and the Green Revolution are excellent in themselves, but since they are under federal government control, have the tendency of creating more civil servants and urban office blocks to house them. Thousands of tons of fertilizers and tens of thousands of farm implements have been given out to farmers. Tractor pools have been tried and failed. There has been irrigation for rice (especially in the north near Lake Chad). Some drainage and bush clearing in the southern rain forest have been implemented, but the results have not been good because the prices offered to farmers in rural areas have lagged miles behind what they can earn in the towns as small traders or as government servants. It should be realized that large irrigation and land clearance schemes demand large-scale management and foreign expertise in Nigeria. The latest set of investment rules allow foreigners to own up to 60% of the agricultural enterprises, and an intergovernmental commission has been set up with the United States to promote investment from these.

It is sad that no qualified Nigerian wants to help the small scale farmers to improve their outputs (especially in accounting and

organization). This is because there are more lucrative jobs in urban areas. With regard to finance and total organization of the farms, the Economist in Knight (17) writes: "World Bank gives technical assistance that goes with World Bank loans. What the bank cannot do is to ensure that farmers get attractive off-farm prices for their produce. Better roads, better seeds and better husbandry make increased production technically possible. But the farmers will not take up the possibilities unless they get good money for their crops. The governments main agricultural priorities so far have been to keep food prices down, to satisfy the growing populations of the towns."

In trying to protect local industries in Nigeria by adopting price control policies, locally produced goods in Nigeria are more expensive than imported ones. Practically all Nigerian exports, now being oil, are priced in dollars. At least one-fifth of the official imports are priced in Sterling. So Nigeria's even more rapid (but unmeasured) inflation has not been reflected in a relative decline of the value of its own currency since the exchange rate has been so high in comparison to most countries of the world. Foreign produced goods have become steadily cheaper in Naira terms. By trying to keep the exchange rate at par with major developed countries' currency, the exchange rate policy has kept imported materials artificially cheap and has helped to spoil the market for Nigerian farmers. Between 1976 and 1980, domestic food production was probably static, thus, food imports rose by 250% according to Knight (17).

The oil policy not only had negative effects but also positive ones. This could be explained by the fact that between 1971-1974, oil revenue to Nigeria came up to ₦5,610 million. In the words of Nweke (33), "Nigerian

foreign exchange reserve soared. Oil industry alone accounted for 86% of foreign exchange earnings in 1974 as compared with only 11% in 1965. Gross Domestic Product recorded an average growth rate of approximately 8.9% per annum between 1975-76 and 1977-78. There was a surplus of ₦42.6 million in 1975; but in 1976 and 1977, a deficit of ₦259.3 million and ₦656.5 million, respectively, was witnessed. Inflation rate in 1976 as reflected by the composite Consumer Price Index (CPI) reached 24% but was lowered in 1977 to 11% due to other counter policies taken during the year. Oil production declined from an average of 2.15 million barrels per day by 1974-75 to 1.94 million bpd by 1977-78.

On a general basis, therefore, government policies had both positive and negative impacts on the economy. The reality of the situation is that with the mounting deficits and the decline in both agricultural and oil production, these policies have never been adequately analyzed before they were implemented. Though some of them are economically feasible and plausible, others are not even close to being an economic policy.

D. Alternatives for Economic Revitalization

It has been advocated by eminent economists like Heady (9, p. 29-35) that agriculture supplies capital for the development of other sectors. According to Heady, "In traditional societies, productivity of agriculture must progress more rapidly than population in order that the entire labor force is not required to provide food and shelter for the nation." Among the policy instruments that Heady advocates are: (1) supply of credit at prices which allow a recombination of farm units into sizes and a degree of specialization consistent with modern farm technology and the stage of

economic development, (2) legislation, and (3) purchase of small or inadequate farms by the public, with their conversion to nonfarm uses. Heady also identified three ultimate ends of agricultural policy which include: (1) to provide conditions which continue the contribution of agriculture to economic progress, (2) to provide prices, income and other compensation conditions which guarantee that the resulting income and welfare outcome to farmers is positive and finally (3) to provide equality of opportunity to farm people especially youth, to participate in the economy-wide facets of economic growth. So far the effective pursuance of agricultural policies, governments should consider both the policy instruments as well as the ultimate ends as expoused by Heady in the formulations of their individual national policies.

Other things that have been suggested, particularly for Nigeria to turn its economy around, is the devaluation of its currency. Knight (18) reports that Nigerian commercial banks have been ordered not to issue any new letters of credit for imports or accept requests for the release of foreign exchange. This has caused a lot of problems to industries relying on imports for most of their inputs as well as for Nigerian students overseas. This alternative is, therefore, having an adverse effect on the country and its people rather than being a measure of strengthening the economic crisis. Nigerian Central Bank reserves fell from about \$10 billion in January 1981 to \$1.7 billion in March 1982. By September 1981, net debt to foreign commercial banks was \$2.3 billion, against net deposits of about \$2 billion a year earlier. It is a cash rather than a credit crunch since by the Third World standards, Nigeria is still rich. "Its debt

service ratio, i.e., the proportion of export earnings it must pay its creditors each year is only 6%" according to Knight (20); therefore, the Euro-markets are open to it for possible loans.

It might be proper to consider tariffs because of the revenue it would bring for the government. It might also be more efficient to administer since it requires far fewer bureaucrats to administer than other agencies formed to handle such affairs. There has been a 12 $\frac{1}{2}$ % cut in salaries of government workers, including that of the President and Federal Ministers. Other measures that have been taken include: (1) Ensuring that the need to claim overseas travel allowances was reduced to the barest minimum by reduction in the frequency of overseas conferences and the duration of stay. (2) An across the board reduction in the normal estate rate (This would apply to all political office holders in the executive branch, including chairmen and board members of statutory corporations.) as seen in Thompson (46). These are all short-term measures which might even backfire on the government if care is not taken. Taken for granted that they succeed, it would not even make a dent on the huge deficit in Nigeria.

One of the alternatives to insure high agricultural productivity is to implement research findings. Taking cocoa for example, according to Oni and Olayemi (35), the amount of cocoa planted in any given year is determined by the expected real producer prices of cocoa and the substitute crop, the existing stock of trees, the age of distribution of the existing trees, the available area for further planting and the changing technology involved in cocoa cultivation. The most damaging thing in

Nigeria is that research findings such as the one above will never be put to practice. I think it is time Nigerians started adopting research findings.

There should also be a coordination of federal financial planning from the economic development planning. This would ensure equity in the revenue allocation system in Nigeria and also prevent the problem whereby in the 1970-74 development plan. Six states enjoyed large budget surplus while others suffered large deficits to the point of not being able to pay their workers. Phillips (37) re-echoed this strategy.

Efforts should be made to involve the private sector in the industrial development. The statutory corporations should be better served as private companies rather than as government bureaucracies. This will eliminate the inefficiencies that now obtains in them. Moreover, the companies will not have political overtones as they do now. Ridding the corporations of political control will go a long way to solving most of the problems involved in the management, organization and control of the corporations. In the words of Ekundare (6), "It is becoming evident in developing countries that government financed projects alone cannot bring nearer the moment of economic 'take-off' and of self-sustaining growth."

IV. DATA ACQUISITION

This section is intended to quantitatively validate what I have qualitatively already discussed. Most importantly, singling out oil production as the independent variable and some other measures in the economy as the dependent variables will help clarify the extent of the economic mismanagement by both the government, as well as the people of Nigeria. Two subheadings will be used in this section, namely: materials and methods and test procedure.

A. Materials and Methods

The materials (data) used in this research are all secondary data mainly from world organizations such as the United Nations, Food and Agricultural Organization, International Monetary Fund, United States Government publications, Nigerian Government publications, and from previous research done by interested individuals on the topic in question. These secondary data were used primarily because of the nature of the research dating back to 1960. Since it is almost very difficult to ascertain the most accurate data from the list of statistical data available, I decided to adopt the statistical data of the United Nations and that of the International Monetary Fund, specifically in my quantitative analysis because of their world-wide appeal. It should be realized that in most developing countries, objective data is hard to come by. In effect, most research done on these countries has to rely either specifically on primary data or on secondary data. Some of the limitations which made me favor the use of secondary data include: distance, time, and finance. It is

my belief that the materials used here are also used for standard policy making regarding Nigeria by international bodies, which makes the accuracy of this research fairly objective and valid.

A hypothesis is advanced to verify if oil production has improved Nigerian economy or not, and if the economy is better now with the oil economy of the 1960s. Using 1960-1970 as a base year, 1970-1980 will be evaluated. Some variables that will be used include: Gross National Product (GNP), Consumer Price Index (CPI), Government Consumption, Private Consumption, total imports, and cocoa production as a representative of agricultural production. These variables will be plotted against oil production and a least squares regression will be used to estimate the trend and possible policy implications in the future since the research is focused on learning about the past trend to be able to effectively predict the future and to control the deep troughs as well as the very high peaks.

From the estimated predictions, correlations will be calculated and a "T" test will be applied to ascertain the validity of the result at the 5% level of significance. The results of the test will, therefore, add a different dimension to the research which will prove that estimated predictions are better adopted as policy instruments for the economy rather than let political rhetorics dictate policy formulations or even worse, use nothing to formulate policies.

B. Test Procedure

SAS computer program is used to evaluate each variable individually with oil production since oil is the mainstay of the economy, to be able to predict what the situation will be in the future. Some assumptions are

made in this test. They include: (1) Oil production will continue to be the mainstay of Nigerian economy. (2) The price of oil will not go below \$20 a barrel. (3) The use of oil as a source of energy for industrial production will always be preferred to other substitutes. (4) Oil production in Nigeria will not decline below 500,000 barrels per day in the next 15 to 20 years. (5) The supply and demand forces in the market are not violated. Observations from 1960-80 are recoded as years 1-21.

Each variable is analyzed separately to see the strength of the relationship as well as to test formulated hypotheses. A prediction equation is then established to help policy makers in the future.

V. PRESENTATION OF RESULTS

A. Gross National Product and Oil Production

In this section, GNP from 1960 to 1980 is deflated to 1975 prices (see Table 16) and graphed in Figure 14a. A mathematical relationship of GNP to time is calculated. This mathematical relationship is considered important because of its role in predicting future GNPs. A look at Figure 14b (deflated GNP) will indicate a parabolic curve, and following the procedure in Nickerson (31, p. 71) the equation for a parabolic curve is given by:

$$Y = a + bX + cX^2 + \Sigma$$

where y = GNP
 X = year
 a = intercept
 b and c = parameters to the estimated regression
 Σ = error term.

A regression is run on the deflated GNP. The model and procedure follow the Nickerson method. The regression equation for GNP is found to be:

$$\hat{Y} = \$7,447.50 + 809.17X + 93.60X^2 + \Sigma' \quad (\text{origin 1969})$$

This equation can be used to predict what the value of GNP would be in any given year. It will, thus, help policy makers to make an estimate of GNP for short term planning.

The question that arises here is why was oil production made the sole contributor to GNP by the government? The fact that oil is an exhaustible and nonrenewable resource would have brought to the attention of policy makers that while it should command an important role in the contribution to GNP, other sectors of the economy also should be developed. The huge

Table 16. GNP in current and 1975 prices for the years 1960-80

Year	Reported GNP (million ₦)	CPI (1975=100)	Deflated GNP (millions)
1960	2,401	35.0	6,860
1961	2,373	37.3	6,361.9
1962	2,526	39.2	6,443.9
1963	2,192	38.2	7,623
1964	3,127	38.5	8,122
1965	3,302	40.1	8,234.4
1966	3,532	44.0	8,027.3
1967	2,869	42.3	6,782.5
1968	2,802	42.1	6,655.6
1969	3,682	46.4	7,935.3
1970	5,125	52.8	9,706.4
1971	6,853	61.3	11,179.4
1972	7,133	62.9	11,340.2
1973	7,133	62.9	12,631.6
1974	16,586	74.8	22,173.8
1975	20,059	100.0	20,059
1976	24,522	124.3	19,728.1
1977	27,772	148.3	18,726.9
1978	28,716	176.0	16,315.9
1979	--	195.6	--
1980	--	217.9	--
	174,692		194,856.29

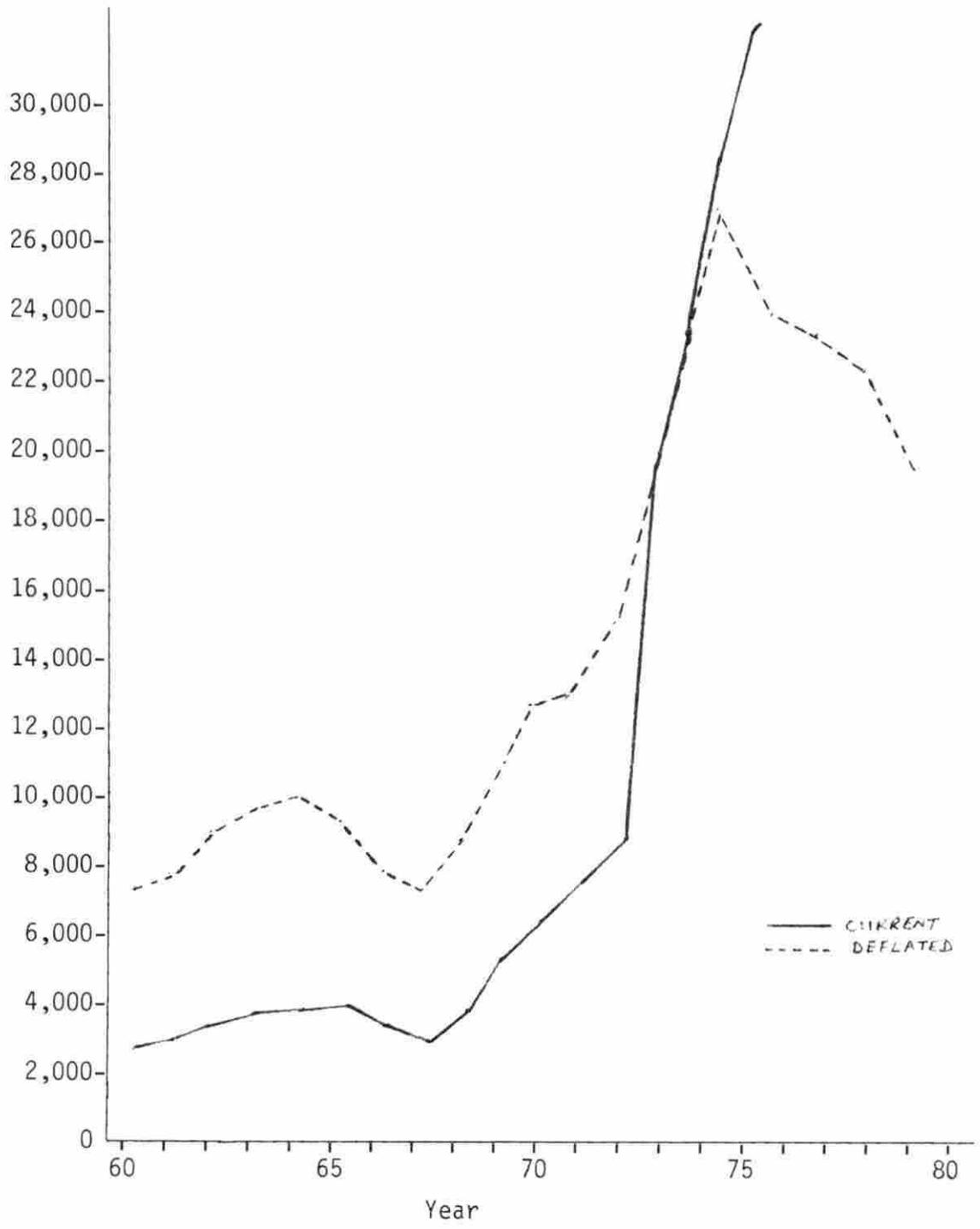


Figure 14a. Gross National Product in current and deflated Naira

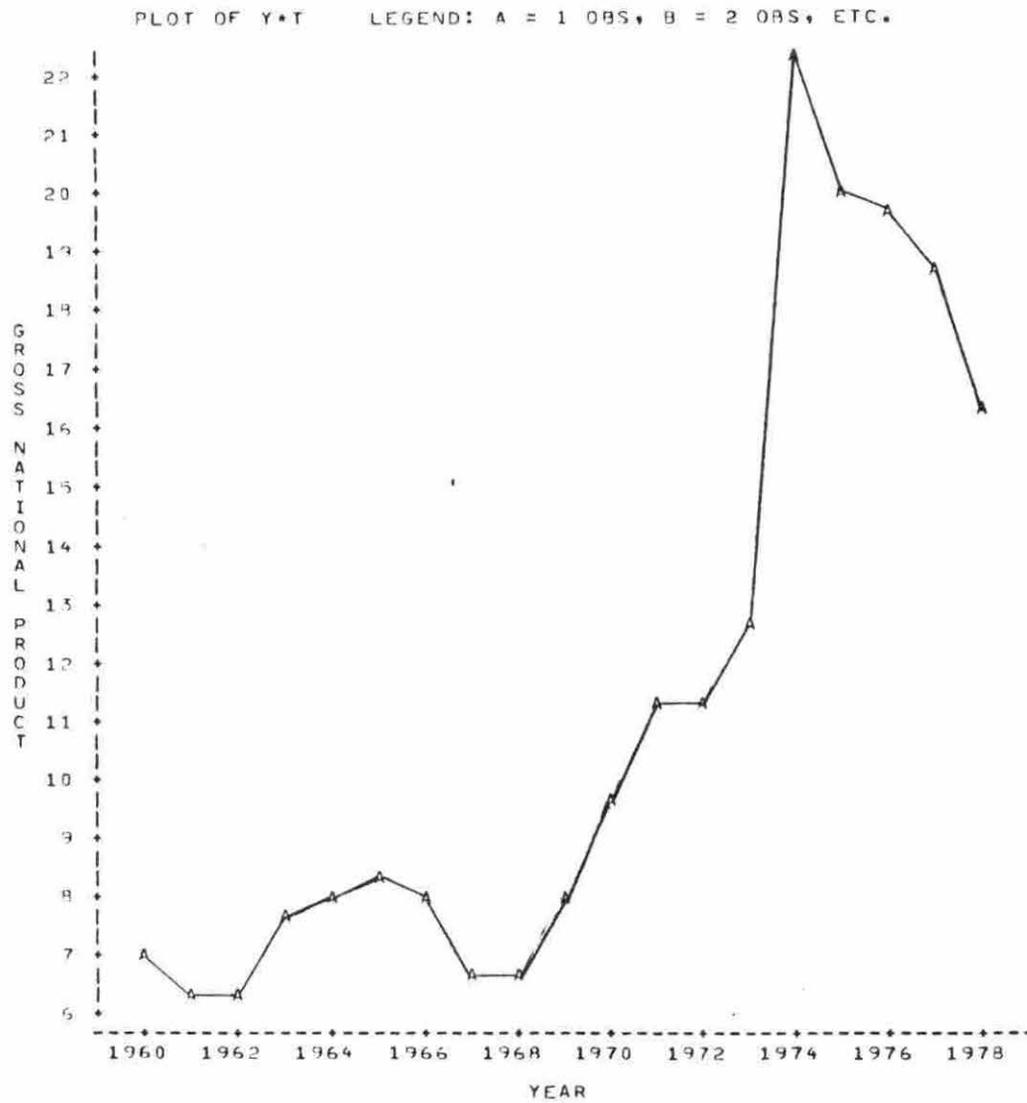


Figure 14b. Plot of Gross National Product and time

revenue from oil could have served the basis for developing other sectors. The fact that oil production is on the decline in Nigeria now is basically because oil production and use is influenced by alternative sources of energy as well as by price. Since oil consumption itself is influenced by the level of industrialization of a particular country, this should have sent a signal to policy makers to diversify their export of oil to as many of the industrialized nations as possible, instead of concentrating the exports to a particular country. In this case, there would be stability in income earnings because one country alone cannot significantly affect the export price and policy in Nigeria.

B. Total Imports and Oil Production

Since total imports rose dramatically during the oil production period, a regression is also run on the two variables with total imports as the dependent variable and oil production as the independent variable. A look at Figure 15 indicates an exponential function of the form

$$g = ae^{bp_i \Sigma^1}$$

where Σ^1 = random error
 p_i = independent variable (oil production)
 a and b = parameter estimates
 e = natural log function.

Linearizing the equation, we get:

$$\begin{aligned} \ln g &= \ln(ae^{bp_i \Sigma^1}) \\ &= \ln a + bp_i + \ln \Sigma^1 \end{aligned}$$

If we let $M = \ln g$
 $\beta_0 = \ln a$
 $\beta_1 = b$
 $\Sigma^1 = \ln \Sigma^1$

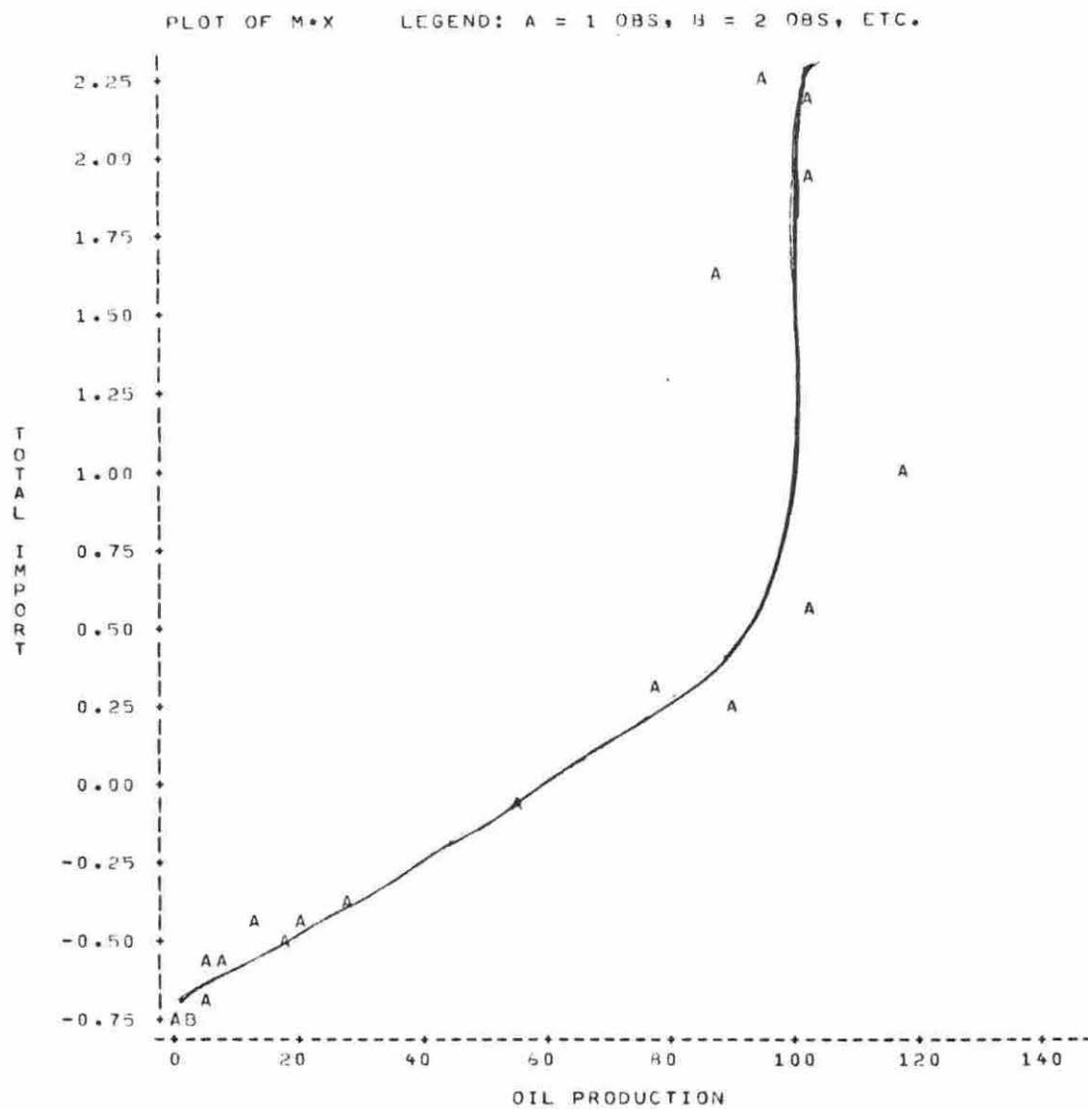


Figure 15. Plot of total imports and oil production

Then we have a straight line linear model of the form:

$$M = \beta_0 + \beta_1 P_1 + \varepsilon^1$$

This regression model above as used in Mendenhall and Reinmuth (30, p. 432) is applied to provide a prediction equation for total imports (\hat{M}) as follows:

$$\hat{M} = .45 + .021P_1 + \varepsilon^1$$

This equation defines the relationship of oil production to total imports.

The standard error of the estimate, denoted by S (Table 17), which measures the average disparity between the actual and estimated values of the variable M is found to be .00279. It should be noted that the standard error S can be regarded as an indication of how well the regression equation describes the relationship between the two variables. If S is small, the actual and estimated values of M must be reasonably close, and the regression equation is a good description of the relationship. If $S = 0$, the actual and estimated values of M must have been identical, and the regression equation is a perfect description of the relationship. A large value for S means a large disparity between the actual and the estimated values of M , and the regression equation is regarded as a poor description of the relationship between the two variables.

In this present case, S is found to be .00279, which indicates a close relationship between oil production and total imports. With the regression equation as $\hat{M} = .45 + .021P_1$, we may now predict M for a given value of P_1 by referring to the plotted regression. For example, with a projected oil production of 88.4 million M.T.,

$$\hat{M} = 2.3064 \text{ billion Naira.}$$

Table 17. Summary of statistical results

Dependent & independent variables	Indications of relationship	S	r	r ²	t
Regressing total imports and oil production	df = 17	.00279	.87	.76	7.502
Regressing government consumption and oil production	df=17	.00259	.91	.83	9.108
Regressing private consumption and oil production	df=17	.00174	.91	.83	9.128
Regressing consumer price index and oil production		.00123	.87	.75	7.07
Regressing cocoa production and oil production	df=17	.001002	-.5	.25	-2.112

Figure 16 shows the observed and predicted values for total imports for all the data set.

The practical question we pose concerns the value of β_1 , which is the average change in M for a 1 unit change in P_1 . Stating that M and P_1 are not linearly related is equivalent to saying that $\beta_1 = 0$. Formulating a hypothesis to test this result, the null hypothesis would be: $H_0: \beta_1 = 0$, while the alternate hypothesis would be: $H_a: \beta_1 \neq 0$. Doing a t test for the analysis at $\alpha = .05$, we reject H_0 when the test statistic $t > 2.110$ or $t < -2.110$ (i.e., the critical value). A value of 7.502 is obtained for the test statistic t (see Table 17). Observing that the test statistic exceeds the critical value of t , we reject the null hypothesis that $\beta_1 = 0$, and conclude that there is evidence to support the theory that total imports is linearly related to oil production, with a 95% confidence limit of $.021 \pm .025$.

The coefficient of correlation on the other hand is a measure of linear correlation and is commonly used as an indicator of the strength of the linear relationship between the two variables, P_1 and M , that will be independent of their respective scales of measurement. It should be realized that the standard error is affected by changes in the units of M . It is for this reason that it is not regarded as a good measure of the degree of relationship. What is needed instead is a measure that is abstract and unaffected by any change in the units in which M is measured. Such a measure is called correlation coefficient and is indicated with the notation ' r '. The value for r here is found to be 0.87. It is important to note that a positive value for r implies that the lines slope upward to

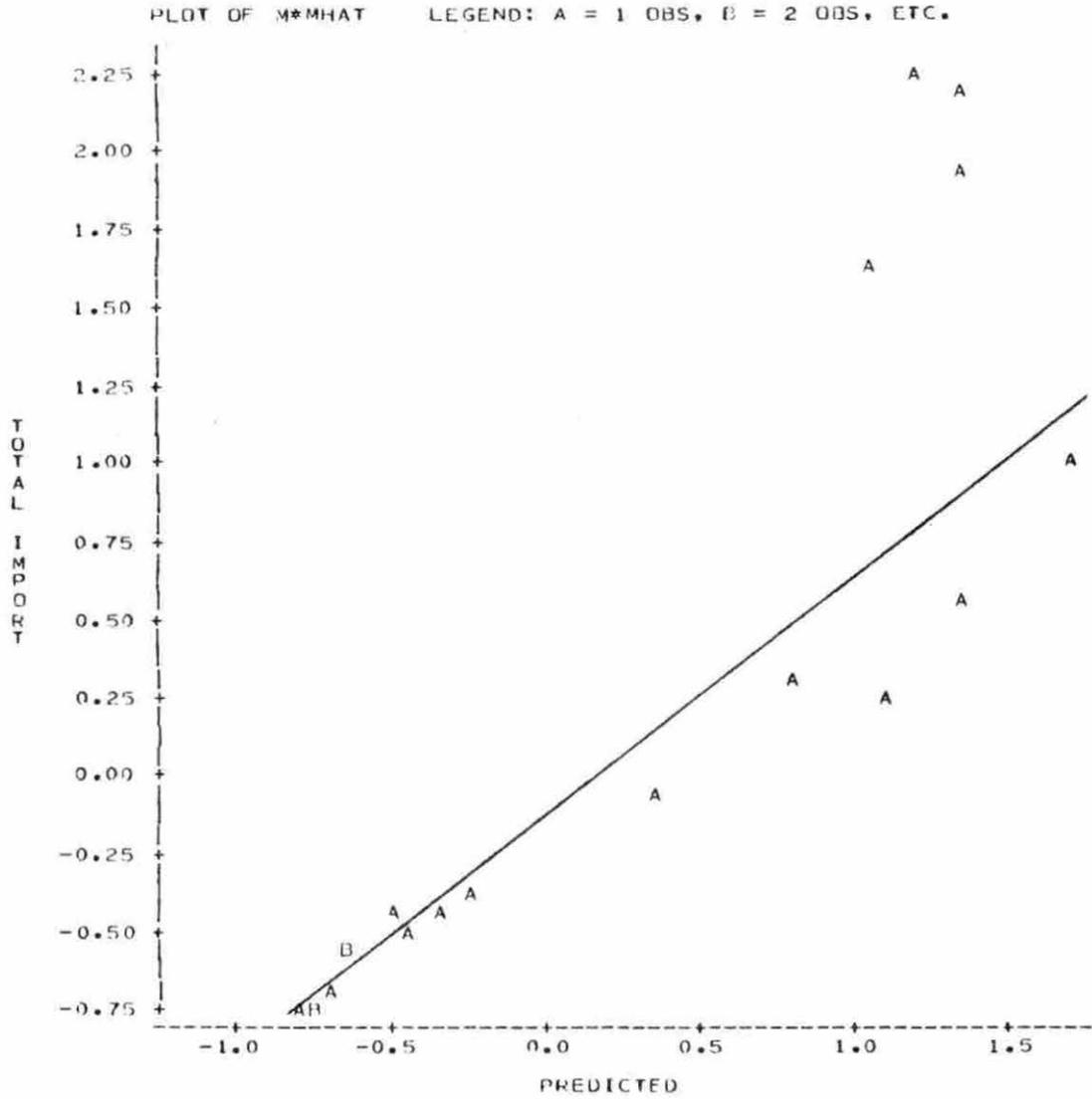


Figure 16. Plot of observed and predicted values of total imports

the right (see Figure 15). The value for the ratio of explained variation to total variation, which expresses the proportion of the variation in M which is associated with or related to the variation in P_1 is given by r^2 and is called the coefficient of determination. The value here is found to be 0.76.

From the analysis of r^2 , we conclude that 76% of the variance in imports is related to or explained by the variations in oil production. From the value of r , we know that there is a strong relationship between the variables P_1 and M (oil production and total imports). A summary of the values for these relationships is shown in Table 17.

The factors that caused this positive relationship between total imports and oil production include the fact that there was much money from oil and the urge for importations increased. With the revenue from oil came massive labor movements from rural to urban centers for the quest of the petro-naira. Food production declined and Nigeria was forced to import food items. With the oil revenue also came the desire and preference for foreign goods in place of locally produced ones. Part of the reason for this preference is the notion that 'made in Nigeria' goods are of low quality and high cost. The quality and cost are directly linked to the fact that Nigeria has not fully developed a standard industrial economy. The few industries around depend solely on importation for their equipment and machinery as well as raw materials. The large number of foreigners in Nigeria have also contributed to this massive importation since most of the things they use have come from their home countries. Effective policies to curb this run away importation should thus focus on these items

mentioned above.

C. Government Consumption and Oil Production

For government consumption and oil production, Figure 17a indicates an exponential function and the regression equation was found to be:

$$G = .162 + .024P_2 + \Sigma^1.$$

Using 1975 data with a projected oil production of 88.4 million M.T., the value of $G = \text{N}2.2836$ billion. Figure 17b shows the observed and predicted values for government consumption. The value of S (Table 17) is shown to be .00259. Here again the value of S is small and indicates that the regression equation indicates a close relationship between oil production and government consumption.

Once again, testing the hypothesis $H_0: \beta_1 = 0$ and the alternate hypothesis $H_a: \beta_1 \neq 0$. With $\alpha = .05$, we reject H_0 because the value of the test statistic t of 9.108 is greater than the critical value of 2.110. We therefore, conclude that there is evidence to support the theory that government consumption is linearly related to oil production, with a 95% confidence limit of 0.024 ± 0.0096 . The value of r which is the coefficient of correlation is found to be 0.91 and since it is positive, it again indicates an upward slope to the right (see Figure 17b). This also indicates a close relationship. R^2 is shown to be 0.83, which implies that 83% of the variance in government consumption is explained by the variation in oil production.

The reason for the massive increase in government consumption with the increase in oil production can be attributed to different factors. Among them are: with the increase in oil production and revenue, the

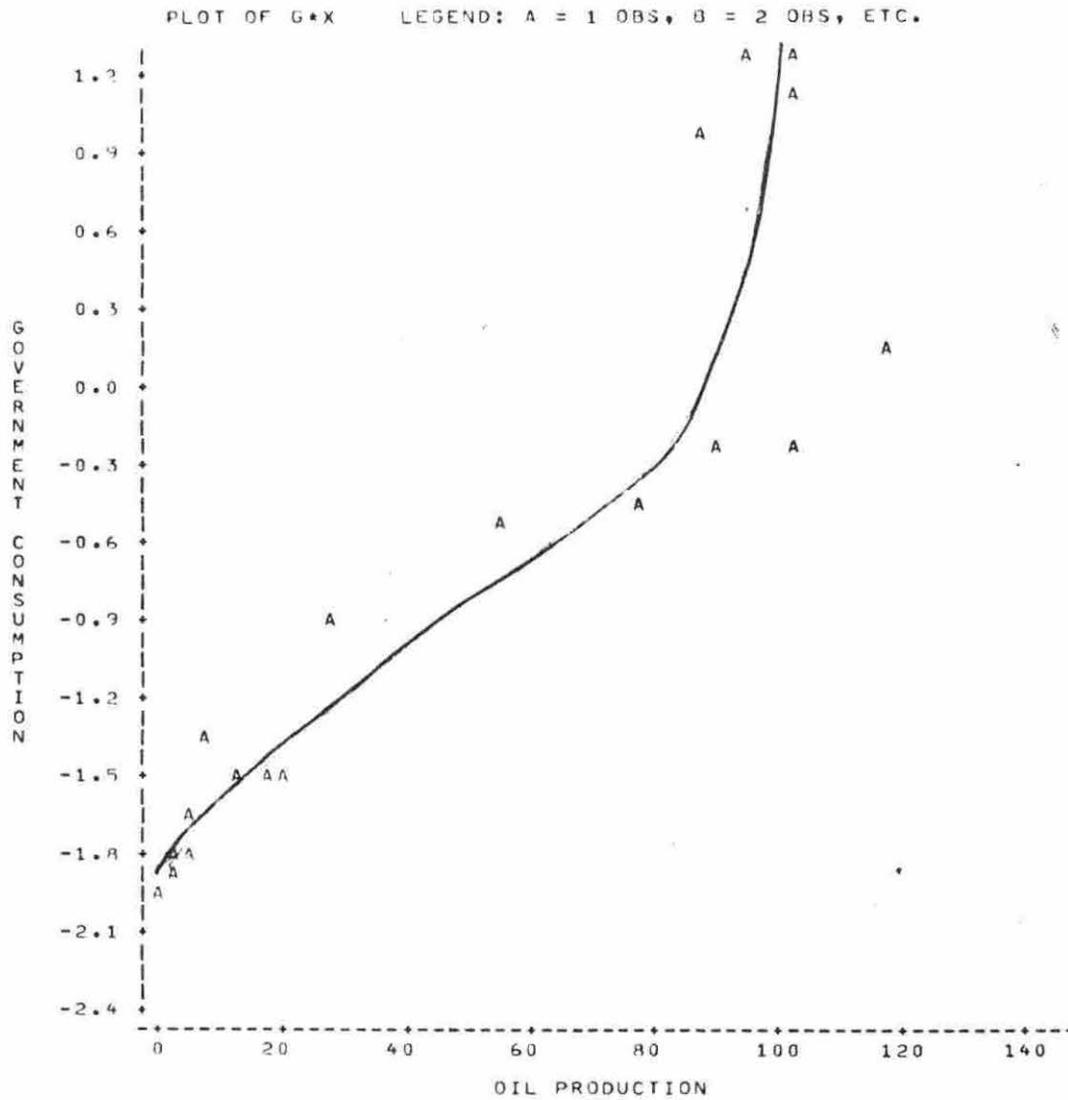


Figure 17a. Plot of government consumption and oil production

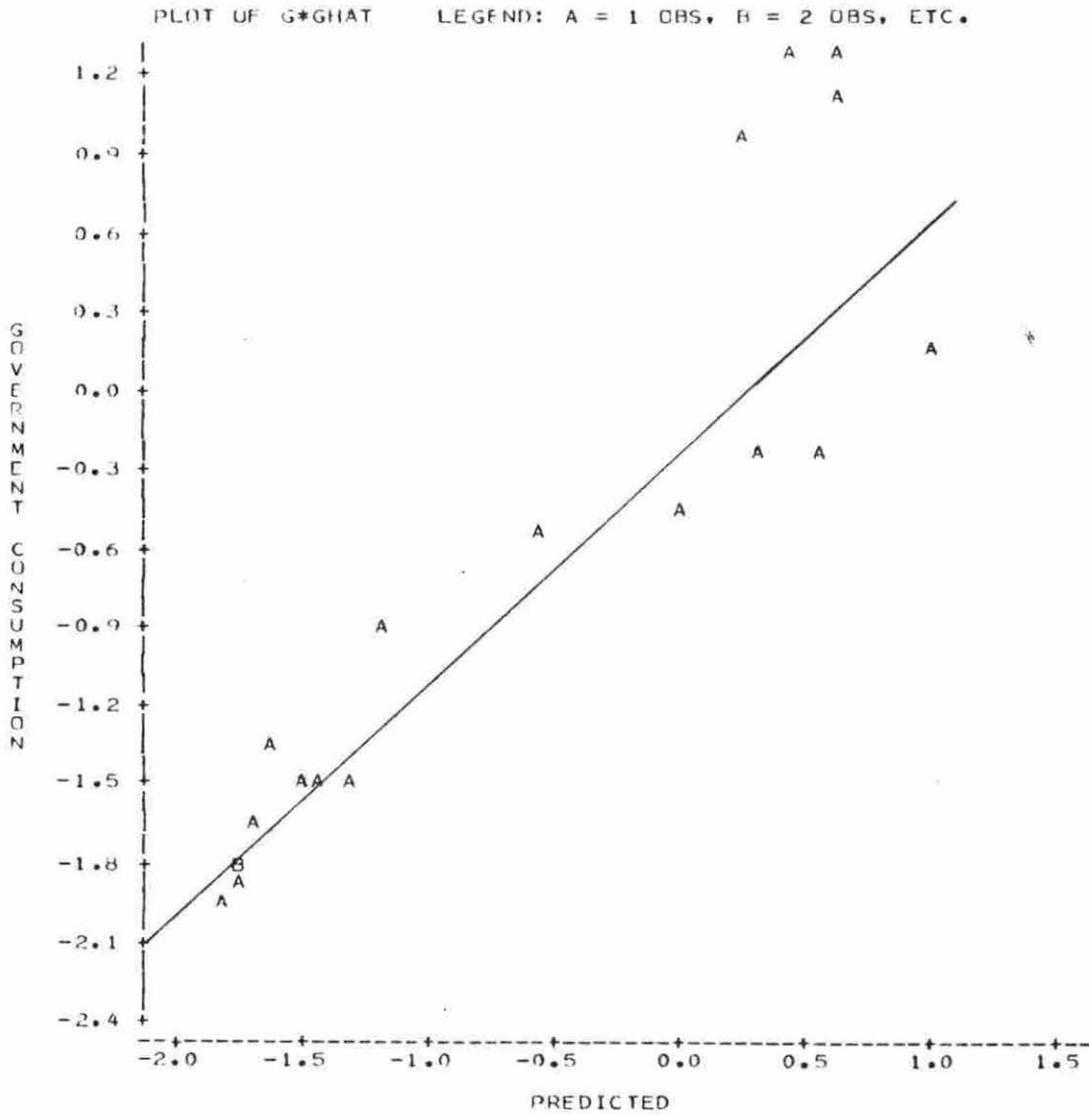


Figure 17b. Plot of observed and predicted values of government consumption

government embarked on massive and gigantic projects such as the development of a new federal capital territory, massive reconstruction of cities destroyed by the civil war, addition and expansion of highways, bridges and airports and schools, and other infrastructures. The creation of states in the country, the hosting of the 'All African Games' in Nigeria and the 'All African Festival of Arts and Culture' within a few years contributed to the rise in government consumption and expenditure. With the oil revenue came massive foreign policy backings for other African countries with the petro-naira. The fact that Nigeria maintained a huge number of military personnel during and after the civil war, and the civil war itself added to the increase in government expenditure and consumption. Though some of these consumptions are unavoidable, the avoidable ones should be curtailed. Development and progress should be gradual and not instantaneous. Policies geared towards the development of the country through government expenditures and consumption should be taken piece by piece. All the above factors led to a massive creation of bureaucracies that consumed almost half of the total amount appropriated for government consumption. Policies that attempt to curtail the rate of this consumption should advocate a shake-up in the bureaucratic structures.

D. Private Consumption and Oil Production

For private consumption and oil production, Figure 18a indicates an exponential function and the regression equation is shown to be:

$$\hat{C} = 2.058 + .0159P_3 + \Sigma^1$$

Using 1975 data, with oil production of 88.4 million M.T., private consumption is shown to be ₦3.4636 billion. Figure 18b shows the plot of

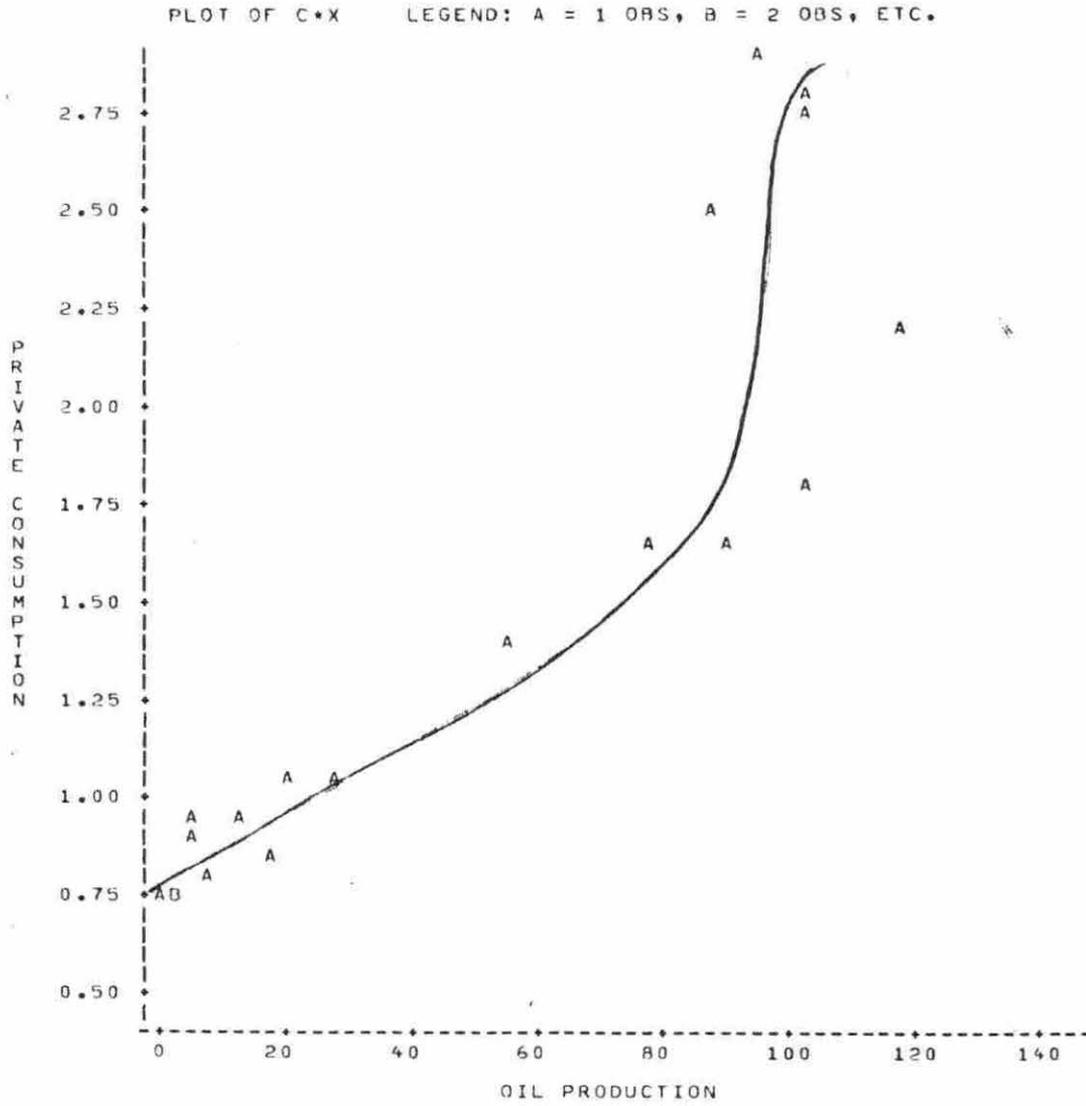


Figure 18a. Plot of private consumption and oil production

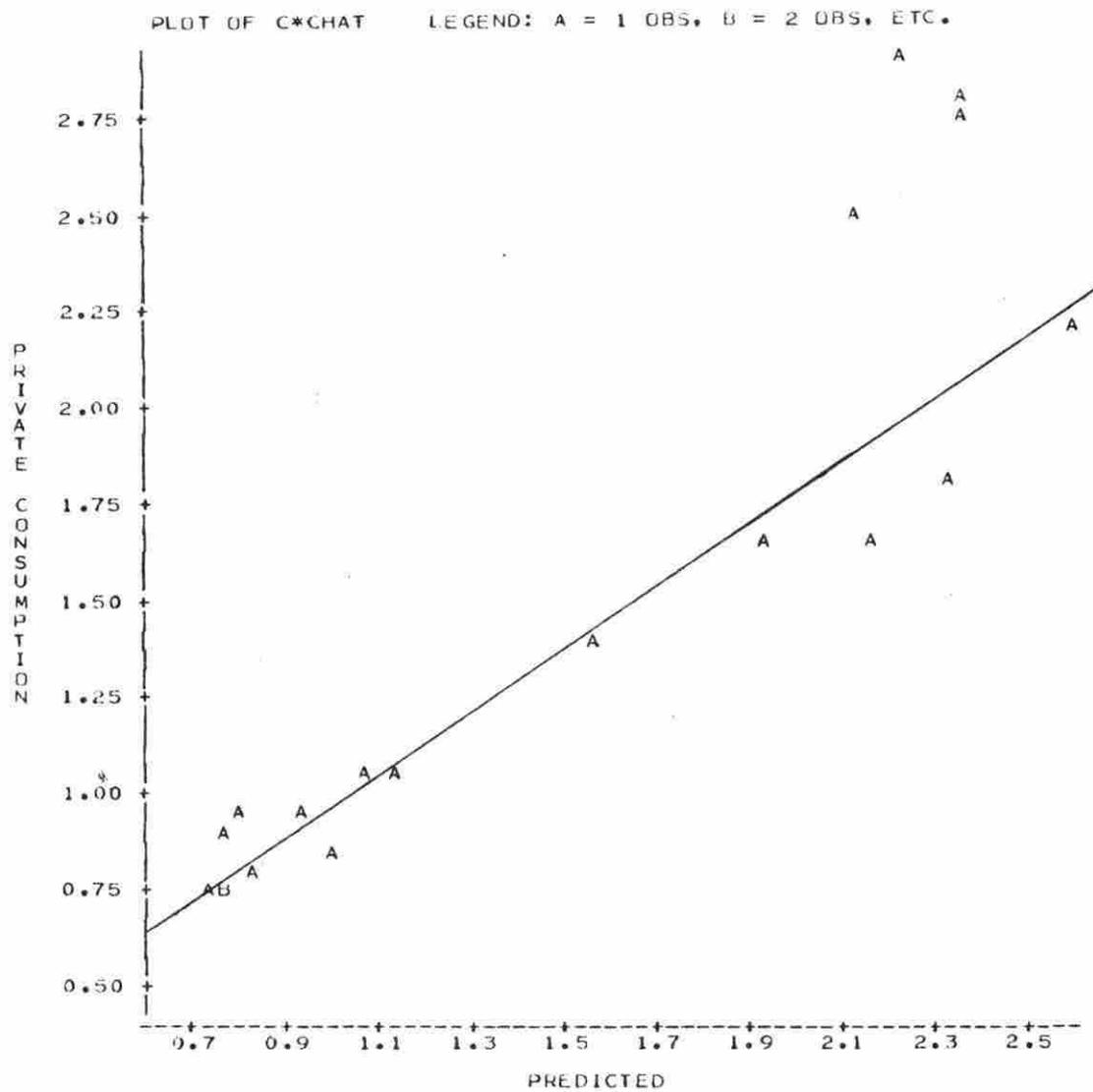


Figure 18b. Plot of observed and predicted values for private consumption

observed and predicted values for private consumption. The value of S in Table 17 is shown to be .00174. Here again, the value of S is small and indicates that the regression equation is a good description of the relationship between oil production and private consumption.

The hypothesis to be tested here is again: $H_0: \beta_1 = 0$, and $H_a: \beta_1 \neq 0$. With $\alpha = .05$, we reject H_0 because the value of the test statistic 't' of 9.128 is greater than the critical value of 2.110. We, therefore, conclude that there is evidence to support the theory that private consumption is linearly related to oil production with a 95% confidence limit of 0.016 ± 0.039 .

The value of r is found to be 0.91 and since it is positive, the lines slope upward to the right (see Figure 18a). R^2 is shown to be 0.83. We, therefore, conclude that 83% of the variance in private consumption is explained by the variations in oil production.

The question posed by the positive relationship between oil production and private consumption is: why was there such an urge to consume? For one thing, with the increase in oil production and oil revenue came salary increases for workers. Though only about 10% of the working population benefited from these salary increases through the Udoji and Williams awards, the effect of the increase trickled down to other sectors. There were high levels of importations, and because of the inadequate taxing system, the individual disposable income was allowed to swell out of proportion. Social status also indicated the rate of consumption. It is no surprise to see a very rich family with more than five automobiles for private use. Family size also influenced private consumption. With the

population boom came an increase in food consumption and the consumption of such items like clothing, housing, health care services, etc.

The policies of the government as mentioned above was responsible for these increases. Inadequate measures should have been taken in recommending salary increases without commensurate productivity. People also need to be educated on the importance of savings and investment in the economy. For these purposes, rural banking should be encouraged and supported by the government. It will give people an incentive to invest their surpluses instead of use for uncontrollable consumption.

E. The Consumer Price Index and the Oil Production Index

For the consumer price index and oil production index, an exponential function is adopted (see Figure 19a) and the regression equation is given as:

$$\hat{A} = 36.15 + .0087P_4 + \Sigma^1$$

From the above equation, consumer price index (A) can be predicted for a given value of oil production index (P_4). Figure 19b shows a plot of the observed and predicted values for the Consumer Price Index. The value of S in Table 17 is shown to be 0.00123. The value of S here is small, therefore, a good description of the relationship between the two variables can be deduced.

The hypothesis to be tested is given as: $H_0: \beta_1 = 0$ and $H_a: \beta_1 \neq 0$. With $\alpha = .05$, we again reject H_0 because the value of the test statistic t of 7.07 is greater than the critical value of 2.110 and we conclude that

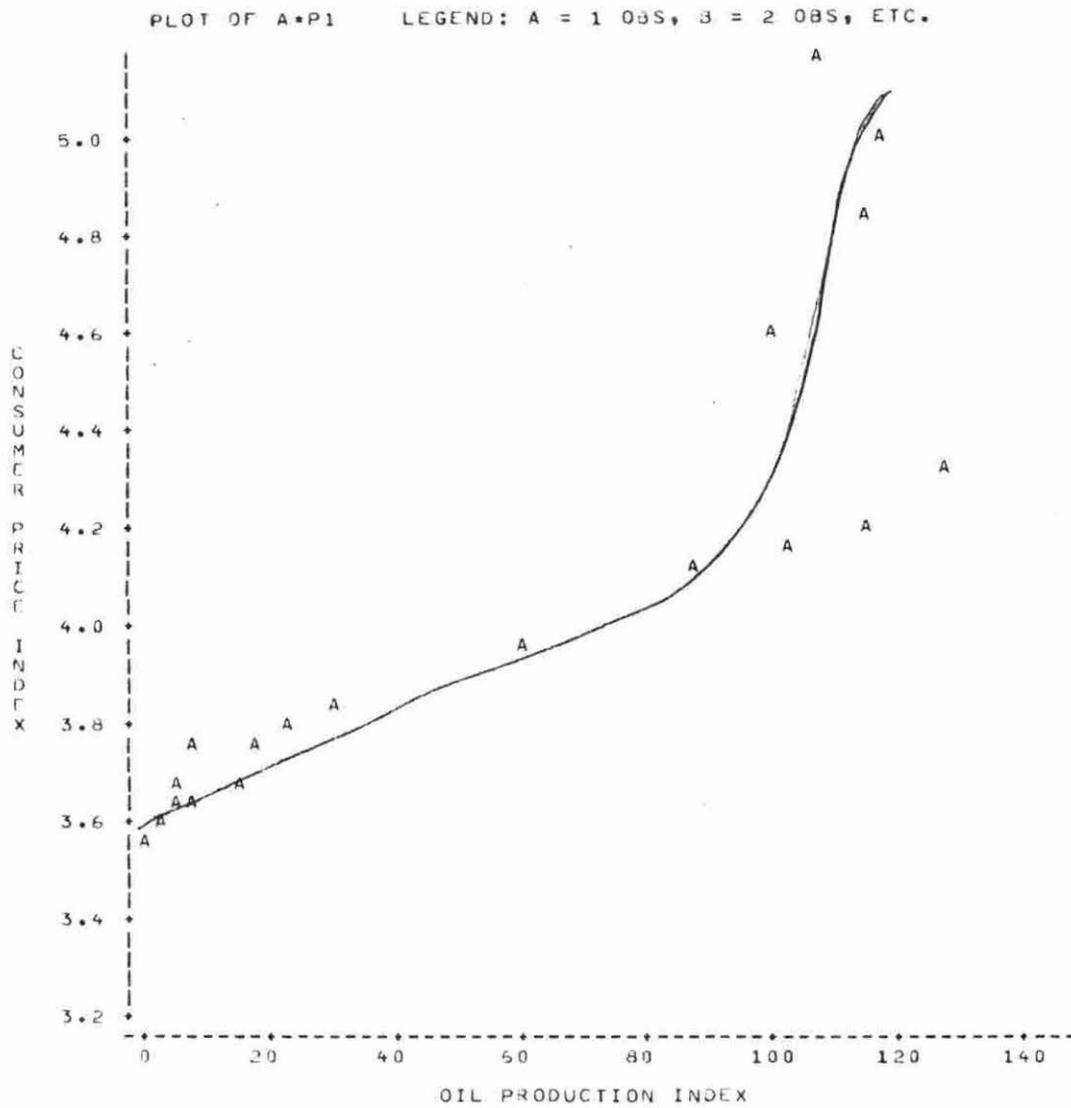


Figure 19a. Plot of consumer price index and oil production index

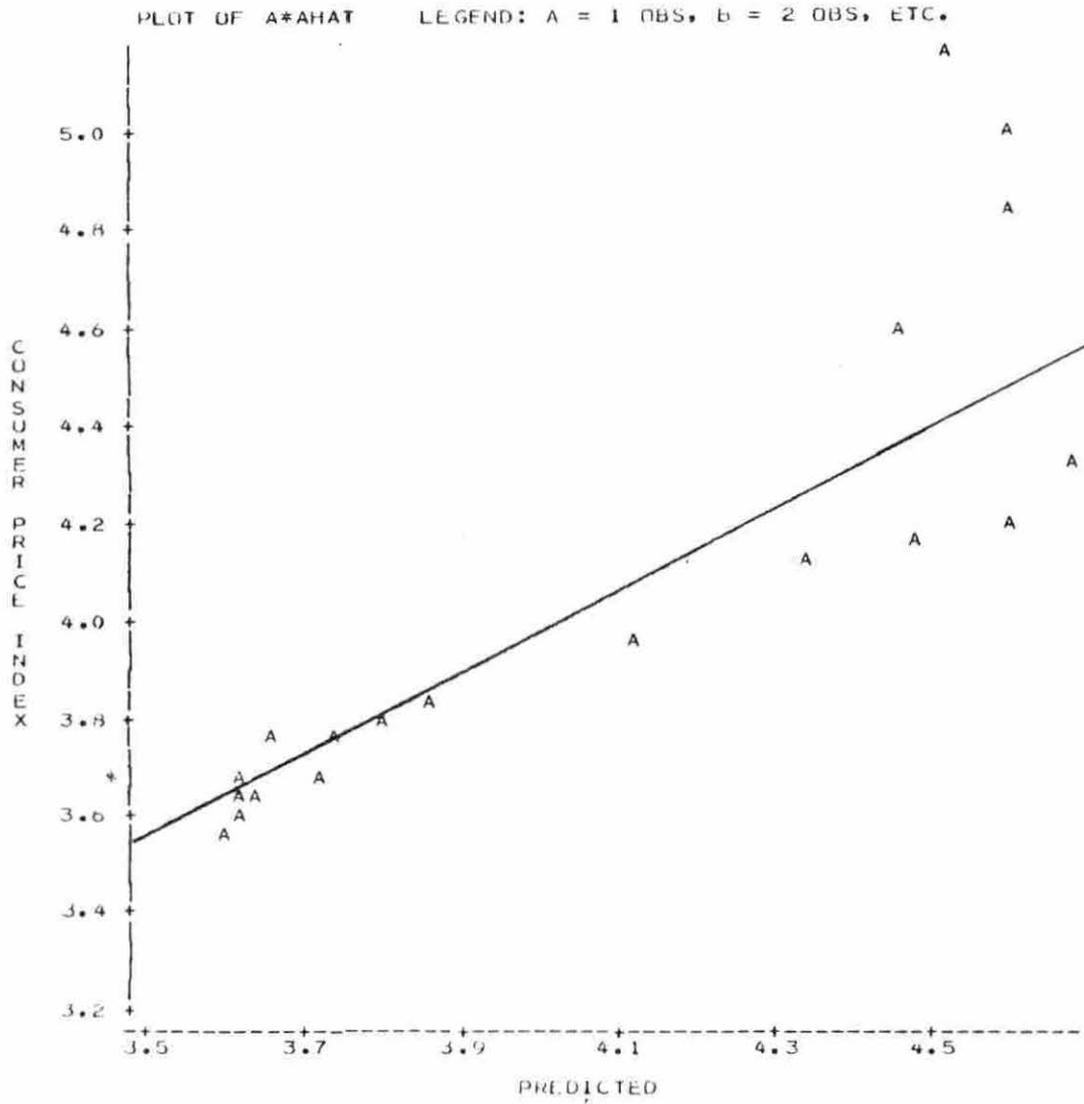


Figure 19b. Plot of the observed and predicted values for the consumer price index

there is evidence of a linear relationship between consumer price index and oil production index, with a 95% confidence limit of 0.0057 ± 0.351 .

The value of r (Table 17) is found to be 0.87. Since r is positive, the lines slope upward to the right (see Figure 18). R^2 is shown to be 0.75. We conclude, therefore, that 75% of the variance in the CPI is explained by the variations in the oil production index.

The factors causing the positive relationship between the consumer price index and the oil production index hinges on some of the reasons mentioned earlier with the other variables. Since the CPI attempts to measure the extent to which prices paid by typical city wage earners and clerical workers for a typical bundle of commodities bought by such workers have changed in comparison with some arbitrary base period; thus, it is a special index that is most commonly referred to with regard to price stability. The high rise in the CPI, even in the fact of rapid unemployment is an evidence of great instability and of course a high rate of inflation. Some of the reasons for this high rate in the CPI include: the exchange rate policies, the need for hard currency, high consumption of goods and services without comparable increase in productivity, and the fact that too much money was pumped into the economy in so short a time without enough commodities to buy them with. Policies should, therefore, gear to the stabilization of the consumer price index and not to allow the oil revenue dictate the pace of the CPI, through the policies of the government.

F. Cocoa Production and Oil Production

Finally, for cocoa production and oil production, a look at Figure 20 indicates a quadratic function and following the procedure in Mendenhall and Reinmuth (30, p. 348), the equation will be given by:

$$Q = \beta_0 + \beta_1 P_{5^*} + \beta_2 P_{5^{**}} + \Sigma^1$$

where $P_{5^*} = P_5$
 $P_{5^{**}} = P_5^2$

The regression equation for cocoa production and oil production is thus shown to be:

$$\hat{Q} = .202 + .002P_5 - .0000204P_5^2 + \Sigma^1$$

The value of S (Table 17) is shown to be .001002. The small value for S indicates that the regression equation is a very good description of the relationship between oil production and cocoa production.

For the slope of the line β_1 , the hypothesis is once more to test that: $H_0: \beta_1 = 0$ and $H_a: \beta_1 \neq 0$. With $\alpha = .05$, we reject the null hypothesis (H_0) because the test statistic t of 2.112 is greater than the critical value of 2.110. A linear relationship is thus implied, with a 95% confidence limit of -0.0000204 ± 0.0004625 .

The value of r is shown to be -0.5 and since it is negative, it indicates a downward sloping to the right. R^2 is again shown to be $.25$. This indicates that 25% of the variance in cocoa production is explained by the variation in oil production.

It is basically government policies that caused the decline in cocoa production. As all the resources in the country were geared towards oil production and its allied industries, people moved to urban centers where

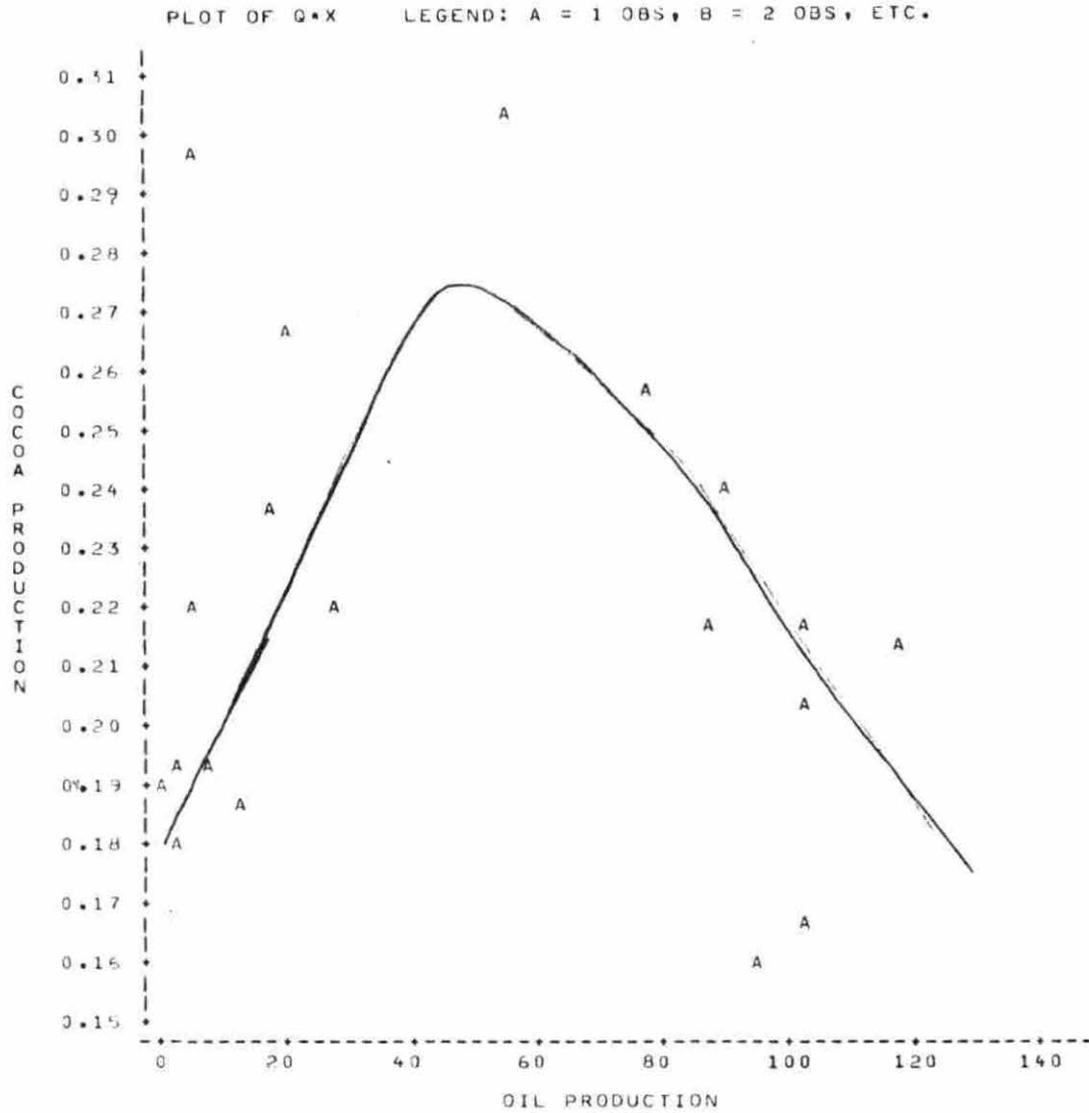


Figure 20. Plot of cocoa production and oil production

it was perceived that the government investment on and from oil would benefit them. Hence, rural to urban migration trippled. The government did nothing to encourage local farmers to remain in the rural areas. The Udoji and Williams awards earlier mentioned favored mostly urban dwellers. Concentration of a few industries were prevalent in the urban areas. There were lack of price incentives for farmers to produce crops, and the notion that farming is a poor man's job helped to facilitate rural-urban movement and the consequent decline in agricultural production. To counteract this trend, government should blend their economic policies since the inception of oil production to accommodate agricultural production. These are the root causes of the decline in agricultural production and if agricultural production is to increase, efforts should be made to put-up an incentive system to retain farmers in the rural areas.

On the whole, one can see that all the variables above are interwoven with oil production and a high proportion of the blame rests on government policies on oil and agricultural production which precipitated these conditions and the ensuing changes.

VI. SUMMARY AND CONCLUSIONS

As can be seen from the whole analysis, the quantitative aspects of the research reinforced the qualitative aspect earlier analyzed. Another thing which the quantitative section did is to have a tool for future policy making. In actual fact, it is seen that while GNP in current Naira increased, when deflated to 1975 Naira, GNP decreased (see Figure 14a). A mathematical equation was thus derived with the deflated GNP, which should be able to predict what GNP would be in a particular year. This will help policy makers to plan accordingly by projecting what GNP would be and institute policies to increase or stabilize it in a particular year. Thus, for the predicted estimation of GNP, the equation is:

$$\hat{y} = \$7,447.58 + 809.17x + 93.60x^2 + E$$

The analysis also confirmed that there is a linear relationship between total imports and oil production. A positive value was obtained for the coefficient of correlation which indicates an upward slope to the right as shown in Figure 15. A prediction equation was shown as:

$$\hat{M} = .45 + .021P_1$$

This would help policy makers to predict what total imports would be given a certain amount of oil production. If the prediction is too large or too small, then policy makers should institute reforms to bring importations to line.

The same is true with government consumption and private consumption. Both have positive 'r' values indicating positive slope upwards to the right as can be evidenced in Figures 17a and 18a, respectively. The analysis

also showed a linear relationship between oil production and the intensity of consumption in the country. A prediction equation is again given to help the policy maker predict in advance what government or private consumption would be given a level of oil production. In this way, policies could be made that would curb excessive spending and consumption. For instance, if in 1965, government consumption was 10 billion Naira, suppose the equation predicts a 200% increase in government consumption within a year because of the level of oil production, policies could be put forward to adjust the increase in government consumption. This would help the country rather than hurt it.

The analysis showed also that there is a linear and positive relationship between consumer price index and oil production index, i.e., as oil production increased, CPI tends to increase also. A positive 'r' value was got indicating an upward slope to the right (see Figure 19a). Once again, a prediction equation was established to help policy makers adjust when inflation for instance is projected to be too high.

Finally, using cocoa production to represent agricultural production, the initial facts were validated that with increase oil production, cocoa production declined. Here, a negative value was got for 'r' indicating a downward slope (see Figure 20). A prediction equation is established also to guide policy makers in their attempt to improve agricultural production. For instance, if the prediction equation shows a downward trend, policies could be made to reverse the trend before it is too late.

Generally, what I have tried to do is to give the policy maker a tool for an effective policy formulation and implementation. Since oil

production is controlling the economy of Nigeria, it is worthwhile to examine some important variables relative to it, to see what the impacts are. I am not suggesting that this will solve the whole economic problems in the country, but it will go a long way to insure a more accurate prediction, a more adequate policy and planning and a more reliable economy. Researchers are invited to critically look at each variable and try to come up with a more accurate prediction since each variable is influenced not only by oil production but by many other factors. It is my belief that had adequate policies been formulated and implemented, oil production would only be a blessing for Nigeria.

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