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DETERMINING THE PRICE OF PETROLEUM PRODUCTS IN NIGERIA AND THE ISSUE OF PRICE SUBSIDY
by
Dr. M. A. Uduebo*

ABSTRACT
The paper examines the issue of petroleum products pricing in Nigeria and the issue of price subsidy. It is based on the cost structure provided by the NNPC to the Belgore Tribunal of Enquiry into Fuel Shortage in Nigeria in 1992

In determining the cost of petroleum products in Nigeria, two types of cost structures are examined - cost of production plus NNPC operational costs and opportunity cost of crude oil plus NNPC operational costs. The cost of production plus NNPC operational costs approach includes the cost of crude oil production or "well-head cost", NNPC operational costs, NNPC profit margin and marketers' profit margin. In the second approach, the opportunity cost of crude oil is used instead of the "well-head cost"; all other cost items are similar. The illustrative quantity of crude oil refined into petroleum products is one barrel. The petroleum product yields are also determined. Based on all these, the prices of the various products are determined.

The findings of the study indicate that using the cost of production plus NNPC operational costs approach, the calculated prices of the petroleum products are not only lower than those effective from November 1993 but also those introduced in March 1991. For instance, as against the calculated prices of 74.7 kobo for gasoline, 49.5 kobo for diesel, 31.5 kobo for kerosine., and 44.3 kobo for fuel oil, the respective retail prices effective November 1993 are N3.25, N3.00, N2.75 and N2.50. In fact, there has been no price subsidy on petroleum products since the price of March 1991. Using the opportunity cost plus NNPC operational costs approach, the calculated prices of the products are higher than the retail prices which prevailed prior to November 1993, indicating existence of price subsidy on the products. However, since that date, the calculated prices have been lower than the retail prices. For example, while the current retail prices are N3.25 for gasoline, N3.00 for diesel, N2.75 for kerosine, and N2.50 for fuel oil, the respective calculated prices are 113.6, 86.9, 57.1 and 77.6 kobo. Thus, as in the case of the first approach, there is no longer price subsidy on petroleum products.

Finally, the paper proposes adoption of the first approach although adoption of the second approach would not lead to higher product prices. Also, considering the spate of price increases on virtually all products in the country, it argues, though not supported by the calculated prices, that there is justification for some increase in the prices of petroleum products.

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1. INTRODUCTION

The desire and determination of the government to remove the subsidy on petroleum products became evident since 1986 when the Structural Adjustment Programme was introduced. Attempts since then to remove the subsidy were thwarted by the resistance of consumers and the general public.

Efforts to remove the subsidy intensified again since January 1993. The government and the Nigerian National Petroleum Corporation (NNPC) embarked on vigorous campaigns to educate the public, including intellectuals, on the need to remove the subsidy. The reactions to the need to remove the subsidy were mixed: while some people particularly the elite and intellectuals supported removal of the subsidy, several others including the low income persons and the labour unions were opposed to the removal. However, on August 3, the government introduced under the brand name "super three star" a price increase for gasoline from 70 kobo per litre to N7.50 per litre. As a result of public agitations, the price increase was withdrawn and the price was retained at 70 kobo per litre. Again on November 8, 1993, the government increased the pump price per litre of petrol from 70 kobo to N5.00; diesel, from 55 kobo to N4.75; kerosine, from 50 kobo to N4.50; and fuel oil from 55 kobo to N4.00. The price increases led to further agitations and strike action by workers. After strenuous negotiations between government officials and the labour unions, new lower prices effective November 18, 1993 were fixed as follows: petrol, N3.25; diesel, N3.00; kerosine, N2.75; and fuel oil, N2.50.

The government, while recognising the hardships the subsidy removal would cause consumers of the affected petroleum products, appealed to everyone for understanding and cooperation and emphasised the rationale for the measure. These include the need to: enhance the productive and distribution capabilities of the oil companies, NNPC and the oil marketers; generate more revenue to the government; align prices of petroleum products with other prices in the economy in consonance with the prevailing deregulation policy; conserve crude oil through rationalisation in the use of petroleum products; and to curtail smuggling of petroleum products into the neighbouring countries.

Since the new reduced prices were announced, there has been relative calm and acceptance from workers, students and consumers of petroleum products generally. During the debates on the subsidy on petroleum products, it was evident that many people do not have adequate information on costs of producing petroleum products and as such their positions on the issue were sentimental and subjective. The purpose of this paper, therefore, is to examine alternative approaches to determining prices of petroleum products. Accordingly, the rest of the paper reviews the evolution of pricing of petroleum products, the concept of subsidy, examines the cost structure of petroleum products, and proffers policy recommendations.

2. EVOLUTION OF PRICING OF PETROLEUM PRODUCTS

NNPC is in charge of producing and pricing of petroleum products in the country. According to the Organisation, prior to January 1986, prices of petroleum products were computed on a cost plus basis[1] at a time when the Naira value was at par with the U.S Dollar. The price of crude oil refined for domestic consumption was 80.0 per cent of the prevailing international market price, while the balance of 20.0 per cent was the subsidy allowed by government because crude oil was produced locally. The resultant product prices were then consistent with import parity levels, that is, the prices that would have been paid if all products were imported. The introduction of the Second Tier Foreign Exchange Market (SFEM) in September 1986, however, changed the relationship between the value of the naira and the dollar. This changed relationship undermined the original intention of government as reflected in the pricing of petroleum products for the domestic market by maintaining subsidy factor at 20.0 per cent in the price paid for crude oil refined locally[2]. With the continued depreciation of the naira against the dollar, the subsidy has increased over time, resulting in upward review of prices of petroleum products in order to maintain the original 20.0 per cent level of subsidy. Prices of petroleum products were reviewed upwards in January 1986, June 1987, April 1988, June 1989, March 1991 and November 1993 as a result of the depreciation in the value of Naira in the foreign exchange market. (See Table 1)

3. THE CONCEPT OF SUBSIDY

Subsidy can be defined in a narrow sense as a payment by governments, organisations or individuals in order to make the price paid by consumers lower than the cost of producing the subsidised product, such that the price is less than the marginal cost. In general terms, subsidy refers to a direct or indirect payment, economic concessions or privilege granted by the government to private firms, households or other governmental units in order to promote public objective[3]. These include welfare programmes designed to ameliorate inequalities in the distribution of income and others to mitigate the effect of market forces.

A distinction is sometimes made between direct or visible subsidies which are easy to identify and measure, and indirect or concealed subsidies which are difficult to identify and measure. Subsidies are implemented through a variety of financial techniques such as direct payments in cash or kind, governmental provision of goods or services at prices below the normal market price, governmental purchase of goods and services at prices in excess of the market price, and tax concessions cum similar inducements. Regardless of the form that subsidies take, direct or indirect, their purpose is to alter the results created by otherwise free market and unbridled competition in a direction consistent with the objective of public policy. The overall effect of subsidies is to encourage the growth of subsidised industries relative to industries that do not receive subsidies and thus to alter the uses to which an economy puts its resources.

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1   These include cost of crude oil, refinery processing fee, oil marketer's profit margin, excise duty, inland transportation and selling expenses.
2   NNPC "Domestic oil pricing and proposed formular for future pricing to enhance subsidies on refined petroleum products" 18th March, 1988.
3   The New Encyclopedia Britannica, Vol. 11, p 344.

TABLE 1
PRICES OF SOME PETROLEUM PRODUCTS
(KOBO PER LITRE)

PRODUCT	OLD PRICE/1 (1)	1986/2 (2)	1988 (3)	1989 (4)	1990 /4 (5)	1991 /5 (6)	1993 /6 (7)	ABSOLUTE CHANGE BETWEEN						PERCENTAGE CHANGE BETWEEN					
								(1) & (2)	(2) & (3)	(3) & (4)	(4) & (5)	(5) & (6)	(6) & (7)	(1) & (2)	(2) & (3)	(3) & (4)	(4) & (5)	(5) & (6)	(6) & (7)
Premium Motor Spirit	20.0	39.5	42.0	42.0 (60.0) /3	60.0	70.0	325.0	19.5	2.5	-42.0	60.0	10.0	255.0	97.5	6.3	42.9	0.0	16.7	364.3
Household Kerosine	10.5	10.5	15.0	15.0	40.0	50.0	275.0	0.0	4.5	0.0	25.0	10.0	225.0	0.0	42.9	0.0	166.7	25.0	450.0
Automotive Gas Oil (Diesel)	11.0	29.5	35.0	35.0	50.0	55.0	300.0	18.5	5.5	0.0	15.0	5.0	245.0	168.2	18.6	0.0	42.9	10.0	445.5
Fuel Oil	-	-	30.0	30.0	40.0	55.0	250.0	0.0	30.0	0.0	10.0	15.0	195.0	-	-	0.0	33.3	37.5	345.5
Aviation Turbine Kerosine (ATK)	19.5	30.0	113.6	100.0	100.0	105.0	550.0	10.5	83.6	-13.6	0.0	5.0	445.0	53.8	278.7	-12.0	0.0	5.0	423.8

/1   The price existing prior to January 1, 1986.
/2   Price became effective from January 1, 1986.
/3   A two tier pricing system of which private vehicle owners paid 60 kobo per litre and commercial vehicle owners paid 42 kobo per litre for gasoline
/4   The two-tier prices in 1989 was unified at 60 kobo per litre towards the end of the year due to abuse on its implementation.
/5   Prices became effective from 5th of March, 1991.
/6   Price became effective on November 19, 1993.

In the light of the above theoretical framework, the petroleum sector of any economy would have subsidy if the government sold the crude oil to any customer at a price below the marginal cost of producing the crude; if the cost of processing a unit of the crude is higher than the price the consumer pays for the same unit; and if the crude or product is sold in the domestic economy at a price below the price in the international market; that is, the opportunity cost of crude oil.

4. COST STRUCTURE OF PETROLEUM PRODUCTS IN NIGERIA

This section analyses the cost structure of petroleum products in Nigeria. The purpose of the analysis is to determine the appropriate price of petroleum products and, deriving from that, determine whether or not there is price subsidy and the amount of the subsidy involved. Two types of cost structures, constituting broad representative views currently discussed on the subject, are examined. These are the cost structures involving: cost of production plus NNPC operational costs; and opportunity cost of crude oil plus NNPC operational costs. Due to lack of information on marginal cost, the average cost of producing a barrel of crude oil is used in the analysis.

As most of the statistical data used in the study was obtained from the NNPC, there might be some elements of overstatement of the costs. This fear became apparent since the Belgore Tribunal of Enquiry of 1992 when the cost data submitted to the Tribunal by the NNPC were observed to be higher than the figures earlier acknowledged by the Corporation. For example, the cost of producing a barrel of crude oil, which the Corporation had earlier admitted averaged US$3.50, was increased to US$6.50 at the Belgore Tribunal. The upward revision of the cost data appeared to reflect the Corporation's desire to enhance mobilization of public support for increase in the prices of the petroleum products.

4.1 Product Yield of Nigerian Refineries

Apart from knowing the cost structure of the petroleum products, it is also very important to know the product yields of the Nigerian refineries in order to determine the prices of the products. This is what is done in this section.

In a general refining process, the following petroleum products are produced from a barrel of crude oil.

(i)	Liquefied Petroleum Gas (LPG)
(ii)	Premium Motor Spirit (Gasoline)
(iii)	Aviation fuel
(iv)	Kerosene
(v)	Automotive Gas Oil (AGO) or Diesel
(vi)	Lubricating oils
(vii)	Waxes
(viii)	High/low Pour Fuel oil (Fuel oil)
(ix)	Bitumen/Asphalt
(x)	Miscellaneous Products

However, the product yield from a barrel of crude oil varies from refinery to refinery and from one type of crude oil to another.

The product yield of the 4th refinery in Port Harcourt is shown in Annex 1. The table shows that product yields vary from year to year. But on the average, a barrel of crude oil yields 34.65 per cent of gasoline, 26.70 per cent of automotive gas oil, 15.67 per cent of dual purpose kerosene, 18.31 per cent of low pour fuel oil, and liquefied petroleum gas (LPG), 1.9 percent. This makes a total of 97.23 per cent. The balance of 2.77 per cent consists of refining fuel, flared gas, burnt coke and intermediate/slops.

The product yields of the Warri refinery for the past three years are shown in Annex 2. On the average, a barrel of crude oil yields 27.52 per cent of gasoline, 17.02 per cent of dual purpose kerosene, 23.21 per cent of automotive gas oil (AGO), 30.85 per cent of fuel oil, and 1.29 per cent of LPG, making a total of 99.89 per cent. The balance of 0.11 per cent is made up of petrochemicals. All these products are very useful.

Annex 3 shows the product yields of the Kaduna refinery. A barrel of crude oil yields 30.69 per cent of gasoline, 16.33 per cent of dual purpose kerosene, 21.52 per cent of automotive gas oil and 21.67 per cent of fuel oil, making a total of 90.21 per cent. The remaining 9.79 per cent consists of LPG, petrochemicals, base oil, refined waxes and asphalt. As in the Warri refinery, all these products are useful in allocating costs.

The above analysis indicates that all the products from a barrel of crude oil are useful and, therefore, become centres of cost allocation. On the average, the three refineries yield 32.16 per cent of gasoline, 16.16 of kerosene, 24.59 of automotive gas oil and 21.97 per cent of fuel oil, making a total of 94.88 per cent (See Table 2).

On the basis of these yields, it is estimated that of the 159 litres in a barrel of crude oil, gasoline accounts for 51.1 litres, kerosene, 25.7, gas oil, 39.1; and fuel oil, 35.0 litres. This gives a total of 151.8 litres. The balance of 8.1 litres is accounted for by products such as LPG, waxes, bitumen/asphalt, base oil, flared gas and burnt coke. Apart from flared gas and burnt coke which might be regarded as wastes and which form an insignificant share (less than 0.3 per cent) in the refining process, other products are very useful. In the final analysis, it is valid to say that a barrel of crude oil may yield nearly 159 litres of refined useful petroleum products.

4.2 Cost of Production of Gasoline plus NNPC Operational Costs

This concept consists of two major types of costs - the operational costs and cost of crude oil production. Other costs are NNPC margin calculated at 10% of total cost, and marketers' margin. The components of operational costs are shown in Table 3 below. The cost of crude oil production is the cost of producing a unit of crude oil, usually referred to as "well-head cost"[4]. The cost to government of producing a barrel of crude oil is currently estimated at US$6.50[5].

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4. Well-head cost consist of exploration, drilling and development costs.
5. This cost consist of technical costs of $4.20 and incentive production cost of $2.30 a barrel. The incentive cost is given to the oil companies to increase production and build up reserves to achieve the target of 25 Billion barrels by 1995.

TABLE 2
TOTAL OUTPUT AND AVERAGE PRODUCT
SHARE FOR ALL REFINERIES

Products	1990	(1) as percentage of the total	1991	(3) as percentage of the total	1992	(5) as percentage of the total	AVERAGE percentage of (2) + (4) + (6)
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Liquefied Petroleum Gas (LPG)	125,094.0	1.10	168,056.0	1.43	234,449.0	2.06	1.53
Premium Motor Spirit (PMS)	3,737,925.0	32.79	3,644,344.0	31.06	3,856,953.0	32.62	32.16
Aviation Turbine Kerosine	1,923,814.0	16.88	1,904,602.0	16.23	1,817,689.0	15.37	16.16
Automotive Gas Oil (Diesel)	2,738,542.0	24.02	3,003,810.0	25.60	2,853,815.0	24.14	24.59
Fuel Oil	2,560,337.0	22.46	2,687,019.0	22.90	2,428,770.0	20.54	21.97
Petrochemical	30,633.0	0.27	31,682.0	0.27	26,752.0	0.23	0.25
Refined Waxes	7,662.0	0.07	5,277.0	0.04	3,027.0	0.03	0.05
Base Oil	94,985.0	0.83	71,437.0	0.61	38,278.0	0.32	0.59
Asphalt	180,134.0	1.58	181,099.0	1.54	99,304.0	0.84	1.32
Refinery Fuel	NA	NA	NA	NA	237,979.00	2.01	0.67
Losses	NA	NA	NA	NA	94,107.00	0.80	0.27
Intermediate	(61779)	(0.54)	36,431	0.31	122,295.0	1.03	0.45
Flares	NA	NA	NA	NA	NA	NA	NA
TOTAL	11,399,126.0	100.0	11,733,757.0	100.0	11,822,391.0	100.0	100.0

NA Not available

Source: Computed from Annexes 1, 2, and 3

It is, however, important to note that the well-head cost only applies to crude oil production. It does not include the operational cost of refining, processing, distributing, and marketing of petroleum products. It is, therefore, important to include in the total cost structure the operational costs as indicated in the tables below as well as adequate profit margins for the NNPC and oil marketers.

The cost structure of producing a barrel of crude oil plus NNPC operational costs is shown below in Table 3.

TABLE 3
SCENARIO I
ONE BARREL OF CRUDE OIL IN NIGERIA:
COST OF PRODUCTION PLUS NNPC OPERATIONAL COSTS

Items	US$/Barrel
Operational costs	
Refining cost	1.81
Distribution	1.45
Headquarters overheads	0.62
NPA charges	0.01
Depreciation cost	0.38
Financial charges	0.51
Sub-total	4.78
Cost of producing a barrel of crude oil	6.50
Total production and operational costs	11.28
NNPC margin (10% of total costs)	1.13
Marketers' margin	2.13
Grand total costs	14.54

Source: Data submitted by the NNPC to the Belgore Tribunal of Enquiry into Fuel Shortage in 1992.

The cost structure above includes the operational costs as well as adequate profit margins for the NNPC and oil marketers. It also includes the cost of crude oil production or the well head costs; that is, costs of exploration, drilling and development. In effect, it takes into account all the cost concerns of the government, NNPC, oil companies and marketers. The cost are denominated in US dollars per barrel of crude oil.

Given: Total production and operational cost
              = U.S. $14.54 per barrel,
              Naira exchange rate = N22.00 to the US dollar,
              Total cost = 14.54 x N22.00 = N319.88 per barrel.

Given also that one barrel of crude oil contains 159 litres, the cost of producing one litre is:

N319.88   159 = N2.01.

As stated earlier, a barrel of crude oil (and consequently a litre of crude oil) contains several varieties of petroleum products. Therefore, the cost of producing one litre given above (N2.01) is the cost of producing all the varieties of petroleum products contained in the litre of crude oil. In other words, the cost of producing the total "basket" of petroleum products in one litre is N2.01. Given the proportionate yield of each petroleum product from a barrel/litre of crude oil refined, the cost of producing each product is shown in column 2 of Table 5 below.

It is interesting to observe that the retail prices of the petroleum products which prevailed prior to the November 1993 price increases strongly reflected the costs of production of the products.   For example, comparison of the costs of production (Table 5, column 2) with the retail prices (Table 2, column 6) shows that the retail price of gasoline was 70 kobo while the production cost was 65 kobo; the price of diesel was 55 kobo while the production cost was 50 kobo; the price of kerosene was 50 kobo while the production cost was about 33 kobo; and the price of fuel oil was 55 kobo while the production cost was 44 kobo. Thus, in all cases, the costs of production were lower than the respective retail prices. It is also important to mention that the costs of production were lower than the retail prices introduced in November, 1993. Therefore, using the cost structure in scenario 1, there was no evidence of price subsidy on petroleum products.

4.3 Opportunity Cost of Crude Oil Plus NNPC Operational Costs

In this approach, the opportunity cost concept is used rather than the cost of production. It is argued that because crude oil and petroleum products are internationally tradeable commodities, the prices at which they are sold should reflect their international prices. The opportunity cost of crude oil used for this exercise is, therefore, the price for which the crude oil could have been sold in the international oil market or the cost of crude oil if it was imported for refining in Nigeria.   This concept is accordingly reflected in Table 4 below. Whereas the cost of producing a barrel of crude oil (US$6.50) is used in Table 3, the opportunity cost of crude oil in the international market optimistically estimated at US$16.50 is used in Table 4. The price reflecting the opportunity cost would vary from time to time as the prevailing international price changes.

Like the cost concept adopted in Table 3, the cost concept in Table 4 comprises two major items of cost, with the item of operational costs common to both concepts. The main difference between the two approaches is the cost of crude oil.

TABLE 4
SCENARIO 2
ONE BARREL OF CRUDE OIL IN NIGERIA:
OPPORTUNITY COST OF CRUDE OIL PLUS NNPC
OPERATIONAL COSTS

Items	US$/barrel
Operational costs	
Refining costs	1.81
Distribution	1.45
Headquarters' overheads	0.62
NPA charges	0.01
Depreciation costs	0.38
Financial charges	0.51
Sub-total	4.78
Crude oil at international market price	16.50
Total crude oil and operations costs	21.28
NNPC margin (10% of total costs)	2.13
Marketers' margin	2.13
Grand total costs	25.54

Source: *Data submitted by the NNPC to the 1992 Belgore
Tribunal on Fuel Shortage.*

As noted above, the major difference between the cost structure in this table and that in Table 3 is that the cost of crude oil sold to domestic refineries in Table 4 is based on the cost of the crude oil in the international oil market. The adoption of the opportunity cost approach approximates to importation of crude oil for domestic refining.

Based on the opportunity cost of crude oil and operational costs above, the resulting price per litre can be calculated as follows:

Total production and operational cost = US $25.54
Naira exchange rate = N22.00 to the US dollar.
Total cost = N561.88

Given one barrel of crude oil = 159 litres,
 the cost of producing one litre = N3.53.

As noted earlier, a litre of crude oil contains a "basket" of petroleum products, all of which cost N3.53 to produce. The cost of producing each product is shown in column 3 of Table 5.

It can be observed from column 3 of Table 5 that the cost of producing one litre of gasoline is about N1.14; kerosene, 57 kobo; diesel, 87 kobo; and fuel oil, 78 kobo.

Costs of producing other products are relatively small. These production costs are higher than the retail prices of the products which prevailed prior to the November, 1993 price increases (See Table 1, column 6). It is, therefore, evident that petroleum products were subsidised prior to that date. However, after the November 1993 price increases, retail prices of the products became substantially higher than their respective costs of production. Thus, there has been no more price subsidy on the products.

However, this approach which imputes the cost of crude oil on the basis of the opportunity cost, a view generally propagated by the International Monetary Fund and the World Bank, is questionable. Critics of the approach have argued that: Nigeria, being an oil producer by sheer luck of nature, should avail its citizens some benefits of the product; adoption of the approach implies that there is no difference between oil importers and Nigerian consumers of petroleum products since both pay the same price for crude oil; and since petroleum product consumers in Nigeria are paid in naira and not in 'foreign currencies, it is wrong to relate what Nigerians should pay to what other countries pay for the same products without simultaneously considering the relative capacities to pay.

TABLE 5
COST PER LITRE OF PETROLEUM PRODUCTS
(KOBO PER LITRE)

		SCENARIO 1	SCENARIO 2
PRODUCT	AVERAGE PERCENTAGE YIELD (1)	COST OF PRODUCTION PLUS NNPC OPERATIONAL COST (2)	OPPORTUNITY COST PLUS NNPC OPERATIONAL COST (3)
LIQUIFIED PETROLEUM GAS	1.53	3.10	5.40
PREMIUM MOTOR SPIRIT (GASOLINE)	32.16	64.70	113.60
KEROSINE	16.16	32.50	57.10
AUTOMATIVE GAS OIL (DIESEL)	24.59	49.50	86.90
FUEL OIL	21.97	44.30	77.60
PETROCHEMICAL	0.25	0.50	0.80
REFINED WAXES	0.05	0.10	0.20
BASE OIL	0.59	1.20	2.10
ASPHALT	1.32	2.60	4.70
REFINERY FUEL	0.67	1.30	2.40
LOSSES	0.27	0.50	0.90
INTERMEDIATE	0.45	0.80	1.50
TOTAL	100.00	201.10	353.20

SOURCE: DERIVED FROM TABLES 2, 3 AND 4

5. SOME INTERNATIONAL COMPARISONS

Data on crude oil and petroleum products generally are not readily released by countries. Such data are kept strictly confidential. This explains certain inadequacies in the data used in Tables 6 and 7 below. However, the data provide useful indications of the issues involved.

a. Production Costs

Table 6 shows the cost of producing a barrel of crude oil in some selected countries. The figures have been updated using the US consumer price index at 1982/84 constant prices. At $1.84 per barrel, the cost of producing a barrel of crude oil in Nigeria in 1992 was the fourth highest after Venezuela, Algeria and Libya. At this level, the cost of production in Nigeria was about 72.2 per cent of the cost in Venezuela. The cost of production, at 80 cents each per barrel in the Middle Eastern countries (Saudi Arabia, Kuwait, Iran and Iraq), was relatively low.

TABLE 6
OUTPUT COST PER BARREL OF CRUDE OIL IN VARIOUS
COUNTRIES[6] IN 1982/84 PRICES

Countries	$/per barrel 1980	$/per barrel[7] 1992
Saudi Arabia	0.44	0.80
Kuwait	0.44	0.80
Iran	0.44	0.80
Iraq	0.44	0.80
Libya	1.18	2.15
Venezuela	1.40	2.55
Nigeria	1.01	1.84
Algeria	1.25	2.28

Source: Fadhill J. Al. Chalabi. OPEC and International Oil Industry, A changing structure, (Oxford, Oxford University Press, 1990). p.112.

b. Consumer Prices of Gasoline

A Comparison of the consumer price of gasoline in Nigeria and prices of gasoline in some selected countries is shown in Table 7. The Table indicates that a consumer of gasoline in Nigeria paid 4 cents per litre while consumers in other countries paid more. For example, consumers paid $1.06 per litre in Indonesia, $1.03 in Chad, 20 cents in Venezuela and 9 cents in Saudi Arabia.

The Table also shows the per capita income in the selected countries. The per capita income in Nigeria was the second lowest after Chad. Saudi Arabia, with the highest per capita income, had the next lowest gasoline price after Nigeria. Generally, there is no correlation between the income level and price of gasoline.

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6   Actual production cost information for OPEC countries is not publicly available. The Table above was estimated by M.A Adelman based on his examination of historical and prospective costs.
7   Adjusted cost using rate of Dollar inflation.

TABLE 7
CONSUMER PRICE OF GASOLINE AND PER CAPITA INCOME IN SOME SELECTED COUNTRIES, 1989

Countries	Price of Gasoline U.S. $ per Litre	Per Capita Income U.S. $
Nigeria	0.04	232
Indonesia	1.06	500
Saudi Arabia	0.09	6,020
Venezuela	0.20	2,450
Egypt	0.25	650
Benin	0.62	380
Cameroun	0.67	1,000
Chad	1.03	190
Niger	0.93	290
Ghana	0.49	400

Sources: 1. IMF desk Economist
             2. World Bank debt table 1991.

The relatively high retail price in the oil importing countries appeared to reflect the cost of importing the product while the relatively low prices in the producing countries reflected built-in subsidy elements. It is important to state that international comparison is a complicated matter due to variations among the countries in terms of income disparity, population, market structure, deregulation, cost structure, competition, and environmental factors related to production of petroleum.

6. AN OVERVIEW OF THE APPROACHES AND RECOMMENDATIONS

Two approaches to determining the appropriate price of petroluem products - cost of production plus NNPC operational costs and opportunity cost of crude oil plus NNPC operational costs - were discussed.   Each of them took into account and included all requisite costs necessary to promote efficient development of the oil industry.   As noted earlier, the items and quantification of the costs were provided (except the variable price of crude oil used in Table 4) by the NNPC. It would, therefore, be expected that the results obtained from Table 3 or Table 4 would be a true reflection of the cost structure under the two approaches. In the event of a change in the cost structure, the cost of producing the products will change accordingly.   The following results emerged from the calculations in the tables:

    a. Based on well-head cost plus NNPC operational costs in Table 3, the retail price of a litre of the "basket" of petroleum products should be about N2.00, with the costs of gasoline, diesel, kerosene and fuel oil at 65, 50, 33 and 44 kobo, respectively. These prices adequately provide for all costs, including the profit margins to the NNPC and the oil marketers as well as costs relating to exploration, drilling and development.

b. If the cost structure is based on opportunity cost of crude oil plus NNPC operational costs as in Table 4, the retail price of a litre of the "basket" of petroleum products should be N3.53, with the respective costs of gasoline, diesel, kerosene and fuel oil at 114, 87, 57 and 78 kobo. The opportunity cost approach is expected to enable the oil industry recover fully all costs.

For reasons earlier advanced in the paper, it is not advisable to adopt this option; that is, the results obtained from Table 4. Rather, it is suggested that the first option (Table 3) be adopted.

At this juncture, it is relevant to recall that in recent times the government announced new levels of gasoline prices which are substantially higher than those calculated above and which bear no relevance to the prevailing cost structure in the oil industry. In August 1993, a price of N7.50 per litre for the "super three star" gasoline was announced, while in November two new prices of N5.00 and later N3.25 per litre were fixed for gasoline. It is acceptable that the NNPC can fix prices for its products at levels that would enable it continue to be in business. However, the fixing of such prices should be done in such a way that the rationale can be justified.

In conclusion, it must be underlined that there is justification for some increase in the prices of petroleum products, considering the spate of price increases on virtually all goods and services in the economy. However, the price of N5.00 per litre earlier fixed by government for gasoline was too high. The latest price of N3.25 a litre is acceptable under the circumstances, although it is still higher than the price per litre of 65 kobo, derived in scenario 1.

PORT HARCOURT REFINERY: PRODUCT OUTPUT AND SHARE
TONNES

PRODUCTS	1990	%	1991	%	1992	%	AVERAGE
Liquified Petroleum Gas(LPG)	100,083.00	1.61	128,639.00	2.12	113,671.00	2.04	1.93
Premium Motor Spirit (PMS)	2,329,835.00	37.48	2,147,853.00	35.46	1,723,396.00	31.00	34.65
Kerosine	1,047,824.00	16.86	977,631.00	16.14	779,494.00	14.02	15.67
Gas Oil	1,632,311.00	26.26	1,723,979.00	28.46	1,411,470.00	25.39	26.70
Fuel Oil	1,168,325.00	18.79	1,042,565.00	17.21	1,051,873.00	18.92	18.31
Intermediates	-61,779.00	-0.99	36,431.00	0.60	25,548.00	0.46	0.02
Refinery Fuel	NA	NA	NA	NA	237,979.00	4.28	1.43
Loss	NA	NA	NA	NA	94,107.00	1.69	0.56
Flares	NA	NA	NA	NA	122,295.00	2.20	0.73
TOTAL	6,216,599.00	100.00	6,057,098.00	100.00	5,559,833.00	100.00	100.00

NA   Not available

Source: Nigerian National Petroleum Corporation (NNPC)

WARRI REFINERY: PRODUCT OUTPUT AND SHARE   ANNEX 2

TONNES

PRODUCTS	1990	%	1991	%	1992	%	AVERAGE
Liquified Petro-leum Gas (LPG)	11,715.00	0.57	21,259.00	0.77	102,000.00	2.52	1.29
Premium Motor Spirit (PMS)	502,726.00	24.29	673,723.00	24.55	1,365,000.00	33.71	27.52
Kerosine	370,138.00	17.89	453,517.00	16.53	674,000.00	16.64	17.02
Gas Oil	459,535.00	22.21	663,453.00	24.18	942,000.00	23.26	23.21
Fuel Oil	725,061.00	35.04	930,410.00	33.90	956,000.00	23.61	30.85
Petrochemical	250.00	0.01	1,950.00	0.07	10,574.00	0.26	0.11
Refinery Waxes	NA	NA	NA	NA	NA	NA	NA
Base Oil	NA	NA	NA	NA	NA	NA	NA
Asphalt	NA	NA	NA	NA	NA	NA	NA
Refinery fuel use	NA	NA	NA	NA	NA	NA	NA
Losses	NA	NA	NA	NA	NA	NA	NA
TOTAL	2,069,425.00	100.00	2,744,312.00	100.00	4,049,574.00	100.00	100.00

NA Not available

Source: Nigerian National Petroleum Corporation (NNPC)

KRPC: PRODUCT OUTPUT AND SHARE   ANNEX 3

PRODUCTS	1990	%	1991	%	1992	%	AVERAGE
Liquified Petro-leum Gas (LPG)	13,296.0	0.44	18,158.0	0.62	27,778.0	1.24	0.77
Premium Motor Spirit (PMS)	905,364.0	29.67	822,765.0	28.06	768,557.0	34.33	30.69
Kerosine	505,852.0	16.58	473,454.0	16.15	364,195.0	16.27	16.33
Gas Oil	646,696.0	21.19	616,378.0	21.02	500,345.0	22.35	21.52
Fuel Oil	666,951.0	21.86	714,044.0	24.35	420,897.0	18.80	21.67
Petrochemical	30,383.0	1.00	29,732.0	1.10	16,151.0	0.72	0.91
Refinery Waxes	7,662.0	0.25	5,277.0	0.18	3,027.0	0.14	0.19
Base Oil	94,985.0	3.11	71,437.0	2.44	38,278.0	1.71	2.42
Asphalt	180,134.0	5.90	181,099.0	6.17	99,304.00	4.44	5.50
Refinery fuel Uses	NA	NA	NA	NA	NA	NA	NA
Losses	NA	NA	NA	NA	NA	NA	NA
TOTAL	3,051,323.0	100.00	2,932,344.0	100.00	2,238,532.0	100.00	100.00

NA   Not available

Source: Nigerian National Petroleum Corporation (NNPC)