THE IMPACT OF MIDDLE EAST OIL ON WORLD OIL PRICES 1973-83

Dissertation

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By

Ahmed S. Zainabdin, B.A., M.B.A.

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To my wife and daughters

Zena and Maha

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A B S T R A C T

This study is an analysis of recent developments in the world oil market. It examines the likely trends for the future and their implications. It is assumed that during the period under study, 1973-1983, no major political upheavals in the Middle East, no major slump in world economic activities, no major oil discoveries outside the Middle East region and no significant technological breakthrough in energy production or consumption will take place.

Attention is focussed on the major Middle East Arab oil producers for whom oil is decisive in their social and economic destinies. The study is particularly concerned with the three major oil-consuming markets: the United States, Western Europe and Japan. It provides estimates for the prospective demand for OPEC oil for their markets in physical and money terms. It is divided into five chapters. Chapter I discusses the economic impact of the oil industry on Iraq, Saudi Arabia, Kuwait and the Emirates. The role of the oil industry on the Iraqi Economy and the objectives of Iraq oil policy are discussed in Chapter II. An analysis of the main features of the international oil market in the 1970's is included in Chapter III. Chapter IV analyses the developments in Middle East crude oil prices since the beginning of the seventies and until the present. The final chapter provides projections of the oil demand of the major oil consumers and estimates of OPEC oil revenues in 1983 under various sets of assumptions. It was found out that demand for oil under any assumption will continue to be large and that until the industrialized world develops alternative sources to oil, and this cannot be realized in the short term, the consuming countries will continue to rely heavily on the Middle East area as their obvious source of supply.

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INTRODUCTION

Oil plays an important role in the economic well being and development of both producing and consuming countries. It dominates the world energy market with a more than 50% share in the world energy production. The energy consumption pattern will not change substantially between now and the mid-eighties. It is likely that oil will continue to play an increasingly important role as a raw material for many industries.

Over the period under study, 1973 - 1983, it is assumed that no major political upheavals would take place in the Middle East region, that there will be no major slump in world economic activities, no major oil discoveries outside the Middle East region and no significant technological breakthrough in energy production or consumption.

This study analyses recent developments in the world oil market, examines the likely trends for the future and its implications.

Attention is focussed on the major Middle East Arab oil producers who constitute two-thirds of the OPEC members. The Middle East oil producers are all developing countries for whom oil is the principal source of foreign exchange and the key to their further development. The oil industry has, therefore, become decisive in the social and economic destinies of these countries.

This study is particularly concerned with the three major oil-consuming markets, namely the United States, Western Europe and Japan, whose combined share in world oil consumption at the present is more than 80% of the total. It provides estimates for the prospective demand for OPEC oil for the three mentioned markets, both in physical and money terms.

For purposes of discussion and analysis, this study is divided into five chapters. Chapter I is a discussion of the economic impact of the oil industry on the Middle East oil-producing countries, namely Iraq, Saudi Arabia, Kuwait and the United Arab Emirates. The role of the oil industry on the Iraqi economy and the extent to which Iraq oil price policy might have different objectives from other oil producers with less developed economies are discussed in more detail in Chapter II. Chapter III analyses the main features of the international oil market in the 1970's, Chapter IV the developments in Middle East crude oil prices since the beginning of the seventies and until the present time.

The final chapter is an assessment of the present oil position of the three major oil-consuming areas mentioned above. It provides projections of their oil demand as well as estimates of OPEC oil revenues from oil exports to the three markets in 1983, under various sets of assumptions.

As a result of the sharp increase in oil prices in 1973 and 1974, consumers are expected to make a great effort to limit their consumption and develop their indigenous sources of supply in order

to lessen their dependence on imported oil. However, until the industrialized world develops alternative sources in sufficient quantities, and this cannot be realized in the short term, the consuming countries will continue to rely heavily on the Middle East area as their obvious source of supply.

C H A P T E R I

MAJOR MIDDLE EAST OIL PRODUCERS

Saudi Arabia, Kuwait, United Arab Emirates

and Iraq.

1. Reserves, production, consumption, exports:

The Middle East area* is known to contain almost 55% of the world proved oil reserves, which at the end of December 1976 were estimated at 598.9 thousand million barrels. (See Table I:1). More than half of these reserves are in the Arab countries of the Middle East and North Africa. In 1976 proved Middle East oil reserves had risen to 326.3 thousand million barrels, and this figure is being continuously revised upwards as Middle East reserves are increasing both in absolute terms and as a percentage of world

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* The Middle East area is meant here the countries surrounding the Gulf area; they are the United Arab Emirates, Kuwait, Iraq, Saudi Arabia, excluding Iran.

Table I:1

World Oil Proved Reserves

Area	Proved Reserves 1.1.77. (1,000 bbl)	Percentage of Total* (approximated)
Total Asia-Pacific	19,391,140	3%
Total Europe	24,538,810	4%
Total Africa	60,570,200	10%
Total W. Hemisphere	67,108,950	11%
Total Communist World	101,100,000	17%
Total Middle East	326,281,220	55%
Total World	598,990,320	

All reserves indicate proved reserves recoverable with today's technology and prices and exclude probable and possible reserves.

* Percentages have been calculated from the table.

Source: The Oil and Gas Journal, December 27, 1976.

reserves. There are reserves in Saudi Arabia, Iraq and Abu Dhabi, whose magnitude has not yet been determined. According to one authority, proven structures and reserves of the Middle East are of such a magnitude that any expected increase in demand could be easily satisfied over the coming ten years.(1) Saudi Arabia and Iraq alone, for example, have enough to meet the needs of the western industrial world for oil till the end of this century. Saudi Arabia, Iraq, Kuwait and Abu Dhabi together possess about 50% of the world's proved reserves.

The main Middle East Arab oil producers in order of size of reserves in 1976 were Saudi Arabia, Kuwait, Iraq, and Abu Dhabi. As Table I:2 shows, Saudi Arabia possesses the largest reserves in the area; these were estimated at 110 billion barrels at the end of 1976 and constitutes around 20% of the total world oil reserves. Saudi Arabia has the largest oil field in the world, the Ghawar field, which produces five million barrels daily; it also possesses the largest offshore field, Safaniya. Saudi reserves are thought to be enough for over 46 years of production at the 1976 production rate.

The Kuwaiti reserves of about 67.4 billion barrels represent slightly more than 10% of the total world oil reserves, and are enough for 59 years at the 1976 production rate.

Iraq is a Gulf state with oil reserves of some 34 billion barrels, enough for about 42 years of production. They may ultimately turn out to be larger.

Table I:2

The Main Middle East Arab Oil Producers

Country	(1) Reserves (1,000 bbl) (at end of 1976)	(2) Production in 1976 (million b/d)	(3) Life-span of Reserves (years)	(4) Population 1975 (1,000)
Saudi Arabia	110,000,000	8.6	46	8,000
Kuwait	67,400,000	1.8	59	980
Iraq	34,000,000	2.0	42	11,124
U.A.E.	31,200,000	1.9	44	350

Source: Columns (1) and (2) The Oil and Gas Journal, December 27, 1976, p. 104.
Column (3) from Memorandum Submitted by Algeria, March 1975, to the Conference of Sovereigns and Heads of State of OPEC Member Countries, p. 195.
Column (4) from OPEC Annual Statistical Bulletin, 1976, p. 1.

Total United Arab Emirates reserves (Abu Dhabi, Dubai, Sharjah combined) are about 31.2 billion barrels, enough for about forty-four years of production at the 1976 production rate.

According to Table I:3, the Middle East provided over one-third of the world output in 1976; it will probably provide around one-half by 1980. Saudi Arabia is the leading producer and exporter of oil, the 1976 production was at 8,570 thousand barrels daily. In 1976 it was the second country in production after the Soviet Union with the United States in the third place. However, Saudi Arabia's production is only a fraction of its potential. Before the 1973 war, the Saudi government was about to approve a proposal by the Arabian American Oil Company nearly to triple output by the end of the decade to 20 million barrels daily.

Beginning 1973 Kuwait started cutting production due to its concern about the depletion of its only source of wealth. The 1976 production at 1,820 thousand barrels was 0.1% lower than that in 1975 at about 1,840 thousand barrels daily. Kuwait has an equal share with Saudi Arabia in the production of the Neutral Zone oil reserves which are estimated to be around 6.3 billion barrels and an output in 1976 at 450.0 thousand barrels daily.

In Iraq the 1976 production was at 2,070 thousand barrels daily. Iraq still has huge acreages that could yield new and exciting finds. Exploration work is being carried on with a sense of urgency. Iraq is investing $1.5 billion in exploratory work with the aim of doubling production capacity from 2.2 to 4.4 b/d by 1980, under a five-year plan beginning from 1976.(2)

Table I:3

World Oil Production in 1976

Area/Country	Oil Production Estimated 1976 (1,000 b/d)	Percentage Change from 1975
Total Asia-Pacific	2,671.5	20.1
Total Europe	900.0	67.3
Total Africa	5,597.6	13.1
Total W. Hemisphere	13,800.7	- 1.9
Total Communist World	12,360.0	6.0
Middle East		
Abu Dhabi	1,590.0	13.3
Dubai	315.0	24.0
Iraq	2,070.0	- 7.6
Kuwait	1,820.0	- 0.1
Neutral Zone	450.0	9.3
Saudi Arabia	8,570.0	25.5
Sharjah	40.0	5.3
Other Middle East	7,025.7	8.2
Total Middle East	21,880.7	11.8
Total World	57,210.5	7.8

Source: The Oil and Gas Journal, December 27, 1976.

The formation of the United Arab Emirates in 1971 brought together seven small sheikhdoms of which three are now oil producers: Abu Dhabi, Dubai, Sharjah. The 1976 production by Abu Dhabi alone was almost 1,590 thousand barrels daily; Dubai produced 315.0 thousand barrels; Sharjah, which only started production in July 1974, produced 40.0 thousand barrels daily.

Table I:4 shows the average annual rate of change in oil output over the five-year-period 1970 - 1975. For Iraq the average annual rate of output for this period was 7.3% higher, for Kuwait 7.6% lower, 14.3% higher for Saudi Arabia and 15.1% higher for Abu Dhabi. The average annual rate of change in oil output for the same countries over the past ten years, 1965 - 1975, is also given. For Iraq, it was higher at 5.4%, rather a modest increase in comparison to the substantial average annual increase in output for Saudi Arabia at 13.1% and Abu Dhabi at 17.4%. For Kuwait, it was lower by 1.6%.

The oil consumption of the Middle East Arab oil producers is very low due to their small populations and underdeveloped economies. They produce so much more than they consume that their dominance in the international oil trade is overwhelming. Saudi Arabia's domestic consumption of oil was no more than 474 thousand barrels a day in 1975. Table I:5 shows the 1975 production and exports of the Middle East major Arab oil producers, the missing percentages being accounted for by local use. The percentages of domestic oil consumption in 1975 appear in this table; they are 6.7% for Saudi Arabia, 13.5% for Kuwait, 7.2% for Iraq and 17.9% for the U.A.E.

Table I:4

Production of the major M.E. Arab oil-producers over the period 1965-1975 and the average annual rates of change over the past five years and ten years (in 000 b/d).

Country	1965	1966	1967	1968	1969	1970	1971	1972	1973	1974	1975	Yearly change 1975 over 1965	Yearly change 1975 over 1970
Iraq	1315	1390	1230	1505	1525	1565	1700	1465	2020	1975	2230	+ 5.4%	+ 7.3%
Kuwait	2170	2275	2290	2420	2575	2735	2925	3000	2755	2275	1840	- 1.6%	- 7.6%
Saudi Arabia	2025	2395	2600	2830	2995	3550	4500	5700	7345	8350	6970	+13.1%	+14.3%
Abu Dhabi	280	360	380	495	600	695	935	1050	1305	1410	1400	+17.4%	+15.1%

Source: BP Statistical Review of the World Oil Industry 1975, p. 19.

Table I:5

1975 Production and Consumption of the Middle East Arab Producers

Country	1975 Production (000 b/d)	1975 Exports (000 b/d)	% of Exports	% of Domestic Consumption
Saudi Arabia	7,075	6,601	93.3	6.7
Kuwait	2,084	1,803	86.5	13.5
Iraq	2,261	2,100	92.8	7.2
U.A.E.	1,663	1,368*	82.2	17.9

* Abu Dhabi only.

Percentages have been calculated from the table.

Source: OPEC Annual Statistical Bulletin, 1976, pp. 21, 22, 26, 27, 66, 67, 71 and 72.

2. The Importance of Oil to the economies of the Major Middle East Oil Producers:

Oil has been and will continue to play a predominant role in the economies of the Middle East oil producing and exporting countries which almost totally rely on the exports of this commodity. Oil exports of most of the Middle East oil producing countries constitute a very high percentage of their total exports as indicated in Table I:6. The oil exports of Iraq, Saudi Arabia and Kuwait in relation to their total exports for the period 1969-1974 are given in Table I:6. According to this table Saudi Arabia's oil sector's share in total exports for the period 1969-1974 was around 97% of the total value of exports, for Iraq it was about 94% and for Kuwait it was about 95%. In other words, the share of oil in total merchandise exports of these countries is overwhelming.

The Middle East oil exporting countries have virtually no other natural resource and without oil their people would be among the poorest in the world. The oil industry, therefore, is decisive in the social, political and economic destinies of the Middle East oil exporting countries.

A discussion of the social and political impact of the oil industry on the Middle East oil exporting countries is beyond the scope of this study. Only the economic impact will be considered briefly relative to the contribution of the oil sector to the national income, foreign exchange earnings and the government budgets of the four countries considered in this study - Saudi Arabia, Kuwait, the United Arab Emirates and Iraq. The impact of the oil

Table I:6

Share of oil exports in total merchandise exports 1969-1974.

(value in millions US dollars)

Country	1969	1970	1971	1972	1973	1974
Iraq						
Exports: total	1 042	1,100	1,543	1,101	2,555	7,278
oil	'969	1,031	1,478	1,006	2,444	6,907
other	73	69	65	95	111	371
Oil share (%)	93.0	93.7	95.8	91.4	95.7	94.9
Kuwait						
Exports: total	1,541	1,654	2,615	2,993	3,807	10,391
oil	1,476	1,580	2,510	2,842	3,572	9,992
other	65	74	105	151	235	399
Oil share (%)	95.8	95.5	96.0	94.9	93.8	96.2
Saudi Arabia						
Exports: total	2,050	2,334	4,032	5,499	8,967	31,263
oil	1,981	2,259	3,932	5,399	8,826	31,232
other	69	75	100	100	141	31
Oil share (%)	96.6	96.8	97.5	98.2	98.3	99.9
U.A.E.						
Exports: total	428	550	897	1,156	1,992	6,494

Source: OPEC Annual Statistical Bulletin 1976, pp. 4 and 5.

industry on the Iraqi economy will be discussed in more detail in the following chapter.

The oil industry increasingly continues to be a prime element in the economies of the Middle East oil exporting countries due to certain factors common to all of them: First, these countries are all underdeveloped with little or no industrialization; as a result they are heavily reliant on imports, particularly of machinery and equipment. Oil revenues consist chiefly of taxes paid directly by the foreign operating companies to the host governments; they also consist of wages and salaries paid by the oil companies plus materials and services purchased locally by the companies. However, these payments are not large in comparison to the flow of tax revenues. The crucial role of oil foreign exchange earnings for Iraq, Kuwait, and Saudi Arabia for the year 1975 is indicated in Table I:7. According to this table, the percentage share of oil revenues in total foreign exchange earnings in 1975 for Iraq, Kuwait, Saudi Arabia and the Emirates was 97%, 92%, 99.8% and 93% respectively, and in 1976 it was 98%, 87%, 99.8% and 93% respectively for the same countries.

Recent increases in oil revenues should enable these countries to increase their foreign imports without balance of payments difficulties. Table I:8 shows the sharp rise in oil revenues of the major Middle East oil producers between the year 1972 and 1974. According to this table, Saudi Arabia's oil revenues in 1974 amounted to a massive $22.6 billion, a dramatic rise in oil income in comparison to that of 1972 which was at $3.1 billion. This sharp

Table I:7

The Oil Revenues' Share In

Total Foreign Exchange Earnings*

(in millions US $)

1975	Iraq	Kuwait	Saudi Arabia	United Arab Emirates
1975 Oil Revenues	7,610	8,040	27,080	6,310
Total Foreign Exchange Earnings	7,810	8,740	27,120	6,810
Oil Revenues' Share in Gross Foreign Exchange Earnings	97%	92%	99.8%	93%
1976				
1976 Oil Revenues	9,800	7,900	30,000	7,420
Total Foreign Exchange Earnings	10,035	8,670	30,045	8,020
Oil Revenues' Share in Total Foreign Exchange Earnings	98%	87%	99.8%	93%

* Total Foreign Exchange Earnings = oil revenues + receipts from non-oil sources.

Source: Calculated from data obtained from Naft-Al-Arab, vol. 12, No. 4, January 1977, p. 7. (Arabic). Quoted from International Petroleum Encyclopedia, 1976, U.S.A.

Table I:8

Oil Revenues of the oil producers in 1972 and 1974

(in Billion US dollars)

Country	1972	1974	Amount of increase in revenue*
Saudi Arabia	3.1	22.6	19.5
Kuwait	1.7	7.0	5.3
Iraq	0.575	5.7	5.1
United Arab Emirates	0.551	5.5	4.9

* Calculated from the table.

Source: Petroleum Economist vol. XLIII, No. 9, Sept. 1976, p. 338.

rise in oil revenues has led to a big increase in the state's foreign exchange revenues. Saudi Arabia is the largest holder of foreign currency after the United States and West Germany.

As the table shows, Kuwaiti oil revenues in 1974 amounted to $7 billion, this compares with revenues of only $1.7 billion in 1972. As for Iraq, oil revenues amounted to $5.7 billion in 1974 in comparison to only about $.6 billion in 1972. The United Arab Emirates 1974 oil revenues, (contributed by Abu Dhabi and Dubai), amounted to $5.5 billion, an increase of about $5 billion over 1972.

Since the oil industry is the most important industry in the Middle East oil exporting countries, the revenues accruing from this industry to each of these countries constitute a significant share of its fiscal income. A major part of the oil revenue is allocated to the ordinary and development budgets which are both geared to an expectation of continually rising oil income. Consequently, any interruption in the stream of this income is detrimental to these countries and could cause them to suffer great setbacks. In countries with large populations, of about 11.124 million, like Iraq, oil has been and will continue to be the main source of wealth in the future. Oil revenues, in fact, spare the Middle East oil producers problems in the areas of balance of payments, income fluctuations and currency stabilization. The share of the oil revenues in the total government revenues* of Iraq, Kuwait and Saudi Arabia for the period 1971-1974 are shown in Table I:9.

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* Based in most cases on Ordinary and Development Budgets for fiscal years.

Table I:9

Oil Revenues as a Percentage Share of

Total Government Revenues*

Country	1971	1972	1973	1974
Iraq	52%	33%	61%	n.a.
Kuwait	98%	94%	94%	96%
Saudi Arabia	75%	87%	93%	96%

*Based in most cases on Ordinary and Development Budgets for fiscal years.

Source: Columns 1 and 2 quoted from: Oil and Development, A Publication of the Iraqi Oil National Company, Baghdad, 1974, p. 9. (Arabic). Quoted from OPEC's Annual Statistical Bulletin, 1970 and 1972.
Columns 3 and 4: U.N. World Economic Survey, 1975, p. 49.

According to this table, Iraqi oil revenues contributed on the average about one-half of the total government revenues for the period 1971-1974.

The Kuwaiti percentage share of oil revenues in total government revenues is on the average 96% for the same period.

The Saudi percentage share of oil revenues in total government revenues is shown to have increased during the same period. Whereas oil revenues contributed by 75% of the total government revenues in 1971, this share rose to 96% in 1974.

The 1975 budgets for the oil exporting countries of the Middle East are set at very much higher figures than in the preceding period. In Iraq, the investment programme for 1974/75 was allocated ID.800 mn. ($2.7 bn.), up from ID.296 mn. in the previous year. Details of the Saudi Arabian budget for 1974/75 are not available, but it is probable that total expenditures by the state have risen by at least 75% to some Rls 40 bn. ($11.25 bn.) in 1974/75, while Kuwait is expected to have supported public expenditure at as much as KD 800 mn. ($2.7 bn.) in 1974/75, almost twice the forecast level for 1973/74. All the smaller producers have shown similar trends, led by Abu Dhabi.(3)

The oil fields in the Middle East oil producing countries are owned by the government, consequently, oil revenues flow directly into the public economy. As indicated in Table I:10(a), the oil sector plays an overwhelming role in the economies of these countries,

Table I:10(a)

The Role of Oil in Arab Gulf Producing and Exporting Countries in 1975*

Country	Oil Revenue (£ millions)	Oil Sector/ National Income	Proportion of Foreign Exchange Earnings %
Abu Dhabi	3,740	85	98
Dubai	1,530	65	70
Iraq	5,400	32	90
Kuwait	3,400	70	90
Saudi Arabia	12,000	80	90

* These estimates were based on projections of output of 140 m. tons in Abu Dhabi, 150 m. tones onshore Kuwait, 220 m. tons in Iraq, and 450 million tons in Saudi Arabia. Also revenue figures given are pre-Teheran.

Source: Iskandar, M., The Arab Oil Question, Middle East Economic Consultants, Beirut, Jan. 1974, p. 75.

and there is no doubt that it will continue to play a vital role in the eighties. The table provides estimates of oil revenues, the contribution of the oil sector to the national income and the foreign exchange earnings of the major Middle East oil producers in 1975. According to this table, oil revenues for the Middle East oil producing countries considered in this study, account for between 70 and 98% of foreign exchange earnings and between 32 and 85% of the national income.

The oil revenues' contribution to the national income of Iraq, Kuwait and Saudi Arabia for the period 1969-1972 and the year 1975 is further shown in Table I:10[(b)]. For Iraq, oil revenues' share in the national income for the said period accounted for more than one-third. As for Kuwait and Saudi Arabia, it accounted for more than two-thirds for the same period.

As for 1975 the share of the oil revenues in the national income of Iraq, Kuwait, Saudi Arabia and the United Arab Emirates were 47%, 76%, 86% and 81% respectively.

It should be noted here that the implementation of development projects and the increase in government spendings affect the development of other economy sectors, especially the domestic industry sector, the construction and services sector; this, in turn, raises the average growth of the national income in these countries.

Table I:10(b)

Oil Revenues as a Percentage Share of The National Income

Country	1969	1970	1971	1972	1975*
Iraq	37%	35%	34%	40%	47%
Kuwait	66%	72%	78%	78%	76%
Saudi Arabia	61%	71%	n.a.	n.a.	86%
U.A.E.	-	-	-	-	81%

* For the year 1975: It was calculated from data obtained directly from the Department of Petroleum and Energy Affairs of the Arab League, Cairo.

Source: Oil and Development, A Publication of the Iraqi Oil National Company, Baghdad, 1974, p. 8. (Arabic).
Quoted from:
Statistical Annual Bulletin - Iraq and Central Bank of Iraq.
Central Bank of Kuwait.
Annual Report of the Saudi Monetary Establishment.

3. Factors affecting oil production policies.

Capital accumulation in the Middle East oil-producing countries is on such a scale as to raise questions on whether the producers will be prepared to go on raising production and thus oil revenues.

Most of the Middle East oil-exporting countries have recently taken virtual control of their oil production either through nationalization, as in Iraq, or through different types of participation, as in the Gulf states. Their vast oil reserves are technically capable of very high levels of production, (see Table I:11). Their domination of world trade, their huge oil surpluses, all this can have a great impact on world oil supplies. These factors give the producers the power to restrict production to the level that meets their internal needs.

Consequently, it appears likely that oil production in the Middle East oil-producing countries will grow at the rate required by the long-term economic requirements of these countries, and it cannot be assumed that oil production will grow at the rate required by demand in the industrialized world unless there are enough incentives for the producers to increase output beyond the level required to satisfy their own internal needs.

The Middle East oil producers' major concern is to ensure a continuing rise in their standards of living. The difficulties of absorbing increased oil revenues for some oil producers, and the enhanced value that oil left in the ground will have in the future, will both make it more attractive for such producers to limit oil

Table I:11*

Theoretical growth in output from the major producers

Country	1973	m. barrels per day 1976	1980	1985
Saudi Arabia	7.5	10.0	14.0	23.0
Iraq	2.0	3.0	5.0	8.0
Kuwait	3.0	3.5	3.5	3.5
Abu Dhabi	1.3	2.5	4.5	5.5

* Estimates by Shell based on present assumptions as to reserves.

Source: Tugendhat, C., and Hamilton, A., Oil The Biggest Business, Eyre Metheun, 1975, p. 236.

production and conserve reserves. In addition, the Middle East oil low production cost will always make it attractive in the market. Thus it appears that a gradual development of production is more in the interest of the producing countries.

Accordingly, there is likely to be a continuing trend towards restrictions of oil output among countries with relatively limited reserve bases. Venezuela's Minister of Mines and Hydrocarbons has suggested that cutting back of oil consumption by the industrialized world is good for the oil producers, it will only allow them to conserve the oil that they have for a longer time.(4) The Middle East oil producers indicate that they can reduce oil production to about 23 mn. b/d. before they will be forced to reconsider their price policy.

Most of the Middle East oil-producing countries lack the infrastructure and the population that can absorb their massive oil surpluses. Saudi Arabia is the most important of these countries. Its huge oil reserves of about 150 billion barrels, as much as three times those of any other country in the world, means it can maintain an output of about 20 million b/d. without putting a strain on its resources. Nevertheless, its population is only about 8 million. Saudi Arabia's 1974 oil revenues were about $ 30 billion, while only less than half of this amount was spent in that year, including the $2 - $3 billion aid granted to other countries.(5)

Another country with similar problems of surplus revenues is Abu Dhabi, whose population is less than 200 thousand, but whose eventual production potential is around 5 million b/d.

On the other hand, there are countries with desperate need for oil revenues to finance their economic plans and with large populations, like Iraq which could go to 5 mn. b/d. and perhaps even more by 1980. With a population of over 11 mn. people, Iraq has every incentive to raise production. Iraq is, therefore, determined to follow a policy of oil production expansion on a large scale. The Iraqi government believes that oil-producing nations should maintain output sufficient for the generation of adequate revenues that can be absorbed by the domestic economy, and that, Iraq with a great need for development, should press ahead with expanding its production, as Iraq needs all the revenues to finance its ambitious development programmes.

Thus the Middle East oil-producing countries could be classified as far as the problem of absorptive capacity* is concerned into three categories:

1 - Countries with smaller populations and ample reserves, like Saudi Arabia and Abu Dhabi, that cannot absorb the massive accumulations of oil revenues.

2 - Countries, like Kuwait, which are dependent on a single commodity and whose economies cannot be easily diversified. They have limited reserves and may find it convenient to restrict production at a rate that guarantees a longer life for their existing oil fields.

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* Absorptive Capacity problem: Where oil revenues are in excess of the present ability to spend domestically.

3 - Others, like Iraq, with large populations and development needs to generate finance for development through the sale of oil.

It appears that the most important factors affecting production policy of the Middle East oil-producers and consequently the decrease or increase in oil exports are the following:

1 - The Absorptive Capacity of the oil-producing countries.

2 - How to Invest the Increasing Oil Revenues Usefully.

1 - <u>The Absorptive Capacity of the Oil Producers</u>:-

The absorptive capacity of an economy may be limited by several factors such as infrastructure, education or human resources. One of the most important factors affecting production policy of the Middle East oil-exporting countries is the inability of most of these countries' economies to absorb the total investment and consumption expenditures that are estimated at about 50% out of the total revenues which the oil producers will get for the period 1973-1983, (see Table I:12).

If these massive surpluses are not invested in guaranteed ways in or outside the producing countries, they will be placed in the industrialized countries in the form of cash balances for a limited rate of interest and will be exposed to losses because of currency fluctuations and changes in exchange rates.

Control of oil supply or lower production, from an economic point of view, is primarily due to the inability of the producers' economy to absorb the oil revenues and at the same time avoid

Table I:12

Estimates of Oil Revenues for the Period

1973-1983 in Millions of dollars

Country	1973	1974	1973/1983
Saudi Arabia	4,915	17,269	177,605
Kuwait	2,001	7,004	72,041
Iraq	1,317	4,610	47,417
Abu Dhabi	1,035	3,172	32,755
Dubai	156	576	5,925

Source: Middle East Economic Digest, March 15, 1974. Quoted from Memorandum relative to the Arab-European dialogue prepared by the Dept. of Petroleum and Energy of the Arab League, Oct. 1974, p. 32. (Arabic).

fluctuation of currency. There is no doubt that assistance in the diversification of producing countries' economies, the absorption of funds by investment in industrialized economies and aid to developing countries are all possible outlets for these surpluses.

2 - Useful Investment of the Increasing Oil Revenues:-

Another factor affecting production policy is the question of how to invest the increasing oil revenues usefully and to find new sources of income that will replace oil after its depletion. Currency fluctuation and the monetary crises that hit the Western industrialized countries in recent years have made the producers lose confidence in oil surplus revenues that are beyond their current local expenditures. Such surpluses might lead to great possible losses as a result of their decreasing purchasing power and the surge in oil prices in the future. As one authority has demonstrated, the rate of inflation, the fall in oil demand and currency fluctuation are all factors that intensify the problems of the producers by threatening the real value of oil and the real value of monetary reserves of the oil-producing countries.(6)

As for the loss of purchasing power of the surplus revenues, Table I:13 shows that the purchasing power for most of the industrialized countries' currencies was eroded severely in 1973 in comparison to their 1962 value, including the American dollar and the Pound Sterling. In 1972 the purchasing power of the American dollar equalled 72% of its value in 1962. In 1972 the Pound Sterling's purchasing power eroded to 62% of its 1962 value. Even the value of the German Mark and the Japanese Yen, both of which are

Table I:13

The amount of decrease in the purchasing power of some currencies of selected countries

Country	Index No. of currency value. Base year 1962 = 100.		Percentage of annual devaluation of currencies.		
	1967	1972	1962/67	1967/72	1973
U.S.A.	91	72	2.0%	4.4%	4.7%
France	85	65	3.2%	5.3%	6.3%
W. Germany	87	73	2.7%	3.6%	7.1%
U.K.	75	62	3.2%	6.2%	8.3%
Japan	84	57	5.3%	5.6%	8.6%

Source: Monthly Economic Letter, Sept. 1973. Quoted from Memorandum relative to the Arab-European dialogue prepared by the Dept. of Petroleum and Energy of the Arab League, Oct. 1974, p. 31. (Arabic).

considered to be strong currencies, decreased and their purchasing power was in 1972 eroded to 73% and 57% respectively of their 1962 purchasing power.

As for the increase in oil price in the future, there are many indicators that point out to this fact:
The oil market has changed from a buyer's to a seller's market, the producers now have the power to set oil prices. The development of other uses for oil and consequently the increase in its economic value, the cutting in oil production because of increased surpluses, and the low elasticity of demand for most of the oil products - all these factors will lead to higher oil prices in the future. OPEC countries are convinced that they can sell their oil profitably in 10 or 100 years as a raw material primarily for petrochemicals if not as a fuel. Thus a production policy from the OPEC countries' point of view is to assure sufficient revenues for development plans, avoid any unnecessary monetary surpluses and hence prolong oil production as far forward as possible.

The industrialized countries can assist the producers in investing their oil surpluses usefully by supplying the M.E. countries with equipment and technical know-how to be able to diversify and expand their productive base.

When considering the conditions of the developing countries, such as the inadequacy of infrastructure and institutions, the lack of markets, the process of technology transfer becomes a complicated one. In addition, the long-term impact of technological change on society

is unpredictable in this changing world. Such problems should be considered and given top priority to the research efforts undertaken by the oil-producing countries. The industrial countries can contribute here by devoting research efforts to identify the appropriate technology to be transferred and by investing in the development of such technology when it does not exist, to provide the necessary raw materials and semi-manufactured goods and last, but not least, to open their markets for the manufactured products that will result from the transfer of certain technology to the developing country. It is very important, however, to select the right kind of technology and the kind of industry to which the technology is to be transferred. In the case of the oil-exporting countries, one area in transferring technology is in the development of the petroleum industry. It is important here to point out that in spite of the advent of direct national control over their oil wealth in the early seventies, most oil-producing countries are in economic danger without research and development, especially in the oil refining and petrochemical industries. The establishment of institutes in the producing countries with the purpose of transferring and assimilating such a technology is, therefore, essential. The aim must be to develop Arab capabilities, and this, in practical terms, means the training of qualified skills in all stages of technology transfer.

Finally, a transfer of technology is possible only in a friendly environment. Thus it is in the interest of the oil-producing countries to maintain good relations with the industrialized countries. The reverse is true for the industrial countries. On an international

scale, the industrial countries could provide the oil-producing countries with opportunities to invest oil surpluses in guaranteed ways in the industrialized countries. In addition to protect oil money in European banks against currency speculation, on the one hand, and to offer an interest rate which exceeds the rate of decrease in the purchasing power for their currencies, on the other. Currently the Arab states are pressing for access to investment opportunities in the developed countries with guarantees against inflation and currency speculation. Given these guarantees, it appears probable that the oil states will accept the incentive to produce more oil. The oil producers, with considerable merit, argue that their depleting oil reserves are irreplacable and it is essential that they safeguard their future interests.

In other words the oil states will need fair incentives if they are to be persuaded against their current belief that leaving their oil in the ground is a better policy in the short run than accumulating foreign exchange that is subject to the ups and downs of the uncertain international monetary market.

4. Investment Practices and Possible Investment Outlets:

A United States official report indicated that the OPEC countries spent one-third of their 1974 oil revenues at $ 90 billion and were left with a surplus of $ 60 billion available for investment abroad.(7) Evidence shows that most of these surpluses were invested in the major oil-consuming countries. The oil-producing states have normally favoured three to six month deposits, or investment in Euro-bonds or dollar bonds, for they have gone through worrying experiences concerning their vulnerability if they hold a single currency and it comes under fire.

According to the above-mentioned report, the 1974 oil surpluses were spent as follows:-

Some $11 billion went directly to the United States, about $ 7½ billion, invested in Pounds Sterling, flowed to the United Kingdom. Direct lending by OPEC countries to official and semi-official institutions in other developed countries amounted to $ 5½ billion. About $ 3½ billion went to official international institutions such as the IMF and the World Bank, and possibly some $ 2-2½ billion flowed to other developing countries.

Two important conclusions could be drawn from these figures:

1 - That the 1974 oil surpluses were not withheld by OPEC countries, that there was a flow of capital to the oil-importing countries.

2 - That the oil surpluses were placed in a variety of outlets throughout the world.

Possible Investment Outlets:

There are several outlets for the Arab oil funds:

1 - Investment in the industrialized economies:

Arab oil-producing countries will be looking for safe outlets to invest their oil surpluses. The major oil-importing countries with their technical experience, could find ways to help enhance the absorptive capacity of the oil producer's economies and their confidence in their future investments abroad, so that the oil producers will have every incentive to produce their oil in the short and medium terms rather than hold it in the ground. It should be borne in mind that the oil-producing states look for investments in the industrialized countries with certain objectives, mainly to increase their foreign currency earnings, to diversify the basis of their national wealth such as investment in refineries and petrochemical operations, and to provide a store for wealth to guarantee future prosperity after the depletion of their main asset.

2 - In the oil-producing countries themselves:

Domestic expenditures of the oil-producing countries mainly comprise the following:-

a - Armaments and internal security absorb significant amounts.

b - Public employment will absorb a large amount of oil revenues. As the oil income of oil exporting countries accrues directly to the government, public employment is one outlet of channelling oil funds into the economy. There is no doubt that as education develops in Saudi Arabia, Kuwait, Abu Dhabi and elsewhere, new jobs will be created, and through the expansion of the economic functions of the government, public employment will grow. In addition increased revenues will lead to the payment of higher salaries and wages.

c - Investment Programmes. This mainly concerns road infrastructure, public utilities, banking, agriculture and investment in petrochemical industries. The oil producers are aware that they should use their natural resources for domestic industrialization. They will be looking to use the higher revenues to establish an industrial base for their economies and diversify them away from dependence on oil exports. Public awareness and responsibility for allocating substantial proportions of oil revenues to development, both social and economic, has become an urgent need throughout the Gulf area. Kuwait allocated £ 3.3 billions for local economy alone in 1975, leaving between £ 4 billions and £ 5 billions for aid and investment.(8) Saudi Arabia invested an almost unbelievable £ 120- £ 170 billion into the 1975-80 development plan.(9)

d - Heavy Expenditures on Imports. Trading prospects for the industrialized nations in the Middle East market are good. A high disposable foreign exchange income in the area together with the necessity for development in petroleum, non-oil industry and in welfare schemes will necessitate heavy government expenditures on imports in addition to strategic procurements of arms. Imports of the Middle East oil-producing countries naturally will increase rapidly but must be limited by the absorptive capacity of these countries. Most of the Gulf oil producers provide a large and lasting market for Western goods. Abu Dhabi, Kuwait, Saudi Arabia and even Iraq are heavily reliant on imports from the United States, Western Europe and Japan in building their own economies. This means that a large proportion of the money spent by the industrial world on oil imports flows back to these

countries. According to estimates given in official and independent American studies.... the percentage of funds that flow back to the United States as company profits and payments for imports by the oil-producing countries is not less than 60% of payments made by the U.S. government to their oil-producing countries.(10)

The European Commission expects the improvement in Europe's trade position to continue, and estimated that the share of Common Market exports to the OPEC countries will more than double from 4.7% in 1974 to 10% in 1978.(11)

Figure I:1 illustrates the continuous improvement in Western Europe's and the United States' trade positions with the Middle East between 1973 and 1974.

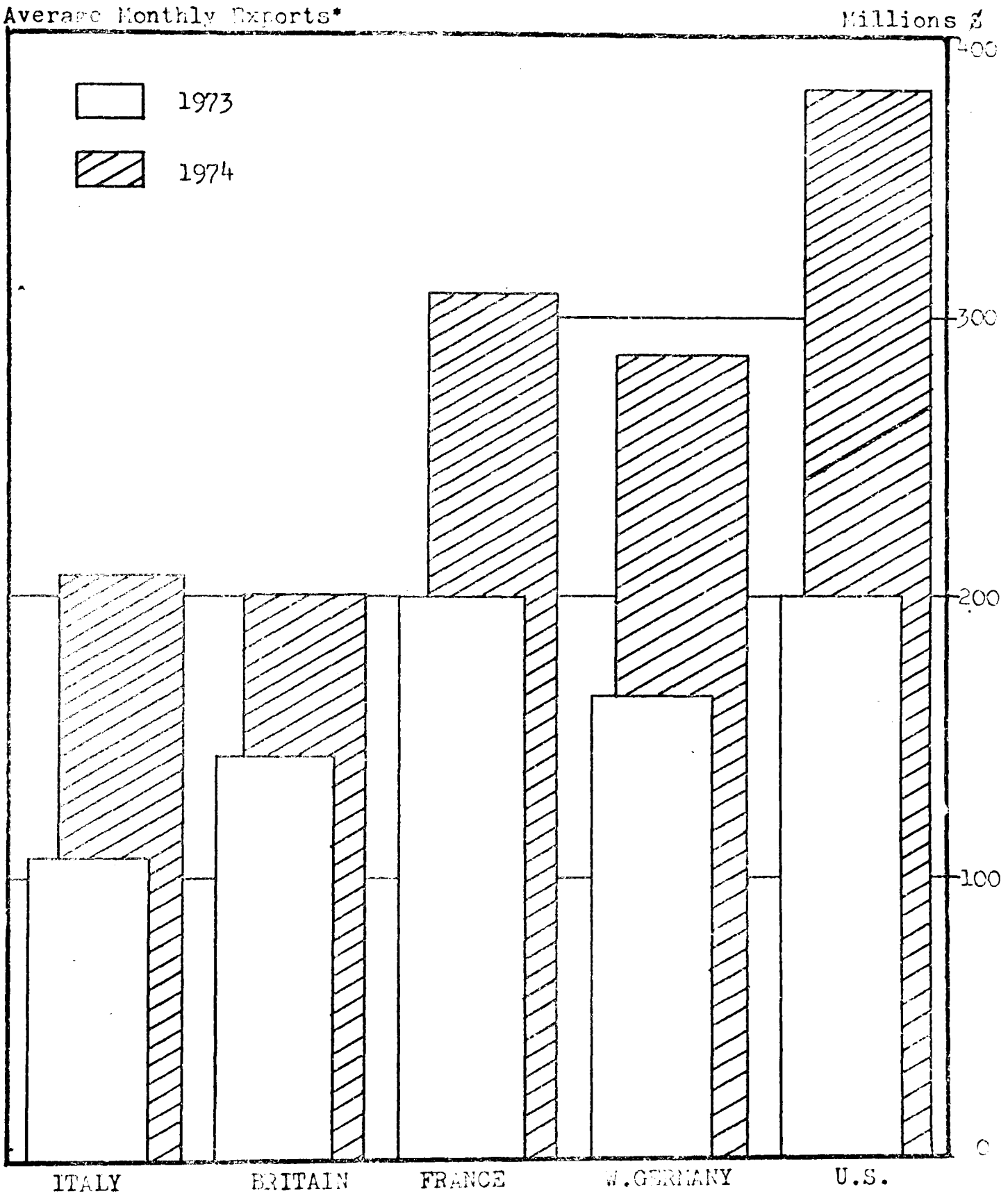
For the United States, a sharp rise in trade with the Middle East is illustrated in Figure I:2. Thus, despite the oil price rise, the United States runs a trade surplus with the area.

3 - Aid to Arab and non-Arab Countries:

The small population oil countries may not have as big a surplus as was first feared, partly because some oil-producers have extended generous aid to other developed countries - Arab and non-Arab. There is an awareness of the need to speed up development in Arab countries with different resources and large populations. Saudi Arabia, Abu Dhabi and Kuwait have all organizations for channelling the funds to the Arab non-oil countries. Inter-Arab

FIGURE I:1

The West's Average Monthly Exports with the Middle East 1973 and 1974

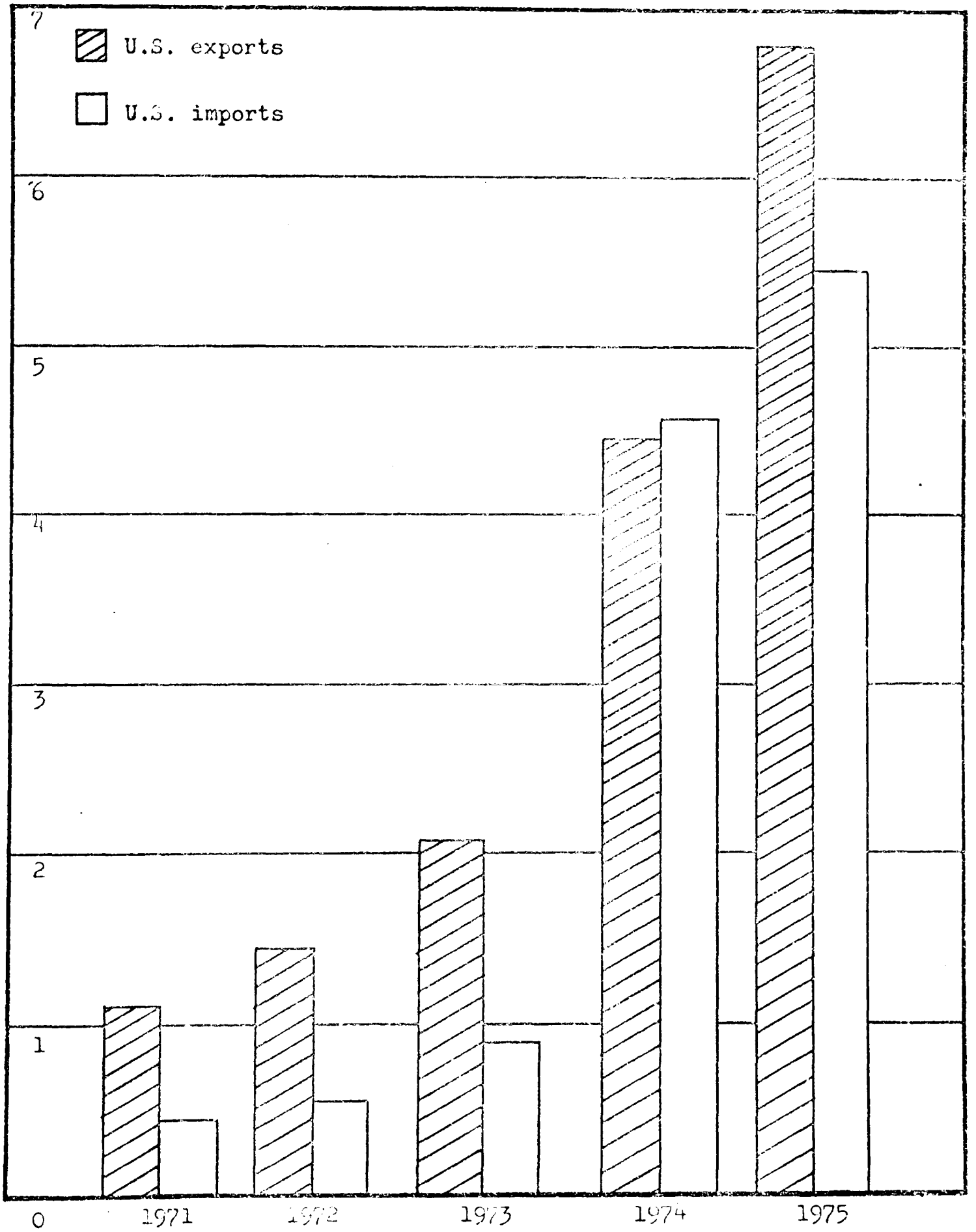


* Based on first 9 months.

Source: Time, March 17, 1975, p. 7A.

FIGURE I:2

Soaring U.S. Trade with the Middle East
1971 - 1975



Source: Business Week, May 26, 1975, p. 38.

aid started with the establishment of the Kuwait Fund for Arab Economic Development which was set up in Kuwait fifteen years ago to offer long-term development loans to Arab countries on similar lines to those of the World Bank. At the beginning of 1974 the Arab-African Oil Assistance Fund was set up by the oil-exporting countries with a capital of $ 200 millions, with the purpose of offering help to African countries affected by oil price increases; by the end of the year a total of $50m had been lent to 16 countries.(12)

The International Monetary Fund Oil Facility which was set up in 1974 to offer assistance to IMF member states, is almost entirely funded by the oil-producing countries. The Arab Investment Company was also established in 1974 to offer help to the Sudan. The Islamic Development Bank was set up in the same year with an initial capital of 750 million 'Islamic Dinars' (about $ 900 million - the 'Islamic Dinar' is equal to the SDR), mainly subscribed by Moslem oil-producing states.

It appears, therefore, that Arab oil surpluses will not be restricted to the oil-producing Arab countries themselves, but will be diffused primarily in the Arab world in the form of aid, as the ninety million out of the 100 million people inhabiting the Arab world, badly need the oil surpluses for they suffer from problems associated with underdevelopment. The Arab population is growing at 2.5-3% p.a.; by the mid-eighties, this population will attain 150 million, that is 60% of the estimated total U.S. population at that date.(13)

The depleting main asset that the Arabs now live upon makes urgent the necessity to provide a continued source of income after the exhaustion of their main commodity.

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(8) Banker, March 1975, p. 315.

(9) The Economist, May 1975, p. 11.

(10) Iskandar, M., The Arab Oil Question, p. 45.

(11) Time, March 17, 1975, p. 7A.

(12) The Petroleum Economist, June 1975, p. 222.

(13) Iskandar, M., The Arab Oil Question, p. 35.

C H A P T E R I I

THE IRAQI OIL INDUSTRY

1. The Importance of the Oil Industry to the Iraqi Economy.

The first chapter made the point that in some respects the Iraqi oil industry differed significantly from that of the other producers, in the sense that Iraq's relatively large population made it both possible and desirable to convert oil revenues to immediate use. Iraq could and should be able to make use of her resources quickly.

This chapter, therefore, considers in more detail the role of the oil industry in Iraq and the extent to which Iraq's oil price policy might have different objectives from those other countries with smaller populations and less developed economies.

As it is the case for other Middle East oil-producing

countries, oil plays an important role in the economic life of Iraq. The oil industry provides the main foundation for the country's economy. It plays a pivotal role in offsetting the deficit in the trade balance due to the wide gap between Iraq's imports and its non-oil exports, estimated by the government to be 157 million Iraqi Dinars in 1970. Oil revenues are the major source of foreign exchange earnings. They constituted 94% and 87% of the total foreign exchange earnings in 1972 and 1973 respectively. Crude oil exports constituted 94% of the total exports of 1974. The revenues for oil exports contributed 90% of the finance for the country's economic and social development plan in 1971.

Iraq, more than any other Arab oil-producing country, has great chances of economic development. Its population is comparatively large, and is also endowed with other sources of wealth, such as cultivable land and water resources, besides oil. Iraq is the first Arab oil-producing country to employ oil revenues in the service of the country's development. The important role played by the oil revenues in the Iraqi economy will be discussed relative to the share of the oil revenues in total exports, their share in foreign exchange earnings, and last but not least, the share of the oil revenues in total government revenues.

a) - The share of oil revenues in total exports:

The value of oil exports increased from U.S. $ 969 million in 1969 to U.S. $ 7,610 million in 1975. The share of oil in total exports fluctuated between 91 and 97 per cent during the period 1969 - 1975. (See Table II:14). Clearly Iraqi international trade is dominated by trade in oil.

TABLE II:14

The Share of Oil in Iraqi Exports for the Period 1969-1974

(in million US dollars)

Year	Oil Exports	Total Exports	% of oil exports in Total Exports
1969	969	1,042	93
1970	1,031	1,110	93.7
1971	1,478	1,543	95
1972	1,006	1,101	91
1973	2,449	2,555	95
1974	6,907	6,907	94
1975*	7,610	7,810	97

* 1975 was calculated from data obtained from Naft-Al-Arab, vol. 12, No. 4, January 1977, p. 7 (Arabic). Quoted from International Petroleum Encyclopedia, 1976, U.S.A.

Source: OPEC Annual Statistical Bulletin, 1976, pp. 4 and 5.

b) - The Role of oil in Foreign Exchange Earnings:

It is well-known that Iraq is heavily dependent on industrialized countries for her ~~exports~~ imports of machinery and equipment. Iraq has no problem paying for her imports from oil revenues. Table II:15 shows the net oil foreign exchange earnings, as compared to foreign exchange earnings from exports of merchandise excluding oil and re-exports for the period 1966 - 1971. When analysing the figures in this table, it is noticed that the oil sector's foreign exchange earnings are overwhelming, in comparison to foreign exchange earnings of the non-oil exports and re-exports. Moreover, while oil foreign exchange earnings between 1966 - 1971 increased, foreign exchange earnings from re-exports decreased during the same period. For example, in 1966 net oil foreign exchange earnings amounted to ID 187.6 million; this amount increased to ID 258.4 million in 1971, while the foreign exchange earnings from non-oil exports and re-exports decreased from ID 26.5 million to ID 23.2 million in 1971 for the same years.

c) - Oil Revenues and Their Share in Total Government Revenues:*

Government oil revenues increased steadily and at a rapid rate up to 1960, and since then and until 1970 they have increased at a very slow rate, mainly due to two reasons:

First, the dispute between the companies and the government since 1961. The result was a decline in the net investment in the oil industry. Consequently, oil output increased at a lower average

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* Total Government Revenues = Revenues of the ordinary budget and of the development plan.

TABLE II:15

Net oil foreign exchange earnings as compared to foreign exchange earnings from non-oil exports and re-exports

(In million Iraqi Dinars)

	1966	1967	1968	1969	1970	1971
Net foreign exchange earnings	187.6	146.3	198.2	185.2	199.4	258.4
Government share of profits	140.8	124.6	159.9	160.9	172.7	270.3
Cash expenditures in Iraq	13.5	14.0	18.8	17.7	16.3	30.8
Other earnings from oil companies	33.3	7.7	19.5	6.6	10.4	42.7
Non-oil exports and re-exports	26.5	23.8	25.9	25.9	24.7	23.2

Source: Najm Aldin, N., The Role of Oil in the National Economy and its Impact on the Development Programs in Iraq, Iraqi National Oil Company, Baghdad, 1974, p. 7.(Arabic).Quoted from Iraqi Central Bank Bulletin, July - September 1970. January - June 1972.

rate for the period 1961 - 1970, as compared with the period 1953 - 1960. (See Table II:16). For the period 1961-70, oil output increased at an annual average rate of 5%, as against 15% during the period 1953-60.

Second, the Iraqi government did not sign the Royalty Expensing Agreement* and as a result has not benefited from the increase in government share in profits that other OPEC members enjoyed since 1965. Because of the above-mentioned reasons, the government oil revenues increased at an average annual rate of about 9.5% for the period 1961 - 1970 as against 16% for the period 1953 - 1960.

The share of government oil revenues in total government revenues stood at 60.5% for the period 1956-61, as compared to 53.3% for the period 1962 - 1972. This is partly due to the fact that some of the development programmes that have been completed have started contributing their share towards financing the new development programmes. (See Table II:17). According to this table, the overwhelming share of the oil revenues is allocated to the development budget rather than the ordinary budget. The table shows the important role of the oil revenues in financing investment projects drawn by the economic plans for the period 1956 - 1973. In 1956 the percentage of oil revenues to the total economic plan revenues was 94%; in 1960 it was 100% and in 1972 it was 90%. The oil revenues' share in the economic plan 1961 - 1965 was 55.8% of the total plan's allocations; this share rose to 69.5% for the development

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* See References (6 and 60).

TABLE II:16

The Rate of Growth of Oil Output and Oil Revenues for the Period 1953-1973

Year	Oil Output (000 b/d)	Annual % change in daily output	Oil Revenues ID in million	Annual % change in oil revenues
1953	581.4	49.5	51.3	55.0
1954	636.2	9.4	57.7	12.5
1955	697.0	9.6	73.7	27.7
1956	641.0	- 8	68.9	- 6.5
1957	449.5	- 29.9	48.9	- 29.0
1958	731.3	62.7	79.9	63.4
1959	859.9	17.2	86.6	8.4
1960	972.2	13.5	95.1	9.8
1961	1,007.1	3.6	94.8	- 0.3
1962	1,009.2	0.2	95.1	0.3
1963	1,161.9	15.1	110.0	15.7
1964	1,255.2	8.0	126.1	14.6
1965	1,312.6	4.6	131.4	4.2
1966	1,392.2	6.1	140.8	7.2
1967	1,228.1	- 11.8	131.7	- 6.5
1968	1,503.3	22.4	203.3(a)	54.4
1969*	1,521.2	1.2	199.6	- 1.8
1970*	1,548.6	1.8	213.6	7.0
1971	1,694.1	9.4	349.7	63.7
1972	1,465.5	- 13.5	229.8(b)	-
1973	2,018.1	37.7	178.6(b)	-

* Excluding government production.

(a) Including additional payments of 7 US cents/b over June - December 1967.

(b) Revenues from foreign companies only.

Source: OPEC's Annual Statistical Bulletin, June 1976, pp. 21 and 147.

TABLE II:17

Oil Revenues During the Fiscal Years 1956 - 1973

(In million ID)

Fiscal Year	(1) Oil Revenues' share in the Ordinary Budget	(2) Revenues of the Ordinary Budget	(3) % 1:2	(4) Oil Revenues' share in the Ec. Plan	(5) Revenues of the Economic Plan	(6) % 4:5	(7) Total Oil Revenues (1 + 4)	(8) Total Revenues of Ordinary Budget & Dev. Plan (Total Government Revenue) (2 + 5)	(9) % 8:7
1956	20.65	62.71	33	48.19	51.13	94	68.84	113.84	60
1957	14.65	61.85	24	34.20	35.87	95	48.85	97.72	50
1958	26.07	75.57	34	60.81	61.74	98	86.88	137.31	63
1959	43.30	89.72	48	43.30	43.57	99	86.60	133.29	65
1960	47.54	103.61	46	47.55	47.68	100	95.09	151.29	63
1961	58.12	120.70	48	58.12	66.68	87	116.24	187.38	62
1962	48.48	114.71	42	50.46	70.03	72	98.94	184.74	54
1963	57.24	126.77	45	57.25	67.60	85	114.49	194.37	59
1964	64.83	145.96	44	64.83	76.47	85	129.66	222.43	58
1965	67.72	179.13	38	67.72	75.03	90	135.44	254.16	53
1966	78.10	158.65	49	62.60	70.80	88	140.70	229.45	53
1967	63.40	210.36	30	65.51	81.86	80	128.90	292.16	52
1968	91.64	212.88	43	83.07	86.98	96	174.71	299.86	58
1969	84.53	260.74	32	84.53	110.42	76	169.06	372.16	45
1970	114.43	292.56	39	97.29	111.16	87	211.72	403.70	52
1971	179.26	388.80	49	170.69	189.28	90	349.95	534.80	65
1972	109.30	270.53	40	109.27	135.88	90	218.57	574.00	38
1973	204.50	382.00	53	204.50	310.00	66	409.00	675.50	60

Continued.....

Sources: 1959 - 1969 Najm Aldin, N., The Role of Oil in the National Economy of Iraq and its Impact on the Development Programs, Iraqi National Oil Company, Baghdad 1974, p. 10. (Arabic).

1970 - 1973 Calculated from Central Bank of Iraq Bulletin, No. 3, July - September 1974, pp. 25 and 28.

plan of 1965 - 1969; it further increased to about 80% for the national development plan of 1970 - 1973.

In the ordinary budget, oil revenues constitute one of the major financial sources of this budget, as can be seen by the same table. During 1956 - 1973 oil revenues' share in the ordinary budget, on the average, was about 40%.

The Impact of Oil Revenues on the Development Programmes since 1970:-

Vastly increased government income on account of oil exports has enabled a rapid rise in expenditure by the state organizations on industry, agriculture, construction and other sectors. Increasing oil revenues after 1970 enabled the Iraqi government to draw up an ambitious development plan for the period 1970 - 1974. This plan was the most determined effort undertaken in the field of development since 1958.

The increase in oil revenues after the year 1970 arise from these developments:-

1) - The East Mediterranean Agreement* reached between the government and the oil companies, according to which, the posted price of a barrel of oil exported from the Mediterranean was increased by 80 cents.

2) - The Teheran Agreement, according to which the Arab Gulf

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* This agreement was arrived at in implementation of OPEC's Resolution No. XXI - 120 adopted in Caracus in December 1970, and in the light of the Teheran Agreement signed between the Arab Gulf member countries, including Iraq, and the oil companies early in 1971.

countries, including Iraq, obtained an extra income of about £ 1200 million in 1971.

3) - The Geneva Agreement of 1972 by which posted prices were raised by about 8.5%.

The 1970 - 1974 plan was a more comprehensive plan in its targets due to the increase in oil revenues. Allocations for this plan reached a level never before witnessed by Iraq economic history. The aim was to create a rapid development in all sectors and economic activities. The total sums allocated for the plan were ID. 1932.0 million in comparison to a sum of ID. 821 million allocated for the previous national development plan of 1965 - 1969.

The 1970 - 1974 plan was mainly financed by the public sector, including the self-financing operations of the state organizations. The private sector contributed by only one-quarter of the total investments.(14) Table II:18 shows the financial sources of the central government sector in the development plan of 1970 - 1974 in millions of Iraqi Dinars. The oil revenues' share in the plan allocations is 79.1%, followed by the external loans' share of about 11%.

The Investment Programme of 1975:-

The total allocations of the investment programme for the nine months of 1975 amounted to ID 1076 million. Such allocations were the largest ever to be approved in Iraq and were almost as much as the allocations for the 12 month period - April 1974 to March 1975 - which amounted to ID. 1169.0 million. Out of the total allocations

TABLE II:18

Financial Sources of the Central Government Sector in the 1970 - 1974 Development Plan

Financial Source	Value	Percentage
50% of the oil revenues	425.0	79.1
Mineral resources revenues	6.0	1.1
General Establishment revenues	29.4	5.5
Internal loans	10.0	1.9
External loans	60.0	11.2
Other financial sources	6.5	1.2
Total	536.9	100%

Source: Najm Aldin, N., p. 45.
The Role of Oil in the National Economy of Iraq and its Impact on the Development Programs, Baghdad, 1974.

for the nine-month programme, oil revenues and other mineral sources share was ID.700 million, i.e. 65.1%. (See Table II:19). This investment programme ended on December 31st, 1975 when the forthcoming National Development Plan of 1976 - 1980 started. Ambitious rates of economic expansion have been worked out by the government for incorporation within the new plan. Details of this plan are, however, not yet available.

TABLE II:19

Financial Sources of the 1975 Development Programme

Revenues	Amount in million ID	Percentage
1) Oil Resources and other mineral resources	700	65.1
2) Foreign loans	25	2.3
3) Other sources	351	32.6
Total	1,076	100.0

Source: Progress Under Planning, Ministry of Planning, Baghdad, Iraq, No. 5, 1975, p. 62.

2. Government - Company Relationship.

By means of the concessions, the oil companies were very influential and virtually in full control of the Iraqi oil sector since the beginning of their operations in 1925 until 1972. They were wholly responsible for planning and executing the policy of oil extraction, of exporting crude oil to foreign markets and of fixing the prices by which government revenues were calculated. An example of their powerful control over prices was their reduction of oil prices twice during 1959 and 1960 without consulting the governments of the oil-producing countries, including the Iraqi government. On the other hand, the oil companies employed large capital with the aim of establishing only an extractive oil industry with a high productivity. Their expenditure on research, training and planning was minimal.(15) They were fortunate in making big oil discoveries with the minimum exploration and drilling effort. The fact that the oil companies' activities were confined only to the extraction and exploration of oil, and did not include refining lessened the chances of Iraqi economy for further investment and work opportunities.

The companies also had full control over production. Production levels fluctuated depending on the relation between the government and the company. When relations were good, the companies boosted production, when relations were not so good, it was kept to a minimum. After 1958 production rates started to decline as a result of the change in the political conditions of the country and the consequent lessening of the companies' influence. The year 1958 was a turning point. According to government figures, ever since the

companies began their operations in Iraq in 1925 and until the end of 1957, oil companies drilled only an average 56 thousand feet per annum. After the 1958 Revolution, the companies drilled at an annual average of 157 thousand feet, after being asked to give up the unexploited lands. The fact that the companies were able to drill 248 thousand feet in 1960 is a proof that they were reluctant to employ big investments in proportion to the country's proven reserves.(16)

The great influence of the oil companies over the oil sector resulted in the isolation of this sector from the Iraqi economy. Additionally, the unsteady growth of the non-oil sectors, increased the country's dependence on oil exports, and consequently, the oil revenues became the major source of income.

Negotiations between the government and the companies started after the 1958 Revolution. The main issues over which there were great differences were prices, production levels and the areas and terms of the Iraqi Petroleum Company concessions. However, the most important difference that had arisen since the signing of the 1952 Agreement* was the principle of relinquishment by the companies of the areas covered by concessions except those that were actually being exploited. This long disagreement between both sides prompted the government to enact Law No. 80 of 1961, which without prejudice to the companies' acceptable interests, enabled the country to win

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* The agreement makes an assumption of profit realized to be shared equally between government and companies. The net profit is found by deducting from the hypothetical price, the cost of production and transportation. For details see Bibliography References (1 and 56). Also Reference (17).

back 99.5% of the lands which were in the hands of the companies but unexploited. The companies drastically reduced production, the rate of increase dropped to 3% in 1962, against about a 10% increase rate in other Middle East oil-producing countries. The long dispute between the government and the companies led to a repeated reduction in oil production. From 1 million b/d in 1961, it rose only to 1.7 million b/d in 1971, as can be shown by Table II:16 in the previous section. The period beginning with the agreement of 1952 and ending in 1961, that is the year preceeding Law No. 80, the average rate of output growth was about 11% p.a. The oil companies adopted low output levels, which represented an increase of only 4.7% after 1961.(17) As a result, the per barrel cost became higher and the government lost the additional revenues. The result was a blow to the Iraqi economy. According to government figures, the low-production-level policy adopted by the companies between 1962-1970 resulted in a financial loss of about 550 mn. ID.*

Another aspect of the dispute was that the companies did not increase their investments in the oil industry in Iraq, either through increasing production capacity or through making investments in the oil industry, such as petrochemicals or refining. In comparison to other countries in the region, Iraq was the only country where the oil companies did not establish an export refinery. (See Figure II:3).

A new round of negotiations between the government and the

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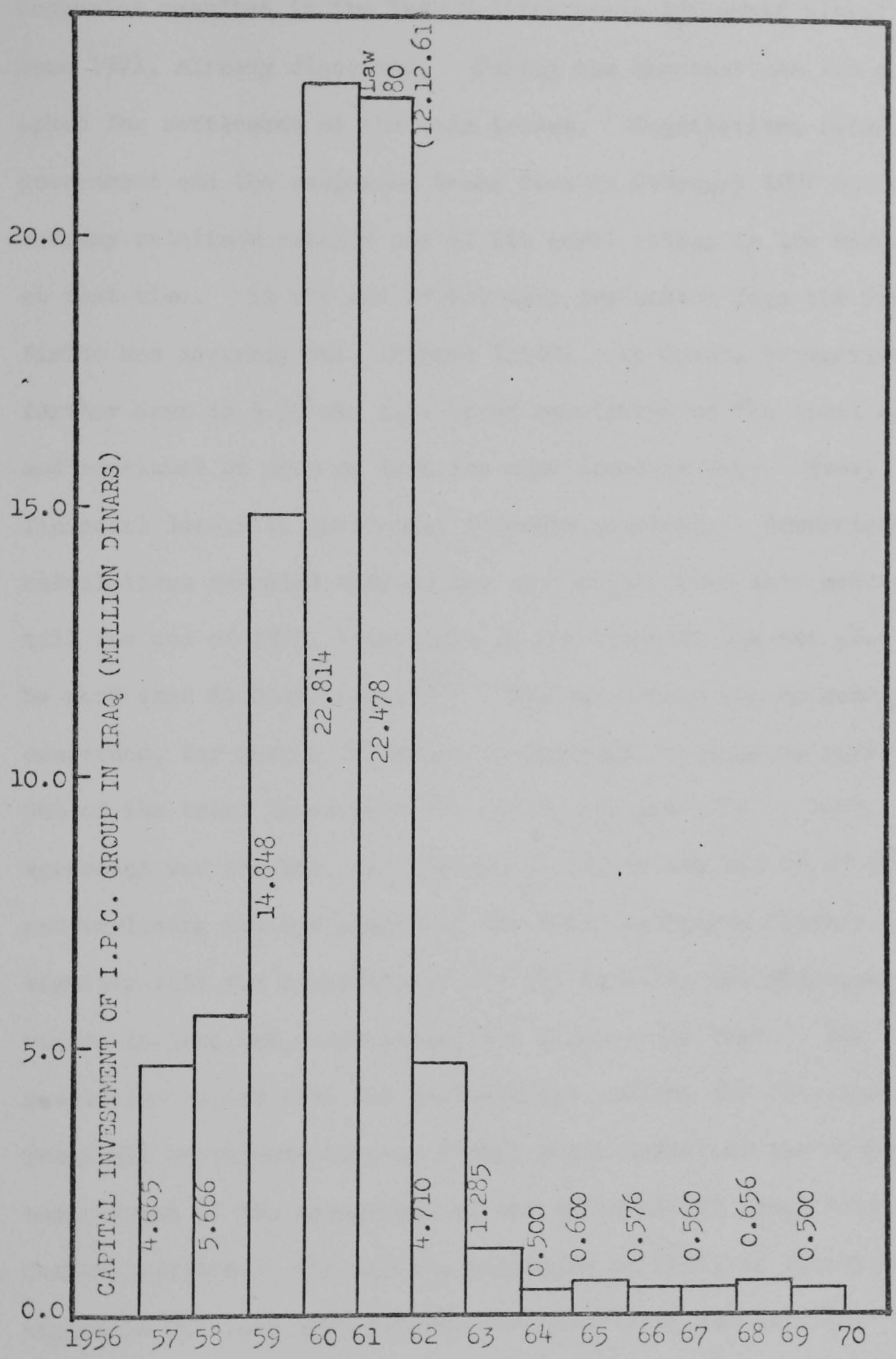
* ID = Iraqi Dinar = £1.16.

FIGURE II:3

Capital Investment of IPC Group in Iraq 1956-70



Companies Investment in Iraq was reduced drastically after the promulgation of Law No. 80.

Source: The Nationalization of Iraq Petroleum Company's Operations in Iraq, The Facts and the Causes, The Ministry of Oil, 1974, p. 11.

companies resulted in the East Mediterranean Agreement signed in June 1971, already discussed. During the negotiations the companies asked for settlement of the main issues. Negotiations between the government and the companies broke down in February 1972 and country-company relations reached one of its worst crises in the Middle East at that time. At the end of February production from the Kirkuk fields was severely cut. (Figure II:4). In March, production went further down to 3.39 mt. i.e. about two-thirds of the total capacity and continued at more or less the same level in May. Heavy financial losses in government revenues resulted. Government calculations revealed that if low production rates were maintained till the end of 1972, total loss in oil revenues for the year would be more than £110 millions.(18) The government was extremely concerned, for such a reduction in earnings represented more than 50% of the total investment for the fiscal year 1972 - 1973. As no agreement was reached, the government issued Law No. 69 of 1972 nationalizing the operations of the Iraqi Petroleum Company (IPC), together with the ownership of all its existing installations and rights in Iraq and compensating the company for them. The resolution stated that the nationalized company was recalled the Iraqi Oil Operations Company (IOOC) which undertook the direct supervision of the management of the nationalized Iraqi Petroleum Company affairs. Through the mediation of OPEC, an agreement was signed in February 1973 between the government and IPC, BPC* and MPC** where issues were settled. After the settlement production

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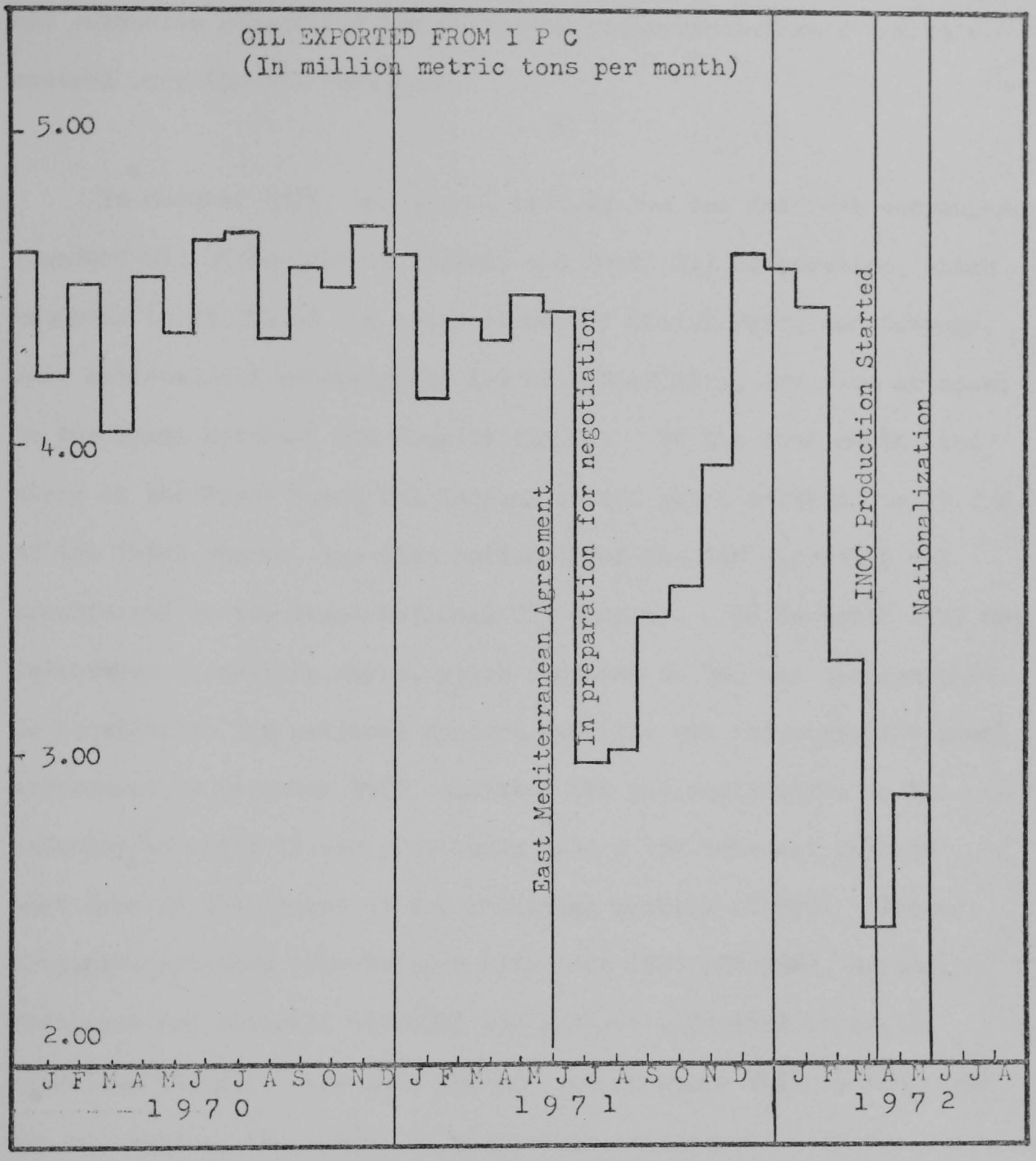
* BPC = Basrah Petroleum Company.
** MPC = Mosul Petroleum Company.

FIGURE II:4

Oil Exported from IPC 1970-72



The Companies exerted pressure on Iraq by reducing production rates whenever it suited them.

Source: The Nationalization of Iraq Petroleum Company's Operations in Iraq, The Facts and the Causes, The Ministry of Oil, 1974, p. 18.

increased rapidly to 2.1 mn. b/d only four months later. The Iraqi oil companies recognized the nationalization resolution and Iraq's control over its oil resources.

In October 1973, the shares held by the two American companies, Standard Oil of New Jersey (Exxon) and Mobil Oil Corporation, which amounted to 23.75% of the total shares of Basrah Petroleum Company, were nationalized according to Law No. 70 of 1973, and were attached to the Iraqi National Oil Company (INOC). In the same month, the share of the Royal Dutch Oil Company in BPC which amounted to 14.25% of the total shares, was also nationalized and its ownership was transferred to the Iraqi National Oil Company. In December 1973 the Gulbenkian foundation share, which amounted to 5%, was nationalized. To consolidate its national control over the oil industry, the Iraqi government in December 1975 completed the nationalization of the oil industry in which it had previously held a 43% interest through take over of the assets of the remaining members of BPC. The oil companies affected were British Petroleum (BP) (23.75%), Compagnie Francaise des Petroles (23.75%) and British interests in Shell Petroleum (9.5%). Now that the government has a full control over the oil sector, the volume of production is determined by the financial requirements of the national development plans and the rate of their execution. The oil sector has become closely related to other sectors of the economy.

3. Production Policy.

As has been noted, the Iraqi economy's difference from the economies of the other Middle East oil-producing countries, such as Saudi Arabia and Kuwait, is its almost great need for oil revenues to finance its economic programmes, give the country every incentive to continue to expand production. Its production in 1975 of about 2,262.0 b/d was an increase of about 15% over 1974.(19) Some oil experts foresee the possibility of the country's oil production increasing to 5 million b/d by early 1980.(20) Iraq's present target of capacity is around 4 million b/d by 1982. The national oil company (INOC) has drawn a ten-year exploitation development plan for the period 1971 - 1981. Its aim is to raise oil production at steadily increasing rates, not less than 10% p.a. With a good level of proven reserves, estimated at end of 1976 at about 35 billion barrels, the country's potential is likely to be substantial.

Iraq's policy of production expansion has been supplemented by the country's undertaking of major projects in relation to transporting and exporting oil. Some of these projects have been completed recently, such as the strategic line projects which will transport oil for export either from the Gulf or the East Mediterranean, the Baghdad-Basrah pipeline, which will transport oil by-products between Baghdad and Basrah by connecting the refineries of both. Another project is the pipeline passing through Turkey to the Mediterranean terminal at Dortoyl. It is noticed that pipelines are playing a major role in providing for flexibility of transporting oil and oil products within the country and to export terminals.

One of the main objectives of Iraq's oil policy is to keep a balance between oil production and revenue needs in order to avoid the necessity that faces other producing countries of leaving surplus revenues in the bank and the consequent problems of the deterioration of the real value of such surpluses due to world inflation.

Within the OPEC framework, Iraq calls for the necessity of programming oil production among the OPEC member countries on the basis of such criteria as financial needs, the country's oil reserves and world oil demand. Such a policy, in Iraq's view, is not intended as an action against the oil-consuming countries. It only means the allocation of total requirements among the OPEC members in order to maintain the price structure and keep a balance between supply and demand in the world oil market. But so far the OPEC members have not reached an agreement on this issue.

4. Iraq's Oil Price Policy.

With their long life of reserves, their small populations, their less developed economies and consequently their limited absorptive capacity, such oil producers as Saudi Arabia and the United Arab Emirates follow a moderate policy of raising the oil price gradually. From their point of view a substantial increase in the oil price might have a drastic effect on demand for their oil, especially in the long run. These countries are concerned about keeping their markets for the longest possible time.

The interest of Iraq, with a relatively more developed economy, larger population and its almost unlimited needs for oil revenues, as noted before, is, therefore, not only to pursue a policy of production expansion but also to raise prices mainly to compensate for the decline in the purchasing power of her oil revenues due to world inflation in order to be able to satisfy her financial needs. It is to her advantage to strive for a maximum level of oil revenues. Iraq as an OPEC member is committed to the price levels determined by OPEC. Its own price policy is determined by the following principles:

1) The social and economic needs of the country.

2) World oil demand.

3) Oil as a depleting non-renewable asset.

4) A relatively high rise in the price helps to restrict the uses of oil to the optimum possible resource allocation such as transportation and petrochemicals.

5) World inflation: In order to maintain the real income of oil, its price must keep pace with the rate of world inflation. The

question is not so much to raise prices as much as it is to maintain the purchasing power of oil revenues. Iraq as well as other producers is suffering from the effects of world inflation on the goods and services they import. Some actual increases in the prices of goods have been more than 50% in 1975.

As an oil-producing country, Iraq is aware of how far it can permit prices to be raised. Iraq prefers a stable and predictable relationship between the price of oil and the price of other commodities. It believes in the need to achieve economic stability in the world so that it can guarantee the flow of goods and technology from the industrialized countries, as such goods are vital to the country's social and economic development.

On the issue of relative values of OPEC crudes, Iraq believes that this problem of relative differentials should be solved in such a way as to guarantee that no discrepancy in prices would take place since this would result in a competition among these crudes. Leaving this issue unsolved would lead member countries to unilaterally index their own crudes, which would threaten to shake the price structure.

As economic development is not only finance alone, Iraq sees the export of oil as part of a wider economic cooperation between the oil producers and the oil consumers. The producing countries need the expertise which can be supplied by the developed countries; they will eventually also need the wider markets of the industrialized countries to dispose of the products that result from the process of

economic development. The producers are responsible to ensure a steady and regular supply of oil to the consuming countries. Such kind of mutual cooperation is both desirable and beneficial to the producers and the consumers.

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16. Ibid. p. 4.

17. The Nationalization of Iraq Petroleum Company's Operations: The Facts and the Causes, An Iraqi National Oil Publication, Iraq, 1974, p. 8.

18. Ibid.

19. OPEC's Annual Statistical Bulletin 1975, June 1976, p. 21.

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C H A P T E R III

A. MAIN FEATURES OF THE WORLD OIL MARKET IN THE 1970's.

1. The Strong Position of the Oil Producers

The changes in the conditions of trade that have been taking place in the international oil market since 1970 are in favour of the sellers : oil prices are high, so is oil demand. At the current production levels the need for oil revenues in most of the oil producing countries is more than satisfied for the immediate as well as the intermediate future. More important, the Middle East oil-producing countries hold the power of decision-making relative to price determination, production levels and to some degree the destination of the oil exports.

The Middle East oil-producing countries have therefore become a dominating force in the international oil market since the beginning of the 1970's.

As a consequence of the 1973 war, the Arab oil-producing countries took over the control of oil production from the concessionaires for the first time.

The producers have also achieved control over setting prices. For the first time in 1970-1971, the oil-producing countries raised the oil prices, not only in response to market conditions, but also to partially satisfy their own demands. In 1973 they took over the power by setting prices unilaterally and disregarding the price agreements.

The strong position of the Middle East oil producers is mainly derived from the following market forces:

(1) Concentration of world oil reserves in the Middle East area:

A recent study has come to the conclusion that new substantial additional discoveries to the Middle East reserves are very promising, particularly in Iraq and Saudi Arabia.(21) This study also indicates that Middle East reserves will be a vital factor to the world for the rest of this century and probably beyond. The reserves of Middle East Arab oil-producers in addition to those of other Arab oil-exporting countries in Africa are about 328.9 billion barrels at the beginning of 1974, or 51% of world oil reserves; their production constitutes 39% out of the world total; their exports make up 52% of the total world oil exports in 1973.(22) Table III:20 shows that the OPEC countries account for about 87% of the total world exports in 1974. According to this table also, the four Middle East oil-exporting countries, Saudi Arabia, Kuwait, Iraq and Abu Dhabi, account for 40% of total world exports in 1974, and

TABLE III:20

World Crude Oil Exports[1], 1970 - 1974

Thousand Barrels per Day

Exporter	1974	1973	1972	1971	1970
NORTH AMERICA	892.9	1,002.9	952.5	743.2	673.7
of which:					
Canada	890.0	1,001.0	952.0	741.8	660.0
USA	2.9	1.9	0.5	1.4	13.7
LATIN AMERICA	2,202.1	2,463.1	2,336.4	2,445.6	2,564.7
of which:					
Colombia	1.3	26.0	40.8	69.6	85.6
Ecuador	164.1	195.1	68.8	0.7	0.7
Trinidad	130.1	64.7	39.4	19.2	23.8
Venezuela[2]	1,772.4	2,123.5	2,132.4	2,313.9	2,434.6
WESTERN EUROPE	75.6	95.4	492.8	40.8	40.3
MIDDLE EAST	19,825.3	19,275.9	16,451.5	14,466.8	12,225.9
of which:					
Iran	5,369.2	5,276.8	4,498.4	3,979.0	3,309.3
Iraq	1,661.7	1,812.3	1,436.1	1,618.9	1,495.8
Kuwait	2,203.2	2,641.6	2,925.0	2,775.2	2,579.9
Oman	289.9	293.5	279.6	291.1	332.1
Qatar	511.2	570.3	481.7	428.6	362.8
Saudi Arabia	7,904.1	7,014.6	5,444.1	4,186.8	3,216.9
United Arab Emirates	1,663.6	1,513.1	1,200.1	1,054.8	777.0

Continued

Exporter	1974	1973	1972	1971	1970
AFRICA	5,054.4	5,501.5	5,375.5	5,387.0	5,824.7
of which:					
Algeria	895.0	964.0	996.8	687.6	974.3
Angola	148.3	144.6	134.5	92.9	83.9
Egypt	3.7	39.5	82.7	214.0	246.7
Gabon	180.7	78.6	106.4	96.1	89.6
Libyan Arab Republic	1,490.3	2,174.5	2,214.2	2,747.4	3,312.1
Nigeria	2,179.4	1,978.1	1,756.1	1,486.4	1,050.8
Tunisia	78.7	77.6	77.9	62.2	67.0
ASIA AND FAR EAST	1,302.6	1,266.7	1,105.8	925.5	761.8
of which:					
Brunei	191.3	213.9	181.8	126.7	134.2
Indonesia	1,036.6	1,012.4	817.2	656.4	625.4
Malaysia & Singapore	60.9	39.5	85.9	142.4	1.8
OCEANIA	-	5.7	11.0	11.1	1.3
SINO-SOVIET COUNTRIES	1,763.8	1,765.7	1,616.2	1,521.2	1,349.2
WORLD TOTAL	31,116.7	31,376.9	28,341.7	25,541.2	23,441.6
of which:					
OPEC Area(2)	27,031.5	27,354.9	24,077.3	22,031.8	20,229.2
OPEC Percentage Share(2)	86.9	87.2	85.0	86.3	86.3

(1) Including re-exports.
(2) Previous years' figures revised after adding to Venezuelan exports the deliveries of Venezuelan crude oil to Netherlands Antilles.
Source: Direct communications to the Secretariat U.S. Bureau of Mines, International Petroleum Annual.

Source: OPEC Annual Statistical Bulletin, 1976, p. 88.

46% of total OPEC exports. The concentration of world oil trade in a few oil-producing countries makes them influential with respect to world oil supply. Such concentration is due to the uneven distribution of the world's oil reserves; this gives the Middle East oil producers their economic and political power. According to the latest re-appraisal of the world's oil reserves presented to the World Petroleum Congress which was held in Tokyo in May 1975, the Middle East, where 11 of the world's 15 largest oilfields are found, accounts for about 60% of the world's proved* reserves.(23) The role played by the Middle East oil-producers, as world suppliers of oil, will expand further, possibly more than has been generally expected.

(2) Growth of the West's dependence on oil:

The strong position of the Middle East oil producers is also due to the fact that, the European, Japanese and increasingly the American markets are heavily reliant on oil exports. Table III:21 indicates that between 1970 and 1974, the imports of Western Europe increased by about 2 m b/d. While total net imports of Western Europe in 1970 were 12,207.9 thousand b/d, they rose to 14,037.7 thousand b/d. Japan's imports rose from 3,416.4 thousand b/d in 1970 to 4,798.1 thousand b/d in 1974, or by more than one million b/d. The United States' imports during the same period more than doubled, its imports rose from 1,324.1 thousand b/d in 1970 to 3,477.1 thousand b/d in 1974. The sharp rise in oil consumption

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* Proved reserves defined as those which are reasonably certain to be recoverable in the future under existing economic and operating conditions.

TABLE III:21

World Crude Oil Imports[1], 1970 - 1974

Thousand Barrels per Day

Importer	1974	1973	1972	1971	1970
NORTH AMERICA	4,297.1	4,096.7	3,005.1	2,349.7	1,894.9
of which:					
Canada	820.0	852.9	788.9	669.1	570.8
USA	3,477.1	3,243.8	2,216.2	1,680.6	1,324.1
LATIN AMERICA	3,360.5	3,424.6	3,007.1	2,794.2	2,434.9
of which:					
Brazil	693.8	715.6	489.1	420.5	359.2
Netherlands Antilles	811.1	896.3	713.5	751.4	871.9
Puerto Rico	322.0	331.6	335.9	270.7	241.1
Trinidad	294.5	283.9	291.4	292.8	310.3
WESTERN EUROPE	14,037.7	14.992.5	14,106.5	12,764.8	12,207.9
of which:					
Belgium & Luxembourg	613.4	762.9	727.0	627.4	605.7
Denmark	187.4	213.2	202.6	215.3	201.1
France	2,646.6	2,583.0	2,397.3	2.183.4	2,062.8
Germany (F.R.)	2,092.8	2,258.3	2,091.8	2,053.1	2,027.7
Italy	2,424.4	2,815.3	2,402.2	2,381.6	2,320.9
Netherlands	1,311.8	1,466.4	1,827.0	1,234.1	1,189.0
Spain	885.4	836.4	781.8	710.5	653.3
United Kingdom	2,288.0	2,530.4	2,391.7	2,162.6	2,036.4
MIDDLE EAST	563.9	497.9	495.8	492.0	562.5
of which:					
Bahrain	176.8	177.4	164.8	180.8	174.0
Southern Yemen	54.6	61.0	72.4	75.7	130.6

Continued

Importer	1974	1973	1972	1971	1970
AFRICA	593.5	669.2	547.3	529.5	422.2
of which:					
Egypt	10.6	70.5	24.5	28.9	22.1
Kenya	56.8	54.8	50.3	51.2	44.5
Morocco	52.1	51.4	35.9	34.2	31.2
South Africa	257.2	273.8	248.2	249.1	173.4
ASIA AND FAR EAST	6,468.8	6,664.8	5,728.3	5,365.2	4,675.3
of which:					
India	282.6	268.6	246.5	265.7	245.0
Japan	4,798.1	4,929.9	4,096.1	3,807.1	3,416.4
Philippines	170.3	185.9	184.7	182.3	183.7
OCEANIA	242.6	240.5	249.1	234.8	346.5
of which:					
Australia	171.3	169.2	178.3	173.7	293.5
SINO-SOVIET COUNTRIES	1,322.7	1,526.9	1,159.1	877.8	896.4
WORLD TOTAL	30,886.8	32,113.1	28,298.3	25,408.0	23,440.6

(1) Includes quantities of crude oil imported under processing agreements.
Source: U.S. Bureau of Mines, International Petroleum Annual.

Source: OPEC Annual Statistical Bulletin, 1976, p. 92.

during the period 1965-1972 in the Western countries was due to cheap oil. Coal production during the mentioned period slowed down. The trend could reverse in the future, as oil prices become higher and industrial countries are developing their own resources of energy including coal. The United States is very rich in coal resources and production is expected to increase. However, over the short term, and probably until the mid-eighties, there will be no alternatives to oil. The problems of the development of coal are mentioned later in this study. But an important factor is the high cost of converting industrial plants from oil to coal burning. This conversion will be undertaken only when other alternative supplies are guaranteed.

It is worth noting that the United States, from the mid-sixties, no longer produced as much oil annually as it used to before that date. The continually growing demand for oil imports in Japan and Western Europe and the emergence of the United States as a major oil importer will further strengthen the position of the Middle East oil producers. The consuming countries will experience great difficulties over the short and medium terms, unless there is a substantial growth of oil supplies from the Middle East.

(3) Growth in oil revenues:

Growth in world oil demand will lead to the growth of oil revenues of the oil producers. Since the OPEC countries' projected total revenues will be much more than their future total expenditures, they will not cut the oil prices in order to boost their sales. For a number of years the oil producers' financial surpluses* would guard

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* Surpluses: money which cannot be spent on domestic development.

them against a price war.(24) Thus the producers might not be attracted to expand production and consequently their oil revenues if there are not sufficient incentives to do so. The key countries like Saudi Arabia and Kuwait do not need the income as they are not sure of spending it usefully; this is probably the main reason for the oil-producers' power. Massive oil surpluses enable the oil producers to reduce production to the level that meets their internal needs and enhance their bargaining position.

(4) World oil production is likely to reach a peak by the end of this century:

The Middle East oil-producers are therefore extremely aware of the fact that such a scarce and valuable resource as oil should be conserved. The latest estimates of world oil reserves presented at the World Petroleum Congress held in Tokyo during May 1975, show that at least half of the ultimate recoverable oil reserves of about 2,030 billion bbl. have already been discovered and that some 925 billion bbl. have yet to be discovered, according to Table III:22. But how much of this will actually be found is determined by economic and political factors. Based on these estimates, world oil output will hit a peak in the 1980's or 1990's.(25) This of course would depend on world demand growth in the future.

(5) Market demand for oil is relatively inelastic with respect to price: as has been shown in the case of Britain. The price of imported oil increased roughly by 300% between the third quarter of 1973 and the third quarter of 1974. Demand only declined by 8% over the same period.

TABLE III:22

World estimated ultimate crude-oil recovery

1/1/75

	Discovered ultimate recovery	Billion bbl of oil Undiscovered potential-resources Expected value	Range	Total recovery
Russia-China et al	178	300	70- 700	478
United States	157	85	50- 150	242
Canada	16	70	40- 110	86
Total North America	173	155	100- 250	328
Middle East	513	150	75- 280	663
Other foreign				
Greater North Sea	23	45	20- 80	68
Other West.Europe	4	12	7- 17	16
North Africa	54	33	15- 60	87
Gulf of Guinea	35	30	15- 50	65
Other Africa	-	8	3- 15	8
NW South America	61	32	20- 50	93
Other Latin America	23	50	23- 95	73
Southeast Asia	32	32	18- 50	64
Other Far East	9	58	20- 120	67
Antarctica	-	20	5- 50	20
Total other foreign	241	320	200- 500	561
TOTAL WORLDWIDE	1,105	925	600-1400	2,030

Source: Oil and Gas Journal - May 26, 1975, p. 63.

However, demand for any particular crude oil is elastic, e.g. in 1975, Iraqi oil on the Eastern Mediterranean, which usually enjoys an advantage over the Arab Gulf crudes because it is nearer to the Western market, was overpriced because of a fall in freight rates and consequently undersold. A minor adjustment on the price of the Iraqi oil, would have boosted Iraqi sales.

In the long run, when other sources of energy become available in the market in sufficient quantities, demand for oil will be elastic. It takes time to substitute other energy forms for a fuel such as oil which supplies more than 50% of the world primary energy. The fact that Middle East oil-producing countries control a resource which is irreplaceable in the short term and which is vitally necessary to the economies of the technologically advanced countries gives them enough power.

The dominance of the Middle East oil producers is therefore mainly due to the above mentioned market forces. But it would be wrong to assume that the action of the Middle East producers of raising prices to their present level was prompted by an irrational action on their behalf, taking advantage of their power and of the energy crisis that hit the world, as it is generally believed, rather their action of raising oil prices was undertaken because an artificially low price for oil in the past deprived the oil producers from the real value of their depleting asset and that the continuation of such a policy would be disastrous as far as the oil conservation and world economy are concerned. In raising oil prices, the oil producers took into consideration the price development of

other commodities in the international market; they also considered the mutual benefit of both the producers and the consumers. The subject of price rises will be discussed later in a separate chapter. But it would be shown briefly here that since 1973 the Middle East oil producers demonstrated their ability to determine the price of oil. Now they unilaterally fix the oil price which used to be fixed by the oil companies. For the first time in sixteen years the posted prices in the Gulf were raised in 1971 when the governments of the oil producers gained 35 cents increase per barrel, and when tax-rates were raised from 50 to 55%. Two years later, in 1973, the producers achieved a 70% increase in posted prices* and then a further 130% in January 1974, in addition to securing higher royalty and tax-rates.

On the other hand, the oil producers' power is demonstrated in the fact that they are gradually acquiring more direct control of production. The Arabian-American Oil Company (ARAMCO) was the first company to accept in 1972 the principle of 20% participation in its producing operations. From the beginning of 1973 the Gulf producers gained 25% participation in company operations and this was to increase gradually until the governments obtained the majority control in 1982. It is worth mentioning in this context that participation in the ownership of the companies began to be expressed in 1968. The Organization of Petroleum Exporting Countries (OPEC) supported this principle in a statement declared in September of the same year at a Conference held in Beirut. The

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* Posted price: a notional reference price used as a basis for calculating royalties and taxes (government take) due to the host government.

following resolution (XXV.139) was passed : That all member countries concerned shall establish negotiations with the oil companies, either individually or in groups, with a view of achieving effective participation on the bases proposed by the said Ministerial Committee. The draft agreement between the oil companies and the negotiator for the Gulf States, Sheikh Ahmad Zaki Yamani, the Saudi oil minister, contained the provision that Government ownership of the established producing concessions will start with 25% in 1973 remaining constant through 1978, rising to 30% in 1979 and 5% more each year until 1982 and then by 6% to 51% in 1983.(26) But the governments' share rapidly increased to 60% in 1974. Most of the Middle East oil producers are now moving rapidly towards full control of their oil production. Full ownership has been acquired by Kuwait. The parent companies of (ARAMCO), Exxon, Mobil, Socal and Texaco, and Standard Oil of California, have accepted, in principle, the full takeover of the largest oil-producing company in the world by the Saudi Arabian government. Among the Middle East oil-producing countries, 60 / 40 participation currently applies in Saudi Arabia and Abu Dhabi.

The achievement of participation is indeed a turning point in the history of the Middle East oil industry, because participation does not only mean the gradual transfer of ownership and control from the oil companies to the host governments, it also means more increase in oil costs, as the host government sell their share of oil back to the oil companies at prices higher than company tax-paid costs*.

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* Tax-paid costs = host government take + costs of production. government take = taxes and royalties paid by the oil companies.

2. The Changing Role of the Major Oil Companies.

Prior to 1971 the governments of the oil-producing countries had no power over setting oil prices or fixing the level of production.

As one authority indicated that the international oil companies, with some exceptions, dominated world oil industry until the mid-1950's. The seven major oil companies controlled about 90% of crudes production and refining.(27) Figure III:5 shows the relationship between the revenues enjoyed by the oil-producing countries and the profits of the oil companies for the period 1948 - 1958. Throughout this period the oil companies' profits were higher than producing countries' revenues, a fact that indicates that the primary control of the oil business was in the hands of the oil companies. Table III:23 shows the relationship between the revenues per barrel of the oil-producing countries and the net profits per barrel enjoyed by the oil companies for the period 1959-1975.

This table shows that up till the year 1967 the companies' net profit per barrel was higher than the producing-countries' revenues per barrel. Beginning the year 1968 and onwards the trend is reversed, in other words, the producers' revenues per barrel became higher than the companies' profit per barrel, when the power started shifting from the oil companies to the producing countries.

The structural changes* which took place during the last six years have had their consequences on the world oil industry and on

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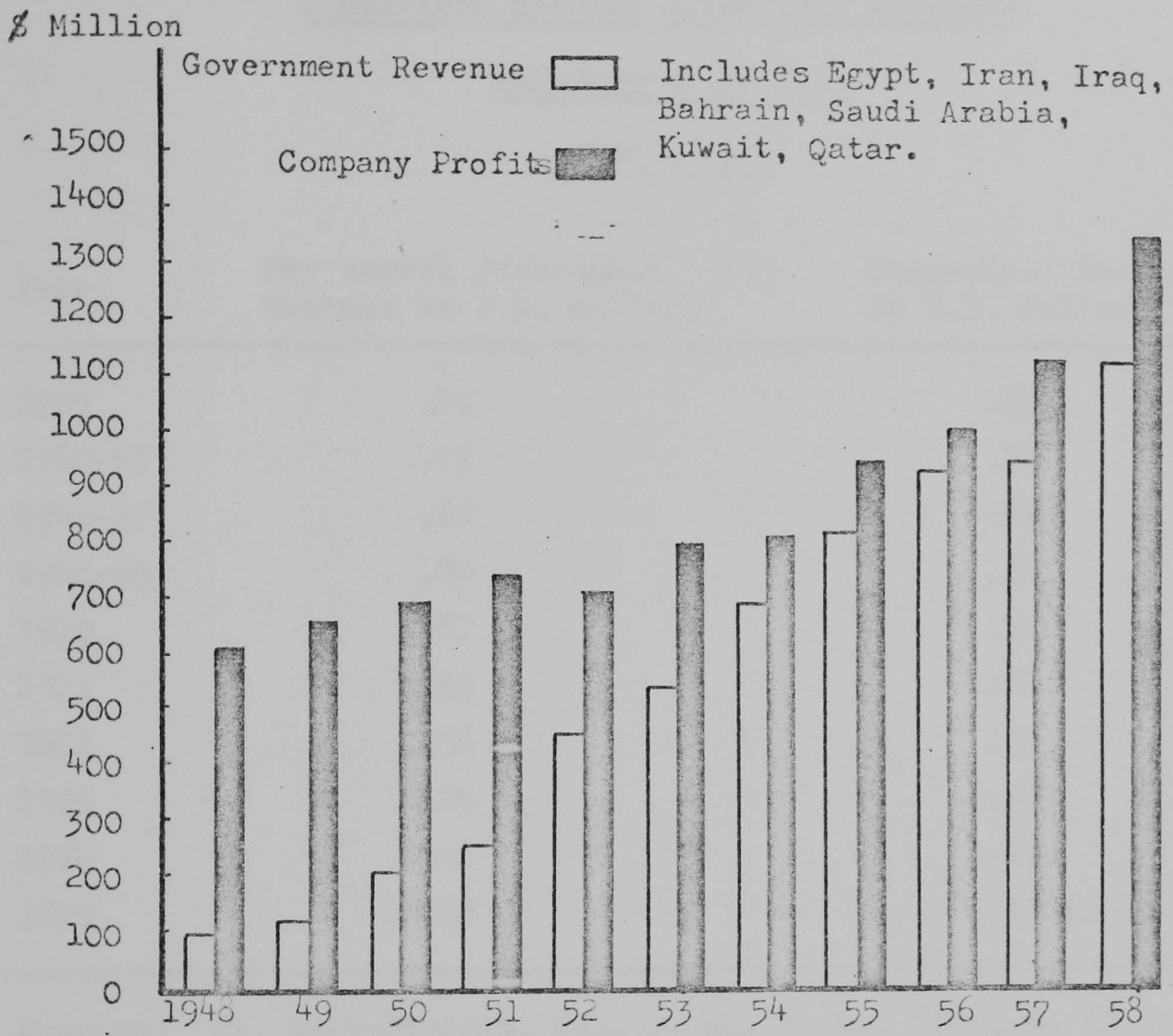
* Refers to certain variables of special interest: supply, demand, distribution of output, prices, the distribution of income between companies and governments.

FIGURE III:5

Comparison between Government Revenues and Company Profits

1948 - 1958



Source: The Colombia Journal of World Business, Fall 1974, p. 50.

TABLE III:23

Comparison Between Government Revenues

and Company Profits

1959 - 1975

Year	Per barrel government Revenue in U.S. dollars (1)	Companies' Profits in U.S. dollars (2)
1959	.79	.88
1960-65	.77	.88
1966-67	.82	.85
1968-69	.85	.82
1970	.87	.79
1971	1.35	.82
1972	1.56	.93
1973	2.26	1.25
1974	9.08	1.49
1975	10.08	.47 (Jan. only)

Sources: (1) Naft-Al-Arab, Vol. 2, No. 8, May 1976, p. 15 (Arabic).
(2) From 1960-1970: Calculated from Sonatrach, p. 176. Quoted from Petroleum Information Foundation, Inc., New York, Paper No. 16, October 1973.
From 1971-1975: The Petroleum Economist, Sept. 1976, p. 338.

those in charge of running it. Such changes did not only affect the structure of the oil industry and its economics but also the manner in which the oil companies do the business.

The change in the power balance in favour of the oil-producing countries has led to a change in the shape of the oil industry which today looks very different from that of 1971. Perhaps the most striking difference has to do with the relationship between the major oil companies and the governments of the oil-producing countries. In fact the agreements of 1971, concluded between the OPEC countries and the companies, which have been largely responsible for such changes, marked the beginning of market power on the part of the oil-producing countries. The companies have been powerful because of the abundant oil supplies which kept a balance between the producing countries with their oil and the oil companies with the markets for that oil. The amount of oil produced in the Middle East was in excess of the amount required. This condition of surplus in the market encouraged the producers before to compete against each other for greater revenues through increasing production. The trading conditions, however, have changed and consequently this balance was upset due to tight supplies in the oil market.

The oil companies until the end of the sixties had a strong control over oil supplies. However, essential decisions over output level, quantities to be exported and, to a considerable degree, over the destination of exports are now in the hands of the oil-producing countries. Beginning the early 1970's there were already indications showing that the oil producers were determined

to acquire control over oil supplies. Such indications were shown in various ways: the expropriation of company assets, like what happened in Algeria and Libya, unilateral decisions relative to the determination to fix maximum output rates in Kuwait, the refusal of the Saudi Arabian government to accept production expansion set by the companies.

The decision made by the producing countries in 1973 over 25% reduction in oil output is a clear example of the producers' power over the control of supplies. Table III:24 shows the cutback in oil supplies in 1973. Originally, the cutback started with a 5% and increased to 25% in November, along with a full embargo on the United States and Holland.

The oil-producing countries, in determining to become owners of their resources have established their own national oil companies. The Kuwaiti National Company was established in 1960, the Saudi Arabian General Petroleum and Mineral Organization in 1962, and the Iraqi National Oil Company in 1961. These companies are the means through which the oil-producing countries acquire gradually the control over oil activities.

The national oil companies are an embodiment of the oil-producers' aspirations to acquire maximum control over their oil wealth consistent with their economic and social interest.

Perhaps it is best to use the words of one authority in concluding that the producing countries have taken over from the

TABLE III:24

Arab Oil Cutbacks in November 1973

Country	Sept. Prod. (1000 B/d)	Prod. after Cutbacks (1000 B/d)	Percentage of Cutbacks
Saudi Arabia	8,600	6,300	26.75
Kuwait*	3,500	2,600	25.70
Iraq	2,100	1,900	9.52
Abu Dhabi	1,400	1,120	20.00
Qatar	600	450	25.00
Libya	2,300	2,000	13.04
Algeria	1,050	900	14.28
Egypt, Syria, Dubai, and Oman	1,050	800	23.80
	20,600	16,070	22.08%

* Production figures for Kuwait and Saudi Arabia include volumes produced in the Neutral Zone which are attributed equally to both countries.

Source: Iskandar, M., The Arab Oil Question, Middle East Economic Consultant, Beirut, 1974, p. 97.

companies the power to set production levels, to designate or embargo export destinations, to direct investments and to set prices.

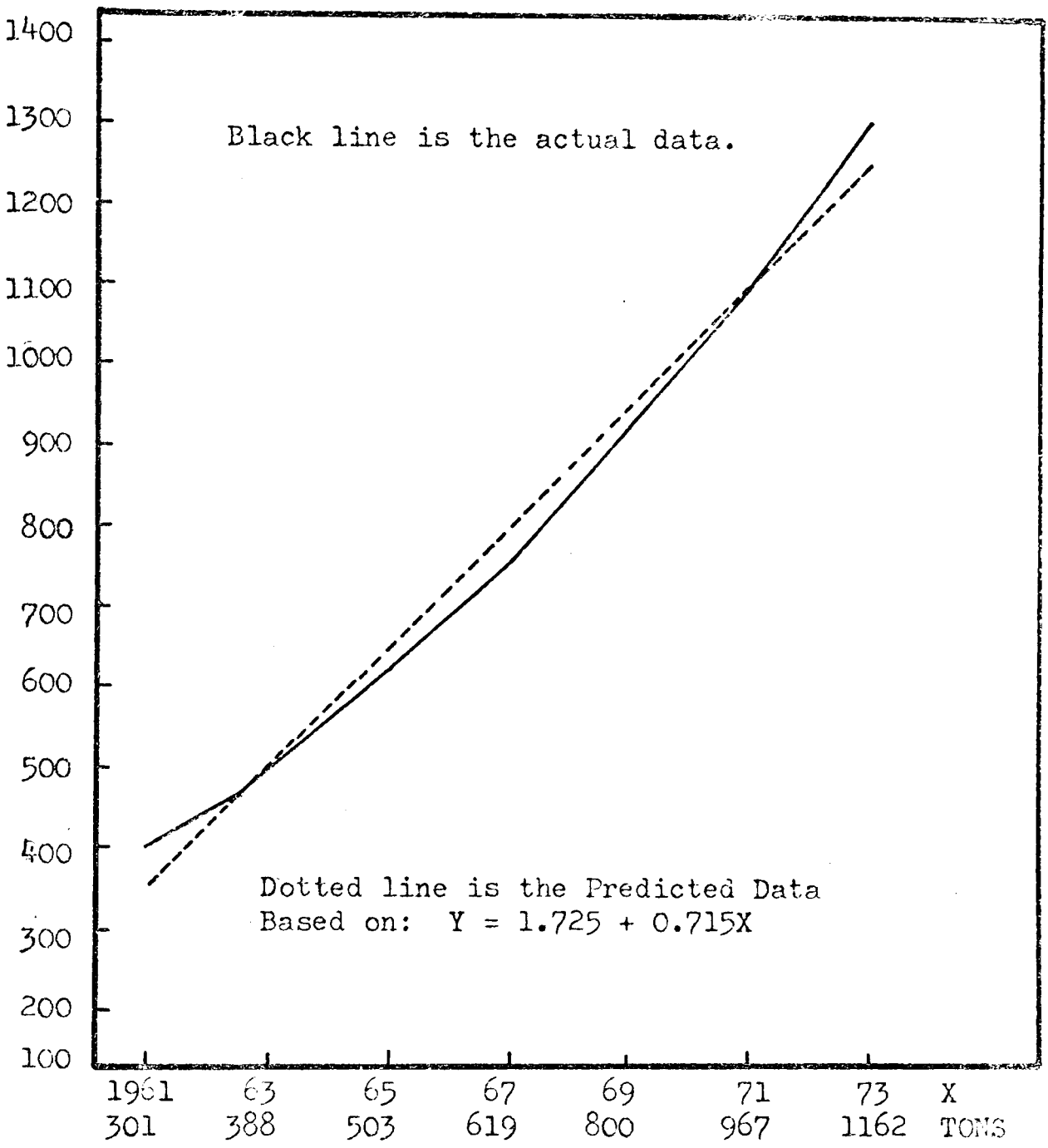
(a) Surge in Oil Demand:-

The Middle East oil-producing countries contributed at least 60% of total world oil trade in 1973 to meet the rising world demand for oil. It should be kept in mind that it was only recently that demand has begun to strain the production capacity of the oil producers. Figure III:6 shows that world demand for oil was growing enormously during the period 1961-1973. Whereas the world oil requirement in 1961 was at about 300 m. tons, it grew almost fourfold by 1973 to about 1200 m. tons. This surge in oil demand is clearly shown by the amount of oil imports of the major oil-consuming countries during the same period. Japan, like Western Europe, was attracted by the prospects of cheap oil. Japanese imports alone have more than quadrupled from around 1m. barrels in the early 1960's to some 6.8 m. barrels a day in 1973. Western Europe imports meanwhile have nearly tripled from 5.8 m. barrels per day to over 15 m. barrels per day.(28) The United States, which has been traditionally self-sufficient in oil production, could not keep up with the growing increase in domestic oil consumption. Indigenous production hit a peak in 1970 and since then has been declining. By 1973 production estimated at 11.077 m. b/d, was only 65% of total demand which averaged over 17 m. b/d. The remaining 6 mn. b/d had to be made up from imports of crude oil and products, of that amount approximately 17 per cent came directly from Arab suppliers, principally Saudi Arabia, Libya, Algeria, and approximately the same amount indirectly in the form of products from Caribbean refineries processing Arab oil.(29)

Although the number of exploration rigs has increased, total

FIGURE III:6

World Oil Demand 1961-74



Source: Columbia Journal of World Business, Fall 1974, p. 50.

oil output did not stop its downward trend of a 6.5% annual decline. Production declined to 8.5 million b/d in 1975. A number of American Congressmen have predicted that the United States could be importing nearly half its 1975 level of oil production by 1985, if no new major discoveries took place.(30)

It is quite clear then, that in spite of the discoveries in Alaska and the North Sea, the major oil-consuming countries - the United States, Western Europe and Japan - will have to depend on oil imports over, at least, the coming decade to meet their growing oil requirements.

(b) The Consumers' Changing Relationship with the Companies:-

The companies no longer have a particularly strong bargaining power because of their monopolistic position either in crude oil-producing areas or in product markets. The oil-consuming countries have recently exhibited certain change of behaviour in their relationship with the oil companies, such behaviour which was responsible, to some extent, for weakening the role traditionally played by the international oil companies, has been mainly expressed in the following two ways:

1) - The oil-consuming countries' bilateral agreements with the oil producers.

2) - The consumers' governments exertion of more pressure over the oil companies.

Consumer governments have been bargaining directly with the oil-producing nations with the aim of securing their oil supplies, on the one hand, and not submitting to the American companies, on the other hand. Bilateral deals between producers and consumers have been concluded. For example, Britain and France, resenting the behaviour of the oil companies during the oil shortage in 1973 sought government-to-government deals with Iran and Saudi Arabia. The consuming countries' governments, rather than leaving oil supply negotiations to the companies, have been considering direct negotiations of oil supply with the oil producers. Such bilateral deals took place after the oil cutback of 1973 and the shortage of supplies that resulted.

The Japanese Ministry of International Trade and Industry (MITI) in October 1973 established an organization, the Middle East

Cooperative Centre, the main purpose of which is to channel governmental funds for economic assistance to the Middle East. In the same year, MITI also announced a policy of a gradual increase of Japan's imports of crude oil directly from oil-producing nations. An agreement between Japan and Iraq was reached in 1974. Japan will offer technical and economic cooperation including $ 1 billion loan over a period of ten years, and in return Iraq will supply Japan with 160 million tons of crude oil, petroleum products and liquified petroleum gas. In 1974, the Saudi Arabian oil minister, Sheikh Ahmad Zaki Yamani visited Japan and an agreement was concluded on Japan's economic and technical cooperation with Saudi Arabia.

Other oil-consuming countries, like France, have signed contracts with the oil-producing countries to exchange nuclear and other technology for guaranteed supplies of oil. West Germany is forming its own state oil company, so that it can compete with the major oil companies and be able to deal directly with the oil-producing countries.

Direct deals between the oil-producers and consumers are beneficial to both sides. The consumers guarantee oil supplies in exchange for goods and services to the producers, who on their part can claim the profits of the oil companies. The consumers will eventually take over direct contact with the oil producers from the companies that will be left with the role of hired agents to produce oil for the producing countries, ship and refine it for the consuming countries.

On the other hand, there is an increasing regulation of oil transportation, refining and marketing by the oil-consuming governments.

In no major country are petrol prices now being fixed by the companies. This idea, that consuming countries' governments fix oil product prices, has been expressed by several governments which believe that they must have the right to set the prices they can charge for products, and that they will then allow the companies a fair return on their investments. This concept, which is apparently finding more supporters in the consuming countries, has worried the oil companies for a long time. It has been commented recently on this idea that at the time when the costs of the oil companies have been rising, their selling prices have been controlled in many markets by the consumer governments.(31) Only in Britain and the United States, among the major industrialized nations, are the main oil companies making a good profit. In fact, the important profit increases that the oil companies have been able to secure for themselves in 1974 added to the resentment of the consuming governments. In order to secure capital for further exploration, the oil companies have been able to push their prices up in 1974 in spite of the glut of oil. They made massive stock profits by selling oil which OPEC had made more valuable since they bought it. Table III:25 shows the major seven oil companies' profits for the period 1970 to the first six months of 1975. Large profit increases were secured between 1973 and 1974. While the combined profits of the seven companies were only £ 8,772 million in 1973, they rose to £ 11,670 million in 1974.

TABLE III:25

Poor, Poor Seven Sisters

Profits after tax $ m.	1970	1971	1972	1973	1974	1975 (6 months)
British Petroleum	218	379	167	764	1,157	174
Exxon	1,310	1,517	1,532	2,443	3,140	1,125
Gulf Oil	550	561	197	800	1,065	355
Mobil	483	541	574	849	1,040	382
Royal Dutch Shell	938	901	704	1,780	2,712	1,003
Standard Oil (California)	455	511	547	844	970	352
Texaco	822	904	889	1,292	1,586	354
	4,776	5,314	4,610	8,772	11,670	3,745

Source: The Economist, September 20, 1975, p. 85.

(c) The Future Role of the Oil Companies:-

Views on the future role of the oil companies have been expressed recently by Harry Bridges, Shell president. He is of the opinion that the era of the oil company as a primarily extractive enterprise on the international scene is drawing to an end.(32) The role of the oil company in the producing countries will be reduced into that of a service corporation. The balance is changing gradually from an emphasis on investment and production to an emphasis on providing services and technology.

Until recently the oil companies have been playing the role of a mediator between the oil exporting and consuming countries. This role has been gradually diminishing giving rise to a new two-party relationship between the producers and consumers, as state oil companies in both groups of countries are assuming a more serious role.

An era has come to an end. It was one when the oil companies owned the oil and had a real bargaining power with the oil-producing countries. The trend is that much of the world's oil production will no longer be owned by the major oil companies and it seems highly probable that there will appear a contractual form of relationship between the oil companies and the producing governments for the production of oil.

Yet the oil companies have still an important role to play in exploration and production and as buyers, transporters, refiners and marketers of the Middle East oil. The world oil supplies will still

be dependent on their sophisticated technical knowledge in exploration, development and production.

The oil companies still have massive capital resources invested in transport, pipelines, refineries and marketing facilities, which means that they still are powerful at the marketing side of the business. It has recently been pointed out that BP is going to have to make its profits downstream, rather than upstream where prices are fixed by the producers' governments. That the oil companies' role is being restricted to refining and marketing the oil, but what their final shape will be nobody knows.(33)

As state oil companies in the oil-producing countries are already established, they will surely be developed and will gradually acquire control over the oil activities in the future.

3. Development of Other Sources of Energy.

Oil represented about 48% of total world energy supplies in 1973, oil and natural gas together constituted 67% of the world's total energy requirements in the same year. However, high oil prices and rising energy demands coupled with the relatively limited reserves of conventional oil and gas will mean that alternative energy sources will be called upon to make an increasing contribution to world energy requirements in the long term. In fact one of the main features of the oil market in the seventies is the development of substitutes for crude oil. The trend of developing other oil resources or other alternative energy sources is believed by the OPEC countries to ease the pressure on these countries to produce more than they require. The development of other energy sources is therefore welcomed by these countries because this means a longer life for Middle East oil. However, there are many obstacles that stand in the way of developing new energy patterns in the West. Such obstacles are, for instance, the lead times involved in developing alternatives to oil or new oil resources, and the huge engineering and contracting effort that is required to produce on a commercial scale.

The major sources of energy alternatives to crude oil that are currently being developed are coal and oil from coal, natural gas, tar sands oil and shale oil, and nuclear power.

A brief discussion of the present condition and future outlook of each of these energy sources will follow.

(1) Coal:

Coal will make an increasingly important contribution to world energy requirements in the future, both as a solid fuel and as a source for producing oil and gas.

The cheap oil supplies in the sixties and early seventies have caused a decline in world coal production and consumption. Between the years 1965 and 1972 growth in world coal production was about to stop. In 1972 coal production did not exceed 2,076 m. tons while it was 2,004 m. tons in 1965. However, it is expected that in the year 2000, coal production will reach 3,500 m. tons.(34) In Western Europe coal production was declining. In the original Community of Six, coal production was reduced from 245 m. tons in 1957 to 146 m. tons in 1972.(35)

The sharp drop in coal usage can be attributed to four factors:

1) In the road transportation market, coal cannot compete with oil,
2) due to the fact that less accessible seams are exploited, production costs are escalating,
3) the difficulties related to transportation of coal because of its bulkiness,
4) prices have been less competitive than low cost Middle East oil.

Reserves: Coal is the most abundant energy source. The U.S. contains some three trillion tons of coal, by far the greatest reserves of stored energy on the continent and one of the largest anywhere in the world.(36) Like oil reserves, coal reserves are not equally distributed from a geographical viewpoint. The majority of world coal reserves are in the USSR and the USA. The USSR has the world's largest coal reserves which constitute 63% of the world total, the US ranks next with 17% of the world total.

Development of coal: The United States is leading the way of developing coal as an energy source. Rapid increase in coal production is being urged. The United States is expected to produce 900 m. tons of coal in 1980. The Office of Coal Research estimates that the US needs to produce three times the amount produced at the 1974 level if the objectives of the Energy Independence Program are to be realized, but this Office doubts the possibility of such production expansion.(37) In his second energy message to Congress in April 1973, President Nixon urged that highest national priority be given to expanded development and utilization of US coal resources. In his first energy message in 1971, Nixon had given top priority to the nuclear fast breeder reactor which cannot be operational much before 1985. In 1973 an immediate increase in Federal coal research was announced by the then US President. This research is to concentrate mainly on techniques for producing oil and gas from coal, along with a major energy research effort of £ 10,000 million over the five years beginning 1975. One-fifth of this sum has been allocated to coal research.

Most authorities now seem to agree that the only way to expand the use of coal significantly is to develop more economic ways to convert coal to synthetic gas and oil. The process of coal liquefaction is not new. The possibility of using coal as a liquid fuel source has been known for a long time. During World War I Germany, with no significant crude oil sources, depended considerably on synthetic liquid fuels produced from coal.

In the US synthetic oil research was undertaken after the

Second World War. In the early 1960's The Office of Coal Research in the US Department of the Interior was created for sponsoring research aimed at creating tonnage markets for the declining coal industry. The first important task undertaken by this Office was the contract concluded in the early 1960's with the American Gas Association to build the first coal-gasification plant. The Federal Agency for Electric Power estimates that by 1980 five plants will have started producing gas from coal. An important element in the development of synthetic fuels from coal is the amount of funds allocated for research and development of these fuels. The US expects to increase its dependence on coal from its present 20% to somewhere between 25-30%, whereas Western Europe hopes to keep its present rate, 24%, in relation to other energy sources in the 1990's.(38) One estimate is that by 1980, indigenous coal production, would account for only 9-16% of total energy requirements in W. Europe while the gap between total indigenous energy resources and total demand might be as great as 62% or more.(39) The Community's requirements for the various energy sources till 1985 will be further discussed at the end of this section.

Difficulties of coal development: A big increase in coal production needs the development of cheaper and more efficient methods of coal mining. Also producing oil and gas from coal is costly and has technological, environmental, political and social difficulties. There are the difficulties and costs of reactions at high pressures, the heat requirement of the process, and the large amount of hydrogen needed to convert the low hydrogen to carbon constituents of the coal into hydrocarbons richer in hydrogen. Moreover, no

technology has yet produced, at least recently, commercial quantities of converted coal at acceptable prices, and few have produced processes which can be called mature. To complicate the problem, there are different grades and types of coal, and many technologies apply to some types but not to others.(40)

(2) Natural Gas:-

Reserves: World proved natural gas reserves are currently about one-half of the total oil reserves. At the end of 1973, world gas reserves were estimated at about 2033 trillion cu. ft., including those of the Communist countries. Prospective natural gas areas are the Continental shelves of North America and Western Europe.

Development of natural gas: Natural gas is an important energy source and higher oil prices will lead to an increase in world gas trade. The US is the largest consumer of natural gas, its consumption is about 33% of its total energy requirements.

The trend shows a sharp increase in world gas consumption, particularly among the major industrialized countries. Table III:26 shows natural gas consumption for the major Western industrialized countries in 1972 and gives estimates of their gas consumption in 1975. Total gas consumption of the major four industrialized countries in W. Europe in 1972 was about 2.1 trillion cu. ft. It is estimated that their consumption will grow to about 3.2 trillion cu. ft. in 1975. Japan's consumption is expected to almost triple from 141 billion cu. ft. to 353 billion cu. ft. in 1975.

TABLE III:26

Country	1972	1975
	Gas Consumption in billion cu. ft.	
France	530	812
Italy	565	882
Spain	35	106
United Kingdom	918	1,342
Japan	141	353
U.S.A.	22,000	20,500

Source: A Report on the Energy Crisis and the Development of Substitutes for Oil, OAPEC, Kuwait, May 1974, p. 29.

In the US, there is currently a severe shortage of natural gas. It is thus expected that the US will need to supplement indigenous production with substantial gas imports, as demand surges in the future. Also in the case of Western Europe and Japan increasing imports will still be necessary to meet the growing demand. The prospective LNG imports by the US and Japan are both of a large magnitude, adding these to the forecast for Western Europe yields a combined LNG imports by the three areas of over 160 billion cu. m/y by 1985, in comparison to less than 16 billion cu. m/y in 1975.(41) That is a ten-fold increase in LNG trade by 1985. Thus gas prices might be pushed higher as Europe needs to increase her imports of LNG as there will be competition with Japanese and American markets.

In the new situation on the energy markets, it is expected that world natural gas production will increase substantially. Growth in natural gas production is projected to taper to a 5.7% annual rate between 1972 and 1985.(42)

Interest now centres around the liquified natural gas industry. Altogether in 1973 there were some thirty LNG projects under discussion round the world, involving a potential trade equivalent of around 20,000 cu. ft. of gas per day - five times the total size of the United Kingdom gas industry-to be carried in around a hundred tankers by the 1980's.(43) The LNG industry has shown growth in different countries like Algeria and Libya. Other Arab countries, like Iraq, Saudi Arabia, Kuwait and Abu Dhabi, are drawing up plans to build gas liquefaction plants. This kind of industry will

undoubtedly contribute significantly to the supplies of liquified natural gas to the industrialized countries. It was reported that Algerias's Sonatrach has concluded four finalized agreements for the supply of LNG from the beginning of the 1980's onwards to customers in Spain and the USA, who accepted the state company's policy of index-linked prices.

Difficulties of Developing natural gas: Obstacles to the LNG trade expansion include uncertainties in relation to the place of LNG among other world energy sources, delays by gas-deficit countries to undertake definite energy policies, the importing countries' eagerness for secure supplies and for the diversification of supply sources, along with technical difficulties relative to financing liquefaction plants on a large scale. A recent survey indicates the financial difficulties involved by giving an estimate that a 10 billion cu. m/y LNG transshipment project would cost £ 5 billion at 1975 prices.(44)

(3) Shale Oil and Tar Sands:

Oil shales and tar sands have recently received renewed attention. The shortage in crude oil supplies and the increasing cost of oil imports will lead to an increasing interest in hydrocarbon reserves found in tar sands and oil shale deposits. Estimates of these reserves vary. Certainly they are abundant. British Petroleum published an estimation of 250 billion barrels of tar sands oil and up to 3,300 billion barrels of shale oil.

Shale oil: Shale oil is not found as liquid, it is embedded in sedimentary clay in the form of a waxy substance known as Kerogen

which is solid at normal temperatures. Shale oil yields most of the various oil derivatives with the exception of lubricants.

Development of shale oil: At present most phases of processing are considered highly experimental. Development of shale oil is almost entirely confined to the United States. The United States Program of Self-Sufficiency in energy estimates that US will be able to produce 1.5 m. b/d in 1985. Estimates of the costs of developing shale oil vary. Synthetic crude costs increase as production increases; this is unlike OPEC oil costs that decline as production increases.

Such high costs are attributed to difficulties associated with labour and capital equipment, with waste disposal, transportation, distribution facilities, in addition to the abundant water resources required, not to mention the social hazards. Such costs may reach double or even triple the 1975 oil prices.(45)

Difficulties: An enormous amount of rock must be handled and disposed of, the amount of water needed is formidable. In addition to massive investments in money and time.

Tar Sands: It occurs as a heavy asphaltic material that will not flow through the rock in the fashion of conventional crude oil.

Reserves: Tar sands are available in many parts of the world, particularly Canada, the US, Venezuela and Columbia.

Development of Tar Sands: In the US development of tar sands was actually begun in 1964 when the construction of the first commercial plant to produce oil from tar sands was started. Most developments have been taking place in Canada. Sun Oil Company since 1967 has operated a tar sands plant in Alberta. After suffering huge financial losses, the plant broke even in 1975. The decision to build The Great Canadian Oil Sands Ltd. (GCOS) plant in Athabasca was a result of the Sun Oil Company's need for reserves for its Canadian refinery. Since 1970 - 1971 tar sands attracted more interest.

A 125,000 bbl/d tar sands plant is being built by Syncrude, a consortium of the Canadian subsidiaries of Exxon, Gulf, Cities Service and Atlantic Richfield, in partnership with Alberta. Petrofina Canada Ltd. has filed an application for a 100,000 bbl/d tar sands plant. This will be truly the first multinational undertaking.

Difficulties: Operating problems still pose difficulties. At least five to six years lead time is needed to bring a tar sands plant into operation. There are also capital, environmental and other factors which have been responsible for holding up commercial development of tar sands for a long time. Labour shortages could be another inhibiting factor.

The US National Petroleum Council's estimate* of non-conventional oil production to 1985 is the following:-

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* Energy in Europe, the Importance of Coal, A report by CEPCEO, London, April 1974, p. 29.

	m. b/d
Tar sands	0.5 - 1.25
Oil shales	0.1 - 0.4
Syncrude	0.08

In conclusion, these sources of oil will not make any significant impact on the world energy market over by the mid-1980's.

(4) Nuclear Power:

At present the contribution of nuclear power to world energy requirements is small. In the US, particularly, there is a widespread concern to develop nuclear power which still accounts for only about 1% of the nation's energy fuel and 4% of its electrical generating capacity. The US is leading the field of nuclear power development. The 1974 fiscal budget calls for spending $ 563 million on nuclear power. Table III:27 shows the development of nuclear energy in the future relative to the number of reactors and their capacity. The number of nuclear reactors in the US is expected to reach 107 with a capacity of 85 300 MW. Japan ranks next, it is expected to have 28 reactors with a capacity of 17 900 MW. The U.K. will have 43 reactors with a capacity of 14 400 MW. Table III:28 shows that at best the nuclear contribution for the major industrialized nations in 1985 will represent no more than 11% of their combined energy demands.

Difficulties: It must be recognized that in the short and medium terms the growth of nuclear power will be limited by the many technological, environmental and economic problems. The high

TABLE III:27

Number of Nuclear Reactors and Their Current Productive Capacity

and Future Prospects in Giggwatts

Country	Available Reactors				Future Estimates		
	1968		1972		1977	1977	1985
	No. of Reactors	Capacity	No. of Reactors	Capacity	No. of Reactors	Capacity	Capacity
U.S.A.	11	2.8	43	25.3	107	85.3	299.0
Canada	2	0.2	6	2.0	9	4.0	12.9
France	6	0.9	9	2.4	13	5.3	21.7
W. Germany	3	0.5	8	2.3	19	10.8	38.2
Italy	3	0.6	3	0.6	7	2.5	14.5
Spain	1	0.2	4	2.0	9	6.5	14.1
G. Britain	26	4.2	30	6.3	43	14.4	44.2
Japan	1	0.2	5	1.7	28	17.9	60.1
U.S.S.R.	-	-	16	2.6	31	10.5	No estimates
Other countries	-	-	-	-	-	-	-
The World Total	54	9.9	136	48.1	309	177.8	586.0

Source: A Report on the Energy Crisis and The Development of Substitutes for Oil. OAPEC, Kuwait, May 1974, p. 34. (Arabic).
Quoted from: Energy Policy, September 1973, p. 114.

TABLE III:28

The Contribution of Nuclear Power (mtce) (2)

	1970	1985
EEC (the Nine)	14	220
USA	8	430
Japan	2	170
Total of Above	24	820
Overall Energy Consumption for these countries	4,061	7,740
Nuclear contribution	0.6%	11%

Source: Energy in Europe: The Importance of coal, a report by CEPCEO, London, 1974, p. 26.

capital costs pose serious problems in the face of nuclear development.

As for the overall energy picture, the 1974 report of OECD shows that other energy forms will account for a greater share in total energy supplies for all OECD regions in 1985, if oil prices remain at the current levels. At a price of $ 9 a barrel, oil share may reach 43.4%. (See Table III:29). At $ 6 per barrel, the report predicts that OECD share may reach 47.1%. Accordingly, the shares of coal, natural gas and nuclear power are projected to be 18.3%, 22% and 13.4% respectively at an oil price of $ 9 a barrel, as against 14.8%, 17.3% and 10.2% respectively predicted for the base case corresponding to the energy situation prior to October 1973.

For the US the shares of coal, natural gas and nuclear power in 1985 are projected to be 22.5%, 26.7% and 14.1% respectively at an oil price of $ 9 a barrel.

For Japan the shares of coal, natural gas and nuclear power are projected to be 13.1%, 6.6% and 14.4% respectively.

For the EEC projections of the shares of coal, natural gas and nuclear power are to be 15.8%, 23.3% and 12.5% respectively. It might be convenient at this point to make a comparison between the OECD report, projections of the shares of other energy forms for the EEC in 1985 and between the EEC report entitled "Guidelines and Priority Measures for a Community Energy Policy" published in

TABLE III:29

Percentage Shares of Different Forms of Energy in Overall Energy Consumption of OECD Regions in 1980 and 1985

% of TPE(1)	1980 Coal	1980 Oil	1980 Natural Gas	1980 Nuclear	1980 Hydro/ Geothermal	1980 (Electricity) (2)	1985 Coal	1985 Oil	1985 Natural Gas	1985 Nuclear	1985 Hydro/ Geothermal	1985 (Electricity) (2)
USA												
Base Case	18.0	47.6	26.9	5.9	1.5	(14.0)	19.7	45.3	23.4	10.2	1.4	(16.4)
⌀6 Case	21.8	43.7	26.7	6.2	1.6	(14.6)	21.9	37.7	25.1	13.4	2.0	(17.4)
⌀9 Case	21.8	39.7	30.3	6.5	1.7	(15.1)	22.5	34.5	26.7	14.1	2.1	(18.4)
CANADA												
Base Case	10.2	51.9	21.7	5.5	10.7	(17.5)	12.5	48.8	20.4	8.5	9.8	(19.3)
⌀6 Case	8.8	49.0	23.1	5.9	13.2	(18.5)	9.7	42.8	24.8	9.2	13.6	(21.1)
⌀9 Case	8.9	48.0	22.7	6.1	14.2	(19.7)	8.3	40.4	24.0	10.0	17.3	(23.9)
EEC												
Base Case	13.2	65.9	14.7	5.1	1.0	(12.4)	9.6	64.8	14.9	9.7	0.9	(14.0)
⌀6 Case	18.2	54.7	19.6	6.5	1.1	(14.1)	14.7	52.4	19.9	12.0	0.9	(16.2)
⌀9 Case	19.6	49.1	23.4	6.8	1.1	(14.1)	15.8	47.3	23.3	12.5	1.0	(17.3)
OECD EUROPE												
Base Case	13.0	66.0	12.8	5.7	2.5	(13.5)	9.6	64.2	13.5	10.5	2.2	(14.9)
⌀6 Case	17.2	55.1	17.8	7.3	2.7	(15.1)	13.8	52.8	18.2	12.9	2.3	(16.8)
⌀9 Case	18.5	50.0	21.1	7.6	2.8	(16.0)	14.8	47.8	21.5	13.5	2.4	(17.8)
JAPAN												
Base Case	10.7	75.1	4.0	8.5	1.6	(11.9)	9.0	72.9	4.9	11.9	1.3	(11.6)
⌀6 Case	12.0	71.0	5.7	9.4	1.8	(12.1)	11.8	67.4	5.9	13.4	1.5	(12.5)
⌀9 Case	12.7	69.5	6.1	9.8	1.9	(12.3)	13.1	64.3	6.6	14.4	1.6	(13.3)
AUSTRALIA(3)	38.2	42.3	18.0	-	1.5	(10.7)	40.0	40.0	18.6	-	1.3	(10.8)
NEW ZEALAND(3)	14.0	43.0	21.9	-	21.1	(30.4)	14.8	33.1	31.0	-	21.1	(36.8)

Continued

% of TPE(1)	1980 Coal	Oil	Natural Gas	Nuclear	Hydro/ Geothermal	(Electricity) (2)	1985 Coal	Oil	Natural Gas	Nuclear	Hydro/ Geothermal	(Electricity) (2)
TOTAL OECD												
Base Case	15.4	57.4	18.8	6.0	2.3	(13.7)	14.8	55.6	17.3	10.2	2.1	(15.2)
⌀6 Case	18.8	51.0	20.8	6.8	2.6	(14.6)	17.6	47.1	20.1	12.7	2.6	(16.6)
⌀9 Case	19.3	47.3	23.6	7.1	2.7	(15.2)	18.3	43.4	22.0	13.4	2.8	(17.7)

(1) Total Primary Energy Requirements.
(2) As a percentage of total final consumption.
(3) One case only.

Source: Energy Prospects To 1985, OECD, vol. 1, Paris, 1974, p. 57.

February 1974. (See Table III:30). According to this table coal must at least account for 17% of the primary energy requirements in 1985, oil's share should be reduced from 61.4% in 1973 to 41-44% in 1985, natural gas should be increased from 11.6% in 1973 to 23-20% in 1985, as for nuclear energy, its share should increase substantially from 1.4% in 1973 to 16% in 1985. It would be beyond the scope of this discussion to point out in detail how optimistic this report is. However, achieving such objectives does imply the accelerated development of other energy forms. Whether such objectives will be met is beyond this discussion. A recent study indicates that the share of oil will continue to be more than half of the Community's total energy requirements through the period under study 1972-1980. (See Table III:31). Coal consumption will be stabilized, natural gas consumption is expected to double so as to take second place after oil, whereas nuclear power's contribution will be minor.

Although the major oil-consuming nations are devoting huge funds to research and development, alternative supplies cannot take off the burden of oil for several years to come. Several years elapse before new coal mines produce, a new nuclear power takes about ten years from conception to commissioning, and to convert industrial plants and power stations from oil burning to coal is very costly and will be undertaken only when alternative supplies can be guaranteed.

The foregoing discussion of energy sources suggests that no new energy technology can make any substantial impact before 1985. One important factor that does not allow the development of other

TABLE III:30

Total Primary Energy Needs in 1985* - Community

	1973 Estimates (Mill.tce.)	%	1985 Initial forecasts (m.tce)	%	1985 Objectives (m.tce.)	%
Solid Fuels	227	22.6	175	10	250	17
Oil	617	61.4	1,160	64	600-650	41-44
Natural Gas	117	11.6	265	15	340-290	23-20
Hydroelectric & Geothermal Power	30	3.0	40	2	43	3
Nuclear Energy	14	1.4	160	9	242	16
Total	1,005	100.0	1,800	100	1,475	100

* Internal consumption + exports + bunkers.

Source: European Communities, The Council, Documents on Energy Policy, Community Energy Policy : Objectives for 1985, Brussels, 18 Dec., 1974.

TABLE III:31

EEC Energy Consumption

	1972		1980 (Forecast)	
	m.t.c.e.*	% of total	m.t.c.e.*	% of total
Coal	324.0	27.5	320.4	20.9
Oil	665.2	56.3	829.1	54.0
Natural Gas	168.9	14.3	332.0	21.6
Hydro/Nuclear	22.2	1.9	53.2	3.5
TOTAL	1,180.3	100.0	1,534.7	100.0

* Million tons coal equivalent.

Source: Ray, G. and Robinson, C., The European Energy Market in 1980, Staniland Hall, 1975, p. 5.

energy forms to their required degree, for the short and medium terms, besides technological, environmental and political factors is an economic one. There is no doubt that developing other energy sources is extremely costly. Perhaps it would be convenient to conclude this discussion with the following quotation: In comparison with ME crude, US surface-mined coal would cost 3.5 times as much, deep-mined coal 6 times, North Sea oil 12 times, oil sands synthetic 20 times, oil shale synthetic 25 times, coal gas synthetic 25 times, and coal hydrocarbons 35 times, nuclear power would be far from expensive still.(47)

4. Stimulation of massive exploration activity outside the Middle East region.

Few of the new oil regions seem to hold potential oil reserves comparable in magnitude to those of the Middle East. Even if such reserves are eventually found, they are likely to be comparatively difficult and very costly to exploit, since mostly they will either be offshore reserves or require much deeper and more complicated drilling. The recent oil price increases have, nevertheless, made the exploitation of such regions economically attractive.

The development of oil resources outside the Middle East area has been gaining momentum in recent years. This includes the developments in the North Sea and Alaska, in addition to continental shelf and other areas. Perhaps the North Sea is now the world's most important area in offshore activities.

The move to offshore exploration and development is an important feature in recent exploration. Offshore exploration is being undertaken off the east coast of Canada and the Gulf of Mexico, and there is both onshore and offshore exploration work in South America, Malaysia, Australia and other countries. Two-thirds of the oil exploration investment in 1975 has been devoted to offshore exploration. In Spain, for instance, Exxon has been given exploration concessions. Portugal has received many offers from companies eager to undertake exploration work. The Canadian government doubled its funds allocated for exploration. In fact the discoveries on the North Slope of Alaska have caused oil exploration fever in the Arctic islands and far north of Canada. In Vietnam oil companies have shown interest in deep water exploration.

In Japan serious effort is devoted to exploration work. Offshore search for hydrocarbons is also being undertaken in several other areas like Brazil, Bolivia, Nicaragua, Trinidad, Argentina and other countries.

A comprehensive survey undertaken by the Scottish Council estimates that offshore world oil productive capacity could reach more than 20 m. b/d in the early to middle 1980's.(48) This survey does not seem to offer much hope that the development of offshore oil will greatly improve the current imbalance between the OPEC and the consuming countries. It indicates that in spite of the offshore developments, for instance, in the United Kingdom and Norway, the Middle East as a whole by 1980 might be in control of the world's largest single offshore oil province with a predicted productive capacity of 6.7 m. b/d in addition to its onshore resources as seen by Table III:32, and next in importance as an offshore oil province would be the North Sea with an estimated offshore productive capacity of 5 m. b/d, followed by the North American zone with a capacity of about 3 m. b/d.

In the United States, the government intend to move ahead with exploration, leasing and production of the outer continental shelf. The size of the areas leased for exploratory purposes have recently tripled. Most observers agree that the United States has witnessed the most intensive and extensive exploration and development efforts within the past few years. However, new discoveries are thought to be unlikely to have a major impact on the United States' total supply, since indigenous production is dropping and there is an

TABLE III:32

World Offshore: Forecast Oil Production Potential by 1980 (a)

Million barrels a day

ZONE	1973 PRODUCTION*				ESTIMATED POTENTIAL BY 1980			
	Offshore	Onshore	Total	Zone offshore as % of world offshore	Offshore	Onshore	Total	Zone offshore as % of world offshore
West Europe	.08	.32	.40	.94	5.07	.28	5.35	23.12
North America	1.74	9.68	11.42	20.51	2.84	12.15	14.99	12.95
Central America/ West Indies	.10	.55	.65	1.17	.51	.85	1.36	2.32
South America	.06	4.57	4.63	.70	.32	5.11	5.43	1.45
Africa	1.06	4.84	5.90	12.50	2.10	6.22	8.32	9.58
Middle East	4.20	17.75	21.95	49.52	6.65	24.55	31.20	30.33
The East/ Australasia	.94	1.43	2.37	11.08	2.39	1.80	4.19	10.90
Communist bloc	.30	9.43	9.73	3.53	2.04	16.88	18.92	9.30
Totals	8.48(b)	48.57	57.05	100.00(c)	21.92(d)	67.84	89.76	100.00(c)

* Actual (estimated).
(a) "High case" forecast (see text).
(b) 14.86% of onshore-offshore production combined.
(c) Approximate.
(d) Over 24% of onshore-offshore production forecasts combined.
Source: Derived from Table B in Scottish Council survey, converted from tons at 7.49 bbls/ton.

Source: The Petroleum Economist, February 1976, p. 49.

increasing reliance on foreign sources. This is mostly due to steady reduction in the rate of new discoveries in recent years. American policy is now urgently directed towards expanding the availability of all forms of indigenous energy. However, as far as oil is concerned, further expansion will be hard to achieve. The latest official estimate indicates that the United States is expected to depend on imports for more than 47% of its oil needs in 1985.(49) This points out that the petroleum outlook will not change substantially between now and 1985. Furthermore, most observers seem to be of the opinion that offshore oil deposits elsewhere in the world are also unlikely to have an important influence on the relationship between supply and demand for oil between now and 1985. The general view is that in addition to the fact that North America is a declining exploration area, North Sea reserves will make only a minor contribution to world reserves as a whole, although they are expanding. An authority on North Sea oil developments, is not so optimistic whether North Sea will produce the amount of oil expected by the early 1980's. He estimates that by the early 1980's the North Sea will produce 10-12 m. b/d. He adds that one cannot be sure that all this oil will be there by the mid-1980's.(50) Another viewpoint is that Alaska and North Sea oil is still not going to make that much of a difference in the dependence on OPEC countries because consumption is rising by about 5% a year.(51) It is this increasing dependence of the industrialized nations on oil which renders these new discoveries unlikely to have a major effect on the total world oil supply within the coming few years. Because of the limited possibilities of finding adequate reserves outside the Middle East area, the technological difficulties and costliness of developing

them, this increasing world demand for oil implies an increasing dependence on the Middle East oil.

B. FACTORS LIKELY TO AFFECT THE WORLD PETROLEUM MARKET OVER THE NEXT 5 - 10 YEARS:

1. Technological factors.

The production of the discovered but undeveloped Middle East oil fields, such as those in Saudi Arabia, can be expanded readily. Because such fields are vast and productive, production expansion is actually achieved within a relatively short time, provided that production facilities are already available.

In comparison, the locations of the undeveloped oil fields in most areas outside the Middle East are not known. If output from such fields is to be expanded, more exploration is needed. The lead times necessary for the establishment of additional energy production capacity from such fields, are very considerable. The minimum lag between a decision to raise future crude oil output appreciably above present planned levels and the date when large amounts of this output will first come on stream is approximately 3-5 years in areas like the US Gulf of Mexico or the British North Sea and up to 10 years in the Alaskan North Slope or Northwestern Canada.(52)

No doubt, more sophisticated oil exploration techniques will help increase the oil substantially found over the coming decade, or reduce the span of lead time necessary in undertaking additional exploration and production.

However, there seems to be few signs of a technological breakthrough that would suddenly reduce the long lead times in raising production levels and help to reduce the high levels of

expenditure of producing oil, or producing and processing alternative energy sources.

2. Economic factors.

All studies of the Middle East oil industry point out the fact that production costs are very low compared to other oil-producing areas. One authority's estimates of the total costs* per barrel of Middle East oil are very low, between 10 and 20 cents per barrel at 1968 prices.(53) Other estimates indicate that the cost per barrel in the Middle East is less than 20 cents, $1.75 in the USA and 80 cents in Venezuela.(54)

In comparison, the new oil that will be produced in the United States will come from small scattered fields with low productivity. The total resource costs of large amounts of this oil will be between $ 7 and $ 11 per barrel. This is also the expected range of costs for producing commercial quantities of synthetic oil from coal or oil shale.(55)

The Middle East producers therefore should be able to maintain a large share of the world oil market

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* Total costs = 1. Finding costs paid to the productive factors like labour and capital, used to search for new oil reserves.
2. Development cost paid for construction of facilities necessary for producing previously discovered reserves.
3. Operating costs paid to run existing production facilities.

3. Political factors.

Since 1970 developed oil sources were being depleted faster than new supplies were discovered. This was due to the progressively increasing rate of oil consumption in the world in addition to the emergence of the United States as a major oil importer. According to Table III:33, between the year 1967 and 1970, world daily crude oil production, excluding the Communist countries, rose more than 8:3 million barrels. Saudi Arabia, Libya, Iran and the USA were the four largest contributors to this rise. However, one of the most significant changes is the fact that production in the USA, Venezuela and Libya reached a peak in 1970 and ever since has been declining. Indigenous US output is very unlikely to rise over the decade. It is not certain whether production from Alaska will compensate in 1980 for the decline in production in the south of the United States. The bulk of these needs can be met only from the Middle East. The Table shows that between 1970 and 1973 daily crude oil output in the United States, Venezuela and Libya declined to more than 1.8 million barrels, while over the same period world oil demand increased by 8.5 million barrels. Saudi Arabia and Iran were the only two countries who could fill the gap by raising production readily from their vast known reserves. Saudi Arabia provided almost 50% of the needed increase of almost 8.5 million barrels between 1970 and 1973.

The implication to this situation is that countries who now play a dominant role in supplying the world market are very powerful economically as well as politically. If one country decides to cut back or refrain from expanding production, such an action will lead to severe shortages in the oil market. Undoubtedly, producing decisions

TABLE III:33

Changes in Output by the Major Oil Producing Nations

Nation	1967 - 70 Absolute Change (Thousand Barrels per Day)	1967 - 70 Percentage of Total Non-Communist Change*	1970 - 73 Absolute Change (Thousand Barrels per Day).	1970 - 73 Percentage of Total Non-Communist Change*
Libya	1,641	19.7	-1,198	- 14.2
Venezuela	148	1.8	- 326	- 3.9
United States	696	8.3	- 318	- 3.8
Saudi Arabia	840	10.1	4,170	49.3
Iran	1,157	13.9	2,108	24.9
Nigeria	681	8.2	1,053	12.4
Abu Dhabi	N.A.	...	657	7.8
Canada	315	3.8	521	6.2
Indonesia	355	4.3	463	5.5
Iraq	290	3.5	446	5.3
Kuwait	451	5.4	280	3.3
Algeria	168	2.0	86	1.0
Total non-Communist world	8,342	100.0	8,461	100.0

* Entries in this column do not sum to 100% because production by several small countries is excluded.

Sources - American Petroleum Institute, Petroleum Facts and Figures (Washington, D.C.: American Petroleum Institute, 1971); Oil and Gas Journal, December 28, 1970, and February 25, 1974.

Source: The Journal of Business, vol. 48, No. 1, Jan. 1975, p. 14.

by Middle East governments, especially Saudi Arabia, will play a pivotal role in future world oil availability and pricing.

Additionally, contrary to what was believed during the 1950's and 1960's, that the value of oil resides in its production and marketing even at low prices, now the atttitude is that oil left in the ground will appreciate in value. This change in attitude will both increase the attractiveness of limiting oil production and conserving reserves for the future. Perhaps the most important development in the oil-producing countries during the 1970-73 was the growing awareness of the significance of using up a depleting resource, no matter how abundant are the reserves at present.

Thus with the growing scarcity of energy sources, oil can no longer be expected at low prices. The oil producers' worry about their reserves' depletion is a major factor that induces them to limit production and reduce its levels to the minimum sufficient to satisfy their own domestic needs and the essential needs of the industrialized countries. The producing countries realize that although alternative energy sources will eventually become available, their prices will be so high that oil will still remain the world's cheapest source of fuel.

The foregoing discussion outlined above seems to suggest that growth of oil consumption and demand in the industrialized countries must be met from the Middle East oil fields at least until the mid-1980's.

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C H A P T E R I V

MIDDLE EAST CRUDE OIL PRICES

1. Significant changes in the international oil market during 1970.

This section discusses the major developments that took place in the international oil market during the year 1970. Such developments are of great importance because of the influence they had on the price movements since 1971 and onward.

Posted prices remained stable for a decade prior to the first of the OPEC increases realized in 1970. Throughout the past decade the cost of crude oil in the major importing regions remained relatively unchanged. In the U.K., for example, the average cost of crude imports was £7.44 per long ton in 1960 and £7.02 in 1970. This, in turn, meant that the price of oil to the final consumer was falling in real terms throughout this period.(56) Table IV:34 shows that although the market price of OPEC oil in 1974 was about five times the 1963 level, real posted prices had declined steadily for almost the whole of the last decade. As shown by Figure IV:7.

TABLE IV:34

OPEC Oil Prices

(1963 = 100)

	Posted Price	Estimated Market Price	Real Posted Price(1)	Real Estimated Market Price(1)
1961	100	104	100	104
1962	100	101	101	102
1963	100	100	100	100
1964	100	95	98	93
1965	100	95	97	92
1966	100	95	94	90
1967	100	95	94	90
1968	100	93	95	89
1969	100	91	92	83
1970	100	90	87	78
1971	100	95	83	79
1972	127	125	98	96
1973	192	206	128 (2)	137 (2)
1974	647	546	385 (2)	325 (2)

(1) Deflated by export prices of industrialized countries expressed in U.S. dollars.
(2) Estimate.

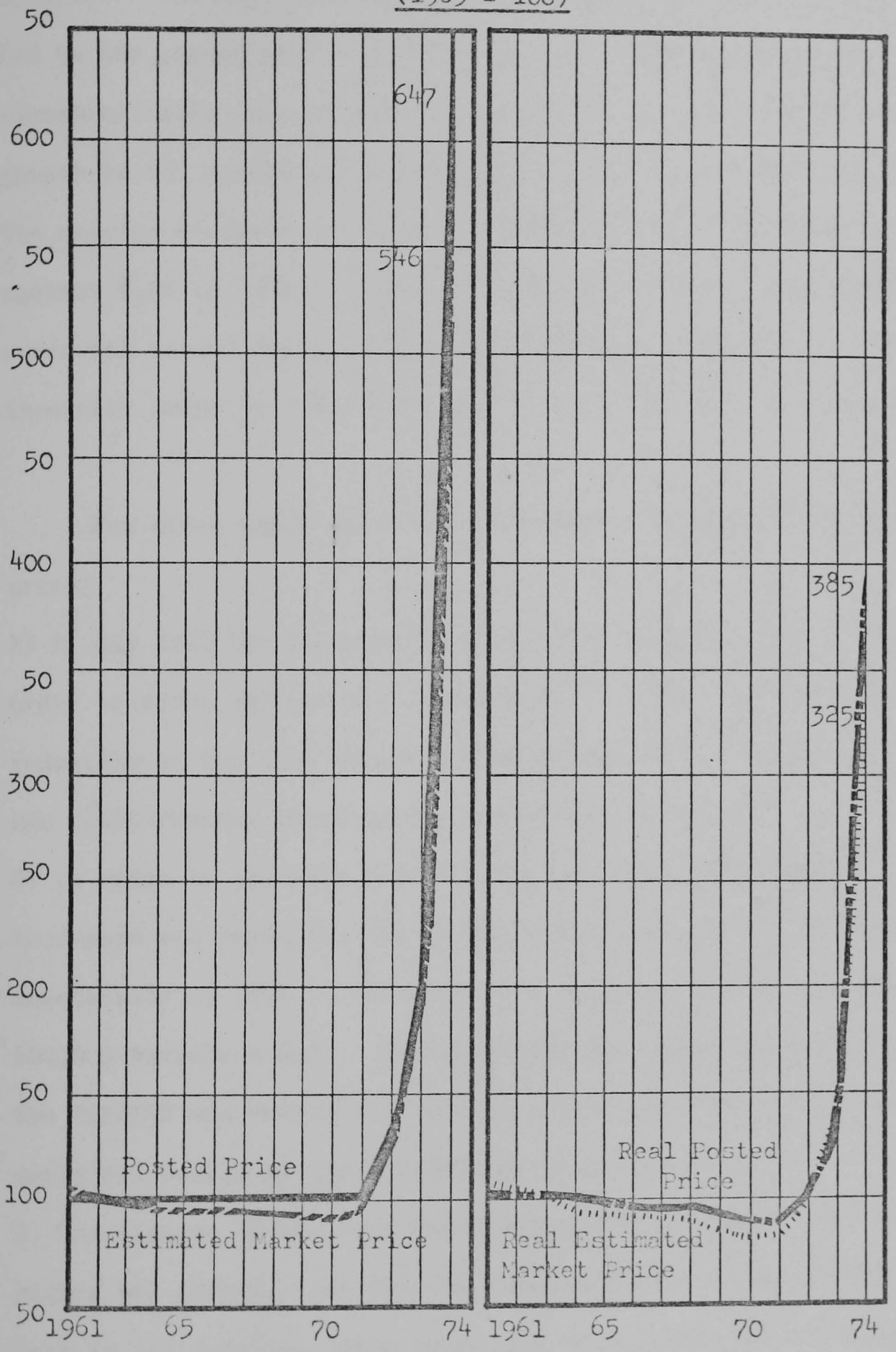
Source: International Monetary Fund, International Financial Statistics; International Bank for Reconstruction and Development, The Changing Energy Scene (internal document), December, 1973.

Source: Energy Prospects to 1985, vol. 1, OECD, Paris, 1975, p. 115.

FIGURE IV:7

OPEC - Oil Prices (1961 - 1974)

(1963 = 100)



Source: Energy Prospects to 1985, vol. 1, OECD, Paris, 1975, p.114.

During 1970, however, a host of factors led to the creation of an imbalance in the supply/demand pattern in the world energy market. This imbalance, which was in favour of the oil producers, led to the change into a seller's market. There were shortages in almost all other energy sources; this in turn led to an unexpected growth in oil demand and consequently affected oil price levels. The average increase in world oil demand in 1970 increased to 9.5% against 8.5% in 1969. The year 1970 was a period of economic boom, crude oil demand for petrochemical industries acquired an increasingly important share in total oil demand within the past few years.

Few other basic factors had an impact on the behaviour of oil prices:

1) In May 1970 the Trans-Arabian Pipeline (TAPLINE) was put out of order in Syria and was not repaired until 1971. This caused a reduction in the flow of Saudi Arabian oil to the Syrian terminal on the Mediterranean coast by 500,000 barrels a day.

2) In order to conserve reserves and accelerate agreement to increased oil revenues, the Libyan government reduced oil production drastically in 1970. The reduction in Libyan output was about 600,000 barrels a day. Thus the combined effect of the closure of the TAPLINE and cutbacks in Libyan output resulted in a reduction of world oil supply of about 1,100,000 barrels a day.

3) The closure of the Suez Canal since 1967 and until 1974 favoured higher oil prices. As the oil companies had to make up for the loss in oil supplies, they increased output from the Gulf area which possessed the extra capacity. This had a great effect on the oil tanker market. Freight rates soared because of the long distance

to carry oil from the Gulf through the Cape of Good Hope - this distance is four times that between the Mediterranean and the European markets. Although there was a fast growth in tankers, available capacity was not enough to maintain crude supplies to Europe at fairly low freight rates. Freight rates for the Spot Tanker Market increased by 300%, a rate never reached before.(57) Perhaps it is worth noting that during 1973 tanker rates were again rising rapidly up to the date of the Arab countries' supply cutbacks.

The combined effect of the above factors led to a sharp increase in the oil prices in the world oil market and an enhancement of the position of the oil-producing countries. The rapid change in the oil market was remarkable.

Libya, among the OPEC countries, was the first to demand higher prices. After the revolution of 1969, a series of confrontations between the new regime and the operating companies took place. The government succeeded in obtaining a sharp rise in oil prices and in taking a majority interest in the oil fields. Each step by Libya was followed by similar ones by the rest of the Gulf OPEC countries.* In September 1970, Libyan posted prices were adjusted upwards in response to a claim that ever since their establishment in 1961, they have been underposted. Prices were raised by 30 cents a barrel for 40° API gravity crudes. Tax rate on oil companies was also raised

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* Gulf OPEC countries : Among those discussed in this study are Saudi Arabia, Kuwait, Iraq, the United Arab Emirates.
Gulf countries are : Saudi Arabia, Kuwait, Iraq, United Arab Emirates, Qatar and Iran.

from 50 to 55%.[58] In November 1970 some Gulf posted prices were increased. The governments of Saudi Arabia, Kuwait, entered into negotiations with the oil companies and raised the prices of heavy crudes marketed by such companies. In addition tax rates were raised toward the new Libyan level.

The significance of these initial price increases is that they were the first advance in crude oil posted prices in the oil-producing countries since 1957, and in fact the first advance in crude oil posted prices since the foundation of OPEC in September 1960. It is worth mentioning that up to the end of 1970, Middle East crude oil was underpriced in relation to world inflation, and more significantly relative to the world's growing dependence on crude oil both in relation to other energy sources and as an industrial raw material.

Prices started to rise in the oil products market as well. In the Eastern seaboard of the United States, the posted prices for cargo lot deliveries of No. 6 fuel rose from $ 2.20 per barrel in November 1969 to $ 3.55 in September 1970.[59]

Thus crude oil and products prices continued to rise as a consequence of the supply crisis in the energy market. According to Table IV:35 the weighted average price of four main oil products in seven West European countries is shown to have increased from October 1969 to October 1970 only by 20 cents a barrel, whereas the increase from October to December 1970 was 47 cents. The total increase for the period October 1969 to December 1970 is 67 cents.

TABLE IV:35

Weighted Average Price of Four Main Petroleum Products(1) in Seven West European Countries.

(in US $/bbl)

Countries	October 1969	October 1970	December 1970	March 1971
Austria	7.77	7.79	7.81	8.40
Belgium	5.82	6.13	6.27	6.52
France	4.54	4.65	4.83	5.43
Italy	3.87	3.87	3.87	3.95
Netherlands	4.53	5.69	5.86	6.08
Sweden	5.14	5.79	7.15	7.15
U.K.	5.72	5.99	6.77	7.23
Average*	4.94	5.14	5.61	5.95

(1) Regular motor gasoline, kerosene, automotive diesel oil and heavy fuel oil. Prices excluding sales taxes.

* The relative shares of inland products consumption of each country during 1969 were used as weights for the consumption of October 1969, October and December 1970 averages. For March 1971, the relative shares of 1970 were used.

Sources: Calculated from data in Petroleum Times and OECD, Oil Statistics.

Source: Al-Mahdi, M.S., The Pricing of Crude Oil in the International Market, Search for Equitable Criteria, A Report Submitted to the 8th Arab Congress in Algiers 1972, p. 35.

Such increases had an impact on the earnings of some oil companies in the third quarter of 1970, net earnings increased by 836 million dollars in comparison to the second quarter of the same year, and later, in the fourth quarter, their net earnings increased by an additional 2,079 million dollars, compared to their level in the third quarter of the same year. (See Table IV:36).

The oil-producing countries were aware of such developments in the international oil market. Thus at the end of 1970, they consolidated new tax demands through OPEC and began to act as a single group.

TABLE IV:36

Selected Majors and Independent Oil Companies Quarterly Net Earnings.

(million $)

	Fourth Quarter 1969	First Quarter 1970	Second Quarter 1970	Third Quarter 1970	Fourth Quarter 1970
MAJORS					
Gulf Oil	1,379	1,392	1,396	1,406	1,310
Mobil Oil	1,248*	1,178	1,097	1,208	1,342
Standard (N.J.)	3,206*	3,250	2,720	3,270	3,840
Standard (Calif.)	1,135	1,036	1,074	1,169	1,269
Texaco	2,177	2,054	1,761	1,879	2,526
Shell (Royal Dutch)**	2,574	2,225	2,191	2,218	2,167
Sub total	11,719	11,135	10,239	11,150	12,454
INDEPENDENTS					
Atlantic Richfield	650	534	487	436	599
Cities Service	350	385	291	196	314
Continental	346	330	366	366	543
Getty Oil	364	231	244	262	375
Marathon	240	191	203	209	243
Phillip Petroleum	364	310	282	257	322
Standard (Ind.)	632	856	738	843	703
Standard (Ohio)	123	168	141	141	235
Sun Oil	408	301	341	342	406
Union Oil	350	232	298	264	351
Sub total	3,827	3,538	3,391	3,316	4.091
TOTAL	15,546	14,673	13,630	14,466	16,545

* Excluding extraordinary losses.
** After depreciation adjustments.

Source: Al-Mahdi, M.S., The Pricing of Crude Oil in the International Market, Search for Equitable Criteria, A Report Submitted to the 8th Arab Congress held in Algiers, 1972, p. 36.

2. Analysis of Price Trends since 1970.

This section deals briefly with the pricing agreements signed between the OPEC countries and the oil companies in the early 1970's. An attempt has also been made to assess the major features of the new oil pricing structure.

The rapid changes in the oil market and the significant developments in it were closely examined in the Annual Conference of the OPEC countries held in Caracas in December 1970. The OPEC countries emphasized their determination to adjust posted prices upwards and to secure a general increase in tax rates. The Caracas Conference found that there was a general improvement in the economic and market outlook of the international oil industry as well as the competitiveness with other sources of energy.(60) Resolution (XXI.120) which was the outcome of the Conference, included the basic principles adopted later by the Teheran and Tripoli pricing agreements. This resolution established 55% as a minimum rate of taxation, it decided to eliminate previous royalty and marketing allowances from posted prices effective January 1971. OPEC governments agreed on a unified price strategy vis-a-vis the oil companies. Ministerial committees were formed so that they negotiate prices tied to the highest posted price that was prevailing in the member countries taking into account differences in geographic location and gravity and any appropriate rise in the future. After the adoption of Resolution XXI.120 by the OPEC countries, a series of negotiations followed with the oil companies, the outcome was that several agreements were signed, their price elements valid until 1975. They were the Teheran, Tripoli, East Mediterranean and

Nigerian (or Lagos) agreements.* Details of such agreements will not be discussed here, although in this section it will be necessary to outline the main terms of such agreements. But the most important point to be stressed here is that such agreements were significant in the sense that they provided the basis for the new oil pricing structure.

The question of bargaining for oil, was not confined to OPEC on one side, and the international companies, on the other, it has become increasingly a struggle between OPEC on one side and the industrial countries acting through the international companies, on the other. Early in 1971, when OPEC countries were bargaining for an increase in their revenues, the international companies and the industrial countries were acting on one side vis-a-vis the group of producing countries. But for the first time in ten years history, the OPEC Gulf members emphasized their readiness to withhold oil supplies to support their claims for higher posted prices and higher revenues.

One aspect of the strategic significance of the Teheran pricing negotiations concerns the direct involvement of the United States government. In January 1971, at the invitation of the American government, official representatives of the major oil-consuming nations met several times in Washington to give support to the international companies. In the middle of January 1971, after

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* For details about The Nigerian agreement see: Rifa'i, T., The Pricing of Crude Oil, Economic and Strategic Guidelines for an International Energy Policy, Praeger Publishers, New York, 1974, pp. 278 - 279.

meeting with the chief executives of the oil companies, the U.S. Under-secretary of State, John Irwin, paid visits to the Gulf countries, namely: Saudi Arabia, Kuwait and Iran to express the American government concern. He was informed that any threats were directed against the companies, not the industrial countries. The Teheran agreement was signed, in February 1971, between the oil companies and the OPEC ministerial committee of representatives from Saudi Arabia, Iraq and Iran. Following the Libyan example, this agreement raised postal prices in the Gulf for the first time in 13 years. Further increases were provided up to 1975. The tax rate was increased from 50 to 55%, and the producing countries' revenue increased by more than 30 cents a barrel.

Within two months of the signing of the Teheran agreement, the Tripoli agreement was reached between Libya and the oil companies. It provided for a minimum increase of 90 cents a barrel in posted price and further increases over a five year period. The posted prices included allowances to reflect Libya's favourable position as being close to the European market when tanker rates were high. Similar agreements followed for short-haul crudes.

The following are the main terms of the agreements:*

1) An immediate base increase of 35 cents a barrel in the posted

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* Summarized from the following sources:

1. Chanem, S.M., The Pricing of Libyan crude Oil, St. Paul Press Ltd., Malta, 1975, pp. 177 - 179. Appendix 6: pp. 319 - 323. Appendix 7, pp. 326 - 332.
2. Kubbah, A.A., OPEC Past and Present, Petro-Economic Research Centre, Vienna, 1974, p. 57.
3. Yahya, S.M., The Bases of Pricing Crude Oil, Iraqi National Oil Company, 1972, pp. 10 - 11. (Arabic).

Continued....

price of all crude oils, of which 33 cents a barrel as a uniform increase in postings and 2 cents a barrel in satisfaction of claims related to freight disparities in the Gulf area.

2) The income tax rate to be 55% of net profit, along with full royalty expensing at the rate of 12.5% of the posted prices.

3) The elimination of marketing and other allowances granted to the oil companies.

4) For the first time, an annual increase of 5 cents a barrel, plus a 2.5% increase in posted prices, as an annual adjustment for inflation until 1975.

5) For crudes with 0.5% or lower sulphur content, a low sulphur content premium of 10 cents a barrel is provided, to be increased by 2 cents a barrel annually from 1972 - 1975.

6) The increase of the posted prices of some underposted crudes in order to eliminate disparities among producing countries' crudes.

7) A Suez allowance of 12 cents a barrel for East Mediterranean, Libyan and Nigerian crudes was introduced. In addition, the introduction of a temporary freight premium of 13 cents a barrel for Libyan crudes, 12 cents a barrel for East Mediterranean crudes and 9 cents a barrel for Nigerian crudes.

8) The application of a new system of gravity valuation, 15 cents a barrel for each 0.1° API as the basis for adjustment of gravity differentials to posted prices of crude shipments falling within a range of 0° to 0.09° of any full degree of API.

.... 4. Middle East Economic Survey, Full Text of Teheran Agreement, vol. XIV, No. 17, 19th Feb. 1971, pp. 2 - 9.

5. Middle East Economic Survey, Full Summary of Terms of Tripoli Agreement, vol. XIV, No. 24, 9 April, 1971, pp. 1 - 5.

The Teheran agreement was generally a success for the oil-producing countries. It changed the nature of the relationship between the producing governments and the oil companies relative to the government share of royalties and taxes which were advanced to 55%, although it was comparatively low relative to Venezuela's 60%. Nevertheless, it was successful in approving of the principle of linking oil prices with the prices of manufactured goods by the industrial countries.

TABLE IV:37

Country	Extra Revenues during 1971
Saudi Arabia	410 million dollars
Kuwait	260 million dollars
Iraq	150 million dollars
Qatar	10 million dollars

Source: Dhahab, S., Some Economic Aspects of the Teheran and Tripoli Agreements, the Iraqi Ministry of Trade, Baghdad, 1972, p. 133. (Arabic).

Perhaps the most remarkable achievement was the harmonization of oil policies of the OPEC countries, as revealed by OPEC's Resolution XXI.120, and the use of the OPEC countries of their bargaining power for the sake of achieving the basic principles provided by this resolution. The Teheran agreement, however, had its own weaknesses, the most important of which is that while it had dealt with the question of world inflation and worked out a formula for compensation - a 2.5% annual increase of the posted price - it did not, (nor did the

Tripoli agreement) mention the question of exchange rates or devaluation. While in the modern world, especially the developed countries, inflation and exchange rates are interdependent, still they are not the same. Thus a 2.5% annual increase was not a good measure of the economic behaviour of the exchange rate or the changes in the purchasing power of any currency.

Another of the important developments relative to crude oil prices was the Geneva Agreement of January 1972 which provided for an 8.49% increase in posted prices to offset dollar* devaluation. The Geneva agreement reached between the Gulf members and the operating companies established the principle of compensation whenever the dollar exchange rates falls in relation to the exchange rates of the currencies of the major industrialized countries. This agreement was modified in June 1973 by the Second Geneva Agreement. Prices in dollar terms were raised by 11.9% to compensate for the second dollar devaluation of February 1973.

The question of acquiring control over oil production by the producing governments affected oil price movements. In June 1972 the Middle East oil-producing countries demanded a share in the management of the industry. January 1973 was the effective date of the first participation agreement reached. Saudi Arabia, Kuwait and Abu Dhabi gained immediate 25% control of oil company operations to be increased gradually until the host countries gain majority control in 1982. This agreement was modified in 1974 and the producers gained

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* The dollar is the monetary unit used in posting crude oil prices.

60% participation in oil operations. Kuwait achieved 100% nationalization in early 1975.

A buy-back price emerged as a result of participation. A buy-back price is what an oil company pays to the host country for that percentage of the oil produced which represents the government ownership share in the company. For example, in 1974, the ownership of Saudi Arabia in Aramco represented 60% of the total production. A buy-back price, thus, was the price that Aramco paid to the Saudi government on 60% of the oil produced. A buy-back price is usually less than the posted price.

Participation had an effect on price movements, since it was revealed to the producing countries that owing to world demand, they could get more for the share of their oil that they were selling themselves than the companies were paying for them for royalties and tax per barrel on the rest. Participation implies a further increase in oil costs to the companies as the host governments sell their share of oil back to the companies or to third parties at prices substantially more than tax-paid costs. As shown in Table IV:38. This table shows the impact that rising posted prices have had on host government take, tax-paid cost and the impact of participation.

Towards the end of 1973 the producing countries demanded an increase in the government take for Arabian light oil in the Gulf. They were dissatisfied as they realized that their revenue per barrel was still too low in comparison to the excise taxes levied by

TABLE IV:38

Movements in Host Government Take and Tax-Paid Costs

	June 1970	October 1 1973	Late October 1973	January 1 1974	Index of Change (June 1970 = 100) October 1 1973	Late October 1973	January 1 1974
	$/barrel						
S. Arabian Light Posted Price	1.80	3.011	5.119	11.651	167	284	647
Host Government Take	0.958	1.765	3.043	7.003	184	318	731
Tax-Paid Cost	1.068	1.875	3.153	7.113	176	295	666
Impact of Participation	-	0.110	0.150	0.200			
Total Cost to Oil Companies (Export Cost, fob)	1.068	1.985	3.303	7.313	186	309	685

Source: Energy in Europe: The Importance of Coal, A Report by CEPCEO, London, 1974, p. 10.

the European countries on their fuel. More significant, the producers started, for the first time to realize that their oil was a wasting asset and that they should conserve their reserves. This idea gained strength in the Arab Oil Congress held in Algiers during May-June 1972. It was decided that it was essential that revenues should be increased without the exhaustion of this wasting asset. Early in 1973 the decision of the Kuwaiti government to conserve production, combined with further cutbacks in Libya, had produced the first signs of a serious supply crisis.

In September 1973, the OPEC countries began negotiations with the oil companies for a revision of the Teheran Agreement to reflect market inflation and the increasing market value of crude oil in consuming countries. Crude oil and products prices started to rise out of proportion to the adjustments provided by the Teheran formula. Since February 1971, that the prices of crudes in arms length deals had increased by 65% as against an increase of only 32.9% in the posted prices on which the government take was based. Furthermore, it was observed that while the tax-paid cost borne by the companies at the time of Teheran represented about 83% of the realized prices, that cost stood in June 1973 at 70% of market realizations.(61) Under these circumstances, the OPEC countries demanded negotiations, for an upward adjustment of posted prices. As no agreement was reached, OPEC countries unilaterally announced from Kuwait on October 16, 1973 an immediate 70% increase in posted prices. Thus, after sixty years of operations in the Gulf, the companies lost the power to determine prices. On October 17, 1973, the Arab oil producers decided in Kuwait to reduce supplies of oil to countries

considered unfriendly to the Arab cause. By the end of October, Arab production was 20% down on September levels. Restrictions on production was eased in January 1974, from 25% to 15% below the September level. During the October war of 1973 two of the three trunk pipelines carrying oil through Syria to the Mediterranean coast were put out of action reducing the flow of oil to the West substantially. During the rest of the year, realized prices for crudes and products continued to rise as a consequence of the production cutbacks and embargoes. Prevailing forces in the market pushed the prices again to about $ 11 per barrel in January 1974. During a meeting of the major Gulf producers OPEC decided to further raise the price by 300%. Table IV:39 shows movements in posted prices from the middle of 1970 till the beginning of 1974.

The rise in oil prices at the end of 1973 and the beginning of 1974 was based on certain economic principles:

1) To raise the price level to that of other energy sources.

2) To make up for the loss of the purchasing power of the oil revenues mainly due to world monetary disturbances, including inflation. While OPEC based its price calculations on the assumption that the general inflation rate during the first half of 1974 stood at 12 - 14%, per annum, OECD calculations show that the average rate in the seven largest industrialized countries for the same period mentioned above was 14.75%.

3) To give oil the value of a wasting asset in order that consumers have the incentive to develop other energy sources.

4) To urge the consumers to use oil in essential matters and in ways compatible with its value.

TABLE IV:39

Movements in Posted Prices (¢/barrel)

Date	Explanation of Change	S. Arabian Light (34°)	Libyan (40°)
June 1 1970	Long-established levels	1.80	2.23
Sept. 1970	Libyan increase		2.55
Feb.15 1971	Teheran Agreement - Gulf crudes	2.180	
Mar.20 1971	Tripoli Agreement - Mediterranean		3.447
June 1 1971	Teheran Increment	2.285	
July 1 1971	Declining tanker rates reduce Med. premium		3.423
Oct. 1 1971	Declining tanker rates reduce Med. premium		3.399
Jan. 1 1972	Declining tanker rates reduce Med. premium		3.386
Jan.20 1972	Geneva Agreement - adjustment for dollar devaluation	2.479	3.673
April 1 1972	Declining tanker rates		3.642
July 1 1972	Declining tanker rates		3.620
Jan. 1 1973	Teheran and Tripoli increments	2.591	3.777
April 1 1973	Application of Geneva Agreement to compensate for second dollar devaluation. Also rising tanker rates increase Med. premium.	2.742	4.024
June 1 1973	Second Geneva Agreement giving increased compensation for dollar devaluation. Also rising tanker rates increase Med. premium	2.898	4.252
July 1 1973	Upward adjustment for currency changes. Also rising tanker rates increase Med. premium	2.955	4.416
Aug. 1 1973	Upward adjustment for currency changes. Also rising tanker rates increase Med. premium	3.066	4.582
Oct. 1 1973	Downwards adjustment for currency changes. Rising tanker rates increase Med. premium	3.011	4.604
Oct. 16/19 1973	Increase in Arabian Gulf and Libya	5.119	8.925
Jan. 1 1974	Increase in Arabian Gulf and Libya	11.651	15.768
Percentage increase 1/6/70 to 1/10/73		+ 67%	+ 106%
Percentage increase mid-October 1973		+ 70%	+ 94%
Percentage increase January 1 1974		+ 128%	+ 77%
Percentage increase 1/6/70 to 1/1/74		+ 547%	+ 607%

Source: Energy in Europe: The Importance of Coal, A Report by CEPCEO, London, 1974, p. 47.

The OPEC meeting in Quito in mid-June 1974 decided to freeze posted prices for a further three months. In September 1974 at its XLI meeting in Vienna, OPEC decided to further freeze posted prices for the fourth quarter of 1974, but to increase total government take by 3.5% to compensate for inflation. The weighted average of government take for the marker crude increased from $ 9.41 to $ 9.74 per barrel, an increase of 33 cents. In December 1974 prices were again frozen until the 30th September 1975. In January 1975, OPEC decided to freeze basic oil prices for the remainder of the year and for 1976 - 1977 to link them to 80 - 90% of the industrial world's inflation. In October 1975, crude oil prices were increased by 10% effective October 1st, 1975 and a price freeze was imposed until the end of June 1976. A further freeze was imposed on oil prices until the end of 1976. At the end of the 15-month price freeze, it was decided in December 1976 by Saudi Arabia and the United Arab Emirates to raise the price by 5%, whereas the remaining eleven member countries of OPEC raised the price by about 10%, effective January 1st, 1977 with a further 5% rise on the 1st July.

The oil-exporting countries seem to favour relative price stability for oil over a period of years, with some form of indexation to maintain the purchasing power of the oil revenues in relation to the prices of manufactured goods. The producers take the view that international inflation has eroded the purchasing power of their revenues in two ways:-

1) By a depreciation in the exchange value of the dollar, the monetary unit in which oil prices have been expressed, and,

2) By raising the prices of goods and services which the oil-exporting countries import - (inflation).

In order to deal with such a problem the oil-producing countries indicated that they intend to:

1) Change from dollars to Special Drawing Rights (SDRs) as the unit of account for valuing oil, and,

2) By indexing oil prices to the inflation rate of goods and services imported from the developed world. One authority has suggested that without indexation the real price of crude oil will quickly decline to the pre-embargo level of near $ 3 per barrel.(62) This can be shown in Table IV:40. According to the figures shown in this table a 15% world inflation rate will reduce June 1975 nominal prices to a real price of $ 3 a barrel in eight years, if prices remained unindexed. At a 20% world inflation rate, pre-embargo prices will be re-established in as little period as six years.

However, details relative to indexation have not yet been worked out. There seems to be a basic difference of view on future oil prices. Certainly, the disagreement is not about the principle of indexation to compensate for currency fluctuations and inflation, all the producing countries agree that this must come sooner or later. The Declaration refers to this in Section 7. Moreover, the price of petroleum must be maintained by linking it to certain objective criteria, including the price of manufactured goods, the rate of inflation, the terms of transfer of goods and technology for the development of OPEC member countries. The problem rather concerns the question of when and to what extent indexation should be introduced.

The oil-exporting countries, therefore, are anxious to secure

TABLE IV:40

Effective Crude Oil Prices for Fixed Nominal Prices, $/bbl.

	World inflation rate	
Year	15%	20%
1	$9.35	$8.80
2	7.95	7.04
3	6.76	5.63
4	5.75	4.50
5	4.89	3.60
6	4.16	2.88
7	3.53	-
8	3.00	-

Source: World Oil, June 1975, p. 55.

a relationship between oil prices on the one hand and other items they import on the other. They also want the price of oil at the point of export to be linked with that of other fuels. They feel that oil is a premium fuel and should be conserved, priced according to its intrinsic value. They resent the fact that oil has until recently been substantially cheaper than other fuels in most markets and borne heavy taxes levied by the consumer governments. Additionally, they would like the value of the oil price to be protected from fluctuations in international currency relationship, as Resolution XXI.122 of December 1970 declares: In case of changes in the parity of monies of major industrialized countries which would have an adverse effect on the purchasing power of member countries' oil revenues, posted or tax-reference prices should be adjusted to reflect such changes.(63)

3. Justification For Oil Price Rises.

In June 1975 Mr. Ahmed Zaki Yamani, the Saudi Minister of Petroleum and Mineral Resources had argued that since the time the oil-producing countries adjusted their prices after a quarter century of price stagnation, they have been continuously criticised. He pointed out that applying world inflation based on the GNP price index of OECD countries to the oil price since 1948, the 1974 oil price should have been more than $ 12 per barrel, this figure is more than the prevailing prices by $ 1.50 a barrel. In other words, prices remained extremely low for a long period, and even until October 1973 - January 1974, at a time when the price of raw materials and industrial goods produced by the West rose sharply. Some oil experts admit that even the present price of oil is still cheaper than other energy sources, and probably is not sufficient to justify development of shale oil and oil and gas from coal. For most of the oil-exporting countries oil is the most valuable asset, but unfortunately a wasting asset. They feel they must make the most of it before it is depleted. Worldwide inflation did not touch oil, the price of which remained constant through the 1960's, despite a gathering general price inflation after 1965, until they were increased in the early 1970's. Even so, the average price of $ 2.95 per barrel in 1972 was lower than it had been two decades earlier in 1953. According to Table IV:41 the terms of trade of Middle East OPEC countries fell from 100 in 1958 to 81 in 1968. The fall in the terms of trade was due to two factors, as shown by the table, the decline of the index of posted crude prices from 100 in 1958 to 88 in 1968, and the increase in the U.N. unit value Export Index from 100 in 1958 to 109 in 1968. Thus while a barrel of

TABLE IV:41

OPEC (Middle East) Terms of Trade

(Base Year 1958)

Year	UN Unit Value World Export Index of Manufactured Goods	Index of Posted Prices	Terms of Trade of Crude Oil
1958	100	100	100
1959	99	91	92
1960	101	89	88
1961	102	88	86
1962	102	88	86
1963	103	88	85
1964	104	88	85
1965	106	88	83
1966	109	88	81
1967	110	88	80
1968	109	88	81

Source: OPEC: An Example of Sub-Regional Co-operation and Trade Expansion, a study prepared by the OPEC Secretariat and submitted to UNCTAD'S International Group on Trade Expansion, Economic Co-operation and Regional Integration among Developing Countries, July 1970 (not published).

Source: Mikdashi, Z., The Community of Oil Exporting Countries, George Allen and Unwin Ltd., London, 1972, p. 166.

Saudi Arabian light crude sold in 1958 at ⅋ 2.08, that same barrel in 1969 sold at ⅋ 1.80. Even in 1970 prices of some crude oils were declining in real terms in comparison to their 1948 and 1957 prices. For some kinds of Middle East crudes, posted prices in 1970 were in real terms 17% less than they were in 1948 and 13% less than they were in 1957. Thus there is no doubt that the enormous benefit conferred on the consuming countries by cheap and plentiful ôil was a major factor in boosting growth and raising living standards throughout the world. And when oil-producing countries were gradually exhausting their oil reserves and competing among themselves in selling their oil, Europe and Japan were obtaining crude oil from the Middle East at artificially low prices, lower by at least one dollar per barrel than the price dictated by competition with other energy sources. Table IV:42 shows the opportunity cost to the Arabs of exporting large quantities of oil at prices lower by at least ⅋ 1 a barrel than prices obtainable on the basis of competition between various energy sources during the past decade. According to this table the availability of low-priced oil in large quantities from the Arab Middle East and Libya during the period 1960 - 1970 incurred a loss to the exporting countries totalling ⅋ 31.5 billion.

This section deals with the question of justification for oil price rises:

(a) Consuming countries' taxes on oil products, world inflation in general.

(b) Oil posted prices and the prices of other commodities.

(c) U.S. oil prices in comparison to Arab oil prices.

TABLE IV:42

Exports of Arab Oil to the Western World and Japan - 1960-1970

Year	Exports of Middle Eastern Countries and Libya (million barrels)	Lost Profit on Account of $1/barrel (million dollars)
1960	1500	1500
1961	1588	1588
1962	1790	1790
1963	2063	2063
1964	2454	2454
1965	2745	2745
1966	3126	3126
1967	3255	3255
1968	3941	3941
1969	4320	4320
1970	4720	4720
Total	31502	31502

Source: Iskandar, M., The Arab Oil Question, The Middle East Economic Consultants, Beirut, 1974, p. 42.

(d) A concluding remark on the uses of higher oil prices.

(a) Consuming Countries' taxes on oil products:

Oil is a wasting resource that remained underpriced for a very long period. This phenomenon is well described by a previous Secretary General of OPEC. He pointed out that it had taken until 1973 to begin to give the producers a return of more adequate value for their crude. In October 1973, this return which was called Government Take was about $ 1.8 per barrel, i.e. 4.2 cents/gallon. The difference between such government take which represented 8% of the retail prices plus taxes levied by the governments of the consuming countries which constituted approximately 60% of the total goes to the companies to pay for their services rendered and profits realized.(64) In other words, oil-producing countries secured from their exports on previous postings to October 16, 1973 just over one-eighth of what governments of industrial consuming countries secured by taxing the products of the crude imports. It was argued thus, that what indeed doubled the price of refined products was the tax imposed by the consumer governments, not only for the purpose of collecting revenue but also for the purpose of protecting their coal industries against cheap oil imports. In most European countries, taxes levied on petroleum products are in the region of $ 10 per composite barrel, a figure still much higher than the current government share per barrel in the Arabian Gulf./ In consumer nations per barrel taxes on car petroleum alone are estimated at $ 5 in the U.S.A., $ 14 in Japan and $ 28 in W. Europe.(65) Thus, it can be demonstrated that producing countries receive equals a fraction of what the final consumer pays for petroleum products in

the consuming countries. Table IV:43 shows that the percentage of producing countries' revenues was 6.7% in 1964, 12% in 1971 and 1972, 13% for the first quarter of 1973, 23% for the fourth quarter of 1973 and 37.4% for the first quarter of 1974 of what the final consumer paid for oil products, whereas the direct and indirect taxes levied by the consumer governments and the companies as profits were 74.1% out of what the final consumer paid in 1964, 76% in 1971 and 1972, 74% for the first quarter of 1973, 65% in the fourth quarter of 1973, 54% in the first quarter of 1974.

(b) Oil prices and prices of other commodities:

Raw materials and agricultural products:

As mentioned earlier in this section, crude oil prices constitute only 8% of the final price to the consumers and were assumed to compensate the producing and exporting countries for a total loss of a depletable natural resource. We find in contrast prices of agricultural products, mainly produced in industrial countries rising sharply over the past years. With the year 1937 as the base of 100, December 1973 indicated the following commodity prices:

TABLE IV:44

Cotton	672.1	Copper (Nov. 1973)	775.6	Rice	833.3
wheat	439.7	petroleum	452.6	tin	601.4
coffee	621.6	cacao	785.2	newsprint	428.9

Source: Al-Mallakh, R., American-Arab Relations: Conflict or Co-operation, Energy Policy, Sept. 1975, p. 176.

Moreover in recent years bauxite increased by almost 500%, steel

TABLE IV:43

The Distribution in Percentages of the cost of a refined oil barrel to the final Consumer in European Markets

The Elements of Cost	1964		1971		1972		1st Quarter 1973		4th Quarter 1973		1st Quarter 1974	
	$/barrel	%	$/barrel	%	$/barrel	%	$/barrel	%	$/barrel	%	$/barrel	%
Costs of Production	.25	3.3	.20	2	1.20	2	.25	2	.25	2	.25	1.2
Taxes of Producing Countries	.74	6.7	1.50	12	1.60	12	1.71	13	3.70	23	7.85	37.4
Freight Costs	.60	5.5	.70	6	.60	5	.75	6	1.00	6	.85	4.00
Refining Costs	.50	4.5	.55	4	.60	5	.65	5	.70	4	.75	3.40
Company Profits	2.40	21.8	4.00	33	4.10	33	4.50	32	4.70	29	5.20	25
Taxes of Consuming Countries	5.75	52.3	5.10	43	5.40	43	5.65	42	5.65	36	6.00	29
Average Selling Price	10.24	100	12.25	100	12.50	100	13.50	100	16.00	100	21.00	100

Source: A Report prepared by the Energy Dept. of The Arab League entitled Arab-European Dialogue relative to Petroleum and Energy, Oct. 1974, p. 27. (Arabic).

rose fourfold, phosphate tripled and gold increased by about 5 times.(66) It is important to point out that in using the above-mentioned commodities for comparative purposes, one distinction must be made, which is the difference between renewable resources, like agricultural products, and non-renewable natural resources such as oil. Indeed, some oil producers have about twenty years of reserves left at their 1973 production rate. Such producers cannot be expected to sacrifice the establishment of balanced economies simply to satisfy consuming countries' needs without some kind of trade off. Table IV:45 indicates that indices of crude oil posted prices fell from 107 in 1958 to 98 in 1959 and then to 94 in 1960, 93 in 1961. The indices of crude oil posted prices remained for a period of twelve years (1959-1970) below their level in 1954, whereas price indices of other major raw materials and other food commodities such as coal, iron, beef were continuously rising during the same period 1954-1973. According to this table also oil price increases realized October 16, 1973 pushed the index of oil posted prices to 170, at a time when price indices of other commodities were raised about 3 times what they were in 1954. For example, the price index of tin, copper, coal, wheat, beef, sugar, iron rose to 274, 203, 182, 246, 252, 295, 281 respectively. Thus, it can be seen that in spite of the October 16th, 1973 oil price increase, oil price index did not reach the level of the price index of other major commodities

(c) Arab oil prices compared to U.S. oil prices:-

Middle East oil posted prices were not only far less than the prices of other commodities traded in the international market, they were also at all times less than the prices charged in the United

TABLE IV:45

Price Indices of Some Commodities for the period 1954 - 1974

Year	Arab Oil Ras Tanura	Tin U.K.	Copper Belgium	Coal W. Germany	Wheat U.K.	Beef Denmark	Sugar Int. Price	Steel U.K.
1954	100	100	100	100	100	100	100	100
1955	100	103	130	102	103	105	99	111
1956	100	110	134	108	106	110	106	141
1957	103	105	93	115	101	108	158	157
1958	107	102	83	120	95	109	107	131
1959	98	109	97	120	95	117	91	115
1960	94	111	100	124	94	115	95	114
1961	93	124	94	124	95	110	89	114
1962	93	125	96	126	98	105	91	114
1963	93	127	96	128	99	110	271	114
1964	93	172	101	120	102	142	181	117
1965	93	196	115	136	100	147	65	118
1966	93	177	183	136	103	131	57	190
1967	93	168	161	136	104	117	64	190
1968	93	181	175	129	114	123	56	193
1969	93	199	217	133	111	144	107	183
1970	93	219	206	152	116	154	115	211
1971	111	200	156	165	112	160	140	244
1972	128	209	140	135	120	227	247	256
1973	170	274	203	182	246	252	259	281
1974								
Jan.	604	407	256	199	203	237	472	293
Feb.	604	460	-	199	200	234	650	323
March	604	490	350	199	206	240	653	402
April	604	535	342	199	212	248	665	402
May	604	536	323	237	-	-	725	-

Continued.....

Year	Arab Oil Ras Tanura	Tin U.K.	Copper Belgium	Coal W. Germany	Wheat U.K.	Beef Denmark	Sugar Int. Price	Steel U.K.
1974								
June	604	525	277	-	-	-	725	-
July	604	-	-	-	-	-	-	-
August	604	-	-	-	-	-	-	-
Sept.	604	-	-	-	-	-	1166	-

Source: A Report Prepared by the Energy Dept. of the Arab League entitled Arab-European Dialogue relative to Petroleum and Energy, 1974, p. 23. (Arabic).

States of America, as revealed by Table IV:46. This table shows the stages which took place in the evolution of posted prices throughout the world. It shows that since 1948 the realized prices, not the posted prices of American oil in the East coast of the United States have been more than the posted prices of Arab oil. The Middle East oil, because of its low prices, competed with American oil in the American market despite the fact that Arab oil bore freight costs from the Gulf and coasts of the Mediterranean to the U.S. coasts. This fact shows the extent to which Middle East oil prices were low in countries to the east of the United States, such as European countries. It also shows the great loss inflicted on Middle East oil as a result of applying price formulae not favourable to the producing countries. Thus producing countries had to take the initiative and set oil prices in order to raise their level up to that of American oil prices and prices of other commodities.

(d) Uses of higher oil prices:-

The world has been subjected to the pressures of a process of adjustment, it is a process that has been delayed for many years. Higher prices are needed to curb demand and promote the expansion of alternative supplies. It is generally believed that oil, and above all, Middle East oil, will supply most of the world's energy needs for the next twenty years or so. Now it should be accepted that the development of substantial alternatives is in the interest of the international community as a whole. The Middle East producers are no less anxious than the industrialized oil-consuming countries that sources of energy, other than oil, should be developed, since

TABLE IV:46

Progression of principal world prices posted

(In $/barrel)

	U.S. East Coast	Saudi Arabia Ras Tanura	Sidon	Iraq Fao	Tripoli	Kuwait Ahmadi
API°	34°	34°	34°	35°	36°	31°
1948	2,68	2,06	-	-	(2,76)	(1,85)
1955	2,98	1,93	2,37	1,90	2,41	1,72
1957	3,38	1,99	2,14	1,93	2,67	1,80
1958	3,28	2,06	2,21	1,98	2,51	1,85
1961	3,28	1,80	2,17	1,72	2,21	1,59
1970 [1]	3,40	1,80	2,17	1,72	2,21	1,59
1971 [2]	3,60	2,18	3,18	2,15	3,21	2,08
1972 [3]	3,60	2,47	3,37	2,45	3,40	2,37
1973 [4]	4,20	2,59	3,45	2,56	3,45	2,48
1973 [5]	10,00	5,03	7,03	4.97	7,03	4,82

1 - Price as of August 31, 1970.
2 - Prices applied beginning February 15, 1971 after Teheran Agreement.
3 - Prices applied beginning January 20, 1972.
4 - Prices applied beginning January 1, 1973.
5 - Prices applied beginning December 1, 1973.

Note: Prices in parentheses are averages. The table above shows the progression of prices in broad stages.

Source: Petroleum, Raw Materials and Development, Memorandum submitted by Algeria on the occasion of the special session of the United Nations General Assembly, April 1974, p. 175.

this will ease the pressure on Middle East oil and reduce its use as a fuel.

Indeed, prevailing prices have not only increased the pace of producing alternative sources of energy but they have also tended to stimulate Middle East OPEC oil supplies. The prices that went into effect in 1974 provided the producing countries with the incentive to raise their crude oil production. During the second quarter of 1974 production reached 6 m. b/d. This indicated the supply price elasticity which characterized this commodity (oil) and signified the willingness of the producers to make more oil available at the proper prices. It should be noted here, that, under prevailing price levels, the oil-exporting countries will increase supplies only when demand rises. The uses of higher oil prices are best summed up by one authority when pointing out that in itself the main importers, W. Europe, Japan and increasingly the United States, are rich and since the prices of their exports are also rising steadily. Moreover, an increase in oil prices may serve a very useful economic function by forcing an overdue reduction in consumption, stimulating exploration for oil in other regions and encouraging the development of alternative sources of energy.(67)

4. Analysis of the forces affecting Middle East Oil Prices and Their Future:-

The central issue today is how to maintain a world price for crude oil that serves the long term interests of all nations. The question to be asked here is what are the forces affecting crude oil prices in the future?

Indeed three groups influence the international oil market considerably, now and in the future, and in different ways, they are the oil-exporting countries, the oil-importing countries and the oil companies.

(a) The Oil-Exporting Countries - OPEC:

The natural strength of the OPEC member countries arises from the distribution of oil production capacity between members. Countries with considerable development needs, tend to have either small oil reserves, like Algeria, or large reserves but small installed capacity, like Iraq, countries with large oil reserves or large installed capacity, like Saudi Arabia, Kuwait, Abu Dhabi, tend to have limited development needs. This concentrated distribution of productive capacity and oil reserves between the OPEC member countries gives so much to Saudi Arabia and leaves the other producers with little ability to break the market. Perhaps another major factor to OPEC's strength is that all its members realize that they are ultimately better off, both in terms of revenues and international recognition with, rather than without OPEC. This argument also applies to Saudi Arabia, the key member with the real power to keep OPEC strong or break it up.

In recent oil literature, one comes across questions as to the ability of OPEC to hold together in the future. Such questions, for example, have become quite familiar to the reader: what will the future level of oil prices be? Can OPEC maintain current price levels? Are prices going to fall as some oil experts predict? Is there going to be a rise in oil prices to compensate for world inflation? Such questions are the subject of debate for economists and spokesmen for the oil-exporting countries as well as government officials of the oil-importing countries. This issue will be dealt with in a separate chapter.

Some oil experts maintain that one weakness of OPEC is the absence of a formal production programme for the members to abide with. Although no official production rationing system exists within OPEC, several of the member countries could afford to cut production severely. Countries like Saudi Arabia and Kuwait have already done so, enabling others like Iraq, for example, to maintain or increase output. Indeed, the OPEC members need not worry much, in the short run, about a formal production programming, as long as Saudi Arabia does not need to expand production. This should not mean that OPEC is safe without a formal production programming.

Another point to mention is that OPEC member countries regard their solidarity of utmost importance. Despite their different views on the pricing of oil, the OPEC countries realize that their joint interest lies in their unity. Thus, we find that OPEC has been successful in decisions relating to price increases in spite of resistance exhibited by certain members who resist any increase in oil prices.

(b) The Oil-importing Countries:-

Coordinated policies of the major oil-consuming countries could have a profound effect on the price of oil. Their objective is a lower price for oil and a steady supply. Senior American officials contend that the united actions of consumer governments can change market conditions sufficiently to force OPEC to reduce prices. In the U.S., Japan and Europe several import-limiting measures, tariffs or quotas, will be adopted to reduce dependence on foreign sources of energy. The consumers try to get into a position by which they can get the price down, through increasing their oil supplies, cutting their dependence on producers and expanding production of non-oil energy sources. All three have the effect of building a downward pressure on prices. As an example of consumer policies is the strategy of Project Independence announced by the U.S. President in 1973, the objective of which is to reduce the rate of growth in demand for oil and to increase the rate of growth in energy production through bringing supply and demand into balance. What this project aims at is to meet America's energy needs from America's own energy sources, this implies that the U.S. should be prepared to pay any environmental and inflationary cost as well. Estimates of when this self-sufficiency will be achieved vary, but most sources are agreed that it cannot be before the late 1980's. However, recent opinions suggest that self-sufficiency in energy cannot be achieved in the foreseeable future. The figures speak for themselves and confirm the US future increasing dependence on imported oil. After more than two years of planning self-sufficiency, the US now imports 35% of its petroleum, whereas at the start of the crisis the US imported 30%. Indeed, it could be argued that the reactions of the

consumers to price changes by alterations in demand and by conservation measures are rather difficult to predict. This is dependent on government action, and heavy financial investments. It is doubtful, that in the short term, the consuming nations can negotiate a lower price of OPEC oil.

In the long run, the consumers are determined, and have agreed at least in principle, to invest substantial sums in alternative energy sources, over the next ten years and to protect or ensure the investments against competition if OPEC dramatically lowers prices. This is where the concept of a price floor for oil becomes important. The floor price objective is strategic, it is related to the policies of the consumer governments to lessen dependence on oil imported from the Middle East. To maintain a price floor is a US plan which aims at the establishment of a system of internal taxes which would make oil prices high to the consumer regardless of the exporting nations' selling price. The idea is that prices should not decline sharply so as not to discourage the development of non-OPEC oil. The consuming countries are to pool capital, technology and raw materials in order to develop oil substitutes.

(c) <u>The Oil Companies</u>:-

It might seem that the companies are interested in a high price for oil since higher posted prices mean higher profits for the companies. But whether they produce oil or purchase it, the companies can still make a lot of money out of oil by diversifying distribution and accepting state participation. Today, the aim of the companies is to purchase oil from OPEC members at the best possible price, and

it is believed that they will not resist a price increase so long as this will make possible the development of other sources.

On the other hand, the companies can create a downstream pressure on prices, in an indirect way, since they have a solid control over the finished products market. They will try to realize an increase in the prices of finished products greater than the increase in the cost of the crude they produce or purchase. Since demand for crude oil is derived from demand for its products, higher products prices might reduce demand for such products that are easily substitutable, and in turn, reduce demand for crude oil. The more the total demand falls, then the more effective will their bargaining power become. Thus the oil companies are still considered one of the important forces in the oil industry, and the policies they follow affect international oil prices indirectly.

Furthermore, the oil companies are putting considerable effort into looking for new oil supplies and for alternative sources of supply. The search for oil is being intensified in offshore waters and deep oceans, as well as on land. It is worth mentioning here that the oil companies started diversifying their search since 1959. Now they are prepared to explore virtually throughout the world particularly in the so-called political stability areas. Thus diversification of supplies has been going on for a long time, but now this activity has acquired a different meaning. Such activities come within the oil companies' strategies to dominate new sources of supply and other energy sources as well. But whatever new production comes from the oil companies' worldwide search, it is unlikely to

affect oil prices in the short run, as such activities are costly and require long lead times. Today's costly exploration efforts are predicted on oil prices going no lower than the current world market price of about $ 11 a barrel.

From the above discussion, it is seen that a delicate and complex balancing performance exists among the many interests of producing and consuming nations as well as the oil companies. Precisely where this will leave oil prices it is difficult to determine.

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CHAPTER V

PROJECTIONS OF OIL DEMAND IN 1983

THE MAJOR OIL-CONSUMING COUNTRIES

1. The Present Oil Position of the Three Major Oil-Importing Areas: The United States, Western Europe and Japan.

This chapter is divided as follows:

1) A discussion of the present oil position of the three major oil-consuming areas, namely The United States, Western Europe and Japan.

2) An attempt to project demand for oil in physical and money terms for the period 1973-1983 for the three major markets mentioned.

3) Policy implications of the projections and a brief analysis comparing the position of the three major oil markets relative to their future oil imports.

The United States:-

Economic recovery in the United States is going faster than has been expected. In the first quarter of 1976 the increase in

the real GNP was estimated at 8.5%.[68] Consequently, forecasts of energy consumption are being revised upwards. At the same time the drop in indigenous oil and gas supplies continues. The result, as seen by the Independent Petroleum Association of America, is a growing dependence on imports.

The United States oil proved reserves and natural gas showed a decline in 1975 for the eighth year in succession (See Table V:47). Even in addition to the huge reserves of the North Slope of Alaska, the American Petroleum Institute assessment shows that proved oil reserves and gas liquids declined to 38.968 million barrels in comparison to a peak of 39.991 million at the end of 1967. Based on 1974 figures, the reserves/production ratio is at present about 8 : 1 for oil and under 10 : 1 for natural gas. This net decline in proved reserves in 1975 occurred in spite of 17.5% increase in drilling activity.[69]

Not only have reserves been declining but indigenous production also has shown a decline. Domestic production reached a peak in 1970. The reduction in output has necessitated a sharp increase in oil imports. By 1972 almost one-third of the United States' oil requirement was being met by imports. It was clear that country was now a major oil importer. The United States' dependence on external sources of supply increased rapidly between 1971 and 1975, and, despite a decrease in demand in 1975, indigenous oil self-sufficiency reached a new low of 63.7%. In 1976, domestic output declined further by 1.8% from the 1975 level which resulted in more dependence on imports to meet its growing demand.

TABLE V:47

US Proved Reserves

End-Year	Crude Oil Mn. Bls.	Gas Liquids Mn. Bls.	Total Mn. Bls.	Natural Gas Trillion cu ft
1966	31 452	8 329	39 781	389.3
1967	31 377	8 614	39 991	292.9
1968	30 707	8 598	39 305	287.4
1969	29 632	8 143	37 775	275.1
1970*	39 001	7 703	46 704	290.7
1971*	38 063	7 304	45 367	278.8
1972*	36 339	6 787	43 126	266.1
1973*	35 300	6 455	41 755	250.0
1974*	34 250	6 350	40 600	237.1
1975*	32 700	6 268	38 968	228.2

* Including Alaska's North Slope - 9 600 million barrels of oil and 26 trillion cubic feet of natural gas.

Source: Petroleum Economist, May 1976, p. 166.

Imports rose from 6,024 thousand b/d in 1975 to 7,251 thousand b/d in 1976.(70) It is expected that crude oil indigenous production will decline further in 1977 in spite of the opening up of the Elk Hills National Reserve. It is hoped that the start of production of the North Slope of Alaska will keep the balance and will bring total oil output to 8.25 m.b/d. The reserves of Alaska's North Slope, which are about 25% of the U.S. oil reserves, are expected to yield some 1.2 m.b/d by 1980.

The United States is the dominant oil-consuming country. Its oil consumption was about 16 m.b/d. in 1975 or the equivalent of about 28% of world oil consumption. In 1976 total consumption increased to 17.6 m.b/d. which is higher than the 1973 level when it was 17.3 million. It is important to mention here that in 1972 the United States imported 30% of its oil requirement. The U.S. is expected to depend on imports for more than 47% of its oil needs in 1985.(71)

The figures in Table V:48 indicate that Canada was the largest supplier followed by Venezuela and Nigeria. It is also shown that a large proportion of America's oil imports come from Saudi Arabia. However, imports from Canada and Venezuela have been sharply reduced. Both countries have national conservation policies and Venezuela has decreasing oil reserves. In addition, Canada started in 1975 collecting a $ 5.20 surcharge for each barrel of oil going to the U.S., making its exports up to $ 1.50 higher in price than imported Middle East oil in that year. Nigeria and Indonesia, which are also big oil suppliers to the U.S., are relatively small producing

TABLE V:48

US Oil Imports by Source*

Thousand Barrels a Day

	1974	1975	% change
Canada	1 070	845	- 21
Venezuela	980	695	- 29
Nigeria	680	685	--
Saudi Arabia	460	670	+ 45
Indonesia	285	380	+ 34
Netherlands Antilles	510	325	- 36
Iran	470	290	- 39
Trinidad	240	240	--
Algeria	190	280	+ 48
Libya	5	230	--
United Arab Emirates	70	140	+100
Kuwait	5	20	+300

* Preliminary figures from the Federal Energy Authority.

As exports from Canada continue to decline, until they are phased out at end-1981, US dependence on OPEC sources, especially Saudi Arabia, will steadily increase.

Source: The Petroleum Economist, May 1976, p. 185.

countries with much lower reserves in comparison to the Middle East countries. The result is that such a situation will lead to a further dependence on other exporters. The U.S. dependence on OPEC oil, especially Saudi Arabia, will increase steadily.

The U.S. is the fastest growing market for OPEC oil. Consumption is going up and there has not yet been any significant progress in going over to alternative energy sources. The U.S. is a country with enormous undeveloped energy sources. It has a great geological potential for finding more oil and natural gas. It has a major proportion of the world's coal reserves, and a great potential for shale oil, as well as a large nuclear potential. Yet the lack of a coherent energy policy makes the development of these resources proceed at a slow pace. Unless strong measures are taken to curb consumption and increase domestic production, the U.S. has to depend progressively on an increasingly large quantity of oil to meet its projected needs. With full economic recovery, competition among all the importing nations of the world for external oil supplies can be expected to intensify over the coming years.

Western Europe:-

Western Europe's reserves of about 25.6 billion barrels at the end of 1975 represent about 4% of the total world's share. Western European oil consumption grew at 10.5% p.a. in the period 1964 - 1969 and at 7.4% p.a. in the period 1969 - 1973.(72) In 1975 total Western European consumption stood at 13.5 million b/d. or the equivalent of about 25% of the world total. As a region, Western

Europe is the second largest oil consumer in the world. This region is almost 60% dependent on imported energy and this is overwhelmingly OPEC oil. Its dependence on Middle East oil was 91% of its total supply in early 1975. The Arab countries of the Middle East supplied 55% of the total European supply in 1975. Imports from North Africa went down from 14 to under 12%. (See Table V:49).

Total production of crude oil in the Western European area remains comparatively small. It was about six thousand b/d in 1975 or 1% of the world total. North Sea production should total 2 - 2.8 million b/d by 1980. Some estimates note that production from the North Sea should reach a level of about 4 million b/d by 1980. North Sea production will amount to 7% of the world supply in 1985. The North Sea will have limited importance to Western Europe as a region by 1980, its contribution to the total world supply will be marginal since no more than 2% of world oil reserves are located in the area.(73)

In 1975 Western Europe imported almost twice as much as the United States and even though Europe continues to develop its North Sea potential as rapidly as practical, it will have to import more oil by 1985. OECD has estimated that in 1980 Western Europe will need 22.3 million b/d.

Japan:-

Japan is one of the major areas that consumes large volumes of oil. It depends heavily on importing its oil requirements from

TABLE V:49

Crude Oil Imports by Area of Origin*

Thousand metric tons/year

To:		Iran	Middle East(a)	North Africa(b)	West Africa	Caribbean (c)	Soviet Bloc	Others and Unspecified (d)	Total	% change 1974-75
U.S.	1974	14 522	67 692	9 233	8 604	3 558	100	9 842	113 551	- 21.8
	1975	17 547	17 547	4 099	6 065	3 366	830	9 698	88 749	
France	1974	8 613	92 346	13 334	14 011	1 438	226	235	130 203	- 18.6
	1975	13 293	70 552	8 527	10 538	752	1 191	1 141	105 994	
West Germany	1974	13 352	43 917	27 095	12 767	2 236	3 018	158	102 543	- 12.2
	1975	14 189	32.799	25 895	11 271	2 154	3 093	624	90 025	
Italy(e)	1974	14 487	67 257	27 175	4 280	585	3 399	267	117 450	- 19.9
	1975	13 000	57 000	16 000	1 400	600	3 500	3 500	95 000	
Netherlands	1974	38 214	7 485	429	13 998	426	19	76	60 647	- 12.3
	1975	17 750	24 403	820	7 830	322	-	2 057	53 182	
Belgium	1974	4 519	20 346	2 311	1 333	406	140	247	29 302	- 10.7
	1975	4 722	17 314	1 541	1 655	367	21	548	26 168	
Denmark	1974	4 373	3 259	587	690	278	-	96	9 283	- 15.2
	1975	3 045	3 253	138	978	-	435	23	7 872	
Sweden	1974	1 434	4 459	349	2 441	981	-	387	10 051	+ 20.8
	1975	3 094	4 867	57	2 533	864	-	725	12 140	
Spain(e)	1974	3 405	32 917	5 760	50	1 543	91	126	43 892	- 4.3
	1975	3 750	31 000	3 500	1 750	1 000	750	250	42 000	

Continued.....

To:		Iran	Middle East(a)	North Africa(b)	West Africa	Caribbean (c)	Soviet Bloc	Others and Unspecified (d)	Total	% change 1974-75
Total of above	1974	102 919	339 678	86 273	58 174	11 451	6 993	11 434	616 922	- 15.5
	1975	90 390	288 332	60 577	44 020	9 425	9 820	18 566	521 130	
% shares	1974	16.7	55.0	14.0	9.4	1.9	1.1	1.9	100.0	
	1975	17.3	55.3	11.6	8.5	1.8	1.9	3.6	100.0	

* Main importing countries only.

(a) Excluding Iran; but including Egypt and Israel.
(b) Excluding Egypt.
(c) Including Venezuela.
(d) Including some transshipment from European terminals.
(e) Figures for 1975 are estimated.

Source: The Petroleum Economist, June 1976, p. 216.

external sources. About 75% or more of the country's primary energy needs is derived from oil, more than in any major country, with the exception of Italy. According to C. Tugendhat, the Japanese market is expected to be in 1985 six times the size it was in 1966. Reserves of oil are insignificant at less than 20 million barrels in 1974. They have generally been declining and the trend seems likely to continue.

Japan is a country with little indigenous energy production. Oil production is insignificant; it remained constant over the past few years at about 5 million barrels p.a. The trend in oil output is expected to decline. Japan's reserve/production ratio is only about 4 : 1. Unless there are new discoveries, no significant additions in its domestic production are expected. Hopes of major discoveries on the continental shelf have been disappointing.

Crude oil imports in 1976 reached nearly 5 million b/d. In 1975 the Middle East provided about 78% of the Japanese imported crude oil supplies. Saudi Arabia was the largest supplier at 1.27 million b/d or 28%, followed by Iran at 1.12 million b/d or 25%. Indonesia, Brunei and Malaysia provided 15.2%.(74) In April - September 1976 Saudi Arabia, the Neutral Zone and the United Arab Emirates supplied nearly 46% of crude oil imports.(See Table V:50).

Deals by oil refiners like those concluded with Iraq, Abu Dhabi and Kuwait, deals with trading companies such as those with China, as well as government-to-government agreements will all play significant roles in the new supply structure of Japan.

TABLE V:50

Japan: Crude Oil Imports by Source

April-September 1976

Thousand kilolitres

		Per cent of imports	Estimated price increase from 1st Jan. 1977
Middle East			
Saudi Arabia*	42 581		
UAE*	14 889		
50% Neutral Zone*	2 602		
	60 072	45.74	5.0%
Iran*	24 841		
Iraq*	3 025		
Kuwait*	8 246		
50% Neutral Zone*	2 602		
Qatar	81		
Oman	4 466		
	43 261	32.93	10.0%
Middle East Total	103 333	78.67	7.1%
Africa*	1 909	1.45	10.0%
Asia			
Indonesia*, Malaysia and Brunei	22 368	17.03	7.0%
China	3 499	2.66	7.0%
USSR	56	0.04	7.0%
Others			
Venezuela*	135	0.10	10.0%
unspecified	60	0.05	7.0%
TOTAL	131 360	100.0	7.1%

* OPEC suppliers: in Asia only Indonesia is a member of OPEC.

Source: Petroleum Economist, February 1977, p. 50.

While measures have been taken to reduce the share in Japan's long-term energy supply, Japan is aware of the need to budget for steadily rising volumes of oil imports to 1985. The demand estimation committee of the Trade and Industry Ministry forecasts that Japan's oil demand will grow at 4 - 5% p.a. over 1976 - 1980. Thus it can be clearly seen that dependence on foreign supplies of oil cannot be avoided over the period till the mid-eighties.

Among the three main oil-importing regions, Japan, with only 12% self-sufficiency in energy and an insignificant oil production is most dependent on external energy supplies, particularly oil. (See Table V:51). Western Europe is less dependent than Japan with a 44% self-sufficiency in total energy in 1975. As for oil, the European self-sufficiency is only 5%. The U.S., compared to Japan and Western Europe, is in a better position. Its self-sufficiency in energy is 84%. Among the advanced countries of the west only the U.S. has substantial oil production of its own.

Western Europe as a region compared to the U.S. lacks most of the features the latter has. Europe neither produces, nor could produce more than a fraction of what it consumes. It may be able to raise its overall energy self-sufficiency somewhat by 1985, if the oil resources of the North Sea continue to be developed at a fast rate. According to a report by the Chase Manhattan Bank published in September 1976, Europe will have to satisfy as much as 95% of its oil needs with imports while all of Japan's needs will be imported. For the U.S., oil is expected to represent about 85% of all energy imports in 1985. (See Figures 8 and 9), for a visual comparison of the dependence on imported oil of the three major areas.

TABLE V:51

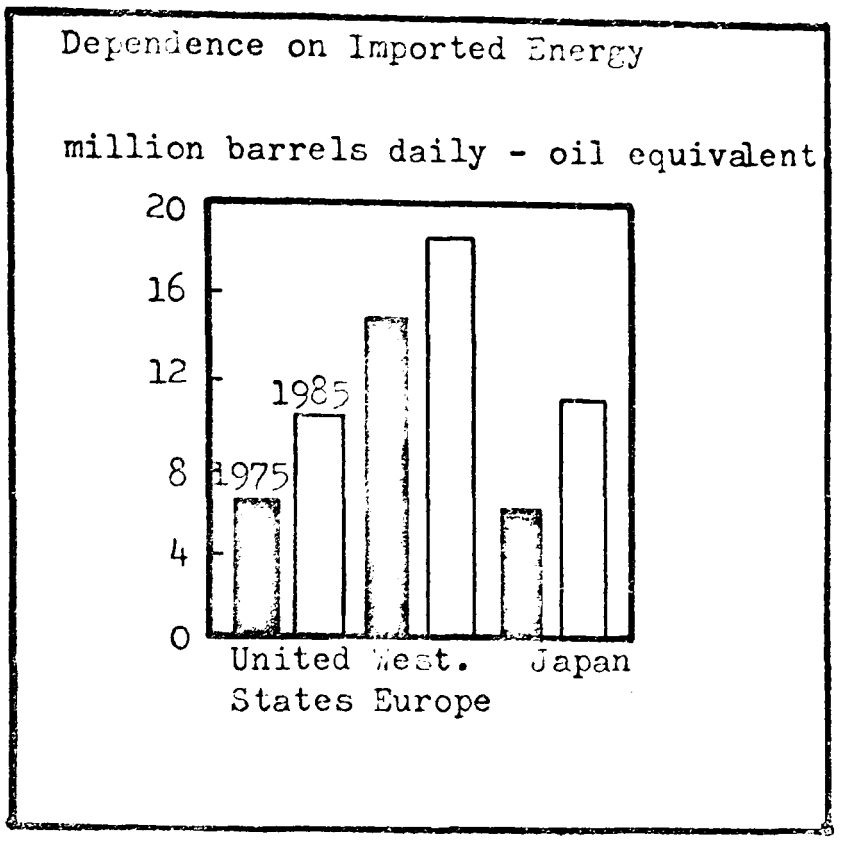
World - Energy Self Sufficiency 1973-1975

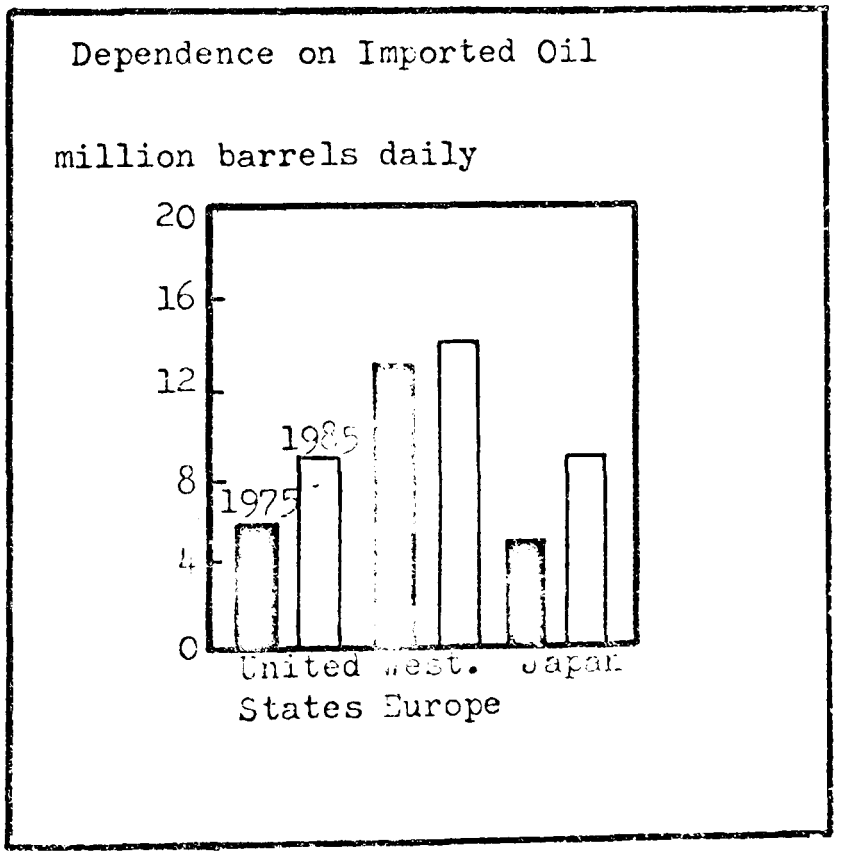
million b/d oil equivalent

	N. America		W. Europe		Japan		Other		World	
	1973	1975	1973	1975	1973	1975	1973	1975	1973	1975
Solid Fuels										
Production	7.7	7.9	4.6	4.4	0.3	0.3	3.6	3.9	16.2	16.5
Imports (Exports)	(0.6)	(0.8)	0.5	0.7	0.8	0.8	(0.7)	(0.7)		
% Self Sufficiency	108	111	90	86	27	27	124	122		
Oil										
Production	13.0	11.9	0.5	0.6	...	...	34.6	32.0	48.1	44.5
Imports (Exports)	6.2	6.4	14.3	12.1	5.5	4.8	(26.0)	(23.3)		
% Self Sufficiency	68	65	3	5	...	...	402	363		
Natural Gas										
Production	12.5	11.1	2.7	2.9	...	...	1.9	2.6	17.1	16.6
Imports (Exports)	...	...	...	0.5	0.1	0.2	(0.1)	(0.7)		
% Self Sufficiency	100	100	100	85	...	...	106	137		
Primary Electricity										
Production	3.0	3.5	2.1	2.6	0.3	0.5	1.2	1.2	6.6	7.8
TOTAL ENERGY										
Production	36.2	34.4	9.9	10.5	0.6	0.8	41.3	39.7	88.0	85.4
Imports (Exports)	5.6	5.6	14.8	13.3	6.4	5.8	(26.8)	(24.7)		
% Self Sufficiency	85	84	40	44	9	12	285	264		

Source: 1976 Energy Economics Seminar, held by the Institute of Petroleum, London, 14th - 22nd May, 1976.
Article: Downstream Developments 1973 - 1975 by C.P. Dalton.

FIGURES V:8 & 9





Source: Energy Report from Chase, The Chase Manhattan Bank, New York, September 1976, p. 7.

2. Projections of Oil Demand for the Period 1973-1983 for the three Major Oil-Consuming Markets, namely U.S.A., Western Europe and Japan.

In addition to the effects of the long recession in the industrialized countries on oil consumption, there is also the impact of the sharp rise in world oil prices in 1973 and 1974 on oil consumption. This situation has introduced new factors when assessing future world oil demand and future oil prices.

A number of studies have been undertaken during the past few years assessing possible growth patterns of the demand for energy, particularly oil, in the short and long terms. One study, which is a valuable piece of analysis, projects energy supply and demand for the OECD area in 1980 and 1985.(75) Another study, exploring the changing energy prospects in the three main OECD regions, has been undertaken by the World Bank.(76) Wide variations in demand for OPEC oil over the next ten years are a possibility found out by a recently published study.(77) Another study was concerned with the long-term price elasticity of demand for oil; it took into account smaller price increases than those of 1973 and 1974.(78) Other studies have been done recently on the short-term price elasticity of demand for oil in the U.S.(79)

A recent study adopted what is assumed to be a low price elasticity of -0.12 over a four-year period, 1974-1977, to analyze possible trends in energy demand for the three major OECD areas: U.S.A., Western Europe and Japan.(80) On the assumption that the price effects are evenly spread during the four years, the

incremental price elasticity each year would be -0.03.* Other studies on world energy and oil demand have also been done.

The purpose of the present chapter is to provide tentative estimates of the future demand for oil, both in physical and money terms, during the period 1973 - 1983 for the three major consuming regions, namely the United States, Western Europe and Japan. The study is confined to these particular markets because of their predominant share in world oil consumption, which exceeds 80% of the total. The chosen period is limited to ten years because over this era oil is expected to remain the main source of energy supply. Projections covering longer periods of time will be somewhat subject to a wide margin of error, since nuclear and/or other sources of energy could be developed in such a way that might affect the price and demand for oil significantly.

The methodology applied can be summarized as follows:-

First: Projections of total consumption of oil are made for 1983 depending on some hypotheses about the GNP growth rates (y) and the GNP Elasticities of Energy Consumption (α).

Second: Total indigenous supplies are estimated for the year 1983 under alternative assumptions concerning the rate of growth of domestic production (S).

Third: Total demand estimates are contrasted with domestic supply in order to estimate oil imports (I).

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* See Reference (86-d), vol. 2, Table 2C-1, p. 11 - the table indicates a price elasticity of -0.25 and -0.23 for the U.S. and Western Europe respectively over an 8 years period 1972-1980.

Fourth: By applying the actual ratio of OPEC oil imports to total oil imports (β), the demand for OPEC oil in physical terms is computed (I_{OPEC}) for the year 1983.

Finally: Oil revenues are calculated under alternative assumptions about oil price levels (Pt) and price elasticity of demand for energy (d).

Assumptions, Sources of Data and Limitations:

The assumptions made in the study and the sources of data as well as their limitations are the following:-

1) - The actual GNP figures for 1973, expressed in U.S. million dollars, are taken for the three regions from the U.N. Statistical Yearbook 1974 (Y_o).(81)

2) - Estimated annual growth rates of GNP for 1973-1983 are for the U.S. 4.8% High (y_1) and 3.5% Low (y_2); for Western Europe 6.6% High and 4.9% Low and for Japan 7.0% High and 5.3% Low.(82) These rates are assumed by Mikdashi, Z.* for the period 1975 - 1985 and are applied here for the period under study.

3) - The GNP elasticity** is assumed to be of the order of 1.18 for the U.S. This coefficient was derived from an examination of the relationship between GNP growth and energy consumption growth over the period 1965 - 1973.*** It is used here for projecting the rate of growth of oil consumption between 1973 - 1983, assuming that past trends (estimated for the period 1965 - 1973) will persist in the

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* See Reference (77).

** The GNP elasticity of demand for energy defined as the ratio of change in energy consumption over a one-percent change in GNP, i.e., the percentage change in energy consumption which corresponds to one-percentage change in GNP.

*** The same coefficient was used by Mikdashi in his projections. See Reference (77) p. 16.

future. The corresponding coefficients are 1.20 and 1.14 for Western Europe and Japan respectively.(83)

Limitations:- The relationship between GNP growth and oil consumption growth during 1973-76 is to a large extent distorted due to the drastic and sudden change in price which took place in 1973 and 1974 and this is likely to be misleading for projection purposes.

4) - Oil consumption growth rate p.a. (r): This is calculated by multiplying (α) by (y). ($r = \alpha y$).

U.S.A. $(r_1 = \alpha y_1) = 5.7\%$

$(r_2 = \alpha y_2) = 4.1\%$

Western Europe $(r_1 = \alpha y_1) = 7.9\%$

$(r_2 = \alpha y_2) = 5.8\%$

Japan $(r_1 = \alpha y_1) = 8\%$

$(r_2 = \alpha y_2) = 6\%$

5) - Actual oil consumption in 1973 (C_o) for the U.S., Western Europe and Japan was taken from OECD Energy Prospects to 1985.(84)

6) - Projected oil consumption for 1983(85) ($C_t = C_o e^{rt}$) where:

C_t = Oil consumption in 1983

C_o = actual consumption in 1973, the base year

r = estimated rate of growth of oil consumption p.a. (1973 - 1983).

U.S.A.	(1) High 30.3 million b /d	$r_1 = 5.7\%$ High
	(2) Low 25.8 million b /d	$r_2 = 4.1\%$ Low
Western Europe	(1) High 33.4 million b /d	$r_1 = 7.9\%$ High
	(2) Low 26.8 million b /d	$r_2 = 5.8\%$ Low

Japan	(1) High 11.6 million b /d	r_1 = 8% High
	(2) Low 9.5 million b /d	r_2 = 6% Low

Turning to the supply side, indigenous oil production has been estimated from several sources(86) for 1983, assuming two different growth rates of 3.8% high and a somewhat lower one of 2.2% for U.S.A. For Western Europe 24.8% high and 20% low. The growth rate is assumed to be zero for Japan.

The actual indigenous supply in 1973 = (Sd_o).

Assumed supply growth rate = High Sd_1, Low Sd_2.

Estimated supply $Sd_t = Sd_o e^{Sd^t}$ High $Sd_t = Sd_o e^{Sd_1 t}$

Low $Sd_t = Sd_o e^{Sd_2 t}$

7) - Actual indigenous supply in 1973

U.S.A. = approximately 9.2 million b /d.

Western Europe = 305 (000 bbl/d) or 0.3 million.

Japan = 14 (000 b /d (negligible).

8) - Assumed supply growth rate (87)

U.S.A. Sd_1 High = 3.8%

Sd_2 Low = 2.2%

Justification: The assumed growth rates (High, Low) seem reasonable given the fact that the annual growth rate of domestic production recorded for 1965 - 1973 is of the order of 3%.

For Western Europe: Sd_1 High = 24.8%

Sd_2 Low = 20%

For Japan the assumed supply growth rate is zero, because of the absence of oil resources. No indigenous supply is expected to develop over the period under projection.

9) - Projected indigenous supply in 1983 = $Sd_o e^{S_a t}$ where t = number of years 10.

U.S.A. High 13.4 million b /d

Low 11.4 million b /d

Western High 3.6 million b /d

Europe Low 2.3 million b /d

Japan Assumed indigenous supply growth rate of zero.

10) - Projected oil imports in 1983 = $S_{it} = C_t - Sd^t$

U.S.A. Case I Low demand - Low supply = 14.4 million b /d

Case II Low demand - High supply = 12.4 million b /d

Case III High demand - Low supply = 18.9 million b /d

Case IV High demand - High supply = 16.9 million b /d

Western Case I Low demand - Low supply = 24.5 million b /d

Europe Case II Low demand - High supply = 23.2 million b /d

Case III High demand - Low supply = 31.1 million b /d

Case IV High demand - High supply = 29.8 million b /d

Japan: All oil consumption is satisfied through imports.

11) - Actual oil imports from OPEC (β).

The ratio of oil imports from OPEC to total U.S. oil imports applied here is of the order of 93.3%. This ratio is obtained from Mikdashi* by averaging the actual ratios for 1969 - 1974. The

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* See Reference (77) pp. 22 and 23.

corresponding ratios for Western Europe and Japan are 92.8% and 98% respectively. The former constitute the average of the actual ratios for 1961 - 1973 and the latter for 1970 - 1973.

12) - Projected Oil imports from OPEC in 1983.

$$I_{(OPEC)_t} = \beta S_{ct}$$

U.S.A.	Case I	13.4 million b /d
	Case II	11.6 million b /d
	Case III	17.6 million b /d
	Case IV	15.6 million b /d
Western Europe	Case I	22.7 million b /d
	Case II	21.5 million b /d
	Case III	28.9 million b /d
	Case IV	27.6 million b /d
Japan	High =	11.4 million b /d
	Low =	9.3 million b /d

13) - Projected oil revenues in 1983 of OPEC =

$$R_{(OPEC)^t} = I_{(OPEC)^t}{}^{(P_t)}$$

(P_t) = estimated oil price for 1983.

The final assumptions relate to the price level and price elasticity* used for estimating oil revenues of OPEC from oil exports to U.S.A., Western Europe and Japan in 1983. Two assumptions are made with respect to the price level:-

(A) First: Price is assumed to remain in 1983 the same as in 1974,

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* A price elasticity of demand measures the percentage change in the quantity demanded with respect to one percentage change in price.

which is $ 11.25.*

(B) Second: Assuming a price increase of one-third of the 1974 price level, increasing to $ 15 by 1983. The price of oil increased actually from $ 11.25 in 1974 to $ 11.8 in 1975/76, implying a rate of growth of 4.88% p.a. The rate of growth used in this projection is somewhat moderate of the order of 3% a year.

The price elasticity of energy consumption:-

As for the price elasticity of energy consumption, two hypotheses are also made here:-

B(i) The first is that demand is perfectly inelastic with respect to price changes; that is a change in price will not affect the demand for oil. In other words, it is assumed that oil demand is determined by technical considerations.

B(ii) The second: The second assumption, which is more realistic, is that the price elasticity is relatively low. The coefficient applied here is of the order of -0.03.(88) This means that a change of 10% price rise will reduce oil imports by 0.3% a year, being about a fall of 3% after ten years. Thus, according to our assumption, a price change of 33.3% will reduce imports by 9.99% after ten years, i.e. by 10%.

The actual demand for U.S. oil imports in 1973 equalled eight million barrels a day. The actual demand for OPEC oil in 1973 equalled 7.4 million barrels a day.

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* See Reference (77), p. 3.

U.S.A.: Projected oil revenues in 1983 for OPEC in U.S. million dollars based on 1974 oil price of Arabian Light crude oil FOB Ras Tanura at $ 11.25 per barrel.

13 - A	Case I	150.8 million U.S. dollars
	Case II	128.3 million U.S. dollars
	Case III	198.0 million U.S. dollars
	Case IV	175.5 million U.S. dollars

13 - Bi. Projected oil revenues in 1983 for OPEC at a price of $ 15 with no price effect on oil imports

Case I	201 million U.S. dollars
Case II	186 million U.S. dollars
Case III	264 million U.S. dollars
Case IV	234 million U.S. dollars

13 - Bii. Projected oil revenues in 1983 for OPEC at a price of $ 15 with price effect on demand for imports

Case I	189.8 million U.S. dollars
Case II	159.9 million U.S. dollars
Case III	253.1 million U.S. dollars
Case IV	223.1 million U.S. dollars

Results:-

On the basis of the above assumptions, we have projected U.S. oil demand and OPEC oil revenues in 1983. The findings are presented in Table V:52. The demand projected is shown in column (12). The alternative cases show that demand will range from 11.6 (low demand - high supply) to 17.6 million b[illegible]/d (high demand - low supply). Revenues for such demand under the assumption of a constant price of

TABLE V:52

U.S.A.

(1) GNP 1973 Y_o	1,168,680 (in U.S. Million dollars)
(2) Estimated GNP Growth Rate p.a.	High y_1 - 4.8% Low y_2 -- 3.5%
(3) GNP Elasticity α	1.18
(4) Estimated oil consumption. Growth rate (r)	High r - 5.7% Low r - 4.1%
(5) Actual oil consumption in 1973. (C_o)	17,156 (000 bbl/d)
(6) Projected oil consumption for 1983 C_t	6A C_{t_1} (High) 30.3 million b /d 6B C_{t_2} (Low) 25.8 million b /d
(7) Actual Indigenous Supply in 1973. (Sd_o)	9.2 (million bbl/d)
(8) Assumed Supply Growth Rate (Sd)	High Sd_1 3.8% Low Sd_2 2.2%
(9) Projected Indigenous Supply in 1983. Sd.eSat	High 13.4% (million b /d) Low 11.4% (million b /d)
(10) Projected Oil Imports in 1983. (Sit = C_t - Sdt)	Case I 14.4 (million b /d) Case II 12.4 (million b /d) Case III 18.9 (million b /d) Case IV 16.9 (million b /d)
(11) Actual oil Imports from OPEC as a percentage of Total Oil Imports (B)	93.3%
(12) Projected U.S. Oil Imports from OPEC in 1983. $I_{(OPEC)}t$ = (BSct)	Case I 13.4 (million b /d) Case II 11.6 (million b /d) Case III 17.6 (million b /d) Case IV 15.6 (million b /d)
(13) Projected Oil Revenues of OPEC from Oil Exports to U.S. in 1983	
(a) Oil Price at U.S. $ 11.25 a barrel	Case I 150.8 (million US $) Case II 128.3 (million US $) Case III 198.0 (million US $) Case IV 175.5 (million US $)

Continued.....

(13) (b) Oil Price at U.S. ¢ 15 with no effect on oil imports	Case I	201 (million US ¢)
	Case II	186 (million US ¢)
	Case III	264 (million US ¢)
	Case IV	234 (million US ¢)
(c) Oil Price at U.S. ¢ 15 with Price Effect	Case I	189.8 (million US ¢)
	Case II	159.9 (million US ¢)
	Case III	235.1 (million US ¢)
	Case IV	223.1 (million US ¢)

1974 will amount to ℔ 128.3 million (low demand - high supply) and ℔ 198.0 million (high demand - low supply) (column 13).

With the price change to ℔ 15 per barrel, with no effect on demand, total revenues will be as low as ℔ 186 million and as high as ℔ 264 million.

With the price change to ℔ 15 per barrel, with price effect, total revenues will be as low as ℔ 159.9 million and as high as ℔235.1 million.

Western Europe:

(A) Projected oil revenues in 1983 for OPEC in U.S. million dollars based on 1974 oil price of Arabian Light Crude FOB Ras Tanura at ℔ 11.25 per barrel.

Case I	255.4	million dollars
Case II	241.9	million dollars
Case III	325.1	million dollars
Case IV	310.5	million dollars

(Bi) Projected oil revenues in 1983 for OPEC at a price of ℔ 15 with no price effect on energy imports

Case I	340.5	million dollars
Case II	322.5	million dollars
Case III	433.5	million dollars
Case IV	414.0	million dollars

(Bii) Projected oil revenues in 1983 for OPEC at a price of ℔ 15 with price effect on demand for imports

Case I 321.0 million dollars

Case II 300.0 million dollars

Case III 412.5 million dollars

Case IV 393.0 million dollars

Results:-

On the basis of the above assumptions, Western European oil demand and OPEC oil revenues in 1983 have been projected. The findings are presented in Table V:53. The projected demand is indicated in column (12). The alternative cases show that demand will range from 21.5 million b./d (Low demand - high supply) to 28.9 million b./d (High demand - low supply).

For such a demand, revenues under the assumption of a constant price of 1974 will amount to $ 241.9 million (low demand - high supply) and $ 325.1 million (high demand - low supply).(Column 13).

At a price of $ 15 per barrel, with no effect on demand, total revenues will range from $ 322.5 million (low demand - high supply) to $ 433.5 million (high demand - low supply).

With the price change to $ 15 a barrel, with price effect, total revenues will be as low as $ 300.0 million and as high as $ 412.5 million.

Japan:

(A) Projected oil revenues in 1983 for OPEC in U.S. million dollars based on 1974 oil price of Arabian Light FOB Ras Tanura at $ 11.25 per barrel.

TABLE V:53

Western Europe

(1) GNP 1973 Y_o	956,200 (in million U.S. dollars)
(2) Estimated GNP Growth Rate p.a.	High y_1 6.6% Low y_2 4.9%
(3) Elasticity α	1.20
(4) Estimated oil consumption Growth Rate (r)	High r_1 7.9% Low r_2 5.8%
(5) Actual Oil Consumption in 1973. (C_o)	15,155 (000 b/d)
(6) Projected Oil Consumption for 1983 (C_t)	6A High C_{t_1} 33.4 (million b /d) 6B Low C_{t_2} 26.8 (million b /d)
(7) Actual Indigenous supply in 1973. (Sd_o)	0.3 (million bbl/d)
(8) Assumed Supply Growth Rate (Sd)	High Sd_1 24.8% Low Sd_2 20.0%
(9) Projected Indigenous Supply 1983. $Sd_o eSat$	High 3.642 (million b /d) Low 2.3 (million b /d)
(10) Projected Oil Imports in 1983. ($Sit=C_t - Sd^t$)	Case I 24.5 (million b /d) Case II 23.2 (million b /d) Case III 31.1 (million b /d) Case IV 29.8 (million b /d)
(11) Actual Oil Imports from OPEC as a Percentage of Total Oil Imports (B)	92.8%
(12) Projected Oil Imports from OPEC in 1983. $I_{(OPEC)}{}^t = (BSct)$	Case I 22.7 (million b /d) Case II 21.5 (million b /d) Case III 28.9 (million b /d) Case IV 27.6 (million b /d)
(13) Projected Oil Revenues of OPEC from Oil Exports to W. Europe in 1983.	

Continued.....

(13) (a) Oil Price at US ¢ 11.25 a barrel	Case I	255.4 (million US ¢)
	Case II	241.9 (million US ¢)
	Case III	325.1 (million US ¢)
	Case IV	310.5 (million US ¢)
(b) Oil Price at US ¢ 15 with no effect on oil imports	Case I	340.5 (million US ¢)
	Case II	322.5 (million US ¢)
	Case III	433.5 (million US ¢)
	Case IV	414.0 (million US ¢)
(c) Oil Price at US ¢ 15 with price effect	Case I	321.0 (million US ¢)
	Case II	300.0 (million US ¢)
	Case III	412.5 (million US ¢)
	Case IV	393.0 (million US ¢)

High 128.3

Low 106.9

(Bi) Projected oil revenues in 1983 for OPEC at a price of $ 15 with no price effect on oil imports.

High 171.0

Low 142.7

(Bii) Projected oil revenues in 1983 for OPEC at a price of $ 15 with price effect on demand for imports.

High 163.5

Low 132.0

Results:-

On the basis of the above assumptions, Japanese oil demand and OPEC oil revenues in 1983 have been projected. The findings are shown in Table V:54. The projected oil demand is indicated in column (12). The alternative cases show that demand could be as high as 11.4 million b /d and as low as 9.3 million b /d.

Revenues for such a demand under the assumption of a constant price of 1974 will range from $ 128.3 million in the high case to $ 106.9 million in the low case.

With the price change to $ 15 per barrel, with no effect on demand, total revenues will be $ 171.0 million in the high case and $ 142.5 million in the low case.

With the price change to $ 15 a barrel, with price effect, total revenues will be $ 132.0 million in the low case and $ 163.5 million in the high case. (Column 13).

TABLE V:54

Japan

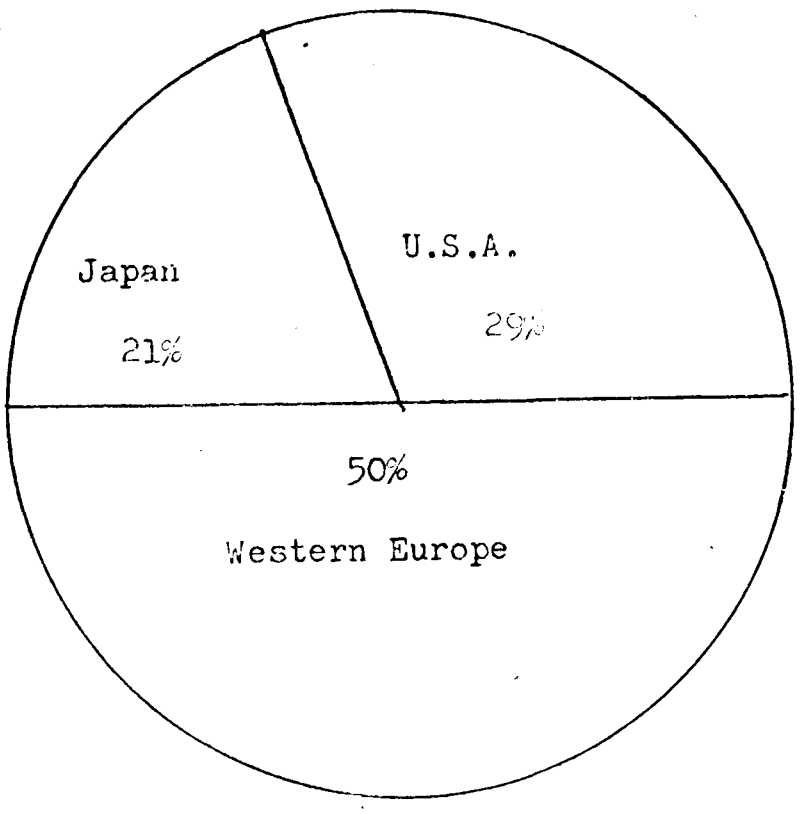
(1) GNP 1973 Y_o	336,680 (million US $)	
(2) Estimated GNP Growth Rate p.a.	High y_1	7.0%
	Low y_2	5.5%
(3) Elasticity α	1.14	
(4) Estimated Growth Rate of oil consumption (r)	High r_1	8%
	Low r_2	6%
(5) Actual Oil Consumption (C_o) in 1973	5,200 (000 bbl/d)	
(6) Projected Oil Consumption in 1983. (C_t)	6A High C_{t_1}	11.0 (million b /d)
	6B Low C_{t_2}	9.5 (million b /d)
(7) Actual Indigenous Supply in 1973 (Sd_o)	14 (000 bbl/d) (Supply negligible)	
(8) Assumed Supply Growth Rate (Sd)	High Sd_1) Low Sd_2)	Growth Rate is assumed to be zero.
(9) Projected Indigenous Supply in 1983. $Sd_o eSat$	High) Low)	Neglect the supply side.
(10) Projected oil Imports in 1983. ($Sit = C_t - Sd^t$)	All demand is imported.	
(11) Actual Oil Imports from OPEC as a percentage of Total Oil Imports (B)	98%	
(12) Projected Oil Imports from OPEC in 1983. $I_{(OPEC)}t = BSct$)	High	11.4 (million b /d)
	Low	9.3 (million b /d)
(13) Projected Oil Revenues of OPEC from Oil Exports to Japan in 1983		
(a) Oil Price at US $ 11.25 per barrel	High	128.3 (million US $)
	Low	106.9 (million US $)
(b) Oil Price at US $ 15 per barrel with no effect on imports	High	171.0 (million US $)
	Low	142.5 (million US $)
(c) Oil Price at US $ 15 per barrel with price effect	High	163.5 (million US $)
	Low	132.0 (million US $)

Estimated Expenditure on Oil Imports From OPEC in 1983:

At a price of $ 15 and low price elasticity, the average of cases I, II, III and IV was taken for U.S.A. and Western Europe and that of case I and II for Japan. It was found out that the estimated cost of U.S. oil imports from OPEC in 1983 would be $ 202 million a day, that of Western Europe at $ 357 million a day and for Japan $ 148 million a day. The corresponding percentages would be 29% for U.S.A., 50% for Western Europe and 21% for Japan. (See Figure V:10).

FIGURE V:10

Estimated Expenditure of Oil Imports From OPEC in 1983



3. Policy Implications of the Projections and a Brief Analysis Comparing the Position of the Three Markets Relative to Their Future Oil Imports.

Policy Implications of the Projections:

1) The demand for oil under any assumption will continue to be large. On the average, the three regions, namely the United States, Western Europe and Japan, are together likely to import about 50 million bbl/d in 1983.

2) Because of the low price elasticity of demand a higher price than the prevailing one is likely to raise the import bill significantly for the three regions. The oil revenues from smaller volumes at higher prices are likely to be larger than earnings from larger volumes at lower prices. Thus from the OPEC point of view, a rise in price with smaller volume of sales is more advantageous in terms of earnings than a lower price with greater volume of sales. Accordingly, it becomes an essential task of the oil-producing countries in formulating an optimum price policy over the period under study to examine the prospects for energy production outside the OPEC area, particularly with respect to cost and time-phasing elements in the longer term. The OPEC countries will be less likely to lower the price of oil in the absence of definite programmes for the development of energy production outside the OPEC area.

On the other hand, the burden of oil imports on the balance of payments of the three areas will be of great magnitude. This calls, therefore, for adjustments in both internal and external policies of the countries concerned. These may comprise the following:-

(a) Conservation in energy consumption, especially for non-production uses, at least in the immediate future. Cooperation on energy conservation and increased production will help reduce dependence on imports.

(b) Orientation of scientific research towards the discovery and development of alternative sources of energy at reasonable costs.

(c) Increase in visible, as well as invisible, exports via a rise in productivity and reduction in costs to compensate for the increase in the import bill.

(d) Greater cooperation between the consuming countries themselves and between them, as a group, and the producing countries:

(1) The consuming countries' cooperation in scientific research to help use technological and financial resources efficiently.

(2) Cooperation in increasing the energy trade between the consuming countries themselves, between countries rich in domestic energy supply and countries with very little indigenous energy, to avoid problems of developing the most expensive indigenous energy sources.

(3) Financial cooperation to solve their problems of their deficits vis-a-vis the OPEC countries. The I.M.F. and World Bank here play a considerable role in supplying recovery loans.

(4) As for the producing countries, they aspire to diversify their economies to avoid their sole and heavy dependence on oil revenues. They wish to diversify their export capabilities. The consuming

countries with their scientific and technoligical experience could contribute a great deal through their active participation and concern over the development programmes of the OPEC countries.

A Brief Comparison of the Future position of the Major Oil Markets Relative to their Future Oil Imports:-

1) Japan:

Japan will be hit very hard:-

(a) It has very little indigenous energy production and insignificant domestic oil production.

(b) Its heavier reliance on OPEC oil imports. Japan's cost of oil imports from OPEC is $ 148 million a day in 1983 or about 10% of its GNP. The cost to the U.S. is $ 202 million or only about 4% of its GNP. Upon considering that the GNP of Japan is one-fourth that of the U.S.A., the evidence of the heavy burden of oil imports on Japan's balance of payments is clear.

(c) Its need to keep the cost of production low in order to compete with other Asian neighbours in the world market. A rise in the price of oil increases the costs of production of commodities owing to oil being a major input. This will result in a change in the domestic price which may reduce its ability to expand exports considerably, because of the severe competition of which Japan suffers at present from its neighbouring countries, e.g. Taiwan, Hong Kong, Singapore, Philippines, South Korea, Malaysia, etc. Japan's dependence on outside markets puts the country in a weak position, unlike the U.S. which enjoys a very large domestic market.

2) The United States:

(a) The U.S. is less likely to be affected as it pays only 4.2% of its GNP for oil exports from OPEC in 1983.

(b) Its huge financial reserves that enable it to undertake research and develop new energy sources extensively.

(c) Its rich energy potential and its new reserves, like Alaska.

(d) Its advanced technology base for developing new energy sources.

(e) The huge financial resources coupled with its political influence enable the U.S. to exercise more influence on the OPEC.

(f) Its high potential for energy saving. The U.S. holds relatively greater opportunities for conservation on fuel consumption than Western Europe and Japan. At present a large amount of demand for oil is for consumption purposes, e.g. heating. Thus a drastic cut could be made, in comparison to Western Europe and Japan where energy is largely used for production.

3) Western Europe:

Western Europe, in comparison to the U.S. and Japan is in a middle position. Western Europe is not so fortunate as the U.S. with respect to the points mentioned above, yet she is in a better position than Japan. Western Europe's GNP is three times that of Japan but the import bill is almost only double that of Japan. Western Europe's oil imports from OPEC in 1983 will cost $ 357 million a day or about 8% of its GNP, whereas Japan is paying 9% of its GNP. The reason why Western Europe is in a somewhat favourable position vis-a-vis Japan is because of the North Sea oil which is expected to develop at a very rapid rate. It should be noted here that the domestic supply is assumed in the study to change by an

average rate of 20 - 24.8%. The position of Western Europe then, depends heavily on the prospects of the North Sea oil.

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$$Y_t = Y_o e^{rt}$$

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CONCLUSION

In the atmosphere of uncertainty that surrounds the behaviour of the international oil market, it is very difficult to speculate on the future of oil prices, especially in the long run. A number of conclusions on crude oil price movements between now and the mid-eighties based on the discussions and analysis of the previous chapters follow:-

A fall in the oil price seems to be unlikely. Despite their differing views on the pricing of oil, due to their varying financial needs and absorptive capacity of the oil revenues, the OPEC countries regard their unity to be essential to achieve their final goals. They were able to keep their prices high during 1974 - 1975 when the market was shrinking. The OPEC members do not compete for markets mainly because of the fact that major producers like Saudi Arabia and Kuwait have enough revenues to meet their financial needs for several years to come. As the quantity of production desired by the producing countries for their long-term economic needs might be less than the quantity required by the consumers, the pressure on prices to be pushed up would be increased.

In the short-term, up till the mid-eighties, there will not be any significant increase in the Middle East oil price, certainly not of the magnitude of the price rise of 1973 and 1974.

The only logical conclusion is that the price of oil will continue to rise gradually between now and the mid-eighties, mainly

due to the following:-

The long-term trend is a steadily growing demand for oil. The United States will be importing large quantities mainly due to inadequate energy policies of the U.S. government and declining indigenous oil production and most important of all the fast economic recovery underway. Demand for oil by the United States will be matched by Western Europe and Japan who will be almost totally dependent on imported oil for their supplies.

•

The price of oil will continue to go up in the short-term due to world inflation. As long as the prices of goods imported from the industrialized countries by the OPEC countries continue to rise, the producers will attempt to raise the oil price to compensate for the loss in the purchasing power of their oil revenues. On the other hand, if world inflation is to continue for long at recent rates, costs of alternative energy would rise fast; this would delay the emergence of substitutes for OPEC oil.

The oil-consuming countries will coordinate their energy policies with the aim of reducing dependence on imported oil, following conservation programmes which may save a considerable amount of energy and developing oil sources outside the OPEC area and oil alternatives. The impact of such measures on the international market, if they are put to effect, will be felt in the long run rather than in the medium term.

As the price of oil in the long run is largely determined by

the cost of alternative energy sources, certain points on this question can be made:-

There are varying opinions on how much oil remains to be found and when alternative supplies will be phased into the world energy picture. There are technical and economic limits to the possible contribution of indigenous energy sources in the consuming areas. The time needed for the establishment of energy production capacity in the consuming areas is very considerable and expenses are enormous. Accordingly, alternatives to oil cannot be available in sufficient quantity to have an effect on market prices in the short run. Such effects will possibly be reflected on oil price levels in the future.

Until the mid-eighties oil will remain the dominant fuel in the world energy market. The present energy picture will not change substantially between now and the mid-eighties.

The bulk of expansion in export capacity during the mentioned period will have to come from the Middle East Gulf area where 55% of world oil reserves are found. However, it has been revealed by current estimates of world production that oil reserves are not sufficient to keep pace with oil consumption growth. Significantly, the importance of oil for energy and non-energy uses is likely to increase in the short run. Additionally, world economies are recovering and expanding, though more slowly than they would have done if oil had stayed cheap.

The pricing decisions need to be made in the light of today's market and today's non-OPEC alternatives. Future oil price policy must be to establish price levels that would seek a balance between the individual member countries' views, price levels that are within the ability of the consumers to pay and which give enough incentives to producers to produce, to achieve also a balance between the short term and the long term benefits and at the same time to ensure that the real value of oil is maintained.

The way to stabilize the oil price would be the adoption of a system of production rationing. This would be achieved either through an agreement reached between the OPEC countries themselves or between the producing countries and the consuming countries. Such an agreement would be of benefit to both groups. For the producers to ensure the real value of their oil and to avoid any competition for markets. For the importing countries, a guarantee against any sudden increases in the price of an essential commodity to their economies. A form of indexation as a way of keeping the real price stable should really be part of any agreement reached between the importing and exporting countries. The protection of the oil price against fluctuations in international currency relationship may be the most important problem to be tackled in any future meeting between the producers and the consumers. It would help to negotiate for a stable oil price, if certain progress is achieved in the international monetary sphere.

APPENDIX

The following summarizes the views of senior officials of oil companies, OPEC and the Ministry of Petroleum and Mineral Resources in Saudi Arabia and the Ministry of Oil in Kuwait, expressed in interviews conducted by the researcher during visits to the major oil companies involved, OPEC Headquarters in Vienna, Saudi Arabia and Kuwait. The researcher, who is an official in the Iraq Ministry of Oil, did not find it necessary to make specific visits to Iraq to ascertain official policy there.

Saudi Arabia's Oil Policy - Current and Future Directions

Comments by M.F. Al-Husseini, the Director General of the Economic Affairs of the Ministry of Petroleum and Mineral Resources. (Translated from the Arabic).

Demand for oil will continue to rise in the foreseeable future. Saudi Arabia is expected to provide 30% of the expected increase. The Saudi response to an increase in world oil demand is due to the country's feeling of moral responsibility towards meeting world oil requirements. The level of oil production from Saudi Arabia's viewpoint is primarily dependent on demand for oil. Saudi Arabia, however, is producing over and above its internal requirements. For the development plan of 1975 - 1980, it has been estimated that the country needs to produce 5 million b/d, to cover costs of the plan, increasing to 7 - 8 million b/d by 1980. Currently, Saudi Arabia is producing more than 8.5 million b/d, which means that the country is overproducing and consequently allowing for faster depletion of resources, the accumulation of income that is subject to inflationary pressures and adding more pressure to the world monetary crisis.

The producing countries will sell their oil to satisfy the essential oil requirements of the consumers. They are not obliged to sell oil for purposes of stockpiling by the consumers. This issue could be an item to be discussed in any prospective meeting between the producers and the consumers.

In relation to oil prices, Saudi Arabia has taken a moderate

stand. This moderation is due to Saudi Arabia's responsible feeling as a member of the international community. This policy, however, will be abandoned if unusual conditions arise such as:-

1) - The industrial countries prove unable to control the galloping inflation.

2) - If there is an energy crisis.

3) - Consumption increased unnecessarily beyond a level that Saudi Arabia can tolerate.

There are several ways to reduce demand for oil; one way is to raise prices sharply. Saudi Arabia prefers to reach an agreement with the consumer on a policy for conserving oil and finding alternative energy policies which help complement the production of oil without necessarily affecting the economies of the consuming countries. There must be more conservation everywhere. It is indeed very wasteful to use oil as energy in the first place. There will be no problem in marketing oil from a low cost producing country like Saudi Arabia. Demand in the future for oil as an energy source or as a raw material will be sufficient to absorb all that Saudi Arabia wants to sell.

At present Saudi Arabia's view is not so much to raise prices as much as it is to improve differentials. This, in the Saudi view, would correct the price structure, making more crude available by taking pressure off light crudes and letting demand shift a bit to medium and heavy oils, until the world economy picks up.

Saudi Arabia believes that the rise in the oil price will be

gradual over the coming five years. Beyond the mid-eighties it is very difficult to predict oil prices because other energy sources will come into the picture. The basic factors that govern the Saudi price policy are:-

1) - World inflation and its effect on the purchasing power of the oil revenues and the cost of imported goods from the West.

2) - The supply/demand condition.

3) - The cost of other energy sources in the longer term.

4) - The long-term GNP growth rates in the consuming countries.

Saudi Arabia believes that the prevailing prices for oil are not sufficiently high to induce a massive development of non-OPEC supplies as well as other energy sources. On the other hand, oil prices should not be raised in a way which would reduce demand for oil and consequently weaken OPEC's position.

Saudi Arabia feels its duty to accelerate its development programmes. The country is also a contributor to a number of development projects on an international scale like the IMF, the Islamic Bank, OPEC funds. The Saudi s feel that the international community should work to remove any imbalances in the world economy, that this should be the objective of any future meeting between the developed and developing countries.

Present and Future Directions of Kuwait's Oil Policy

Comments by Dr. M. Naseer, the Assistant Under-Secretary of the Ministry of Oil. (Translated from Arabic).

About 90% of the total government revenues for the year 1975 - 1976 was contributed by oil. This heavy reliance of the Kuwaiti economy on a sole commodity makes the country vulnerable to changes affecting this commodity, whether such changes be on a local scale, such as if output is reduced or the time of oil depletion draws near, or on an international scale, if world oil demand is reduced.

The production policy of Kuwait over the coming few years is based on the following considerations:-

1) - Oil conservation: this policy aims at saving oil for future generations, as oil is depletable and reserves are limited.

2) - Financial needs: Kuwait has to spend $ 15.2 billion under its 1976/77-1980/81 Development Plan. Additionally, Kuwait is committed to fulfil its financial obligations to Arab and other developing countries.

3) - Kuwait feels a moral obligation to supply the world market with oil.

Kuwait is willing to provide the consumers with their oil requirements provided that the consuming countries pursue policies aiming at fighting inflation and agree to link oil prices to a certain indicator. Kuwait is for a policy of stabilizing oil prices. This means firstly, determine the real value of oil and compensate for any decrease in the purchasing power of the oil

revenues, by linking the price of oil to certain criteria such as the cost of imports, the cost of other energy sources, fluctuations in the values of exchange currencies and depletion of oil reserves.

At present, oil is undervalued and prices should be adjusted upwards. Kuwait's main objective is to maintain the unity of OPEC and accordingly is ready to support any decision undertaken by the OPEC member countries with respect to this matter.

National control over the oil industry stems from the government's determination to exercise complete control over production and price policies that give top priority to national interests. The marketing policy, which takes this point into account aims at:-

1) - Less reliance on oil companies.

2) - Increase national control over the marketing aspect of the oil industry.

3) - Search for new markets for oil exports.

4) - Demand more on long-term contracts to guarantee exports against severe market fluctuations.

As oil is a commodity of which the world is increasingly in need, it is believed that oil has become the basis for the establishment of a world economic order based on a more balanced relationship between the industrialized countries and the developing countries.

OPEC's Viewpoint

Comments by Mr. M. Al-Rashed, A Senior Economic Analyst of the Economic Department, OPEC. (Translated from Arabic).

Oil prices will continue to rise over the coming few years. Rising demand for oil and rising inflation in the industrial countries are two major causes for an increase in oil prices.

The economic considerations that determine the OPEC price policy are:-

1) - Oil is a depleting resource.

2) - Major future oil discoveries are limited.

3) - The alternative energy sources are still uneconomic.

4) - World inflation.

The price of oil has very little effect on world inflation, no more than 4 or 5% at most. The rate of inflation varies from one country to another, ranging between 15-20% in 1976, depending on the economic and political conditions of the country.

The OPEC countries welcome the development of non-OPEC oil or other alternative energy sources, because this will ease the pressure on the OPEC countries to produce more than they require. Up till now there are no economic indications that other energy sources compete with oil.

A production programme for the OPEC countries serves the interests of the producers. The aim of a production programme is

to conserve oil for the people who are the owners of their countries' wealth, and save oil for future generations, and avoid any conflict among the producers that might arise because of the price differentials. Additionally, by means of a production programme, the problems created by stockpiling will be avoided.

From an economic point of view, the two price tier which resulted from the OPEC Doha meeting of December 1976 is not in the interest of the producers. The buyers will switch to cheaper oil, and the producers with dearer oil will lose some of their markets. The producers who favoured a 10% price rise will experience a drop in demand. If this condition persists, buyers will switch to buy from Saudi Arabia and the Emirates, these countries will sell all they can and what is still required by the consumers will be obtained from the rest of the producers. Additionally, the producers, with a higher price for oil will get less revenues than they realized before the price increase (of December 1976). Such countries, however, will be in a better economic position in the future because their oil wealth will be conserved for future generations. It is more logical that the producers, in a prospective meeting, fix one price for oil.

The Oil Companies' Viewpoint of the Oil Market

A Viewpoint from a Shell Spokesman.

The oil companies now have no influence on future price movements. The oil producers will be able to keep the price structure, at least through 1980 and perhaps beyond. There is more weight in Saudi Arabia's position, and that country's interest is to sell less and less of its oil. The strength of OPEC is primarily derived from the fact that it is made up of two groups, the first group would like to increase production but is unable to do so because of physical limitations; and the second group is able to expand production but is not willing to do so because the marginal value of doing so is zero.

Oil prices have been fairly stable in 1973 - 1975. However, since prices throughout the world are rising rapidly, the price of crude oil could rise in parallel to world inflation. In other words, inflation plays a role in price increases. Prices, therefore, might go up in the long run mainly due to the commanding position of OPEC, the rising cost of discovering and developing new oil sources, world inflation and the overall world reserve situation.

There must be a ceiling to the price of oil, but where the ceiling is, it is very hard to say. A price ceiling is connected with the economic activities in the consuming countries and with the cost of alternatives, which are still more expensive than oil. With respect to an agreement reached between the producers and the consumers on the long-term price of oil, the belief is that there is

no indication that such an agreement will take place because there is no indication of what to negotiate.

A Viewpoint from a B.P. Spokesman.

Although the oil companies have no more influence on setting crude oil prices, they have an indirect influence on such prices through their control of products prices. In the short run, oil prices could remain relatively stable, as there is an indication of this at present. The period from 1974 almost to the present has witnessed a fairly conservative market on prices. Inflation is a force in putting off the time when oil prices fall. The strength of the oil producers is partially derived from the rapid inflation in the West and this inflation is delaying the emergence of substitutes for OPEC oil. In such circumstances the oil producers must be expected to press hard for crude prices to be linked to some inflation indicator for their imports of manufactured goods and also for protection against currency depreciation by some means such as adjusting dollar crude prices against SDR's.

On the other hand, it is very difficult for the oil producers to agree on production quotas as a means of stabilizing output. If prices rise substantially, consumers will reduce demand. If demand goes down, all OPEC member countries will agree to reduce production, the producers could go down to 20 million b/d and still maintain their price level. In 1975 demand overall was depressed, but price reductions on crudes particularly depressed, resulting from a reduction in demand, like Mediterranean crudes which were overpriced because of lower freight rates, or extended credits

offered by the producers have been considered minor adjustments which have not disturbed the general price structure. Although there is plenty of oil to be developed, there is no sign of alternatives to OPEC oil in the foreseeable future, as such alternatives cost much more than oil.

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