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THE STRUCTURE OF THE SPOT OIL MARKET AND ITS IMPLICATIONS FOR SUDAN'S MARKETING POLICY

A Research Paper presented by

Elmoiz Abunura

(Sudan)

in Partial Fulfilment of the Requirements for obtaining the Degree of

Master of Arts in Development Studies

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December 1984

To the Memory of my Friend

Mohmed Ahmed Elsadig (1955-1984).

TABLE OF CONTENTS

List of Text Tables

GLOSSARY

AGIP	Italian Oil and Gas Company, controlled by ENI.
APICORP	Arab Petroleum Investment Corporation
BP	British Petroleum Company; formerly known as Anglo-Persian (APOC) until 1935 and as Anglo-Iranian (AIOC) until 1954.
CFP	Compagnie Francaise des Petroles
CHEVRON	see SOCAL
CONOCO	Continental Oil Company
DEMINEX	see Veba Group
EEC	European Economic Community
EGPC	Egyptian General Petroleum Corporation
ENI	Ente Nazionale Idrocarburi
EXXON	Offshot of the original Standard Oil; was known as Standard Oil Company (New Jersey) until 1972.
GPC	General Petroleum Corporation (Sudan)
IEA	International Energy Agency
KPC	Kuwait Petroleum Corporation
MOBIL	Offshot of the original Standard Oil Company; first known as Standard Oil Company of New York (hence Socony); changed name to Socony-Mobil in 1955 and to Mobil in 1966.
NIOC	National Iranian Company
OAPEC	Organization of Arab Petroleum Exporting countries
PERTAMINA	Indonesian State Company
PETROBRAS	Petroleo Brasileiro
PETROFINA	Begian Oil Company (private company)
PETROMIN	Saudi Arabian Governmental Agency with responsibilities for oil.
ROYAL DUTCH/ SHELL GROUP	Technically the correct way of referring to Shell; dates from 1907 when the Royal Dutch amalgamated its interests with the British company the "Shell" Transport and Trading.
SOCAL	Standard Oil Company of California; uses the name Chevron widely in its operations.
SONATRACH	Algerian State Hydrocarbons Company
VEBA GROUP	West Germany's leading group of oil companies; headed by Veba AG. The group has a majority holding in Deminex, the exploration company.
WNPC	White Nile Petroleum Company

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Elmoiz E. Abunura

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CHAPTER I

GENERAL INTRODUCTION

1.0. INTRODUCTION

By the year 1986, Sudan is expected to start the commercial production of its crude oil, explorations of which started effectively with the signing of production sharing agreement with Chevron Company in 1975. The initial estimates showed that, the level of production is commercially viable.

At present, the debate in the Sudan about this new industrial sector is concentrated on the utilization of the oil revenue. Being a small producer and hence a price taker, the Sudan faces the problem of understanding the structure, and the functioning of the international oil market, but most importantly adapting itself to the changing conditions of this market.

1.1. PURPOSE OF THE STUDY

The main objective of this study is to describe and to analyse the structure and the functioning of the spot oil market with special reference to the Rotterdam spot oil market and project its implications on Sudan's oil marketing policy in the medium term 1986-1990. The purpose of this paper is to justify the assertion that the spot oil market will exist as a workable market in the near future and hence the reliance of Sudan on such market for marketing its crude oil could be a viable alternative, but not a complete alternative to the sales contracts. It is argued in this paper, however, that the spot oil market, in addition to the sales contracts will enhance the maximization of Sudan's oil earnings. By following this combined approach, Sudan can avoid the negative impacts of the sales contracts to a small producer, particularly during the period of oil glut. The striking point about the oil glut is that the major oil companies are taking advantage

of the crude oil surplus and extracting discounts from the small producers. It is also argued that the role of the National Oil Company in the Sudan can be magnified and get strength via the spot oil market, which in turn was viewed as an appropriate channel to that effect.

The spot oil market is undoubtedly the most complicated market. It is a result of the interaction of various economic and political factors. These factors are relevant for any successful rational marketing policy. The particular relevance for such strategy is the mechanism which governs the production sharing agreement with the oil companies. This inevitably raises the critical issue of the choice between the foreign and national companies for marketing of crude oil. With the understanding of these various interdependent forces, the study attempts to outline the general framework for the Sudanese oil marketing policy with emphasis on one hand on the objective of the maximizing the oil earnings and on the other hand the objective of strengthening and expanding the role of the National Oil Company.

1.2. METHODOLOGY

The paper is an economic study of the oil industry in general and the spot oil market in particular. Its raw material is the operating of this industry. Its methodology is historical, analytical, and to some extent comparative, utilizing the tools of economic theory and statistical inference. The basic concern is to measure changes in the oil marketing system with specific emphasis on the spot oil market and to understand its implications for Sudan's oil marketing policy during the medium term 1986-1990.

1.3. SOURCES OF DATA

The analysis is largely using secondary data and information collected from official publications of General

Petroleum Corporation (G.P.C.) in the Sudan and Chevron Oil Company; these are supplemented by available literature on energy in general, and oil industry in particular from the Library of the Institute of Social Studies (I.S.S.), Shell's Library, and the Energy Centre's Library (Rotterdam University).

For the current oil details, I have depended heavily upon the oil industry's outstanding trade journals like Petroleum Intelligence Weekly (P.I.W.); and Platt's Oil Gram Internationally; Petroleum Press Service; and Petroleum Times in U.K.; the Oil and Gas Journal; and World Petroleum in U.S.A.; the Middle East Economic Survey (MEES); Arab Oil in Tripoli; and Review of Arab Petroleum and Economic (Baghdad).

In writing this study, I faced problems due to lack of data concerned with the structure and the functioning of the spot oil market. In order to overcome this difficulty, I have relied heavily on interviews which I have had in the European Marketing Region of Shell International Company - The Hague, and other spot trading sources in Amsterdam - Rotterdam - Antwerp (ARA) area.

1.4. THE SCOPE OF THE STUDY

In order to carry out the investigation, the paper has been structured as follows:

Chapter II, after the introduction, will describe briefly the economic structure of the country. The historical development of explorations in the Sudan, and the production sharing agreement with Chevron Company will be discussed.

Chapter III, will be devoted to discuss the international oil marketing system. The structure of the market will be illustrated. An attempt will be made to analyse the recent developments in the market, and the factors which affect the marketing system. The chapter discusses two important concepts which are the demand, and supply of oil. The prospects for

oil substitution in terms of energy consumption is also discussed. A further point which is demonstrated in this part, is the prospects for growth in the world consumption of oil during the medium term 1986-1990.

Chapter IV, moves to discuss the spot oil market, with special reference to the Rotterdam spot oil market. The market structure is reviewed. The supply - demand relationship is of course important for understanding of the functioning of this system. The spot oil prospects are also discussed.

In chapter V, the main emphasis will be on the relevance of the spot oil market for Sudan's oil marketing policy in the medium term.

The final chapter will contain the conclusions of the previous analysis.

CHAPTER II

SUDAN AS A POTENTIAL OIL PRODUCER

2.0. INTRODUCTION

This chapter starts with a general background to the economic structure of the country. The structure of the petroleum sector in the Sudan would be discussed. The part outlines the commercial discovery of oil in the Sudan. The recent development in oil explorations as well as the production sharing agreement with the international oil companies are also demonstrated.

2.1. THE ECONOMIC STRUCTURE

Sudan is the largest country in Africa, covering some 2.6 million square kilometres and has a population of 22 million. It contains within its borders a complexity of geographical areas, ethnic groups and economic adaptions. Geographically, the country is characterized by east-west going belts with desert and semi-desert in the north, savanna areas in the middle, and the southern sudd region with swamps leading into East African savannas of the far south.

The corner-stone of the Sudanese economy is its agricultural sector which account for approximately 40 percent of GDP and virtually all its exports. Within agriculture the production of cotton on large, government owned irrigation schemes has traditionally been Sudan's main export accounting for over 40 percent of total merchandise exports (and n.f.s.). Oil seeds, gum arabic, live stock, and more recently, sorghum have made up most of the balance. The main import items are crude and finished products, food stuffs, chemicals and drugs.

Sudan's industrial sector remains rather under-developed, contributing only between 12 and 15 percent to GDP throughout the 1970's.[1]

Despite its natural resources, Sudan's level of development is very low. GNP per capita in 1980 was in US $ 460 placing the country among the low-income developing countries. By social criteria, the country is also underdeveloped. The adult literacy is only 20%, while life expectancy is 47 years.

The economy progressed well in the mid 1970's but was brought to halt in 1979 when a balance of payment crisis led to an austerity programme. This was partly caused by the failure to gain full benefit from agricultural resources which represent as we mentioned before the "backbone of the economy". Stagnation and a scarcity of resources for development expenditure were already evident by the early 1970's. From this perspective, the massive injection of loans to the country offered temporary relief from the impending crisis and external shock of 1973/1974 oil price like. But at present, these debts represent a heavy burden on the Sudanese economy. The debt service ration will reach in 1984 about 153.8 of the total export earnings.[2]

Unlike many other countries in the region, Sudan is an oil importer. The increase in the world oil price led to an increase in the total imports value of the country. In 1982, oil imports represented about 35% of total imports compared with only 4% in 1970. At the same time, these oil imports represented 80% of the total exports earnings compared with only 4.3% in 1970 (see Table 2.1). From the last point, one can understand why oil discoveries in the Sudan is crucial to the economic development of the country.

2.2. THE STRUCTURE OF THE PETROLEUM SECTOR

Petroleum business in the Sudan, as in many developing countries was handled exclusively by foreign-owned and foreign-managed oil companies. But unlike other oil-developing countries where "the seven sisters"[3] run and manage integrated oil industry, the oil business in the Sudan was restricted to downstream activities.[4] In the Sudan, the oil companies at first imported their petroleum products from parent companies overseas. They marketed their products throughout the country without control by the government in the Sudan. Maximization of profits is the motive of the enterpreneurs, and the oil companies in Sudan were not the exception.

Table (2.1)

Comparison between the Oil Imports Value to the Total Value of Exports and Imports during the Period 1970-1981.

(Value in Sudanese Pounds)

Year	1 Total Imports (million LS)	2 Total Exports (million LS)	3 Total Oil Imports (million LS)	3/1 Ratios (%)	3/2
1970 - 1971	119,1	104,4	4,0	4 %	4.3 %
1971 - 1972	121,4	102,4	6,2	5 %	6 %
1972 - 1973	113,1	127,6	6,1	5.4 %	4.8 %
1973 - 1974	149,6	142,8	8,1	5.4 %	5.7 %
1974 - 1975	280,0	154,6	30,8	11 %	19.9 %
1975 - 1976	262,0	176,8	34,8	13.4 %	19.7 %
1976 - 1977	236,0	231,7	39,4	17.6 %	17 %
1977 - 1978	248,7	199,3	39,2	15.8 %	19.7 %
1978 - 1979	307,2	223,5	58,0	18.9 %	25.9 %
1979 - 1980	488,2	288,9	109,8	22.5 %	38 %
1980 - 1981	768,0	376,4	172	22.4 %	45.6 %
1981 - 1982	1000,6	439,3	332,8	22.3 %	75.8 %

Source: Studies Unit, General Petroleum Corporation, 1982.

They were very efficient in that respect. The foreign exchange problems we encounter today were non existent.

In 1960 Shell and B.P. proposed to build a 25,000 b/d refinery at Port Sudan. The companies designed the refinery specifically to refine Iranian light crude, because both companies were running the oil business in Iran, and the crude oil supply was thus guaranteed.

In the early 1970's the Sudan government felt that the petroleum industry was too important nationally to be left in the hands of the private sector, that sector's pursuit of profit might even conflict with the political interests of an independent government. The government therefore took over total control of the petroleum sector, reducing the role of the oil companies to that of distribution and marketing. The government moved in to take 75% shares of distribution and marketing of Total Oil Company. In 1980, the state established the General Petroleum Corporation (G.P.C.) as a state corporation in its attempt to control most of the activities in the petroleum sector. At present, although the state controls most of the activities in the petroleum sector, there are still foreign-owned companies like Shell, Mobil Oil, Agip and partially nationalized Total Company, working in the international distribution and marketing.

Until recently Sudan's indigenous resources of conventional energy were thought to lie only in hydro-electric potential, the value of which has been affected by the highly seasonal fluctuation of water level. However, a significant level of crude oil production is now anticipated following discoveries of crude oil. These may be large enough to achieve self-sufficiency eventually.

2.3. OIL EXPLORATIONS AND DISCOVERIES IN SUDAN

Oil exploration in Sudan started for more than twenty years ago. In 1959 Agip Mineraria began drilling in the

Red Sea area, where limited amounts of natural gas were discovered. Years later, other oil companies mainly Shell, American Pacific, Ocean Oil, Digna (with Sudanese shareholding) and Chevron, prospected in the same area. The results of these explorations were not promising. In 1975, after signing a production sharing agreement with Sudan government, Chevron has relinguished its concession in the Red Sea area, and turned to other concession areas in the south-western part of the Sudan. This is a vast tract covering 258,900 square kilometres made up of four main blocks, Muglad, Melut, Blue Nile and Baggara.

Chevron exploratory drilling was started in October 1977 when various sites were drilled. The depth of the wells ranges between 4,974 to 1491 of leets with expected yield between 564 to 5,400 b/d. Chevron has estimated that about 70 percent of Sudan's oil exports will come from the Bentiue area. This is reflected in the significant flow rates at unity 2,5,7,9, 10,11 and 14.

The next active company in the Sudan oil search is the France's Total exploration. The company combined forces with the Geneva-based International Energy Development Corporation (IEDC). They hold a 60,000 sq.kms concession in the north-west of the country. Total's main concession, however, is a 145,000 sq.kms area in the Muglad basin area in the south-west. The company is also exploring a 6400 sq.kms off shore concession south of Suakin in the Red Sea. So far Total has drilled one well in the Red Sea area, but no oil has been found. Total is planning to drill another well in the area.

The American firm, Texas Eastern is operating a 275,000 sq.kms concession in the northern Red Sea hills under an agreement signed in December 1979. They have so far drilled one well which is not very promising. The company is now evaluating the results obtained from the first well before a decision is made on whether to drill another.

The American firm, Sun Mark, a division of Sun Oil of Dallas, joined the process in 1981 with a concessionary area of 127,000 km in northern Sudan. It has already completed its geological survey and is preparing itself for further phases.

In general, oil exploration in Sudan is not an easy ride. Chevron has estimated the average expenditure incurred in drilling one well to be around US$ 5. Before the drilling stage several other exploratory stages have to be completed. Among the companies that received concessions but didn't continue exploration were Agip, Union Texas and Philips Petroleum Europe - Africa.

However, Chevron's continual discoveries have aroused interest among international oil companies, and the hunt for oil goes on. Shortly an agreement will be signed between the Ministry of Energy and Mining and the Canadian Trans-pacific Oil and Mineral Co. As well, negotiations are now under way with four other international companies, the Afro-Sudanese Oil Co., the Canadian Oil Co., Huston International and Araka.[5]

2.4. OIL RESERVES IN SUDAN

Although the actual amount of oil reserves in Sudan is still unknown, it was estimated, however, that it will be around 10 billion barrels.[6] With this figure, Sudan will actually surpass some OPEC members like Algeria, Ecuador, Gabon, Indonesia and Quatar as it is illustrated in Table (2.2). However, after further discoveries at Unity Field, Tabaldi and Heglig Fields, Chevron estimates Sudan's reserves up to 1 billion barrels.[7] Chevron insists that the figure of 10 billion was a personal guess and that the actual reserves are only one-tenth of this figure.

Table (2.2)

Oil Reserves in the Sudan and in OPEC Countries

(Billion Barrels)

Country	Crude Reserves
Sudan	10.0[x] - 1.0 [xx]
Algeria	8.2
Ecuador	1.1
Gabon	0.45
Indonesia	9.5
I.R. Iran	57.5
Iraq	30.0
Kuwait	67.93
Libya	23.0
Nigeria	16.7
Quatar	3.6
Saudi Arabia	168.03
U.N.E.	30.41
Venezuela	17.95

[x] High Senario
[xx] Low Senario

Sources: Annual Report of OPEC, 1980.
Chevron Oil Company of Sudan.

2,5. THE COMMERCIAL EXPLOITATION OF OIL

The size of the country, as well as the location of the oil fields has attracted an increasing debate regarding the commercial utilization of oil in the Sudan.[8] The discovery of the Unity Field by Chevron Company has led to two alternative plans which are: refinery project, and export pipeline project.

The refinery project which is proposed to be located at Kosti, is expected to start operating at a capacity of 25,000 b/d, thereby providing up to half of Sudan's fuel requirements by the middle of 1980. However, in view of the remoteness of the oil fields from the refinery site, a 550 km pipeline is necessary to transport oil to the Kosti refinery. Kosti was chosen in preference to the Bentui site which is adjacent to Unity fields on the basis of its location which facilitates distribution of oil products by river, railway and roads.

Surprisingly, the refinery idea was cancelled and substituted by a new project of constructing 1440 km pipeline from the central oil fields in the south-eastern of Sudan to the Red Sea area. The initial capacity of the pipeline is 50,000 b/d, but the ultimate capacity of the pipeline with the additional pumping facilities, is now put at 170,000 - 200,000 b/d.[9]

Three grounds are given for the switch:

(i) Firstly, it will be quicker and easier to build a pipeline.

(ii) Secondly, foreign financiers seem reluctant to lend Sudan funds to be invested in import-substituting projects like the proposed refinery; they prefer to see their funds invested in an export-oriented project that earns hard currencies from which their loans can be repaid.

(iii) Thirdly, Chevron is also keen to retrieve some of its mounting investments in the Sudan. It fears that this will not be possible if the oil it produces is consumed locally and paid for in local currency.[10]

The coordination of the various technical, legal, financial and organizational aspects of the Sudan export pipeline project will be undertaken by the White Nile Petroleum Company Ltd. (WNPC). The WNPC was formed in August 1981 and comprises the Sudan Government, Chevron, and the International Finance Corporation (IFC) of the World Bank. With $ 1.5 billion working capital, its equity break-down was 40 percent for the Sudan Government, 40 percent for Chevron and 20 percent for IFC.

Later, however, when the idea shifted from refinery to export pipeline, a new partner which is the Arab Petroleum Investment Corporation (APICORP) joined the company. The equity break-down became 33.3 percent for the Sudan Government, 33.3 percent for Chevron, 16.66 percent for IFC and 16.66 percent for APICORP, with a share capital of $ 600 million for Sudan, $ 600 million for Chevron, $ 300 million for IFC and $ 300 million for APICORP. It is agreed that, after capitalization, the distribution of shares will be in the ratios of 45%, 45%, 5% and 5% respectively.

Meanwhile WNPC will own the pipeline and terminal and will charge sufficient tariffs on crude oil to cover all its obligations including operating expenses, debt service and dividends to share holders (with a 15 percent rate of return). The pipeline and terminal are projected to be completed and ready to begin operation by the fourth quarter of 1985. The total cost of the pipeline and mersa nimeri is initially estimated at $ 1 to 1.2 billion including capitalized interest, working capital, contingency (20 percent factor), and escalation (see Table 2.3). Last year, six international consortia were invited to bid for the construction of the pipeline.[11] In july 1983, the bid was awarded to a "snamprogetti" led consortium.

Table (2.3)

Export Pipeline Cost[x]
(US $ millions)

Item	Probable Low	Probable High
Main Pipeline[xx]	730	880
Spur Pipeline[xx]	160	190
Terminal	110	130
Total Cost	1000	1200

x Excludes all field production facilities which will be provided by Chevron Sudan.

xx Includes pipeline, pump stations, telecommunications and support facilities.

Source: Chevron Oil Company of Sudan, 1983.

2.6 PRODUCTION SHARING AGREEMENT WITH CHEVRON

Before I discuss the production sharing agreement with Chevron, I feel it is necessary to examine the concept of production sharing agreement, and trace back briefly the development of this type of petroleum contracts in LDC's.

2.6.1 THE CONCEPT OF PRODUCTION SHARING CONTRACTS

There are three basic elements of a production sharing contract. These are cost recovery, production "split" between the government and the oil company, and income tax. The concept of production sharing contract (agreement) originated in Indonesia in 1966[12] and was later used in Peru, Malaysia, Libya, Egypt, etc.... Production Sharing contract (PSC) is carried out with the government, usually through its State Oil Company. This would appear to give a greater degree of control over operations of the private contractors.

The concept of cost recovery also originated in Indonesia, where the first 40% of production went to the contractor to cover costs. The percentage varies in other countries between 20% - 40%.

Following deduction of cost recovery, production is divided between the oil company and the state. This is known as the "production split" and it varies widely from 15% government/85% company in Chile[13] to Peru 50/50, Indonesia 66/34, Libya 81/19, and Egypt 85/15. Some countries vary the production split with the production levels, such as Angola, Egypt (see Appendix 1) and India.

Around the world, oil companies are generally subject to national corporate income taxes on their share of production, ranging up to 68.5% in Peru. The 85% OPEC income tax does not apply to production sharing contracts, but only to production under the old-style concession. One OPEC country, Libya, does not impose income tax on PSC at all but divides production to 81% government/19% company free of tax.

2.6.2 THE PRODUCTION SHARING AGREEMENT WITH CHEVRON

The production sharing agreement between the Sudan Government and Chevron Oil Company has been signed in 1975. According to this agreement, the petroleum operations are being carried out under the agreement. The agreement illustrated that Chevron assumes all risks and will furnish all capital requirements. The company may, if and when production commences, export and sell petroleum and retain the proceeds abroad. It may also repatriate freely all funds advanced or loaned from foreign sources and may transfer abroad all profits or dividends earned from its operation as well as proceeds from the sale of the assets. Recovery of all costs and expenses in respect of all petroleum operations to an amount equal in value to a maximum of 30 percent per annum is allowed. From the balance, the government is entitled to 70 percent

and the contractor to 30 percent on an amount up to 450,000 b/d. The government percentage increases to 75 percent at 450,000 - 750,000 b/d, and to 80 percent over 750,000 b/d.[14] The initial exploration period is four years, but one extension of two years may be granted. If an economic field is discovered, the agreement provides for a 30 year development period and possible extension of 10 years.[15] With regard to the exploration expenditures, the agreement stated that the exploration expenditures must be a minimum of US$ 2 million each of the first, third and fourth years and US$ 4 million the fifth and sixth years. Providing this commitment is fulfilled, the contractor may relinguish all or part of the area at any time.[16]

Unlike other producing countries in which oil companies are generally subject to income taxes on their share of production as I demonstrated in the last section, in the case of Sudan, the taxes are however paid by the Sudan Government.

Apart from above contract's terms in Sudan, and in comparison to some LDC's (Indonesia, Libya, Peru and Egypt), one can say that these countries reached far more better conditions than Sudan. For example in Egypt, while the contractor has more or less the same percentage of the cost recovery "cost oil" which is about 30%, the Egyptian Oil Company (EGPC) has nevertheless the lion's share in the "production split" (85/15) while it is just 70/30 in the Sudan.

Generally, the principal terms and conditions reached in the case of Sudan were favouring the Chevron Oil Company more than the government. This could be attributed to the weaker bargaining position of Sudan during the negotiations. One of the main explanations to this effect was because of the unfavourable economic situation that was prevailing at that time in the country. Hence Chevron Company was able to negotiate the economic terms of the agreement in its favour.

In conclusion, it seems that when developing countries

like Sudan (with abundant oil reserves) enter into negotiating agreements with oil companies, it should pursue its benefits to the utmost, without discouraging a gradual inflow of private foreign investment in the petroleum sector and in the economy as a whole.

2.7. SUMMARY

In this chapter an attempt has been made to trace back the history of discoveries and explorations in the Sudan.

It has also been shown that the signing of the production sharing agreement with Chevron Oil Company in 1975 was a turning point in these discoveries.

The initial reserves which have been demonstrated in this chapter showed that the level of oil production could be commercially viable.

The production sharing agreement with Chevron has been discussed, and it is also concluded that developing countries like Sudan should pursue its benefits to the utmost in negotiating with oil companies, without discouraging the inflow of foreign investment in the petroleum sector.

From the terms of the agreement with Chevron one can understand that the share of the government which could be directed to the international oil market, will be about 98,000 b/d if the export pipeline operates at its full capacity which is 200,000 b/d.

Chapter II, Footnotes

1. Brown, R., 1984, p. 3.

2. Ibid., p. 53.

3, The term "seven sisters" referred to the major oil companies which are:
   (a) Standard Oil Company of New Jersey (EXXON).
   (b) Standard Oil Company of California (SOCAL).
   (c) Mobil Oil.
   (d) Gulf Oil Company.
   (e) Texaco Oil Company.
   (f) British Petroleum Company (BP).
   (g) Royal Dutch Petroleum Company and Shell Transport and Trading (Shell).

4. Ader, Macar., 1984, p. 1.

5. Sudan Now, March 1983, p. 13.

6. An interview with one of Chevron's directors in BBC (20/5/1982), cited in OPEC Bulletin, Nov. 1982.

7. Sudan Now, p. 11.

8. See Awad, M., 1983.

9. Monthly Digest, January 1984, p. 3.

10. An interview with the Minister of Energy and Mining, Sudan Now, July 1980.

11. The bidding consortia are made up of Japanese, American, British, West German, Italian, French, Dutch and South Korean companies.

12. World Petroleum Arrangements, p. 47.

13. Ibid, p. 48.

14. Meed, 15/10/1980.

15. Sudan Now, p. 11.

16. Ibid.

CHAPTER III

THE INTERNATIONAL OIL MARKETING SYSTEM

3.0. INTRODUCTION

The previous chapter illuminated that the Sudan will be an oil producer in 1986; therefore understanding the international oil marketing system is crucial for the country.

This chapter attempts to describe the international oil marketing system. As any market, the nature of the product and its characteristics are important for understanding the marketing system. The oil marketing system is influenced by various marketing channels viewed in historical development. The first of these is the historical role played by the seven sisters. Secondly, the emergence of a marginal free market for crude oil. Thirdly, the establishment of what might be called the independent companies. Fourthly, the Soviet Union has appeared as an important force in oil marketing. Finally, the entry of OPEC national companies into the world oil market is also an important factor.

In the final section of this part an attempt will be made to discuss the supply - demand projection of oil.

3.1. THE FUNDAMENTAL CHARACTERISTICS OF INTERNATIONAL OIL INDUSTRY

One of the main characteristics of oil is that it is an exhaustible natural resource, which greatly influenced the market structure; this is in the sense that the continued extraction of oil will lead eventually to its total depletion.

Secondly, oil industry is mostly oriented towards the world market, and that its growth depends on international trade. Leaving out the Soviet Union, and to a much lesser extent the United States of America (which has become heavily dependent on oil imports), the oil industry in the rest of the world relies basically on the oil imports from countries where oil consumption is low. Table (3.1) illustrates the production, reserves and consumption by regions.

Table (3.1)

Major World Regions: Oil Reserves, Production, and Consumption

Area	Population[1] (millions)	Reserves[2] (million barrels)	Reserves per capita (barrels)	Production[3] (000 b/d)	Consumption (000 b/d)	Consumption[4] per capita (b/d)
Asia-Pacific	1415	19756	14	2518	8840	.006
Western Europe	355	22923	69	2825	12985	.038
Middle East	170	369285	2172	12464	1685	.009
Africa	445	572	126	4454	1565	.003
Western Hemisphere	595	115287	194	15990	21970	.037
Centrally Planned Economies	1385	85115	62	14650	12800	.009
World	4365	670189	154	53002	59845	.013

1. 1980 estimates.
2. As of January 1, 1983.
3. 1982 daily average.
4. 1981 daily average.

Source: Oil and Gas Journal, December 27, 1982.

Another characteristic of this industry is its steady and sustained growth, resulting from the fundamental changes which have occurred in the economies of the industrialized countries, particularly since the second world war, and the transformation of their energy structure from a basic reliance on coal to a basic reliance on oil and gas. This transformation was due to the properties of oil, which made it the most suitable fuel for the technological innovations and changes necessary for the western economy.

An important feature which indicates the uniqueness of the oil industry is its integrated nature. Indeed oil cannot be made available to end consumers without being passed through various phases, each of which generates new added values. These phases are exploration, discovery, transportation, and refining. Therefore the investment in one phase of the industry depends largely on the nature and size of investment in the other phases, and the amount of investment at each phase forms the market for the preceding phase and so on.

A further characteristic of oil is that it is highly capital and technology intensive. The capital costs (expenditures necessary for installing production capacities), particularly at the phase of crude discovery and development, constitute a very high proportion of the total cost involved in the oil industry in general.

All these factors together reflect that oil is a strategic commodity and therefore is closely linked to the world power politics.

3.2. THE STRUCTURE OF THE INTERNATIONAL OIL MARKETING SYSTEM

3.2.0 INTRODUCTION

As mentioned at the beginning of this chapter, the oil marketing system is governed by various historical developments.

3.2.1 THE SEVEN SISTERS[1]

From the late 20's to the early 70's, oil industry has been dominated by seven international highly integrated oil companies commonly referred to as the "seven sisters". The significance of such control is reflected in Table (3.2).

Table (3.2)

Ownership of Crude Oil Reserves
World-wide (%)

	1953	1963	1970	1975	1977	1979	1982
Seven Majors	87	82	61	30	22	25	31
Other Private Companies	6	9	33	8	7	20	21
Producing Governments	7	9	6	62	71	55	48

Source: Shell Briefing Service (SBS), 1982.

The cartel extends to the field of oil refining and transporting facilities in the world outside the centrally planned economies. As a result, the companies horizontally and vertically integrated and the international flow of crude oil was confined to a closed circuit of international channels for the crude oil exchanges within the cartel system of integrated operations. Hence a market in a proper sense of the word for crude oil entering international trade, did not exist. Naturally the quantities of crude oil produced were limited by the needs of the cartel only. As a result there was no surplus of crude oil made available for purchase by third party sellers.[2]

3.2.2 THE EMERGENCE OF A MARGINAL FREE MARKET FOR CRUDE OIL

One of the most significant developments of the 1950's which had a great influence on the nature of the market was the emergence of oil buyers, seeking trade in a free market outside the channels of the "seven sisters". This free market is institutionalized mainly by the so-called "independent companies". The independent companies can be divided into three groups: Non-American independent companies (Burmah Oil Co., CFP, Petrofina, etc.); American independent companies (Continental Oil, Marathon Oil, and Philips); and state oil companies like Ente Nazionale Idrocarburi (ENI).[4] The independent companies started to produce crude oil from the producing regions. From the marketing point of view, their investment were basically geared not to the international market as much as to the markets of their home countries. This was the case of the American independent oil companies who looked at the U.S. markets as their main outlets for the oil produced from oil ventures outside the United States.

A second factor is the role played by the "Soviet Union", where its production started to increase at a rate higher than its domestic consumption. The Soviet Union's desire to export crude oil was sharpened by its needs for foreign exchange. This emergence of the Soviet Union added a new impetus to the formation of a "free market" from buyers and sellers of crude oil independent of the cartel.[3]

The entry of the national oil companies of the consuming countries like ENI in the investment phase of crude oil production in the producing area was a third factor behind the development of a free oil market. The purpose of the entry of these companies was to secure oil imports for their own countries rather than to sell on the international market. Nevertheless, they ended in practice by partially entering the free market as both buyers and sellers at the same time.[4]

Al-Chalabi (1980) argues that:

> "They did this in order to meet the requirements of the refineries that they owned, and to achieve quantitative and qualitative balances in these requirements. (The oil produced by these companies might be of a quality which did not suit the refining configurations or consumption patterns in their countries; this obliged them either to sell that blending with the oil that they secured".[5]

All these developments led to a growth in the spot oil market independently from the major closed circuits and caused major changes in the world oil market and oil trade. Although this market remained marginal, never exceeding a small proportion (about 10 percent) of the volume of oil entering world trade, its existence nevertheless marked the beginning of major changes in the market structure. It led to an important curbing of the role of the major companies and the gradual entry of the national oil companies of OPEC. This market also strenghtened the political trend in some of the producing countries towards a government take-over of the national oil wealth, because the presence of these marketing outlets guaranteeing a minimum level of government oil sales made the take-over a practical possibility.[6]

At the same time, the existence of the spot oil market also weakened the inter-company relations in the cartel and led to competition among the majors. This because some of the companies, notably B.P. and Esso, had begun to enter the spot market as crude sellers, while others were doing so in a small way as buyers.

In more practical terms, one can say that it was the presence of this small but growing market that has enabled the national oil companies in some OPEC members to gain, since the late 1960's, access to world oil marketing, albeit on a partial and limited scale.[7]

3.2.3 THE OPEC NATIONAL OIL COMPANIES

The crucial development that occurred at the beginning of the decade of the 70's radically altered the situation

in the oil market and considerably strenghtened the role of the national oil companies.

These developments concerned both the supply side and the demand side. From the demand side, there was the increase in the entry of independent buyers into the world market, notably from the United States, the centrally planned economies, and the national oil companies of the industrialized consumer countries such as Deminex and Petro Bras.[8]

The entry of the United States into the free market as a buyer of increasing quantities of crude was an important development in the demand side of the market.

Indeed the development in the oil industry during 1970's have been more important for the supply side of independent oil entering international trade than the demand side, since they have led to a sudden and rapid increase in the quantities of independent oil being offered for sale by the oil producing exporting countries. This was accompanied by nationalization measures. The nationalization measures which were implemented by some OPEC members were the indicators of real structural change in the marketing relationships towards replacement of the major oil companies by the national oil companies of OPEC. This structural change is reflected in Table (3.3).

Table (3.3)

Shifts in Oil Industry Ownership and Sales of Crude Oil and Products

(%)

	1970	1982
Crude Oil Ownership		
The Seven Majors	61	22
Other Multi-Nationals	33	19
Producing Countries	6	59
Product Sales		
The Seven Majors	50	40
Other Multi-Nationals	41	42
Producing Countries	9	18

Sources: International Petroleum Encyclopedia, 1971 and 1983.

From the above discussion I can conclude that OPEC did not only influence the forces of supply and demand but also created its own marketing channels i.e. its national oil companies.

3.3 THE RECENT CHANGES IN THE WORLD OIL MARKET

In this section I will focuss more specifically upon the recent changes in the world oil market. This could be treated by analysing the supply-demand relationship in the oil market during the period 1973-1983.

3.3.1 THE OIL MARKET DURING THE PERIOD 1973-1981

As I discussed in the previous section, before 1973 the oil market is mainly dominated by the major oil companies "the seven sisters", and to a lesser extent by the marginal free market "the spot market". In 1973, and after the Middle East war, the role of OPEC and its influence over the market has increased. This development is attributed to two developments unfavourable to the economic interests of the oil producing countries which were:

(i) The exchange value of the dollar in relation to other currencies was falling.

(ii) The rate of inflation was rising rapidly fuelled by an economic boom.[9]

OPEC countries were becoming dissatisfied with the erosion in the real value of the unit price of oil. But they were only able to alter the situation in their favour when they enjoyed market powers. This power arises when the oil supply/demand balance tightens on the market. This is precisely what happened in late 1972 and throughout 1973. The market began to tighten well before the Arab-Israeli war. The latest point is an important fact which many commentators and authors on oil affairs either seem unaware of, or prefer to ignore.[10] The tightening of the market was being signalled by all the usual indicators: tanker freight rates, product prices and spot crude prices.

To give one example, the world average realized price of crude had risen by US$ 2 a barrel between October 1972 and September 1973, but to be compared with an increase of less than 50 cents in the posted price of the Arabian Light crude oil.[11] The OPEC price rise of October 1973 is a natural result of these developments. It is vain to seek a political explanation for this price rise which was entirely due to the tightening of the oil market. The Arab-Israeli war and the production cut-back tightened the market further. They created much uncertainty among oil buyers who began to bid-up spot prices to unprecedented levels. Transactions at $ 12 per barrel and above were being reported in 1976. OPEC followed suit by raising the posted price of Arabian Light to $ 11.65 in the same direction as the spot, but well below the maximum level attained. Table (3.4) points out the fluctuation of OPEC prices.

From 1976 up to 1978, the price of the crude oil was characterized by some degree of stability. In 1978, OPEC was dissatisfied with world inflation and another weakening of the dollar.[12] The market had been fairly balanced, if not a bit slack, since the beginning of 1977. However, by mid 1978, before the events in Iran, certain timid signs of tightening started to emerge Product prices began to rise and spot prices of crude oil to firm up (See Table 3.4). The events in Iran provoked a price explosion, largely due to sudden structural changes in the industry and to oil buyers' reaction to uncertainty. Oil companies were induced to build up their inventories immediately after the disruption. The build-up started very early in the second quarter of 1979, and continued until the third quarter of 1980. This was a major build-up, taking inventories to a historically unprecedented high level. Thus, demand for oil increased for inventory purpose at a time when available supplies were more than sufficient to meet consumption requirements. This increased demand fuelled further price rise in 1979, 1980 and 1981 (See Table 3.4).

Table (3.4)

The Ups and Downs of OPEC Prices, 1973 - 1983

($/B)

Year		Mideast Light Crude -34		Mideast Heavy Crude -31		African Light Crude -37	
		Official Price	Spot Price	Offical Price	Spot Price	Official Price	Spot Price
1973	1st Q	2.10	2.08	1.97	1.94	3.10	3.05
	2nd Q	2.25	2.35	2.10	2.20	3.30	3.75
	3rd Q	2.55	2.70	2.40	2.55	3.85	4.50
	4th Q	3.65	4.10	3.50	3.90	5.90	7.00
1974	1st Q	8.65	13.00	8.57	11.00	10.75	15.50
	2nd Q	9.60	10.60	9.51	10.00	11.55	13.40
	3rd Q	9.60	10.00	9.51	9.80	11.55	11.50
	4th Q	10.40	10.30	10.17	10.20	11.75	11.70
1975	1st Q	10.46	10.42	10.37	10.35	11.80	11.50
	2nd Q	10.46	10.42	10.37	10.35	11.80	11.40
	3rd Q	10.46	10.43	10.37	10.35	11.43	11.50
	4th Q	10.46	10.46	10.37	10.35	12.70	11.60
1976	1st Q	11.51	11.51	11.30	11.18	12.84	12.90
	2nd Q	11.51	11.51	11.30	11.18	12.84	12.95
	3rd Q	11.51	11.60	11.23	11.25	13.10	13.15
	4th Q	11.51	11.90	11.23	11.40	13.10	13.56

1977	1st Q	12.09	12.50	12.37	12.30	14.33	14.45
	2nd Q	12.09	12.45	12.37	12.30	14.33	14.45
	3rd Q	12.70	12.63	12.37	12.20	14.63	14.28
	4th Q	12.70	12.68	12.37	12.12	14.63	14.05
1978	1st Q	12.70	12.66	12.27	12.10	14.33	14.00
	2nd Q	12.70	12.70	12.27	12.07	13.97	13.89
	3rd Q	12.70	12.79	12.27	12.13	13.87	13.98
	4th Q	12.70	13.50	12.27	12.75	13.97	15.00
1979	1st Q	13.48	18.35	13.08	16.90	14.84	21.05
	2nd Q	16.15	27.35	16.29	25.70	19.52	29.90
	3rd Q	18.89	32.90	18.96	29.80	23.41	35.75
	4th Q	22.84	38.17	23.32	34.50	26.14	40.33
1980	1st Q	27.17	36.58	27.90	33.75	34.67	38.92
	2nd Q	28.82	35.52	29.22	33.88	36.72	38.15
	3rd Q	30.21	33.30	30.81	32.08	37.73	34.77
	4th Q	31.33	38.63	31.22	37.63	36.90	39.63
1981	1st Q	32.60	37.32	33.91	36.40	40.30	38.76
	2nd Q	33.00	33.58	34.10	32.55	40.30	35.36
	3rd Q	33.05	32.06	34.02	30.46	39.53	35.62
	4th Q	34.00	33.73	33.36	31.92	37.43	36.81
1982	1st Q	34.00	30.00	32.40	29.25	36.52	33.00
	2nd Q	34.00	32.00	32.40	31.25	36.52	34.00
	3rd Q	34.00	31.25	32.40	30.25	36.52	33.25
	4th Q	34.00	30.50	32.40	29.75	36.52	32.25
1983	1st Q	29.00	28.44	27.40	27.50	30.02	29.13
	2nd Q	29.00	28.98	27.40	27.62	30.02	30.31
	3rd Q	29.00	28.61	27.40	27.41	30.02	30.83
	4th Q	29.00	28.56	27.40	27.48	30.02	30.00

Source: Adapted from PIW, April 12, 1982, p. 11.
PIW Special Supplement, April 18, 1984.

3.3.2 THE OIL MARKET DURING THE PERIOD 1982 - 1983

As a reaction to the increase in oil prices in 1973, the advanced industrialized countries established the International Energy Agency (I.E.A.).[13] As an anti-OPEC organization, IEA began to implement its policies. These policies are mainly oil conservation policies. The IEA also encouraged policies aimed at increasing oil discoveries in the West to reduce the political and economic risk on depending on the Middle East as a major source of crude oil. In fact, the new price formula of the OPEC in 1979 resulted in new incentives for explorations and production from other zones in the Western hemisphere (i.e. Mexico, Canada, North Sea). As a result from this policy, the non-OPEC production of oil surpassed OPEC production for the first time in 1982. From the available figures in Table (3.5) one can see that OPEC production as a percentage from the total world production (excluded centrally planned economies), has declined to just 43.2% in 1983 compared with 65.1% in 1974.

In addition to the economic recession in the West, there are some factors responsible for the drastic fall in oil use. These factors are:

(i) IEA did its utmost to minimize its member dependence on OPEC oil, inducing more oil production from non-OPEC countries as I discussed before, and encouraging the development of alternative energy. Apart from that, the economic recession in the West helped them in their efforts to curtail oil consumption.

(ii) The historical relationship between energy and GDP growth had been broken because of the wide ranging structural change in the industry. For example the machine now takes less energy input to produce an equivalent unit of domestic product. This had happened in the wake of energy's conservation policy.[14]

(iii) A new phenomenon had emerged after the Iranian revolution (1978 - 1979), and the crude price rises of the late 1970's.

Table (3.5)

OPEC and non-OPEC Production 1973 - 1983

Thousand Barrels

	OPEC Production	% of the Total World[1]	Non-OPEC Production	% of the Total World	Total World
1973	11,315,925	64.6	6,191,670	35.4	17,507,595
1974	11,216,064	65.1	6,012,790	34.9	17,228,854
1975	9,923,018	62.7	5,907,910	37.3	15,309,928
1976	11,252,108	65.3	5,968,690	34.7	17,220,798
1977	11,413,025	64.3	6,334,150	36.7	17,747,175
1978	10,879,325	61.4	6,831.960	38.6	17,711,285
1979	11,289,223	60.9	7,223,460	39.1	18,512,683
1980	9,838,245	56.4	7,593,300	43.6	17,431,545
1981	8,208,808	51.7	7,684,000	49.3	15,892,808
1982	6,751,708	45.8	7,981,000	55.2	14,732,708
1983	6,380,522	43.2	8,402,000	56.8	14,782,522

[1] Excluded Centrally Planned Economies.

Source: Petroleum Economist, July 1984.
P.I.W., October 15, 1984.

In the advanced industrialized countries, consumers started gathering reserves of crude oil, and when the economic climate changed, they unloaded these stock piles onto a stagnant market.

All these factors forced OPEC for the first time since its formation (1960) to pass a resolution to lower the price of the Arabian Light crude oil, which is the marker crude oil of OPEC, from US$ 34/b to 29/b. To protect their new formula, the OPEC has relied more on cutting the level of production to 17.5 mb/d for the remainder of 1983. A production quota was set for each member except Saudi Arabia which will continue as an equilibrating or swing producer.

3.3.3. AN ANALYSIS FOR THE SUPPLY-DEMAND RELATIONSHIP DURING THE PERIOD 1973 - 1983

Although it is difficult to analyse the supply-demand relationship in oil, an attempt will be made in this section to analyse this relationship during the period under the study.

From the demand side, the 1973 - 1976 episode which we have been analysing ends with a significant increase in world oil demand in 1976. Oil demand in the world (excluding centrally planned countries) dropped from 47.9 million b/d in 1973 to 46.3 million b/d in 1974 and 45.2 million b/d in 1975.[15] But this"demand crisis" ended after 18 months. In 1976 demand rose to 48 million b/d, reaching a higher level than the peak of 1973. If we compare this episode with developments in the world oil market during the period 1978 - 1981, we will immediately recognize striking similarities. Many features of the two periods which I have discussed are identical. The same patterns of behaviour seem to recur; the same patterns of responses have been obtained.

In my attempt to analyse the demand side, I feel it is necessary to demonstrate a point about the spot prices. As we see from the trend in the oil market (see Table 3.4), spot prices led the movement throughout 1979. OPEC followed

suit with a lag and official price rises fell short of the levels attained on the spot market. The convergence between spot and official prices occurred much later when the market slackened and spot prices sharply declined while OPEC was still in the process of catching up. As in 1974, the OPEC price structure became distorted for exactly the same reasons. In a tight situation every producer in a seller market has considerable freedom in matters of pricing.

Finally, one can argue that OPEC had been successful in holding the official price in the past, that is in 1975, 1977 and 1978 when the oil market was similarly limp. However, this had been due largely to the fact that only a minor share of the world demand could be satisfied by the price-cutting non-OPEC competitors.[16] OPEC was a major and not a residual producer (see Table 3.5). In early 1983 the situation had demonstrably changed; OPEC was at the end of the buyer's shopping list and had to bear the larger brand of the market's down swing. To pursue the point further I should illustrate that while world oil production declined by 4.8 percent in 1980, 6 percent in 1981, and 6.2 percent in 1982, OPEC's output showed a drop of 15.5 percent in 1980, 15.7 percent in 1981 and 18.7 percent in 1982.[17] In a situation like this, cutting OPEC production to a low level capable of defending the official price was thus not as easy as in previous years, because the member's "irriducible minimum" output and foreign exchange needs had collectively grown beyond that level.

Aside from the above, it can be recognized from the supply side that the inventory cycle of 1978 - 1981 has the same qualitative features as the inventory cycle of 1973 - 1975. The supply crisis catches everybody napping with inadequate cushion from inventories. For a short period during the supply disruption, inventories are naturally run down.

As soon as the worst impact of the supply disruption is absorbed, the oil companies attempt to build up stocks to

very high levels, and the process prolongs the period during which the market is tight and fuels further price increases. The crisis of 1973 - 1974 and 1979 - 1980 each involved two stages: a supply disruption followed by a rise in demand entirely attributable to a frantic urge to build up stocks. But stock levels cannot be increased forever. Sooner or later the process has to stop and the demand for oil begins to decline for the simple reason that inventory demand dwindles down to zero. This fall in demand, which is usually compounded by a decrease in consumption due to the price rise, produces a glut on the oil market. The oil glut enables the oil companies to shop around. They start fighting against high price producers and use their inventory cushion as a weapon in the price war. They draw down their inventories and this process results in a further reduction in oil demand which aggravates the oil glut. Finally, the oil glut leads the industry to expect a fall in the real price of oil, and the expectation of falling prices leads to a further reduction in stocks. All that happened in 1974 - 1975 as described here, and since 1983 we are witnessing once again the same phenomenon which faces OPEC in the oil market. The ability to cope with a slack market is significantly enhanced by an orderly price structure. The oil market stabilized as soon as the various oil producing countries adjusted their differentials from the market crude to the correct level.

In conclusion it can be said that an orderly price structure has two main beneficial effects on the market:

(i) First, reduction in world oil demand would be distributed in equitable proportion between various producers. A situation in which every producer suffers the same relative reduction in off-take as everybody else is infinitely more tolerable than the current situation, where some countries have to cope with a very large drop in export volumes while others escape unscathed.

(ii) Secondly, reduction in oil demand would not be as large with an orderly price structure; companies would not need to use the inventory weapon to force price adjustments.[18]

3.4. THE NATURE OF THE DEMAND FOR ENERGY AND OIL

The emphasis in this section will be on the nature of demand for energy in general, and oil in particular.

In general, the demand for energy is relatively inelastic with respect to its price over a moderate period of time. The reason for this is mainly due to the very particular use; the cost of energy is a small fraction of the cost of the main product service demanded.

The demand for a particular energy source is, however, more elastic with respect to its price because buyers are able to substitute one energy source for another. But in the short or medium term, it is quite difficult to convert from one source of energy to another since costly and specialized mechanical energy conversion equipment cannot be economically replaced within a short period of time.[19] To further the later point, I can argue that the demand for crude oil which is derived from demands for its various products generally, is quite inelastic in the short or medium term. The demand for crude oil from a particular region could be elastic due to the buyer's ability to substitute oil from one region to that of another region. Such a possibility has been effectively curtailed by the presence of an oil exporter's organization. However, the demand for OPEC can be considered as an "excess" demand reflecting the difference between the quantity of oil demanded and the quantity supplied in the consuming countries at different prices. Because the nature of the demand for OPEC oil is an "excess" demand, it will tend to be more price elastic than the total demand for oil.

3.5. SUPPLY AND DEMAND PROJECTION OF OIL IN THE MEDIUM TERM

In the previous discussion, an attempt was made to analyse the structure and functioning of the international oil market and to assess the main force within the marketing system. An issue of great importance, however, is the forces of supply and demand within which this market operates. It is important to point out before going further that, the future of oil in the world economy is a matter of conjuncture. This is mainly reflected in the sharp divergence in the estimates, projections, and guesswork regarding the oil balance, which are governed by the difficulties of the behaviour of the forces of supply and demand.[21]

The major factors affecting demand includes:

(a) The uncertain rate of economic growth in the major oil consuming countries, and to a lesser extent, the development trend within the OPEC and the other developing countries;

(b) the unclear trend in energy conservation in terms of both increasing energy efficiency and changes in life styles;

(c) the unpredictable behaviour of oil prices;

(d) the influence of price and income elasticities of the demand for oil.[22]

On the supply side, the crucial elements include:

(i) Uncertain prospects for the global expansion of production capacity in oil and gas;

(ii) the rate of progress in the development of alternative sources, particularly coal, nuclear power, and heavy oil;

(iii) the level of "desired" production and capacity utilization chosen by OPEC members; and

(iv) the "constraints and incentives" under which non-OPEC suppliers may be expected to supplement OPEC producers.[23]

Furthermore, supply and demand uncertainties involve a host of non-economic variables that makes projections particularly hazardous. Indeed prediction has already been a dangerous game judging by the failure of previous reachings of the future of international oil prices and energy demand pattern; no purpose would be served by attempting to guess oil prices in 1990. The tendency has been for forcasters to be conditioned by the psychology of market trends at the time of their calculation. Therefore while it is impossible to predict the future, it is imperative to draw conclusions from the various projections. The I.E.A. (1982) sets two major basic assumptions to reflect economic growth rates and oil prices.

The first forcast is termed as high demand senario, based on constant oil prices and high economic growth. The basic assumption in this view is that oil prices would maintain their real value in the long run, i.e. increase at a rate of inflation between the mid 1980's and the end of the century. Untill 1985, however, real oil prices are assumed to decline by 3.9% per year, i.e. by 1 percentage point more than the 1974 - 1978 trend in world oil prices. The result would be a real oil price of about US$ 28 per barrel in constant 1981 dollars, after the mid-1980's. In line with pricing outlook, this view assumes economic growth rates of 2.6% per year between 1980 and 1985, and 3.2% in the 1985 - 2000 period.[24]

The low demand senario assumes that energy demand growth would be dampened by gradually rising oil prices and subdued economic growth. This based on the assumption of 3% annual increase in real oil price after 1985. Accordingly real oil price in constant 1981 dollars would fall to about US$ 29 a barrel in 1985 and then grow to a level of about US$ 45 per barrel at the end of the century. Like the first approach, a recovery of the world economy is assumed in

the first half of the 1980's but at lower rates, averaging 2.4% per year through 1985 and 2.7% per year over the period 1985 - 2000. A point should be made about the growth rates which seem high in light of the present recession; they would not be sufficient to effectively curb unemployment. In conclusion, the overall economic performance associated with this approach would be far from satisfactory.[25]

Table (3.6)

Underlying Assumptions of Demand Projections

	1980 - 1985	1985 - 2000
High Demand Senario		
Constant Oil Price/ High Growth		
Real Oil Prices	- 3.9%%	+ 0 %%
Economic Growth	+ 2.64%	+ 3.2%%
Low Demand Senario		
Rising Oil Prices/ Lower Growth		
Real Oil Prices	- 3.3%%	+ 3.0%
Economic Growth	+ 2.4%	+ 2.7%

Source: World Energy Outlook, 1982, p. 24.

Aside from the above assumptions, and with regard to the supply-demand projection of oil, it can be said that energy markets and the oil market in particular, are likely to remain deceptively stable through the mid-1980's, but are projected to be increasingly tight thereafter.[26]

As is demonstrated in Table (3.7), slackening overall energy demand, together with relatively high levels of

domestic oil production will contribute to decline in OECD oil import demand over the next few years. Therefore, rising oil demand trend in OPEC and other developing countries are likely to be absorbed by the oil market without major strains.

The oil market is likely to move gradually towards a basic disequilibrium again as the growing world oil demand will be confronted with stagnating production. The oil output in North America, the North Sea and the Soviet Union is projected to decline and the OPEC production could well be constrained by declining reserves in some countries and by political decisions in others. The I.E.A. study pointed out that the oil import requirements are expected to rise in the LDC's as a result of the economic development of these countries. The OECD demand for oil imports, on the other hand, would decline slightly from present levels if non-oil energy use grows substantially, but may well increase steeply in the absence of additional price or policy incentives to restrain oil consumption and to increase domestic production.

As a concluding remark to the I.E.A. assumptions, it can be argued that overall demand developments together with limited progress in inter-fuel substitution could set the stage for an oil market situation where demand would again tend to exceed available supplies at the end of the decade. With growing margins of excess demand, substantial price pressures would build up and might ultimately find an outlet in renewed erratic price movements.

Another forcast was made by U.S. CIA in early 1977. The Agency projected that world demand would exceed production capacity by 1985 causing a sharp rise in oil prices. This pessimistic picture based on assumptions that the U.S.S.R. would become a net importer of oil in the early 1980's.

Table (3.7)

OECD Energy Demand and the World Oil Balance[1]
(Mb/d)[2]

	1980	1985	1990	2000
OECD				
Total Primary Energy	79.1	81 - 82	89 - 93	105 - 121
Net Oil Energy Demand	40.4	46	55 - 56	72 - 78
Oil Demand	38.7	35 - 36	34 - 37	33 - 43
Oil Import Demand	24.2	21	20 - 24	18 - 30
World Oil Demand				
OECD	38.7	35 - 36	34 - 37	33 - 43
OPEC	2.9	4	5 - 6	8 - 9
Non-OPEC LDC's[3]	7.9	9 - 10	11 - 13	17 - 22
Total	49.5	48 - 50	50 - 56	58 - 74
World Oil Supply				
OECD[4]	14.8	15	14 - 13	15 - 13
OPEC[5]	27.5	23 - 26	27 - 29	24 - 28
Non-OPEC LDC's	5.3	8 - 9	9 - 11	9 - 13
CPE[6] Net Exports (imports)	1.3	1 - (1)	0 - (2)	0 - (2)
Processing Gains[7]	0.6	0.6	0.6	0.6
Total	49.5	48 - 50	50 - 52	49 - 53
Excess Demand	-	-	0 - 4	9 - 21

1 Figures mentioned first from low demand senario.

2 Conversion factor: 1Mb/d= 48.2 Mtoe or 1toe= 7.57 barrels.

3 Non-OPEC developing countries (also includes South Africa and Israel).

4 Including synfuels.

5 OPEC estimates are basically for "possible production as indicated by reserves and projected additions to reserves.

6 Centrally planned economies.

7 Gains in volume (not in weight) due to the refining process.

Source: World Energy Outlook, 1982, p. 26.

The agency however, revised and updated its forcast in the mid of 1981, predicting this time that, while the Soviet Union production actually peaked in 1980, the USSR might still be able to keep exporting oil through 1985.[27]

The agency original forcasts was challenged by many oil economists[31] who anticipated a low demand for and high supply of energy to higher price elasticities.

Finally one can say that there are however some of the projections regarding the behaviour of the forces of supply and demand. As the discussion shows though, most of the studies predicting the behaviour of oil did not provide an answer for this behaviour. Nevertheless, they are indicative of the future of oil demand and supply.

3.6. SUMMARY

This chapter has focussed upon the international oil marketing system. The evolution of the international oil market in its historical perspective has been discussed.

The chapter demonstrated that before 1973, the oil market was mainly dominated by the major oil companies "the seven sisters", and to a lesser extent by the spot oil market which was institutionalized by the independent oil companies. It is also argued that the growth in the spot oil market independently from the major closed circuits led to major changes in the world oil market and oil trade.

The study has shown that the role of OPEC has increased after the Middle East war of 1973 compared to their role pre-1973. In this context the chapter pointed out that OPEC countries were becoming dissatisfied with the erosion in the real value of the unit price of oil. But they were only able to alter the situation in their favour when they enjoyed market powers. This is precisely what happened in late 1972 and throughout 1973. The chapter illustrated that OPEC did not only influence the

forces of supply and demand but also created its own marketing channel, i.e. national oil companies.

I have also attempted to analyse the supply-demand relationship during the period 1973-1983. With regard to the role of OPEC, the study indicated that OPEC had been successful in holding official prices in the past when the oil market was similarly limp, and OPEC was a major and not a residual producer. However, the situation had demonstrably changed since 1983. It is argued in this chapter that in a situation like now, cutting OPEC production to a low level capable of defending the official price was not as easy as in previous years.

The chapter reviewed various projections of the forces of supply and demand. These senarios show that the oil glut will be gradually eliminated. It can also be seen from these projections that demand would again tend to exceed available supplies at the end of the decade.

Chapter III, Footnotes

1. The influence of the seven major oil companies "the seven sisters" on the world oil scene has been widely discussed by Adelman (1972), Frankel (1946), Hartshou (1967), Penrose (1968), Sampson (1975), and Dasgupta (1975).

2. Penrose, 1968, p. 133.

3. Mattei, the first president of ENI who did not like the international majors whom he accused of monopolistic and discriminatory behaviour, began in an attempt to assert the independence of ENI, to import oil in 1958 from the only large independent supplier available at that time (U.S.S.R.).
The story of Mattei and ENI has been told in Dechert (1963), Frankel (1966), and Votaw (1966).

4. I should demonstrate here that, in the case of ENI, the majors were in firm control of the Italian oil market, and although they could have been forced to leave by the post-facist government, there were no other sources beside the majors that could completely satisfy Italy's need for imported petroleum fuels. ENI which was then being molded together by its first president, Mattei, adapted a strategy of trying to lessen Italy's dependence on the majors by making ENI itself into a multi-national company. See: Penrose, pp. 142-144.

5. Al-Chalabi, Fadhil, 1980, p. 38.

6. Ibid., p. 39.

7. The Algerian national oil company (Sonatrach) started to market the oil at its disposal from the production of the Americna companies of which the government had taken control following the Middle East war of 1967. The Iranian National Oil Company (NIOC) was also able to market small quantities of oil during the same period. See Al-Chalabi, op.cit., p. 39.

8. Deminex is a West-Germany based company, and Petro-Bras (Petroleo Brasileiro) is a Brazilian State oil company.

9. Jaidah, Ali, OPEC Bulletin, November 1983, pp. 1-14.

10. See Ben-Shahar, H. (1976), and Doran, C. (1977).

11. Jaidah, Ali, p. 2.

12. Nguema, M., OPEC Bulletin, February 1983, p. 6.

13. In February 1974, thirteen of the twenty four OECD states convened the Washington Energy Conference, underlining the urgency of the situation. In November 1974, sixteen OECD members met in Paris and signed an Agreement on International Energy Programme (IEP). Twenty one OECD states currently are signatories to the IEP. France is the main non-signatory. See Prast, W., and Lax, H., 1983.

14. Singers, S., 1983. p. 342.

15. The figures extracted from the Petroleum Encyclopedia,75.

16. Amuzegar, J., 1983, p. 94.

17. Neguema, M., p. 7.

18. Jaidah, A., p. 8.

19. The discussion follows closely Jacoby's line of argument. See Jacoby, N., 1974.

20. Mantoura, Claude, 1978, p. 16.

21. In the past ten years, nearly one hundred studies and projections of future energy supply and demand have been made- mostly in the developing countries- by public and private organizations. Of these almost one fourth have dealt exclusively with the supply and demand of oil. For a partial list of these references see Edwin, A., Deagle, Jr., Bijan Rahmani, and Richard Huff, 1981.

22. Amuzegar, p. 6.

23. Ibid.

24. I.E.A., 1982, p. 25.

25. Ibid.

26. I.E.A., p. 26.

27. Interestingly enough, the North Atlantic Treaty Organization (NATO) conference on energy in April 1981 concluded that the U.S.S.R. may become a major energy supplier to the West before the end of the century.

CHAPTER IV

THE SPOT OIL MARKET, ITS STRUCTURE, AND FUNCTIONING

4.0. INTRODUCTION

The previous discussion has shown that the spot oil market existed on the fringes of the oil industry, dominated by the integrated companies. However, this market has been institutionalized by various economic and political forces, and its behaviour is mainly governed by these forces. Although this "free" market has long remained rather marginal, never exceeding under usual circumstances more than a small proportion (about 10 percent) of the volume of oil entering the world trade, its existence has nevertheless marked the beginning of major changes in the oil market structure as we pointed out in the previous chapter.

This chapter has been devoted to describe the spot oil market with special reference to Rotterdan spot oil market. The economic function of the spot oil market will be discussed. Finally, an attempt will be made to project the role of the spot oil market in the medium term.

4.1. SPOT OIL MARKET: DEFINITION

A spot market in its normal form might be defined as the balancing market between supply and demand where the final balancing of surpluses and deficits takes place. In times of easy supply, prices on the spot market will tend to be lower than main stream prices; in times of tight supply they will tend to be higher. In other words they will follow the laws of supply and demand, just as in any other commodity market. If there is such a thing as "the Rotterdam market" it is not a market and it is not at Rotterdam, that is, there is no market in the conventional sense where people meet to match bid and offers.

But indeed there is a trading activity in which anyone with a rented office, financial back-up and telephone/telex can engage.

The location however, may be somewhere between Rotterdam, London, Paris, Milan, Hamburg and southern Germany.

In fact the term "Rotterdam" covers two distinct but linked types of trade:

(i) International cargo trading that takes place between the centres mentioned above;

(ii) barge trading centred mainly in Rotterdam and covering trade from the ARA-range (Antwerp-Rotterdam-Amsterdam) of ports up river of Germany, Switserland, Belgium and sometimes France.

4.2. THE HISTORICAL DEVELOPMENT OF THE SPOT OIL MARKETS

4.2.0 THE SPOT OIL MARKETS

This part attempts to demonstrate the historical development of the spot oil markets. Although the centre of the theme will be the Rotterdam spot oil market, an attempt will also be made to illustrate very briefly the development of the Mediterranian spot oil market.

4.2.1 DEVELOPMENT OF THE ROTTERDAM MARKET

Although several refining terminalling areas such as New York Harbor, the Caribbean or the Far East trade centred in Singapore, serve centres for spot trades, it is the Rotterdam market that is most often identified as the heart of spot trading activity. Development of the Rotterdam market has its roots in the growth of the European refining industry after World War II, when most European governments and oil companies undertook refinery construction programs. Emphasis was upon refining within their borders with less investment in Middle Eastern or Caribbean refinery centres. It is argued that there were several advantages to be gained from such a program:

(i) Firstly, by importing crude rather than products, large tankers could be used with significant economies of scale.

(ii) Secondly, the foreign exchange shortage of the post war period made it more economical to buy crude oil for refining in Europe, rather than pay the additional cost for refined oil.

(iii) Finally, by building them close to consuming centres, refineries could be designed to suit the specification of local demand.[1]

As the post war economy boomed, European refinery capacity rose from under 3mb/d in 1948 to more than 35 mb/d in 1972. While 70 percent of the world's crude oil was refined at the source in 1939, by 1950 this share had decreased to 50 percent, and by 1973 it had declined to under 10 percent. This concentration of refineries near the growing West European markets assisted in the development of spot markets in oil products. The imports of Rotterdam six are reflected in Table (4.1).

During the 1950's, trading in oil products began to develop. Companies inexperienced in oil production but with background in shipping and coal became involved in the growing market for refined products and especially in the market for gas oil. Although trade initially flowed down the Rhine river from West Germany to the low countries, it soon expanded up-river, as independent refineries in Italy and the major refineries in the Netherlands (Rotterdam) began to offer supplies to meet the growing German demand.[2] The market for gas oil in particular developed to supply the large German market which is reflected in Table (4.2). Rhine barges moved by canal into Bavaria and into Switserland, and as far as Basle. Much of this market was served by independent distributors without refineries of their own, who imported their products. It was as a result of the need to supply the German market, which was traditionally serviced by a large number of independent traders, that the first international spot market for gas oil developed.[3]

Table (4.1)

Net Imports of Main Product Groups into the Rotterdam Six[1], 1977

Thousand Tonnes

Country	Mogas	Naphtha	Gas/Diesel Oil	Heavy Fuel Oil	Total
Belgium	(-2032)	(-616)	(-2214)	(-3823)	(-8685)
Denmark	310	227	3059	4738	8334
% of inland demand	18.5	73.9	39.1	76.6	57.9
Germany	3651	3232	19800	2641	29324
% of inland demand	16.3	45.7	33.5	11.9	26.5
Netherlands	(-2666)	640	(-9337)	(-7826)	(-19189)
% of inland demand	-	12.1	-	-	-
Sweden	1049	26	4641	7317	13033
% of inland demand	28.7	23.2	51.1	64.6	53.9
Switserland	1767	71	5548	696	8082
% of inland demand	68.4	71.0	77.6	41.1	70.1
Total	2079	3126	21497	3743	30445
% of inland demand	5.6	21.7	22.1	7.6	15.3

[1] Belgium, Netherlands, Denmark, West Germany, Switserland, and Sweden.

Source: Petroleum Economist, April 1979, p. 3.

Table (4.2)

Structure of the German Oil Market 1979

	Percent Shares			
	Gasoline	Diesel Oil	Gas Oil	Fuel Oil
Supplies	100	100	100	100
Domestic[a]	70	85	58	87
Imports	30	15	42	13
- by independent others[b]	05	-	02	-
Wholesale	100	100	100	100
Integrated Companies	89	91	72	83
Independents	11	09	28	17
Retail	100	100	100	100
Integrated Companies	75	80	70	83
Independents	25	20	30	17

[a] Domestically refined.

[b] Integrated Independents with refining capacity elsewhere.

Source: Petroleum Economist, April 1979, p. 4.

The spot trade in Rotterdam market actually encompasses two separate types. One is barge trading which covers the trade from the ARA ports (Antwerp/Rotterdam:Amsterdam) up the Rhine river to Germany, France and Switserland. The barge trade in oil products was made possible by the concentration of refineries built by the majors in and near Rotterdam to serve in-land markets, but was facilitated by the growing barge capacity and storage tanks, built by such firms as Paktank, to serve those markets. By the early 1960's, spot prices quoted for Rhine barge lits were becoming important world-wide as pricing indicators.

Spot quotes has expanded during the 1970's to include sea going cargoes, as both consumers and producers increasingly dealt with supplies that were not subject to the majors' control. The trade in ocean cargoes is largely centred in London and covers international trade between ports around the world.

Today, products with prices linked to Rotterdam pricing come from a variety of places, but from three major sources:

(i) The export refineries of the Mediterranean and, to some extent, those in the Caribbean;

(ii) the major refineries in the ARA area, France, and the United Kingdom (which has recently become an important source);

(iii) the U.S.S.R. and Eastern Europe; in addition, supplies have on occasion come from countries east of Suez, and more can be expected in the future from the refineries of the oil producing countries of the Arabian-Persian Gulf.

The buyers and sellers using the Rotterdam spot market have changed over time. In the period from the mid-1960's to 1974, there was a large increase in the number of participants in the Rotterdam barge trade. Most of these new traders were independents. Prior to the assumption of control over pricing by OPEC, the majors earned most of their profits on their upstream operations. In general, both product and crude prices were determined by the majors and trade on the spot market had marginal impact on the price structure of the industry. The spot oil market was largely a short term market and reflected the long-term, fixed-price contracts that characterized the industry as whole. The major oil firms were largely willing to let the independent traders manage the spot trade, and while occasionally placing surplus lots of refined products on the market, they rarely acted as spot buyers.

Although spot trading of crude oil also grew in 1970's the Rotterdam spot oil market has primarily been dominated by the trade in oil products. Owing to the capital-intensive nature of the refining industry, refiners have preferred to maintain access to a steady supply of crude oil through the use of long-term contracts, rather than relying on short-term spot purchases. Crude oil therefore has traditionally represented only a small portion of the Rotterdam trade (15%-25%)[4].

Since the OPEC induced upheaval of 1973-1974, however, the centre of the oil industry's profitability has shifted down stream. As a result, the larger oil firms have paid closer attention to the activities of the spot market. This became increasingly true as contract prices began to be linked, either directly or indirectly, to published spot prices. The existence of surplus refining capacity, as consumption dropped after the 1973-1974 price increased and the growth of the spot market as a source of supply has helped to end the tightly controlled long-term supply and price structure set by the majors.

Although most of the world's oil continues to be marketed through the majors, increasing volumes of crude oil are moving through independents and national oil companies as I pointed out in Table (3.3). Some producers such as Kuwait, which sold up to 700,000 b/d on the spot market in 1980, have continued to make use of the spot market for crude.[5] The majors have at times been driven to make spot crude oil purchases to acquire refinery feed stocks and meet their commitment. The integrated oil firms now tend to buy more on the Rotterdam spot oil market than they sell. The major refineries have thus reshaped their attitude towards the spot market, and some have established trading subsidiaries in recognition of the new importance of the Rotterdam market.[6]

4.2.2. DEVELOPMENT OF THE MEDITERRANEAN SPOT OIL MARKET

The growth of the Mediterranean spot oil market (or Italy spot oil market as some oil observers refer to it) parallelled the post war rise of the independent oil companies operating in Libya and Algeria, with the building of refineries in Sicily and Sardinia to process North African crude oil. Italy, historically a major net importer, took advantage of both its proximity to the Suez canal and North Africa and the rising demand for oil products.

As a result of the independent policy which has been followed by ENI Company and in order to lessen Italy's dependence on majors, most of the crude oil processed by Mediterranean refineries was supplied by independents with no refineries of their own.[7] The independent companies both supplied the crude oil and marketed the final products, minus the products that the refineries received as partial payment. Oil products were either trans-shipped to Trieste and sent by pipeline northwards to Bavaria, or were shipped by sea through Gibraltar to meet the demands of North West Europe (NWE). In particular, the Italian refineries were an important source of heavy fuel oil. Late 1960's, Italy had become a major source of oil products for the NWE area and, like Rotterdam at that time, a pricing centre in its own right.

The refining capacity of the Mediterranean area was built to meet the burgeoning oil demand of the 1950's and 1960's. By the mid-1970's, however, as the world refinery industry slipped into a state of excess capacity, the Italian refineries, which are simple and unsophisticated, suffered from a loss of markets. In addition, the interrupted use of the Suez canal as a shipping route and the substitution of super tankers to carry crude oil around the Cape of Good Hope, reduced the geographical advantage of the Mediterranean industry. This advantage was further

eroded as North Sea oil and natural gas began to replace the Middle East and African imports.

For these reasons the current Mediterranean market functions as a marginal source of supply. Due to the Italian market positions as the shortest route from North Africa, Mediterranean (Med) spot prices are generally lower than those in Rotterdam. More than geography comes into play here, however; although Mediterranean (Med) prices would theoretically equal NWE prices less freight costs, they need to be slightly lower to be competitive.

From the above discussion one can say that the Mediterranean spot oil market operates in the shadow of the larger Rotterdam market. It functions less as a market in the traditional price-setting sense than it does as an essential source of supply. Its convenient location near the major oil producing centres of the Middle East and its huge capacity justify its continued existence in support of the European trade in oil. The importance of the Mediterranean market was demonstrated in the second half of 1980 when the Italian refining centres easily picked up the slack after Iran's huge refinery in Abadan (the world's largest) was destroyed during the Gulf war.

4.3. THE ECONOMIC FUNCTION OF SPOT OIL MARKET

This section will deal with the problem at hand by focussing on the functioning of the Rotterdam spot oil market. For a better understanding of the economic functioning of the spot oil market, the first part of this section will be devoted to discuss the aspects of "the Balanced Oil Market". The definition "Balanced Oil Market" refers to a market in which the requirements of its refineries could be satisfied by crude availabilities. It was the oil market which existed during the period of the majors' dominance, drawn in chapter III.

4.3.1. ECONOMIC FUNCTION OF THE BALANCED OIL MARKET

In an ideal world for the majors, production, transport, refining and a market would be in a balance, company-by-company. It is common place in the industry that the "seven sisters" have developed complex ways of dealing with crude oil imbalance, by making term commitments and exchanges. Similarly, the balance between owned tankers, term character and spot represents another highly evolved system (a major industry in its own right) for dealing with imbalances in transportation. So it is in dealing with the imbalances between refining and markets. Not the most sophisticated system can ensure that a refining programme is perfectly in balance with its markets. Surpluses of some products and deficits of others are inevitable and must be handled; the surplus will either be stored against a period of shortage or sold; the deficits made up by buying products.

In this market, all oil firms have a hierarchy of balancing criteria within their supply system, broadly:

(i) Each company will seek products or outlets within the limits of its own refining system.

(ii) When this is not adequate, they will have resources to other refineries. In fact, the supply departments of integrated companies are in constant communication; since the flexibility offered by an extended system of supplies and requirements is that much greater than the possibilities within a single company. The variety of deals is also greater, and much of the inter-major balancing in products, as with crudes, takes the form of exchanges where the product is not physically moved, exchange deals can be highly complex, involving multiple ways to arrive at the desired end.

(iii) The residual requirement or availability is what the refiner trades into the independent market by selling or exchanging either direct with the trader or through a broker.[8]

4.3.2. ECONOMIC FUNCTION OF THE SPOT OIL MARKET

From the previous discussion, one can argue that the main economic function of the spot oil market is derived from its role in dealing with the imbalances between supply systems and markets. But the relation between traders and the oil companies are a good deal closer and more complicated than this might suggest. For example, the companies have different policies towards the spot market. These policies are distributed between extremes from complete separation (Texaco) to close involvement (Petrofina). Towards the first extreme are majors (e.g. Exxon), whose policy is to buy when necessity and economics dictate and to sell only reluctantly and little. Towards the other extreme are those (BP), and (KPC). These companies treat the independent traders as part of their market and to whom they are prepared to sell at the going price, as they will to anyone else.[9]

The spot oil market is therefore more than a marginal free market. The larger traders take positions in supply availabilities, entering into term commitments with refineries. These may be "closed" in the sense that the trader has matching requirements, or more often less "open" to be used as the basis for dealing or exchanges.

Moreover, the total range of sources of products gives traders a more solid base than a balancing role for majors would allow. There is some evidence to suggest that majors account for no more than 40% of availabilities in the spot market.[10] The rest comes from private export refineries in the Mediterranean and Caribbean and from state-owned oil companies in East and West Europe and in producing countries. In addition, when the prices indicate, supplies can be drawn into the spot oil market from as far as a field as Japan.

To summarize the traders role, I can argue that traders do not generate products (except for the comparatively rare trader processing deals), nor do they create markets, but they trade between the two. They perform a role in the integrated system that is not an addition of but an addition to a role already being performed by the companies. But they can move more quickly and flexibly and so are able, in some ways, to do it better. This trading mentality does not fit comfortably into a large corporation. They can be seen as an organizational response to the need to perform certain functions that are best carried out outside the main structures of the industry.[11]

In actual terms, the market is a result of distress sales. Indeed refiners set their crude to optimise between products and stay in balance with their markets. Products are only sold into the cargo market when other ways of dealing with them have been exhausted. In order to clear tanks or get rid of material for which there is no storage capacity, the refiner will sell at any price, since the loss on a cargo sold at low prices is far less than the cost of having to reduce refinery runs. By the same reasoning, if a company happens to be short of a product it must be a "distress buyer", prepared to buy at any price in order to be able to honour contractual commitments. A second set of suppliers are the export refiners who cut the market to ribbons by opening up their crude runs as soon as prices rise above their variable costs. The third group of suppliers operate from the base of a different economic system, mainly the East European countries whose production does not share a common cost base with their competitors. None of these sets of circumstances match the situation in which the majors operate in their main markets, the circumstances, and so the prices are untypical and representative only of themselves.

This is a somewhat exaggerated account of a point of view, admittedly, but no argument even faintly resembling it, can be sustained. Firstly, because if a refiner made a habit of selling his production at a loss he would be out of business. Secondly, because there are many buyers and sellers in all but the specialized oil products market sellers are rarely forced down to the lowest nor buyers up to the highest prices they might have to accept. Distress cargoes often make their appearance, approaching North West Europe (N.W.E.) without a buyer and the price does not drop out of sight as a result; it drops to a level where it becomes attractive for a buyer with storage and an eye on market opportunities to take it in. Since there are potentially several buyers, the price is not going to go so far down without someone making a bid, if only to stop the others doing so first. The conncetion between the spot price he pays and the short term market is analogous to that between the spot and term charters in the tanker market. In periods of stability when price equilibrium can be reached, the spot rates will fluctuate around the cost of extra product on the same sort of reasoning. If prices go too high (and with joint products it is misleading to talk in these terms), new supplies will swiftly be made available. When they drop refiners may prefer to buy in the market and adjust their runs accordingly or, as in the case of a distress cargo, a trader will buy it when the differential is enough to cover the cost of storing the product until a time when the market can take it.[12]

These equilibrating influences cannot operate in conditions of price instability, or when there has been a massive shift in market balance. This is the state of the market ruling at present, the imbalance being two-fold, overcapacity in refining due to unrealized expectations of growth in demand; imbalance between the refining and the demand barrel.

To pursue further the point about the imbalance between the refining and the demand barrel, one can say that world demand for refined petroleum products has been oriented towards the light end of barrel, in particular the middle distillates (kerosene and gasoil), and this has been exacerbated by the shrinkage in residual fuel oil demand. On the supply side, more than 86 percent of the world's proven reserves exist as heavy crude oils, which are more difficult to process. Light crude's viscosity and the need for associated gas for other down stream industries compel producers to satisfy the preference of refiners for light crude oil supplies, which are easy to process due to their gravity. All the above mentioned factors compounded by the world's refining over-capacity, call for a structural change in the refining industry. These include:[13]

(i) The demise of the world's hydro-skimming refining capacity.

(ii) The encouragement of OPEC member countries to devise a new policy for building the required sophisticated refining schemes and more complex refinery configurations.

While the construction of sophisticated refining operations in the world helps to reconcile the demand pattern for products, it also presents the possibility of saving refinery fuel costs. This is because the fuel price could exceed more than half the refining expenditures and would make the opeartions more efficient because of the security of crude oil supply and the possibility of avoiding the use of unhomogenized blending feedstock for cracking.[14]

The previous factors led to a shift in the world crude oil supplies towards heavier grades. Although the pattern of crude values varies a bit from one refinery centre to another (for methodology of crude value calculation, see Appendix II). Heavy crudes continue to be a relative bargain in all spot markets; in November 1984 for example, the

Arabian Heavy crude oil is worth about $0.86/a barrel less to refiners than the marker crude Arabian Light, in contrast to the $3 differential on official prices in the Rotterdam spot oil market (see Table 4.3). This shift in oil industry will have an important impact on the demand on the Sudan's crude oil on the spot oil market which will be discussed in the next chapter.

Table (4.3)

What crude is worth to Refiners in the Rotterdam Spot Oil Market

OPEC crudes Type & Gravity	November 1984 official price	spot price	spot product price	1980* official price	spot price	spot product price
Arab Light-34	29.00	28.10	26.30	29.38	35.85	31.76
Arab Medium-31	27.40	27.35	25.93	29.81	34.59	29.82
Arab Heavy-27	26.00	26.72	25.44	28.70	31.50	29.00
African Light-37	28.02	27.90	27.03	36.50	37.90	34.63

* Average

Sources: Adapted from P.I.W. Supplement, Nov. 1984.
P.I.W., Special Supplement, Feb. 2, 1981.
OPEC Bulletin, January 1981.

4.4. SOURCES OF SUPPLY

Sources for the spot oil market areas wide spread as the economics of refining and transport allow; production has been mobilized from as far away as Malaysia and Curacao. The main source are three groups:[15]

(i) Export refineries, mainly in the Mediterranean and also, but less important, in the Caribbean.

(ii) North West Europe, mainly majors refineries in the ARA range, France and the UK, the latter having recently become an important source.

(iii) East Europe, which is to say the USSR and Romania.

In any of these areas, traders will also generate their own product by processing crude oil on their own accounts. In addition, there are two other groups:

(i) The state-owned refineries in such countries as Turkey, Spain and Egypt.

(ii) The refineries in oil producing countries such as Algeria, Libya, Kuwait and Iran.

These groups are all interlinked with Rotterdam through prices and their own market dynamics play an important part in price determination at Rotterdam, particularly the Italian and Caribbean refineries. East European suppliers are volumetrically important (the USSR is the largest single national source) and highly important in their influence on the market even though they do not make but follow prices.

The result of this diversity of supply is that the European spot market, unregulated and mostly unrestricted, has had access to virtually limitless supplies at marginal costs. Any attempt to raise prices within the market would have to deal with this fact first of all.[16]

In conclusion, it can be said that the market has changed, and is changing fundamentally. The role of trader remains, at core to mobilize and handle the balancing amounts of products.

4.5. THE BUSINESS OF TRADING

The traders are described in some details in the previous parts. For the purposes of this section I shall confine myself to their central role in the spot oil market.

For a start, traders are very numerous. There are probably between two and three hundred companies that would call themselves oil traders.[17] Many of the most succesful were set up by ex-employees of other traders or by refugees from the cargo trading department of the majors. It is an easy business to start and very attractive.

Traders are an integral part of the market. The core function of traders is a balancing one. No country, company or refinery is ever in balance between supply and demand for all products, and an interchange to balance up surpluses and deficits is constantly taking place as we discussed in section (4.3). By far the greatest part of this balancing takes place within and between the integrated system, but the independent traders play a part:[18]

(i) To take products from or supply it to the integrated systems at the margin, when the main volumes have been balanced. Majors' policies towards independent traders have changed over time; as a rule, the majors now buy far more on the Rotterdam market than they sell.

(ii) To take speculative positions, term and spot; to buy for stock, speculating on seasonal price movements.

(iii) To mobilize supplies from outside the major integrated supply systems.

(iv) To act as a source for non-integrated down stream outlets.

In all of this, they are potentially in competition with the majors, but it was a curious feature of the years in which the trade enjoyed its most rapid expansion that the majors appeared to be happy to let them get on with it.

Curious, but understandable since at the time the owners of crude oil were still pursuing profits at the well head and traders served to help move the product, the effect on down stream price was secondary. However, this attitude has given way to a consciousness of the importance of Rotterdam and of the need to capture at least a part of the traders' margin.

4.6. THE SPOT OIL PRICES

The price behaviour of the spot oil market, Rotterdam for example, is usually approximate what is called as "Rotterdam Spot Prices". The market can be considered as existing at three levels. At the most basic, there is the level of actual trading. The prices at which these deals are completed are, if anything, "Rotterdam Prices". The companies involved know what their own prices are and, through market talk, they will find out much about other transactions. But they always need to know more, and it is a natural development in any market that news reports should develop to collect and dessiminate information more widely. For Rotterdam, the most widely read and used report is published daily in "Platt's Oil Gram Price Service". In addition, a number of other reports are published, from the twice-weekly "Petroleum Argus" and in the U.S.A. the weekly "Oil Buyers Guide", to the monthly run down of spot prices in "Petroleum Intelligence Weekly". All these reports are based on regular, systematic, trawling of the market for information. The information so collected cannot be comprehensive, however, nor does it lend itself to methodical, statistical processing. These prices contain subjective lelments. Therefore, despite its long history, the spot market still need a price structure which objectively reflect the forces of supply and demand. Since the price quoted in the price reports are strictly speaking not essential to the functioning of the market although they are of immense interest to companies directly involved.

However, this is mainly because of the nature of this market and the pressures setting these prices are not just economic and political but organizational and even psychological as well.

4.7. THE PROSPECTS OF THE SPOT OIL MARKET

The spot oil market is institutionalized by the imbalance between the demand and supply of oil as we discussed in chapter III, and in the previous sections. Although the spot oil market is a recognized marketing channel since 1950's, the current oil glut in the market increased sharply the volume of oil trade in the spot oil market from 10% of the total oil trade to 40% of oil trade.[19] The spot oil market prospects as a viable market depends mainly on the oversupply of crude oil or shortage of crude oil. Some oil circles predict that the oil glut in the international oil market will persist at least for the remainder of the decade, if not into the 1990's.[20] This conjecture is based mainly on the current oil market which is characterized by the oversupply of crude oil.

In my attempt to evaluate this prediction, I would argue that the opponents of this hypothesis do not consider the impact of the economic recovery in the OECD countries, and the industrialization trend in many developing nations (such as India, Brazilia? Taiwan, and South Korea etc.) on the demand for oil. Another element which is forgotten is the projection of crude oil price changes in the medium term.

Adopting, with modification, the high term senario of I.E.N., I could argue that the demand for oil would again tend to exceed supply before the end of this decade.[21] The modification which I have made to this senario centered on the point that the oil glut will be eliminated during the first half of 1986 instead of 1985 as predicted in IEA senarios. The reason behind this is due to my assumption that OPEC members would reach a formula to adjust their prices,

narrow the price differences between light and heavy crudes and control their production during the first half of 1985. This policy will lead inevitably to eliminate the oil glut during the first half of 1986.

As a result of the above assumption, one can predict that the volume of oil trading in the spot oil market will decline from 40% to its margin of 10%. On the other hand, the spot oil prices will tend to rise over the official prices at the end of this decade as a result of the excess demand.

In conclusion, it can be said that the spot oil market will exist as a workable market, and hence the reliance of the Sudan on such a market for marketing its crude oil could be a viable but not a complete alternative.

4.8. SUMMARY

In this chapter I have attempted to describe the structure of the spot oil market with special reference to the Rotterdam spot oil market. The economic function of the spot oil market has also been evaluated.

The chapter pointed out the multiplicity of the definition of what constitutes the Rotterdam spot oil market, and adopted the definition of the Platt's Price series which defined the Rotterdam market as a place where all the cargoes are traded in North West Europe. N.W.E.).

The historical development of the spot oil market has beeb traced in the study. The chapter has shown that until the Libyan discoveries by the "independents" the supply, refining and marketing of oil in Europe was almost entirely in the hands of integrated companies. But the development of Libyan crudes and the simultanous exclusion of these crudes from the U.S. market by quotes restrictions forced these companies to an alternative market. The result was investment in refineries based in Italy. This was linked with the development of Rotterdam port. Before then

Rotterdam market had been in existence on small scale, limited by product availabilities. Years later, Rotterdam has become what has been called the "greatest oil bazaar in the World".

I have also attempted to analyze the economic function of the spot oil market. It is argued in the assay that the economic function of the spot oil market is derived from its role in dealing with imbalance between refining and market surpluses of some products and deficits of others. It has also been shown in the study that there is a noticeable shift in the world crude oil supplies towards heavier grades of crudes. This shift is due mainly to the construction of sophisticated refineries.

The chapter has focussed on the sources of supply and illustrated that the sources are all interlinked with Rotterdam through prices. It is also shown in the chapter that the spot oil market, as a result of this diversity of supply, is unregulated and mostly unrestricted, and has had access to limitless supplies at marginal costs.

The trading business has been discussed. In this context I have indicated that the traders are an integral part of the market. I have also pointed out the functions of the traders. The study stressed that the core function of traders is a balancing one.

The chapter moved to reflect the spot oil prices. It is argued that the prices in the spot oil market contain subjective elements, therefore the spot oil market will still need a price structure which could reflect the forces of supply and demand.

Finally, the spot oil market prospects have been presented. I have adopted the assumption of I.E.A. which termed the high senario. From this senario, I predicted that the volume of oil trading in the spot oil market will decline, while its price will increase over the official crudes price.

It is also argued that the spot oil market will exist as a workable market in the near future, therefore it could be a viable but not a complete alternative for Sudan's oil marketing policy which is the theme of the next chapter.

Chapter IV, Footnotes

1. Prast, W. and Lax, H., 1983, p. 62.

2. Roeber, Joe, Petroleum Economist, April 1979, p. 2.

3. Inter Commodities Limited, 1981, p. 6.

4. Shell Company sources, The Hague, September 1984.

5. Petroleum Economist, January 1981, p. 5.

6. For example, Shell's Petro, BP's Anco, and Exxon's Impco. See "The Rotterdam Spot Market", unpublished report, Shell Company, The Hague, 1981, p. 3.

7. Frankel, p., 1966.

8. Roeber, Joe, 1976, p. 7.

9. Roeber, Joe, Associates Comma (The EEC Register of spot transactions), 1980, p. 2.

10. Shell sources, The Hague, October 1983.

11. Roeber, Joe, 1979, p. 3.

12. Roeber, Joe, 1976, pp. 198-200.

13. El-Mangosh, A., OPEC Bulletin, August 1983, pp. 13-21.

14. El-Mangosh, A., OPEC Bulletin, March 1983, p. 3.

15. Roeber, Joe, 1979, p. 4.

16. Ibid.

17. Roeber, Joe, 1976, p. 12.

18. Roeber, Joe, 1979, p. 3.

19. demonstrated that today up to 40%-50% of world oil trading takes place in the spot market. See "Oil industry's changing structure", Petroleum Economist, January 1984, p. 9.
While Professor Peter Odell put the volume of oil trading in the spot oil market between 30%-40% (an interview with Professor Odell, Rotterdam, 3/8/1984).

20. Among these circles

21. I.E.A., Op.Cit., p. 25.

CHAPTER V

THE IMPLICATION OF THE SPOT OIL MARKET FOR SUDAN's OIL MARKETING POLICY

5.0. INTRODUCTION

In the previous chapters, attempts were made to analyze the structure and functioning of the international oil marketing system. The mechanism which governs the work of the spot oil market was also examined. The spot oil market is a viable alternative to a sales contract, but it is not a complete solution to the Sudanese policy in oil marketing.

This chapter will venture to make a comprehensive appraisal of these two alternatives so as to understand their implications for Sudan's oil marketing policy.

5.1. SALES CONTRACTS AS AN APPROPRIATE SYSTEM FOR MARKETING SUDAN's CRUDE OIL

The concept of sales contracts is closely linked to production sharing agreements in LDC's. The idea appeared for the first time in Indonesia in 1960's[1] as a result of the Indonesian government interference to control the production and marketing of oil through its national oil company "Pertamina"[2]. The idea was later adopted by oil producing countries during the 1970's. It is worth mentioning here that, with regard to the production sharing agreement with Chevron Oil Company in the Sudan, the company is obliged, at the request of the government to purchase or market the states' share of production as an agent on behalf of the government. Such a provision may be a useful option for the government in situations of over-supply, because most oil companies will normally be better equipped than many governments to market oil internationally. Since Chevron company is anxious to obtain crude oil for marketing, the chance to purchase the states' share of production is desirable.

From the government point of view, sales contracts offer the chance of a secured source of income in hard

currency and stability in terms of revenue. It is also linked to the official prices which could follow the OPEC pricing formula.

However, the system has certain disadvantages in Sudan:

(1) There are discounts which are determined by the strong bargaining power of Chevron and its ability to claim high price discounts. The bargaining power of Chevron could be attributed to two factors:

(i) Sudan will be a small producer in 1986 (50.000 b/d). It could be assumed that the company could take advantage of this situation in addition to some logistical problems in delivering its crude oil to buyers at the loading port. To stress on the latter point, one can say that the exporting port cannot initially accomodate supertanks. Therefore Chevron could argue that the freight cost is high compared with other exporting terminals. Hence, discount is needed. This is the argument used by the major oil companies in other small producing countries like Angola, Zaire, Cameron, Ivory Coast, Congo and others.[3]

(ii) The international oil glut which led to a sharp change in the oil marketing structure (already discussed in chapters III, IV), from sellers market to buyers market. To pursue the point further, one can say that the security of the available crudes is no longer an issue for the oil companies. They could utilize the spot oil market, where the prices of most crudes are cheaper than the sales contracts (see Table (3.4), (4.3) and (5.2)). As a result of the latter fact, many producers were forced to give discount to oil companies only when they negotiate for renewal of their sales contracts. This presumption could be demonstrated by Iran when it, as reported, was offering discounts up to $2.50 a barrel for its light crude.[4]

(2) The other disadvantage in the case of Sudan relies on the fact that sales contracts could lead the country to deal with only the producing company which is Chevron. This heavy reliance may put an end to any attempt to strenghten

the national marketing body in the General Petroleum Corporation. The experience of OPEC countries has shown the importance of diversifying the marketing channels.

5.2. THE SPOT MARKET AS AN APPROPRIATE CHANNEL FOR MARKETING THE SUDAN's CRUDE

As discussed in chapter IV, the spot oil market is institutionalized by the imbalance between demand and supply of oil. As shown in the previous chapter, the spot oil market has gained momentum during the current oil glut in which the volume of oil trade increased from 10% to 40% of total oil trade.

This section will discuss the viability of the spot oil market as an appropriate alternative for Sudan's policy in oil marketing.

The first advantage of the spot oil market is that the Sudan would maximize its crude oil earnings by utilizing it. This is mainly due to the nature of demand for the Sudan's crude in the spot oil market.

To test the preceding hypothesis, attention in this section will be focussed on the nature of the demand for the Sudan's crude in the spot oil market (Rotterdam as an example). We shall, for the sake of argument, refer to the Sudan's crude as Sudan Blend.

It is worth noting that there are a number of factors involved in determining the relative value of a crude oil in particular oil market. Each crude has its own unique characteristics which will determine the products it can yield, and in what quantities when refined. Moreover, the configuration of the refinery itself will inevitably influence the breakdown of products yielded by a barrel of given crude oil. A recent study by the commercial department of the General Petroleum Corporation (G.P.C.) has shown that the Sudan Blend is a low sulfur crude[5], and its API gravity is 32.6[6].

Table (5.1) demonstrates the yields of Sudan Blend crude if it runs in a sophisticated refinery in the Amsterdam-Rotterdam-Antwerp (ARA) area.

From this table it could be said that the yields of Sudan Blend are similar to the yields of the Nigerian crude (Forcados). It is also worth noting that there is a heavy demand for this crude oil in the Rotterdam spot oil market.[7] This is because of the German market demand for gasoil for heating. Because of this, it could be argued that crudes which have yields of gasoil are more competitive now in the Rotterdam spot oil market than other crudes as it is reflected in Table (5.2).

Also it could be noticed from this table that the low sulfur crude (Forcados) has a higher price in the spot oil market than that of the high sulfur Arab Light and Iranian Light. This is due to the new tendencies in some advanced industrialized countries like Japan, U.S.A., and West Germany towards avoiding environmental pollution by putting some restrictions on use of high sulfur crude oil. Another advantage of Sudan Blend crude could be attributed to the switch in the refineries to the medium or heavy crudes. Now refineries could minimize their losses, or achieve profits by cracking heavy crudes. (See Tables (5.2) and (4.3)).

From the above discussion, one could argue that the Sudan Blend could result in greater returns if sold in the spot oil market. It can be stated that the spot price of Sudan Blend will tend to be at least as high as the official price during the current oil glut. At the same time, when the glut is over and assuming a "high term senario", the Sudan Blend price could rise far above official prices. From the latter discussion, one can say that the nature of Sudanese oil is an important factor in establishing the viability of the spot oil market as an alternative to the sales contracts.

Table (5.1)

Yields of Sudan Blend, and other crudes in the Rotterdam Spot Oil Market

Products	Sudan Blend 32.6^0	Forcados-31^0	Iran Light-34^0	Arab Light-34^0	Brent-37^0
	%	%	%	%	%
Naphtha	5.0	4.8	5.5	5.4	6.6
Prem Gasoline	8.0	10.6	12.2	11.9	14.6
Reg Gasoline	7.0	3.8	4.4	4.3	5.3
Gas Oil	54.0	55.2	37.5	40.3	42.0
Fuel Oil	24.0	21.3	34.8	32.8	27.2
Losses	1.70	3.9	3.05	1.84	3.37
Sulfur	0.30	0.40	2.55	3.46	0.93

Sources: P.I.W. Special Supplement, March 1984.
Petrofina sources, Brussel, October 1984.

Table (5.2)

Prices of some crudes in the Rotterdam Spot Oil Market during 1984.

(US$/B)

Month	Forcados-31^0			Arab Light-34^0			Iran Light-34^0		
	Official Price	Spot Price	Spot Product Value	Official Price	Spot Price	Spot Product Value	Official Price	Spot Price	Spot Product Price
January 1984	29.2	29.5	30.52	29.00	28.50	27.62	28.00	27.60*	27.60
March 1984	29.2	30.20	29.80	29.00	28.57	27.60	28.00	27.90	27.70
June 1984	29.2	29.4	29.06	29.00	28.20	27.14	28.00	27.00	26.95
September 1984	29.2	29.1	28.33	29.00	27.85	26.58	28.00	27.01	26.61
November 1984	27.52	28.17	27.64	29.00	28.16	26.30	28.00	27.3	26.35

* Based on the average of the calculation of the Platt's European Market Scan.

Sources: P.I.W. Supplements, January-November 1984.
Platt's European Market Scan, January-November 1984.

The second advantage of utilizing the spot oil market is to strengthen the National Oil Company "The General Petroleum Corporation". This could take place through establishing a national oil marketing apparatus in the General Petroleum Corporation. The spot oil market viewed as an appropriate channel for strengthening the independents or the national oil companies as demonstrated in chapter III. By utilizing this market, the Sudan can diversify its trading partners which the experiences of LDC's show is important. At the same time, the state oil company can create its national oil marketing outlets in spot oil market centres. Although there are many obstacles facing the National Oil Companies (NOC's),nevertheless, the experiences of some producing countries show that these impediments could be overcome.

It is not the intention of the author to discuss all the obstacles that would be faced by establishing or strengthening National Oil Companies. But with regard to marketing obstacles, one could argue that the NOC's face competition from the established oil companies which have control over the existing marketing outlets. Therefore, one would think the NOC's have two options in marketing operations:[8]

(i) First, they may decide to market their own crude oil, by attempting to penetrate the market which the major multi-national companies and other oil companies exert over foreign crude outlets;

(ii) second, the NOC's may choose to enter into joint ventures with existing entities that have already set-up market outlets. This option may be done as a joint venture with National Oil Companies of consuming countries, independents, or in junction with the "Majors" that already have access to substantial marketing outlets.

As the NOC's of the producing nations are divided between these two approaches, only a few of these companies

like the National Iranian Oil Company (NIOC), and Kuwait Petroleum Corporation (KPC) follow the first option.

With regard to the first option, one strategy which the NOC's could follow is to buy their way down stream. This could involve the creation of shipping companies like the Arab-Maritime Transport Co. Also it might involve participating in refinery projects closer to ultimate markets so as to gain down stream experience (NIOC was tempted by such deal in Belgium, while KPC has a refinery in England). It is clear that the idea behind this deal, whereby the government of Iran, for example, was to buy 10 percent of occidental, is that this could lead to a series of joint ventures which would have given Iran experience in the down stream area.

Most of the NOC's prefer the second option, i.e. enter into a joint venture. Pertamina was the first advocator of this option, when it established a joint trading company with a Japanese firm to market Indonesian crudes through the Singapore spot oil market. Pertamina's experience is well illustrated from the quotation of its Director of oil and gas, Mr. Wijarso, when he in 1977 argued:

> "In its efforts to obtain the best price possible, the first step Pertamina has to undertake is to go on its own to the market. However, in attempting to do so, Pertamina is faced with disadvantage of not being a fully integrated international oil company, as such, it does not have down stream operations, which usually ensure marketing outlets To overcome this disadvantage, Pertamina choose the option of establishing trading companies, in joint partnership with buyers, such as power companies, refineries, etc... In doing this, it tries to ensure the interest of the buyers in accepting Indonesian crude directly from Pertamina. We have also tacitly agreed with the foreign contractors not to compete for the same buyers; this of course is not always the case, but great clashes of interest have always been avoided".[9]

From the above quotation, it could be argued that, although the utilization of jointly-owned trading companies

as a substitute for owning integrated down stream international operations, may not be the best solution to the problem, but from Pertamina's marketing point of view, it has proved, so far, to be satisfactory. This option has also the advantage for not requesting extensive international marketing investment which, in Pertamina's case, is of prime importance.

The preceeding discussion could be relevant to a small producer country like the Sudan. It could opt for the second approach which does not require extensive international marketing investments.

Questions which could arise are: where and with which partners, if the state oil company in the Sudan is to establish such a trading company? Rotterdam oil market could be a target for obvious reasons; Sudan Blend of low sulfur crude oil which yields 54% of gas oil could be sold in the German gas oil market. In regard to the second part of the question, the answer is to explore the possibility of establishing links with the independents which are already operating in the market. They demand crudes which have similar specifications to Sudan Blend. Thus, one could suggest that any of "The Five"[10] could be a good partner to the Sudan if it wants to establish a trading company in the spot oil market. Petrofina, for instance, is one of the five involved in the spot oil market operations (see chapter 4.2.2). This company has interest to enter into partnership with a producer whose crude is similar to Sudan Blend.[11]

In the previous chapter, the disadvantage of prices volatility if the spot market is utilized has been discussed. It could be stated that, for a low income country like Sudan, most of its revenues are generated from the export earnings; the unpredictability of the prices in this market may lead many planners to suggest the need for a country to enter into secure sales contracts despite its high discounts.

5.3. TRENDS TOWARDS A SUDANESE MARKETING POLICY

Having discussed the spot oil market as an alternative to the sales contracts, the paper will venture to draw a trend towards marketing policy for the Sudan in the medium term.

It is worth noting that the system of sales contracts and the spot oil market have advantages and disadvantages.

Although the sales contracts offer more security to the government in terms of stability in revenue and hard currency, it is nevertheless the case that the Majors continue to extract high discounts from small producers because of logistical problems, i.e. delivery of crude, and the shipping facilities at the loading port, etc. In addition, the oil glut which works as a factor favouring the Majors, has been forcasted to continue until the end of 1985.

The main advantages of the spot oil market to Sudan is the maximization of its crude oil earnings by utilizing this channel in the medium term. Strengthen its national oil company is a second advantage of this system. The main disadvantage of the spot oil market is the prices volatility.

One would, in this case, argue that a small producer and price taker like Sudan should utilize the spot oil market in addition to entering into a sales contract. The experiences of some producing countries like Egypt and Indonesia show success in this method.[12]

The advantages that could be drawn if the two systems are both utilized could be illustrated as follows:

1. By marketing part of its crude oil through sales contracts, the country can have the security which the planners forcast.
2. Utilization of the spot oil market will generate more revenue for the country than sales contracts.
3. The National Oil Company can play an essential role through establishing a joint trading company with one of the independents.

In the spot oil market, in this respect,to avoid the convergence of price volatility,the trading company can put a flexible price formula by linking for instance, the prices of Sudan Blend with a basket of competitive crudes (Ural "U.S.S.R", Forcados "Nigeria", Suez Blend "Egypt", Brent "UK").

However, the implementation of this policy will face many marketing barriers, but these barriers could be removed by the cooperation between the Sudanese National Oil Corporation and the National Oil Companies in OPEC, OAPE, and the independent companies.

5.4. SUMMARY

In this chapter the attention was focussed on the spot oil market as a viable alternative to the sales contracts.

The chapter discussed sales contracts as a viable alternative system demonstrating that it offers the Sudanese Government a chance of a secured source of income in hard currency, and the stability in terms of revenue. But this approach also has disadvantages. One of the disadvantages is that the price disocunts which could be determined by the strong bargaining power of Chevron company. It could also be argued that this system will lead to a heavy reliance on the producing company which would limit the role of the National Oil Company.

The study moves on to discuss the spot oil market as an appropriate alternative for Sudan's oil marketing policy. An important advantage of this system is that the Sudan could maximize its crude oil earnings by utilizing the spot market. This is mainly due to the demand nature on the Sudan's crude (Sudan Blend) in the spot oil market. A second advantage of this approach is that the Sudan can strengthen its national oil corporation (G.P.C.) by utilizing the spot oil market. It is argued that although there are many obstacles facing the National Oil Companies, nevertheless, the experiences of some oil producing countries show that these

obstacles could be overcome. For instance, in order to overcome the technological barriers for entry in the market, the paper adopted a marketing approach in which the General Petroleum Corporation (G.P.C.) could enter into a joint venture with one of the Independents. The chapter illustrated that the main advantage of this system is the unpredictability of price trend in the spot market which creates difficulty for the economic planners in the Sudan to predict about the country's oil earnings.

The chapter ventures to formulate outlines for a Sudanese oil marketing policy during the medium term 1986 - 1990. It is argued that both systems have advantages and disadvantages. Having considered the preceding fact, the chapter argued that the appropriate marketing approach which is adviseable to be followed in the Sudan, could be a combined policy between the spot oil market, in addition to the sales contracts.

Chapter V, Footnotes

1. The Barrows Company, 1980, p. 28.

2. Permina, one of the forerunners of the present Pertamina, started to export its own produced crude in 1958. In 1965 another milestone was reached when Pertamin, one of the forerunners of Pertamina, was able to export crude oil produced by another major operator. The volume involved was small, but its significance was that it was the first time in OPEC countries, a state oil company could sell a crude produced by its contractor. For more details about Pertamina see: Chadar, Fariborz, 1977, pp. 119-145. Also see The Proceedings of OPEC Seminar, Vienna, 1977, pp. 161-166.

3. See Sarkis, Nicolas, AOG, 16/11/1984.

4. AED, 30/11/1984.

5. The sulfur content of a crude oil can vary from as little as 0.1 percent to as much as 7 percent of the total weight. In the latter case, the crude could be referred to as very "sour". On this basis, a crude like Iranian Light 34 degree API, with 1.3 percent sulfur, can be expected to have a slight price advantage over Arabian Light 34 degree API which, though produced in the same region, has a sulfur content of 1.7 percent.

6. American Petroleum Institute (API) system is one of the grading systems which is in widest use. Under this system, each crude oil is given an API degree rating which relates its specific gravity to that of water. For the purpose of the API scale, water has been given a measure of 10 degrees API; crudes higher than water are rated on the scale above ten, and those heavier than water are rated below ten. Thus, Arabian Light crude, over three times as light as water, receives a 34 degree API grading. Broad classifications of crudes by API degrees vary considerably according to the traditions of each market, and so differ from region to region. However, as general rule, crude oils like those of North Africa rated at 40-45 degrees API, are said to be very light, and those with grades above 32 degrees to be light. On the other hand, crudes in the 22-32 degrees API range are classed as medium, while those below 22 degrees are referred to as heavy crudes.

7. Shell sources, The Hague, November 1984.

8. Chadar, Fariborz, 1977, p. 47.

9. Wijarso, Ir., The Proceedings of the OPEC Seminar, Vienna, 1977, p. 163.

10. Cie. Francaise de Petroles (CFP), Elf. Aquitaine, Veba, Petrofina, and Ente Nazionale Idrocarburi (ENI).

11. Petrofina sources, Brussel, October 1984.

12. For more details about Pertamina marketing policy, see Wijarso, Ir., op.cit., pp. 161-166. For the marketing views of the Egyptian General Petroleum Corporation (EGPC), see Buckman, D., Petroleum Economist, November, 1984, pp. 442-444.

CHAPTER VI

CONCLUSIONS

In the study on the structure of the spot oil market and its implications on Sudan's marketing policy, the following conclusions could be derived:

The principal terms and conditions reached between the government of Sudan and Chevron Oil Company in the production sharing agreement were in favour of Chevron Oil Company. This was because the company took advantage of the unfavourable economic situation in the Sudan.

It is also presumable that any prospected sales contract with Chevron during 1985 will favour the company as a result of the current oil glut; and the logistical problems faced small producers like Sudan.

This situation could be altered by the end of this decade to favour the bargaining power of the Sudan as a result of the following factors:

1. The rush of many oil companies in search for oil in Sudan. The explorations and discoveries of new reserves have led many oil observers to presume that the Sudan could possibly be a big producer in the near future.
2. Sudan has established a General Petroleum Corporation (G.P.C.) which could be strengthened if an appropriate marketing policy, aimed at maximization of its crude oil earnings, and developing the activities of the corporation, was followed. G.P.C. could achieve positive results if it followed combined marketing policy i.e. adopting sales contracts approach on one hand, and utilizing the spot market on the other hand.
3. There are indicators which show that the oil glut will be eliminated before the end of this decade (high term senario of I.E.M.). Thus, the market will tend again to be sellers market.

4. The future cooperation between G.P.C. and the rest of the National Oil Companies (NOC's) of OPEC, OAPEC and other independent companies, will strenghthen G.P.C.'s position by providing it with the technical assistance needed for marketing operations.

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APPENDIX I

SUMMARY TO THE EGYPTIAN PRODUCTION CONTRACTS

Cost recovery:

A fixed percentage of production (20% or 30%, depending on the contract concerned) is set aside for cost recovery. If the amount of recoverable costs- which are determined partly on an expensing basis, partly on a depreciation/amortization basis - is less than the value of the cost oil, the contractor must either pay the difference to the NOC., i.e. has the obligation to pay for the excess cost oil at market value or deliver to the NOC the whole or part of such excess cost oil at the latter's option. In recent contracts excess cost oil is split between the NOC and the Contractor.

Domestic Demand:

Contractor has no obligation to sell part of his share of the profit oil on the domestic market.

Income Tax:

Contractor subject to Egyptian income taxes but the NOC assumes, pay and discharge, on behalf of the Contractor, such taxes out of the proceeds of its share of the crude oil.

Production Split:

There is no participation nor "excess profit payments", but the major part of the profit oil, expressed in most contracts as a fixed percentage (80% or 85%) of the available production, goes to the NOC. In 1980 contracts the profit oil split is made at escalation ratios following a sliding scale based on production levels. Generally the prospectivity of the contract area (and the environment e.g. deep water) is taken into account when establishing the split.

Management:

As from the first commercial discovery, operations are taken over from the Contractor by a non-profit making Operating Company, jointly owned in equal shares by the NOC and the Contractor.

Source: World Petroleum Arrangements, 1980, p. 82.

APPENDIX II

CALCULATING THE VALUE OF THE REFINED BARREL OF CRUDE OIL

The first step is to compute the weighted average value of all the refined product components in a barrel of crude oil at the refinery gate. In oil jargon this is known as the "Gross Product Worth" or G.P.W. This is determined by multiplying the prevailing spot price for each product by its percentage share in the yield of the total barrel of crude oil.

The value of the fuel oil portion of the yield is largely determined by its sulfur level. Therefore an adjustment must be made where the sulfur level in fuel oil produced from a given crude differs from the prevailing quality of fuel sold in the spot product market. Generally, a refiner will blend fuels of various qualities to meet each market needs.

Following is a sample calculation of the Gross Product Worth of a barrel of Arabian Light crude refined in Rotterdam with its product yield sold at spot oil market prices (assuming February 1984 prices).

Product Type	Arabian Light crude oil		
Product Type	Rotterdam spot Price	Product yield	Value of yield
Naphtha	$29.32 x	5.4%	= $ 1.58
Premium Gasoline	31.75 x	11.9%	= 3.78
Regular Gasoline	30.91 x	4.3%	= 1.33
Gas oil	33.67 x	40.3%	= 13.57
Fuel oil:			
1% Sulfur	28.21 x		
3.5% Sulfur	25.86 x		
Adjusted Fuel Price*	25.84 x	32.8%	= 8.48
Total value of Arabian Light's Product Yield (G.P.W.)			= $28.74

* Adjusted to reflect value of 3.46% sulfur fuel oil yield of Arabian Light crude.

Source: P.I.W., Special Supplement, March 12, 1984