Chapter 1

"Global Oil Market in Eighties: An Overview"
The eighties marked a distinct phase in the evolution of the global oil market. Unlike the seventies, when the supply side dictated the terms and references of the market, it was the demand side which obtained the ascendancy in the eighties bringing a qualitative change in the behaviour of the global oil market. It is observed that "1980s featured a reverse swing of the pendulum, because the soaring oil prices of the seventies reached their peak, before falling sharply in both real and nominal terms in the eighties". The transformation of the market in favour of buyers can be explained by looking at the demand and supply side along with the structural changes in the industry itself. The demand for oil has declined mainly due to two factors: Recession and the conservation/substitution in the consuming countries. The supply side was influenced by the rise of non-OPEC suppliers namely North Sea, Mexico and Oman. In addition, a few other important factors having influenced the behaviour of oil market include changes in the net back prices; Development in the spot market; downstream operation

and inventory and storage. A brief review of these factors is given below to analyze the behaviour of the oil market in the eighties.

Decline in demand

(I) Recession: The general trend of energy consumption particularly oil since late 1979 has been declining due to long period of economic recession in the industrialized nations. The table 1 shows that overall global oil consumption has registered negative decadal growth between 1979-1989.
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<td>24894 2356.1 2255.5 2166.8 2151.1 2197.3 2180.2 2248.8 2290.9 2378.3 24207+1.8%</td>
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As it is evident from the above table that global oil consumption declined during the eighties. During 1979-89, the oil consumption registered negative growth - 1.39%. As the table 1 shows that most of the countries had suffered a decline in their consumption in 1979-89. The regional growth rate hide wide variation from one country to another. The drastic fall in consumption for energy in general and oil in particular, raised an important question as to what extent this could be attributed to the world economic recession? And how the changes in the economic activities could affect energy and oil consumption. The energy consumption has been found to be highly sensitive to any change in GNP. It is noted that in the period of recession, the oil consumption declined faster than that of GNP/GDP, whereas in the period of prosperity, the rate of growth in energy consumption especially oil has been higher. This positive correlation between energy consumption and GNP/GDP growth led during the post war period to generally high energy coefficients.

particularly in case of oil in the industrialized countries. In the early phases of industrial reconstruction of Western Europe and Japan, such coefficients had surpassed the unity, so that an increase of 1 % in GNP would bring much higher rate of increase in oil consumption. However, after 1973 price increases and especially after the successive price of 1979/80, these coefficients had dropped to less than half unity in many of the industrialized countries. This indicates that oil consumption had become less-sensitive to the change in GNP/GDP performance. 3

Short-time factors like increase in the valuation of US dollar vis-á-vis other currencies had also contributed significantly to the general stagnation of oil consumption in the world. It meant higher cost of oil imports in terms of local currencies in the non-dollar areas. Increasing costs were more strongly felt by countries whose currencies depreciated the most vis-a-vis the US dollar or those with greater external deficits. 4 In October 1981 when OPEC prices

3. Ibid, p. 4.
4. Ibid, p. 5.
reunified, is taken as the base, the strengthening of the US dollar has had the effect of increasing the purchasing power of the price of $34/b to about $37.25/b by February 1983 i.e. about 10% increase. This net gain in purchasing power for OPEC was caused by the change in exchange rates. It was imposed in a period of economic recession a further constraint on oil consumption because these increased costs of energy input could not be absorbed by the already performing low level economies.5

The second price shock of 1979-80 had affected the energy consumption of developing countries. The problem for these countries was not only the impact of price on consumption due to the changes of energy coefficient or intensities, but more the impact of these price increase on their external balance of payments. Most developing countries were suffering from massive external debt because they had tendency to invest more capital than their internal savings. The heavy external debt of these countries were existed prior to the oil price increase but it was further aggravated due to price increase. Between 1978 and 1981, the value of net oil

5. Ibid, p. 5.
imports of these countries almost was tripled, increased from about $16 bn to $45 bn. With this sudden rise in their oil bill, along with other factors, these countries had to face an increase of $45 bn in their external debts during the same period.\textsuperscript{6} These countries adopted severe measures to decrease their imports, especially oil due to the growing balance of payment deficits. That is why between 1979 and 1989 oil consumption in the developing countries had declined and registered negative growth -2.75\% as it is evident from the table 1.

(II) Conservation and Substitution :->

Conservation and substitution had played a key role for the decline in oil demand during the eighties. Conservation is concerned with using less energy. It is the result of technical and economic evolution of energy consumption in a country. The contributing factors to the attitude of change were the price and availability of energy in relation to other goods, the climate, the availability of different

\textsuperscript{6} Ibid, p. 6.
fuels, the supply of capital and technical skills and the cultural traditions. Consumers made changes due to the rising energy prices. They invest in a process by saving energy and buying more efficient appliances. Consumers may abandon certain methods of using energy and shift to something completely different.  

Following the oil price increase of 1973 and subsequent recession in the oil market, the industrialized countries responded by energy saving. The world in general and industrialized countries in particular had felt the necessity of oil conservation for the first time when the first oil shock occurred. The objective of energy policy of these countries was to reduce dependence on oil to a sufficient extent. It would allow normal economic forces of substitution.  

Substitution:  
The substitution of oil to other sources of energy was another factor effecting the demand for oil. Since 1973,  

8. Ibid, p. 80.
many industrialized countries have taken steps to reduce the dependence on imported oil by improving the use of other sources of energy like coal, gas and nuclear power. This was also one of the factors of oil price collapse of 1986. Due to substitution measures, the percentage share of oil in total primary energy requirement (TPER) declined from 52.2% in 1973 to 49% in 1979 and 43.3% in 1984. The table no. 2 substantiates these facts.

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td>Oil</td>
<td>52.2</td>
<td>49.7</td>
<td>44.6</td>
<td>43.8</td>
<td>43.3</td>
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<td>21.3</td>
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<td>25.0</td>
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<tr>
<td>Gas</td>
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<td>19.7</td>
<td>19.9</td>
<td>19.3</td>
<td>19.4</td>
</tr>
<tr>
<td>Nuclear</td>
<td>1.2</td>
<td>3.2</td>
<td>4.3</td>
<td>4.7</td>
<td>5.2</td>
</tr>
<tr>
<td>Hydro and others</td>
<td>5.6</td>
<td>6.1</td>
<td>6.8</td>
<td>7.2</td>
<td>6.1</td>
</tr>
</tbody>
</table>

Source: Energy Balances of OECD Countries.

As it is evident from the above table that the share of oil declined from 1973 to 1984 whereas the other sources of
energy increased during this period except gas. The table also indicates that the share of nuclear power in TPER had increased rapidly from 1.2 % in 1973 to 5.2 % in 1984.

(5) Emergence of non-OPEC oil producers

The emergence of non-OPEC producers was one of the factor which affected supply side of the market in the eighties. The major non-OPEC producers are North Sea (U.K. and Norway), Oman, Egypt, Mexico and Brunei. The sources of crude oil supply became more diversified as Mexico and North Sea and other developing countries producers entered the market. Many of these areas which earlier, was costly to produce but they had suddenly became viable other the two oil price increases in the seventies. This strengthened the position of the de-integrated oil company units because it diversified into those new sources. The sudden rise to the prominence of the North Sea as a major oil basin, combined with the U.K. government's favourable fiscal policy on North Sea oil provided new impacts on the changing market struc-
ture in the eighties.9

The non-OPEC countries got benefits from higher OPEC oil prices by increasing their capacities. They pursued aggressive price and marketing policies in order to achieve a higher share in shrinking market. This was one of the major cause of the instability in the international oil market. During the period of tightness in the market, as was the case in 1979, the non-OPEC producers were selling at higher prices than those officially announced by the OPEC, while in the times of soft market conditions, these non-OPEC producers were selling at lower prices than OPEC. Consequently, OPEC which was the only price setter in the oil market in the seventies and other oil producers followed behind. but in the eighties, there were two price setters. OPEC was committed for the price stability in the international oil market, even if this involves a substantial reduction in the

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volume of their production.

Table 3

OPEC/Non-OPEC output

<table>
<thead>
<tr>
<th>Years</th>
<th>OPEC output mb/d</th>
<th>Non-OPEC output mb/d</th>
</tr>
</thead>
<tbody>
<tr>
<td>1980</td>
<td>26.9</td>
<td>18.4</td>
</tr>
<tr>
<td>1981</td>
<td>22.6</td>
<td>18.8</td>
</tr>
<tr>
<td>1982</td>
<td>19.0</td>
<td>20.1</td>
</tr>
<tr>
<td>1983</td>
<td>17.0</td>
<td>20.9</td>
</tr>
<tr>
<td>1984</td>
<td>16.3</td>
<td>22.2</td>
</tr>
<tr>
<td>1985</td>
<td>15.4</td>
<td>23.1</td>
</tr>
<tr>
<td>1986</td>
<td>18.3</td>
<td>22.7</td>
</tr>
<tr>
<td>1987</td>
<td>17.3</td>
<td>22.6</td>
</tr>
<tr>
<td>1988</td>
<td>19.6</td>
<td>22.8</td>
</tr>
<tr>
<td>1989</td>
<td>21.3</td>
<td>21.9</td>
</tr>
</tbody>
</table>


It is therefore evident from table No. 3, that a new situation was created in 1982 when the non-OPEC production was more than the OPEC production. The non-OPEC output had been remaining high till 1988. This created glut situation in the market because non-OPEC production got increased to a such a level that it exceeded the OPEC production. Among the

causes which explain, how non-OPEC oil was replacing that of OPEC was the non-OPEC's aggressive marketing policies. While OPEC abided by self imposed production restraint programme and sold its oil at official selling price (OSP). In fact, non-OPEC oil producing exporting countries had been systematically undercutting OPEC's price in order to maximize their market share.11

(4) Netback Pricing :->

Netback pricing was one of the important factor which influenced the structure of the oil industry in the eighties. The simple definition of netback pricing is to value the crude oil by "netting" costs for the value of the products which is obtained through the refining process. In other words, the netback price of a barrel of crude oil is the total product. It is worth of refined products minus the costs incurred on transporting the barrel from the export terminals to the refinery. The gross product worth is the

sum of product prices weighted by the refining yields.\textsuperscript{12}

"The general structure of a netback formula is therefore:

\[ N = \sum_i p_i a_i - \sum_j c_j \]

\( N \) is the netback price of a barrel of crude; \( p_i \) is the price of product \( i \), \( a_i \) is the yield measured according to a volume or weight of product \( i \) in the refined barrel such that \( 0 < a_i < 1 \) and \( \delta a_i < 1 \) (\( 1 - \delta a_i \) is the small percentage of the barrel used up as refinery fuel or dissipated as losses); \( c_j \) is the cost element \( j \) involved in the transport and refining of the barrel.

Netting back from products to crude involves a time dimension because of transport, processing and sales time lags. The netback price of crude lifted at date \( t \) depends on the gross product worth which is realized after a time lag, the time required to transport and refine the crude. Note, however, that the disposal of refined products may spread over a period of time after the completion of refining. Formula (1) is readily modified to include this time factor,

\textsuperscript{12} This Section is largely based on the study on "Netback pricing and the oil price collapse of 1986", by Robert Mabro in the Oxford Institute for Energy Studies, January 1987.
i.e. the period i over which products are sold and the gross product worth is realized.

\[ n_t = (\xi P_i a_i)_i - (\xi c_j) \]  

(2)

An alternative formulation, which will prove useful, replace the cost terms \((\xi c_j)\) by transport costs per barrel, \(f_t\), and a processing fee \(z\) thus

\[ n_t = (\xi P_i a_i)_i - (f_t + z) \]  

(3)

Although these expressions are simple enough in their general form difficulties arise as soon as attempts are made to define precisely the yield, price, cost and time parameters. It is important to stress that there is no unique definition of these parameters applicable to all situations. The preferred definitions depend on the type of deal involving netback pricing, on the purpose and scope of netback pricing in that deal, and on the nature of the economic relationship between the partners of the deal".

(This content is obtained from "Netback Pricing and the Oil Price Collapse of 1986" by Robert Mabro)

Netback pricing depends on the following three factors:

(I) The nature of the deal involving netback price, (II) The
objectives and scope of netback pricing in the deal; (III) The nature of the economic relationships between partners of the deal.

There are differences among the three cases: (a) The crude oil transfers among the subsidiaries of an integrated corporate group, is made on the basis of a netback; (b) There was long-term supply contracts between two major oil companies of the pre 1973 era which involved netback pricing; (c) The Arm's length netback deals between a producing country and an oil company, the independent refiner such as the Saudi Arabian deal of late 1985 and 1986. All these and similar cases in which the netback pricing was related to the valuations of oil transactions. The actual deals should be distinguished from those netback calculations made by oil companies, consultants and specialized journals which was for the purpose of assessing the relative attractiveness of the different crudes to a refiner. It is imperative here to make brief study of all the above three factors to know the developments of netback pricing:

(A) Transfer of Crude Oil among Subsidiaries: The internal transfers among subsidiaries is valued by the different methods. The netback pricing is one of them. In such a
scenario, the application of netback is an internal accounting affair. Like the other instances of transfer pricing, it can be made to serve the fiscal purpose. The main objective of the tax minimization is the reallocation of profits or losses between locations or sectors subject to different tax regimes. In pursuit of this objective, the tax parameters of the general netback pricing would be defined carefully to reduce the total tax liability of the cooperate group.

(B) The long term supply contracts among companies in the pre 1973 era: The inter-company exchanges played key role during the old OPEC concession period, because the major oil companies used to balance their crude oil supplies and balance within the framework of very long term contracts. The major objectives of these arrangements was to secure a stable access downstream to crude long-term companies. It can be achieved by a stable source of supplies to crude short-term companies. Their effect was to enhance the overall integration of the international oil industry.

(C) The Arm's length netback deals: Saudi Arabia adopted the netback sales deals in the second half 1985. It had covered a significant proportion of crude oil trade. In
these types of contracts, the price of crude supplies by the producers is calculated ex-post on the basis of a netback formula specified ex-ante in the contract. The relationship between the two parties to deal differs (a) from the parties because they have autonomous entities, not a part of an integrated corporation, (b) from the contract period which is much shorter and the context is that of a fairly de-integrated corporation. The oil companies and independent refiners buy crude through positive downstream margins in the Arm's length netback contracts. Producers offer to supply crude on the netback basis in an attempt to attract buyers. Thus buyers shift additional volumes to protect the level of their current sales with the intention of getting positive margins. The aim of producer is eminently competitive. Producer would negotiate the terms of the netback pricing formula as flexible as necessary to achieve aims and objectives. The refiners response to the offer of a netback deal depend on their relative preference for crude purchase contracts which is related to the positive refining margins.

It is therefore obvious from the above analysis that the introduction of netback deals adds to the range of
contracts for the crude oil transactions. The problem faced by the sellers and buyers was the selection of the preferred type of contract. However, in 1985-86, most oil exporting countries seemed to opt for only one method of sale, but on the other hand, buyers were concerned with the problem of optimal diversification of "their portfolios" of crude oil contracts.

There were two preference sets which were matched by the netback deals. First, a producer concerned with increasing the volume of his sales in a market supplied by short-haul crude and second, a refiner concerned with increasing the certainty of a positive refining margin. Thus, it provided to understand why Saudi Arabia, a major producer of long-haul crude, which had been displaced from the North American and European markets, through the fixed price contracts. It adopted netback deals on a large scale in late 1985 to regain a share of these markets. These were two sides: Producer's side and refiners' side, the netback contracts in terms of competition for additional export volumes on the producer's side while on the refiner's side, the demand for low risk contracts. It is imperative here to
present brief analysis of both competitive behaviour and attitudes of risks.

(I) The competition has its own dynamics. Those players who move first, make the initial gains in the form of an increased market share at the expense of other players. By moving first, Saudi Arabia within two or three months increased its export volume from 2.0 mb/d to 3.5-4.0 mb/d. However, the action of the first player elicits responses from its competitions. By adopting same and similar tactics, some react almost immediately in order to increase their own export volumes. In 1985-86, a number of countries followed Saudi Arabia in their move but some other oil exporters, particularly Egypt and Mexico found it difficult to respond because of political and legal rigidities. But the gains made by the first player were threatened by the moves of all other producers. The first player was then compelled to change the terms of netback contract in an attempt to defend its earlier gains. This was precisely what happened, first in the second quarter of 1986 when Saudi Arabia introduced a discount element in the pricing formula and later in October 1986 when it conceded a further 50 % discount to some Aramco Partners.
The refiners interest in the netback contracts has emanated from the low risk characteristics. It would be wrong to assume that refiners were obtained crudes oil under the netback arrangement because they were risk averse. The refiner was in a position to choose between different types of crude supply contracts, who can obtain oil from the spot market or from producers supplying crude in terms of contract with the pricing formulae other than the netbacks. It can also be obtained from his own sources if he gets property right upstream. Generally the large oil companies hold a portfolio of contracts.

The netback pricing was practiced by Libya and Iran for the limited volume of sales and limited period of time. The adoption of the netback pricing by the Saudi Arabia has greater significance because it had restructured of the international oil market. It had adopted netback pricing arrangement to regain its market share in the Atlantic basin and of the east of the Suez. Consequently, Saudi Arabia's total output doubled from about 2.2 mb/d in August, 1985 to 4.5 mb/d in the first quarter of 1986. About 70% of the Saudi Arabia's exports were based on netback arrangements.
The majority (65%) of Saudi netback contracts were with the major oil companies while independents 16%, state oil companies 12% and others represent the 7%.13

The oil price collapse was the result of competition which began after the 1979-80 shock and its damaging effects on prices. Some steps had been taken by the OPEC in March, 1982, 1983 and October, 1984 to contain this competition and its adverse effects on prices. The first attempt was not very successful, the second provided the world petroleum market with a period of 12-16 months of relative stability and the third step was a tight production programme which was never seriously implemented. However, throughout 1981-85 period, Saudi Arabia and some other OPEC members continued to uphold to a significant extent the OPEC fixed price policy. This behaviour caused a considerable loss in export volumes, prevented prices from collapsing between 1981-85. There was price erosion. It was noted that competition was stronger than the resistance put by some producers on the price front. In 1985, Saudi Arabia

decided that it would not continue to defend prices on its own. This decision was motivated by three factors: First was financial. The rapid loss in revenues and certain prospects of further losses if price remained static, was becoming very alarming. The second factor related to Saudi Arabia's place in the world oil market. A considerable reduction in the market share was not acceptable because it deprives the country concerned from the leadership and influence and it threatens its commercial position in the future. The third reason was political. Saudi Arabia had only two options (I) To appeal to other producers for their obligation and interest in price discipline; (II) To join the competitive fray. The first option was attempted through warning at OPEC meetings and through solemn messages from the King himself to other heads of the state. But warnings were not heeded. The other producers estimated that Saudi Arabia would not risk the economic damages and the political aggravation which was brought by the abandonment of the official price policy. They did not see that in any case Saudi Arabia had been suffering from economic damages. The experience of 1986 was not the conclusion that the principle of netback was wrong. Given certain essential
safeguards, it can be substitute for full integration and lead to price stabilization. The first imperative safeguards was the minimum floor price below which netback price should not fall. A reasonable level for such a floor price would be somewhere approximating the equilibrium price between oil and other forms of conventional energy which was around $15/b for Arabian light crude oil with well established freight and quality differentials for other crude oils. This floor price was kept in real terms by linking it to average inflation in a group of industrial countries and the value of the U.S. dollar in relation to a basket of other major currencies.

(5) Development in Petroleum spot markets:14

The development of the spot market also played key role in shaping new structure to the global oil market in the eighties. It is imperative here to know as to what extent the development of the spot market influenced the

14. This Section is largely based on the study : "Spot oil, netbacks and the Petroleum Futures: The emergence of new oil market" Fereidun Fesharaki, and Hossein Razavi in the Economist Intelligence Unit, Special Report No. 1063, London.
structure of the oil market. An attempt has been made in this direction in next few pages.

The spot market transaction in oil have been as old as the industry itself. The spot market referred to spot trading in Rotterdam, New York Harbour and a few others centres. These markets had established in the past two decades. The development of the spot market had taken place in the following four stages:

(I) First stage was the functioning of spot market as the residual market. The problems faced by the most oil companies was the matching of their refinery output, with the markets current demands for various products. They had deficits of some products and surplus of others. The company has attempted to balance these deficits and surpluses by storage and shipment facilities. But it was economical to balance them by selling and buying some products on the spot market. The spot market in its early stages of development during 1950s and 1960, was basically concerned with the buying and selling of some products. The role of the spot market was the residual channel of oil trade. The main channel for oil supply was the integrated system of the
major oil companies. Each company had its own supply of crude oil as well as the capacity to refine it. The volume of spot trading was limited to around 5% of the total trade while the remaining 95% was based on contracts, specifying prices and quantities over relatively long period.

(II) The second stage of the spot market development was its shift from residual to a marginal development. This was the basically the development in the seventies. The spot market played marginal role in the petroleum industry after 1973-74 oil shock. The terms, "residual" and "marginal" both denotes to small volume of trading. The residual refers to small and insignificant trading but marginal implies small and significant trading. Its significance was in terms of the impact on the main contract market. When the spot market serves a residual role, it basically follows the contract prices. But when it serves a marginal role, it becomes an indicator of overall market conditions. The basis of the decision criteria is the marginal whenever decision have to be made in the Petroleum industry. The another basis of the decision is the cost and revenue of producing and processing of the marginal barrel in the
refinery operation. The shift in the spot market from the residual to marginal took place between 1975-78 when low spot prices were used as indications of soft market conditions by the industry as well as the government of consuming countries. The shift was accelerated after 1979 when it demonstrated that the spot market could play this role in both the tight and soft market conditions.

(III) The stage third was the conversion of the spot market into a major market: - This development basically took place in the eighties. It was only after 1983 that spot and spot related trade started to grow rapidly. By 1985-86, it was accounted for 85-90% of internationally-traded account. There were several factor which contributed to this sudden rise. First, the excess capacity of the refining industry forced refiners to fight for their survival. Refiners were forced to use most economical way of procuring their crude. They increased their refinery capacity to the point that could sell their marginal barrel of product at any price as long as it covered marginal operating cost. This has brought about a shift from term contract arrangement to the spot purchase of crude. It was due to the advantage of flexible spot prices with rigid contract
prices; second: As OPEC countries began losing market share, they involved in the spot related sales included variable price contracts.

(IV) The fourth stage was the spot market's parallel functioning with future markets: The development of market in petroleum future was in response to instability in spot prices. The first generation petroleum future including a crude oil contract on New York Cotton Exchange and a Banker and Gas oil contract on the New York Mercantile Exchange were introduced in 1974. But the reason for its failure was that petroleum prices did not fluctuate as it was expected. The international spot prices of crude oil was $10.30 and $10.46 a barrel during the period from October, 1974 to December, 1975. The second generation future started with the introduction of a heating oil and a heavy fuel oil contract on Nymex in November, 1978. There were various factor for the success of heating oil contract. Some of them are as follows: (I) The fuel oil had been exempted from price control in more than 40 states in 1976; (II) The global oil price became very volatile after 1978; (III) The Reagan Administration completely deregulated to its price in
February 1981 and forged a stronger link between U.S. prices and volatile global prices. The significance of this contract was in (a) its "Cash market" i.e. the spot oil market, being one of the longest commodity market in the world; (b) The complementary role of this contract was to provide the industry's requirement of a crude/product mix of contracts before effectively utilizing fortune for hedging purposes; (c) The fact that it had developed into a price signalling channel for the traders of crude oil in the world in general and in U.S.A. in particular.

The role of spot market and future trading was rapidly increasing in the industry's decision making process under the stage 4. At the same time there was interaction between the two markets.

It is therefore evident from the above analysis that the spot market developed in the eighties. Its significance has also increased in this period which led to the change in the structure of the oil market in the eighties. Spot market can be also be termed as the "emergence of new oil market in the eighties".
(6) **Vertical Integration:**

Among the factors which influenced the structure of the global oil market in the eighties, the vertical integration was also one of them. The vertical integration is the long and the dominant mode in the world oil trade, confined in the companies operation. This is an integrated channel which had reduced the two way flow of information the up and down. OPEC government started downstream integration abroad but no single OPEC government can directly influence production there while some of the international majors had influenced it ten years ago in some of the OPEC countries. The private oil companies purchased same crude according to their equity rights which they once had from OPEC-national oil companies. They had obtained from their own production plus long term contract supplies around 60% of total output in the WOCANA (world outside communist areas and North America) in 1982.15

Some of the major oil companies expanded their retaining and marketing network to buy crude and other products on the reasonable basis. Those companies who have significant equity production would have to bear lower acquisition cost because refiners and non-integrated buyers have to pay national oil companies in OPEC and elsewhere than the official selling prices (OSP). Most of their equity production with a price level of $29/b even at a high rate tax, had brought substantial net profits. The difference between current cost to the equity producer and price was that OPEC had the lowest cost of oil production than non-OPEC exporters. But it is well known fact that oil is the lowest cost energy than other energies. It was energy which they priced at $10 per barrel of oil equivalent above the accounting cost of energy production. The accounting cost was not "long-run marginal supply cost" in an extracting industry. But such a long term supply cost was not easy to define in circumstances where non-communist world oil producing capacity was under utilized with most surplus in the areas of low-cost.16 In the OECD countries, private oil companies

handled the vast majority of products, sold to the markets where prices have been fixed. The demand for oil both for OPEC and non-OPEC countries was expected to rise more during the eighties than demand within OECD. Oil pricing in all those countries was closely related to prices in the world market. Such market forces as affect crude oil prices in particular had exerted almost entirely along the interface between OECD import demand and supply from all the world's crude sellers.

It was very difficult to achieve profitability and sustain it to European refining or companies during the 1980s. The distribution and marketing was the part of the business with less fixed investment. It had more scope and opportunities for innovative cost-cutting and managerial flair. The profitability in the eighties was strongly influenced by whether other OPEC governments follow Kuwait and Venezuela and decision had been taken to buy substantially into European refining and marketing. Most of the private oil companies were more selective about their market commitments in the regions because they had consolidated in a few national market but withdraw from other national markets. This factor may attract some companies to invite
OPEC to take over more downstream business in Europe. It was very difficult to rationalize OPEC government's will to invest substantially downstream abroad. 17

7 Refineries:

The development in the refineries in the eighties led to the changes in the structure of global oil market. A brief study is imperative here to know that how the changes in the refinery industry affected the structure of the global oil market.

There was an acceleration of refining industry in the non-communist world in the 1983. The industry's contraction with primary distillation capacity reduced by 163 million tonnes in 1983 following the 149 million t/y decline in 1982. At the end of 1983, the capacity stood at 2962 million t/y, 1/10 below its 1980 peak. It was 5.2% fall in the refining capacity during 1982-83 which was excess of the equivalent decline in refining throughput (2.3%) and consumption 1.6%. The utilization of the distillation capacity

ty has increased in the late seventies. But 69.5% utilization plan was operated inefficiently and unit costs were high. The table no. 4 shows the refinery capacities of most of the countries during the eighties:

Table 4

Refinery Capacities THOUSANDS BARRELS DAILY

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which CEDD & LDCs 64 805 65 715 65 140 62 225 59 260 57 600 56 475 56 135 56 345 56 550 55 900

It is therefore evident from the above table that the overall percentage growth of global refining capacity between 1979 and 1989 was -70% which was the negative growth rate of the refinery capacities in the eighties. But some of the countries got substantial increase in their refinery capacities like Mexico and China. Following the rapid increase in the seventies, the refinery capacity was cut significantly in the eighties.

The utilization rate for the primary distillation capacity were the traditional measure of a refinery's overall efficiency. With the cost of capital, maintenance and administration was independent of the volume processed and with the fuel cost which was around $2 barrel considered as largest running expense faced by the refiners. It was partly independent and high utilization rates gave lowest unit costs. But refiners paid attention towards upgrading investment to provide returns which was needed to cover distillation losses. That is why the utilization rates for cracking, coking and other conversion plant were becoming a more significant factor in assessing the success of a refining operation. This was particularly true in the U.S. where
refiners had installed much more upgrading capacity to meet the demand for gasoline. It was one barrel for every two of distillation capacity against one for six of distillation in West Europe and one for ten of distillation in Japan. 19 Although crude processed by the U.S. refineries have become heavier (and therefore in need of increased cracking) the 15% decline in consumption of gasoline and middle distillates since the 1978 peak had resulted in lower utilization rates in the West Europe. In 1983, the U.S. cracking and coking plant ran at 85% of capacity while the Chevron was reported 82% utilization. 20

There was surge in construction of conversion facilities in the West European refineries. It had brought some 1.4 million b/d of catalytic cracking, 1.3 million b/d of visbreaking, 200,000 b/d of coking and 160,000 b/d of hydro cracking plant on the stream. Although the utilization rates were high and there was increasing concern at the prospect of over expansion in gasoline-making facilities.

The West Europe was a net exporter of gasoline. The spot-market prices for gasoline had fallen significantly over the past few years, with July, 1984 Rotterdam quotations was down from around $ 390 / tonne in 1981 to $ 350 in 1982 and $ 310 in 1983 and $265 in 1984. Meanwhile, the equivalent price of heavy fuel oil which was an indicator of cost of cracking feedstock remained in the $175-185 range. The development of West Europe's cracking capacity brought the changes of the long-term benefit to the European refining business. From the viewpoint of the individual refiner, the cracking the marginal barrel was attracting as long as the additional revenue outweighs the resulting fall in gasoline prices, but ultimately would lead to lower returns for all if gasoline moves significantly into surplus. The development in the cracking capacity led to the development of a strong market for virgin fuel oil as cracker feedstock. The price was remained at about the same level during the 1979-81 inspite of the decline in demand from the burning market. The imports of fuel oil into West Europe has increased as a result of the relatively firm prices. The gasoline and middle distillates were around 61% of West European oil products demand against 51% in the
The massive transformation in the oil scene in 1980 has had its repercussions in the tanker business. The unprecedented jump in the price of crude oil and the economic recession in the Western world restricted the consumption of petroleum products. The cessation of stock building had further affected market demand. The drop in volume of oil traded and therefore in the demand for tankers had been larger than the drop in oil requirements. Thus, despite the slight decline in the size of commercial tanker fleet in 1980, the manageable in lay-up had increased. These adverse influences were reflected in the tanker markets. The dirty and clean image and the level of spot freight in the first half of 1980 was well below the 1979 level. For dirty tonnage Arab Gulf and West Europe for instance, the weighted average of spot freights for first half of 1980 was $w-36$, it was rather higher against $w-48$ for the whole of 1979. It was $w-99$ for Mediterranean and West Europe against $w-139$. As for clean tonnage, the weighted average Caribbean/USAC, EEC was

W 282 against W 366. These figures were provided by the John I Jacobs, the well known world fleet Review. 22

The size of the commercial fleet including government tonnage has been slightly reduced by 2.3 million dwt since the end of 1979. According to Jacobs, it was total 317.4 million dwt, of which 126.6 million (40 %) was owned by oil companies. Deliveries of new carriers in the first half of 1980 aggregated 3.43 million dwt against 3.06 million dwt in 1979. Though this figures included 2.7 million dwt of vessels sent to the scrap yard, the commercial tanker fleet contained 8.0 million steamers of 20 years old and another 13 million dwt of motorships and 8.4 million of steamers were between 15 and 20 years old. A table compiled from the Jacobs report, analysis of the existing fleet according to the country of registration. It showed that there have been few changes in relative position during six months in 1980. Liberia was on the top in this field with over 31 % of the world total. A long way behind it was Japan the U.K., Norway, Greece, the U.S.A., France and Panama in that order.

These eight countries together accounted for three quarters of the total tonnage. They were followed by over 60 other states. Though the size of the commercial fleet has reduced a little, the surplus of carrying capacity had been swollen by the drop in demand. The precise magnitude of the surplus was difficult to calculate since any estimate depended on assumptions about the normal operating practice. The London based company John I Jacobs & co. Ltd. assessed the surplus at just over 108 million dwt, compared to about 82 million at the end of 1979. The tonnage of tankers actually in lay-up had risen in first half of 1980 from 7.9 to 8.4 million dwt, but slow steaming was reckoned to be absorbing about 56.5 million dwt capacity against only 35 million in December 1979. The wastage of time in ports was around a future loss of 25 million dwt capacity against 21 million in the early 1980, while "dead freight" was only 15 million dwt due to the acceptance of pot cargoes. In addition of it, there were some minor inefficiencies in the operation which brought the total surplus to some 108 million dwt.\textsuperscript{23}

\textsuperscript{23} Ibid, p. 421.
The existence of shipping capacity in excess of current requirements was not reflected in a complete cessation of new ordering. The surplus was confined to VLCCs and there were many smaller sized ships which were approaching the end of their life. The order load rose by nearly 3.8 million dwt in the first half of 1980 to a total of 20.2 million dwt and the proportion ordered by oil companies went up in six months of 1980 from 28.4% to 32%. But orders included only nine VLCCs with a combined dw tonnage of 2.5 million. There was concentration of orders (4.3 million dwt) in the size category 80-100,000 dwt and another in the 35-40,000 top group (3.0 million). A high proportion of these smaller vessels were for transport products, though there was no clear cut diving line between crude and product carriers. By contrast the LNG trade had been affected by various delays in the implementation of export schemes largely due to price disputes. As a result five LNG carriers well over 500,000 cum was laid up.24

The 1982 was considered for its dismal performances of

the depressed freight rates and meager earnings. The capacity of world fleet was reduced because of the accelerated scrapping. The adjustment was not reinforced by an improvement on the demand side. The world demand for oil declined by 4% and the process of destocking continued throughout 1982 and short-haul supplies from Mexico and North-Sea were maintained at the expense of long-haul shipments from middle East. A massive surplus of capacity was continued to overhang in the market. For dirty vessels Arab Gulf via Cape and spot freight declined from a weighted average of about W 28 in 1981 to W 20 in the first half of 1982 but it recovered to W 30 in the second half of 1982. The dirty rates Mediterranean U.K. etc were averaged W 52 in the first half of 1982 as it was the whole of 1981. The Caribbean US AC had decreased from W.85 in 1981 to W 73 in the first half of 1982 but substantially increased to W 79 in the second half of 1982. 25

The world Tanker fleet Review which published by John I Jacobs, has a wealth of statistical and other information

about all aspects of the tanker business. It showed that 1982 was a year for the scrapping of oil carriers. The tonnage broken up had increased rapidly from 12 million dwt in 1981 to 22 million dwt in 1982. It was the 7% of the world fleet. The total which included 55 vlccs, mostly turbine powered, of which one, the 'British patience' was only 8 1/2 years old. After partially offsetting the elimination of the tonnage, the deliveries of new tankers in 1982 comprised 155 vessels with a capacity of some 6 million dwt. John I Jacobs had estimated that the world tanker fleet was reduced by almost 17 million dwt in 1982 against a fall of 5 million in 1981. At the end of 1982, the world total was under 304 million dwt as compared to 320 million in 1981. The commercial fleet was around 291 million, of which oil companies owned 117 million plus 13 million of tankers in government. The Liberian-registered tonnage had reduced in 1982 but the scrapping had accounted for 28% of the world total. Japan in the second place which was around 9%, then Greece was around 8%. The Norway was around 6% of the entire fleet. In the eleventh place was Saudi Arabia which had made sub-
There was rapid increase in the tanker operating costs. The tanker operating costs were crews, fuel and lubricants, maintenance and insurance had rises in the late seventies. The Drewry reckons that for smaller tankers, the costs has risen in real terms i.e. they went-up by more than the prevailing rate of inflation. The increase in real costs was averaged about 5% a year during 1971-81. On the other hand, the real costs for VLCCs with their economies of scale had declined by an annual average of around 1.5% in 1971-81. During the same period, shipping revenues had been highly erratic. There had been long-periods of unprofitable trading. The smaller tankers had been more profitable than large ones, despite increase in real costs. It was because the freight rates had been better maintained in this sector where demand supply had been even more. In both cases of operations on the time charter had been more profitable than those for single Voyage business. 27

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27. Ibid, p. 122.
(8) Downstream Operation :-

The downstream operation played an important role in shaping new structure to the global oil market in the eighties. The changes in the downstream operation has influenced the structure of oil market. It is imperative here to give brief analysis of the downstream operation to know as to what extent the changes in the downstream operation influenced the structure of the global oil market in the eighties?

The shift in the ownership of oil production from the majors to the state-owned companies in the seventies made an impact on the contracts of lifting oil. The long-term contracts on the preferential terms became the basis for the lifting crude oil which the Majors had formerly owned. But since 1979, several of these contracts had come to an end and only few companies had been allowed with such preferential supplies. In the 1982, with the depressed demand of oil, these long-term preferential supplies had been added to their equity production and the volume of output to which private companies had only continuing rights was about half
of the crude oil output.28

This transformation in upstream ownership was the result of take-over of the equity rights by the host governments which the private companies used to have in the development and production of the crude oil for export. But its effects had not fully worked through the world oil business. It had brought some transfer of ownership in the downstream sector. They had rearranged the balance of interests of different major actors on the oil scene. OPEC member states and oil companies were not only actors on this scene. The OECD governments were also actors and played dual roles. The exporting and industrialised countries share leading roles in oil performance. The economic rents in joint manner had increased out of all proportion. This structural change as well as sharp increase in prices of oil had realised these economic rents.29 It had changed the roles of the three main actors on the oil scene to differing degrees: The role of OPEC government has changed radically from tax gathering to


direct market participation in the eighties. As the world's main sellers of crude, they get the full present of prices, profits and rents which they achieved from their production. The OECD had become the largest single balance of payment cost, increased in oil imports. Some of these countries with the substantial oil producing and even net exports had benefited much more than ten years ago. The oil companies, equity production was largely confined to non-OPEC and increasingly to OECD oil provinces. As the shift in the ownership of upstream, the private oil industry had become a net buyer of the crude. It had become reality for even largest oil companies.30

The former seven major international companies were the main supplier of crude to the third-party market in the seventies but in the eighties, entire crude oil supplied by national oil companies of OPEC and other exporting countries. The private oil companies purchased crude oil and sold it to final markets in OECD. The downstream role of oil companies in the OECD market was dual: As crude buyers and

as product sellers. It was in their interest to make the wide differences between two sets of prices through the product prices going up than by crude prices going down. Most of the oil companies took it to final customers. They cannot avoid experiencing price elasticity and fuel substitution. Most OECD product markets were under downward pressures of their prices. These had arisen from surplus refining capacity in the largest market regions. It was from unconstrained access to crude beyond their needs from many sources of supply and from an ample availability of refined products. The downstream profitability was restored in the USA when refiners post the prices there, were to able to decline crude oil prices. The reduction in OPEC price in 1982 had made it temporarily profitable in Europe.31

The downstream investment by producing countries became important in the eighties. Many producing countries had undertaken the development of domestic and refining capacity. It was motivated by the desire to avoid undue reliance on overseas interests and foreign technology. Many had made

the move toward export refining to seek not only a share of the perceived refiner's margin but also the benefit of developments and greater flexibility to deal with volatile and uncertain crude oil markets. Some of the countries had made "natural evolution" by acquisition of offshore refining and marketing interests in the apparent search for more investment opportunities, earnings, security of offtake and improved market knowledge. Despite the interest of producing and consuming countries, all four or five oil producing countries had taken significant steps in this direction. These arrangements had reflected very different approaches to the issue of downstream integration, ranging on the one hand, from statoil and KPI who had undertaken full-ownership and operation of integrated refining and marketing system. It was done through the joint venture approach adopted by the Venezuela and Saudi Arabia to the minority equity position and the associated crude oil supply contracts negotiated by Pemex and IPIC.32

The five criteria have been identified to indicate whether a particular producing country was to be predisposed or not towards downstream integration:

(I) The real national cost of capital to seek investment opportunities or to undertake development projects at home or abroad which have a high social value;

(II) Interest in foreign investment or the country concerned feel easy investing abroad and it understand fully the political, economic and social value in which it operates. Can it operate effectively in a different cultural environment?

(III) Whether human resources available to successfully manage such an investment or the country concerned protect itself from the inevitable conflict of interest which would arise within the national oil company (between its upstream and downstream interests) and in a joint venture, between national company and its foreign, private sector partners.

(IV) The existence of reserve supports such an investment over its effective life.
(V) Crude oil marketing difficulties faced by company and whether these reflected strategic weakness or institutional problems within the control of the producer.\textsuperscript{33}

These above criteria were an attempt to identify those countries for whom downstream integration was logical move. This analysis suggests that Kuwait, Venezuela and to a lesser extent Norway were obvious candidates for the active downstream investment programmes. Kuwait could find future global role to its strategic position. Then the second tier group composed of Saudi Arabia, Abu Dhabi, Mexico, Iran and Iraq where selective and partial integration were necessary. Finally, a third group was composed of Qatar, Libya, Indonesia, Algeria, Nigeria, Ecuador, Gabon and other producers.\textsuperscript{34}

The change in the oil industry in the eighties had led Majors to improve their position though vertical integration by investing only in their own economies. Whereas, oil producing countries were essentially investing abroad but their understanding of economic, political and social practices

\textsuperscript{33} Ibid, p. D2.

\textsuperscript{34} Ibid, p. D2.
were limited. For example the KPC (Kuwait Petroleum Company) was interested in Taxaco's refining and marketing facilities on the US East coast. The KPC would not bring many products from Kuwait to market in the US. A US involvement would bring Kuwait crude imports for refining in the US. KPC was also interested in getting into refining in Asia, but realised, this may not take place for a number of years. The global oil market was no longer growing at 6 or 7% a year. The sustained growth in oil demand in the past war period gave investors the ability to undertake capital commitment with confidence that facilities would be fully loaded and inflation would underpin investment costs. By contrast, the decline in the global oil demand has created a residue of refining capacity, would remain un-economic.35

The primary justification for producer integration was "security of outlets". The agreement was that under prevailing and foreseen market conditions, market share could only be secured through ownership of downstream assets. The

origin of this view seemed to be the difficult experience of some producer countries in meeting their export targets during 1981 to 1983. Some OPEC countries experienced difficulty in meeting production quotas. These countries lost their market share simply because they were absent from the downstream business. The reasons were more complex. In many cases, countries lost market share because unlike their competitors they were attempting to defend an agreed price level as part of OPEC official sales structure. It was indeed a fact of commercial reality that under such a structure, the non-OPEC producers had no problem in maximising output and that some OPEC countries had greater freedom than others to adjust competitive position through equity margins, refined products, and NGL exports. Under normal market conditions, a producer's ability to meet a specified export target depended more upon its freedom to set its export price than on the extent of its downstream involvement. Downstream integration also provided an insurance policy against extreme market conditions.36

The fundamental conflict of interests between producer/marketer could be avoided. In a downstream joint venture, the producer's partner should have not been expected to worry about the upstream margins. Its interest would be in maximising volumes and earnings in the downstream sector. Full control or majority ownership would tend to reduce such conflict of interests. But just as one producer with a large amount of excess capacity could destroy the crude oil market. From the perspective of an oil producing country, there might be a danger that free market pricing in a period of excess refining and marketing capacity would turn downstream integration into a global netback arrangement and the ultimate result would be transfer of profit from upstream to downstream sector. A high degree of downstream integration on the part of oil producing countries would widen existing disparities between OPEC member countries in their ability to meet quotas at any given price level, so that a return to the concept of Op's would be difficult. This meant that sole level through which producers could stabilise the market.
would be done by the production programming. 37

**Storage and Inventory:** The storage and inventory have also influenced the structure of the global oil market in the eighties. A brief study is imperative here.

During the seventies, the oil inventory strategy of the industry was to keep stock at reasonable levels. There was a slight upward trend in the stock level from 1976 to 1979. This was attributed to government strategic stock building in the US, Japan and West Germany. The European Government and Japan imposed obligatory stock levels during the stock market of 1976 to 1978 and this was seen by the companies as a great milestone. The source of this resentment was the widespread and persistent softness of product prices during this period. In many countries, retail prices did not rise enough to keep-up with the inflation, some even fell in absolute terms. The product spot market prices were steady. Gas oil prices were between 110 and 130 dollars per tonne. In contrast, gas oil prices in 1979 ranged from 150 to 390 dollars per tonne. During 1975-78, buyer's market, the

inventory management practices of the oil companies have confronted OPEC with serious supply planning problems than its government actually had. A deliberate and sustained drawdown of stocks in early 1976, could have put for greater pressures on some OPEC countries to discount prices. As OPEC production was down to 25 m/bd and Saudi Arabia and the UAE had split from pricing policies of other member states of OPEC. In 1983, there appeared to be a sustained drawdown of stocks under similar circumstances. 38

In the short term, both supply and demand are strongly influenced by oil inventories. When buyers, including the refining industry, expect prices to fall, they draw down their stocks producing a sizeable surge in supplies. When they expect prices to rise, they build-up their stocks, producing a sizeable surge in demand. These inventory surges have had a much larger impact since 1979. The existence of large inventories was the systems of the lack of confidence of buyers in the reliability of their supplies. In such situations, stock management played a potentially perverse

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role. Instead of being a tool to stabilise a market, inventories actually destabilised it. This happened in the oil market during eighties. The economics of storage was more affected by oil price increases than by any other factors. The price escalation of 1979-80 and high interest rates raised both the intensive value and the financing cost of holding product. The result was a strong desire on the part of oil companies to reduce inventories and keep stocks to the minimum working level. Independent storage of companies immediately suffered from this change of emphasis although they could not be blamed for it. When oil was cheap, the rental of storage tank could make-up as much as one-third of total costs of holding products. As oil prices doubled, this proportion become less significant.39

It is therefore evident from the above analysis that inventory and storage have been in a state of depression throughout the eighties. It had also played a key role to alter the structure of the oil market in the eighties. It

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further influenced the position of OPEC. The problem was compounded by the behaviour of stocks and newly emerging speculative forces in the oil market, particularly the oil futures and forward markets, which were affected by market fundamentals. The sharp fluctuation in stocks whether commercial as a result of market perception, or based on policy, had invariably played a destabilising role in the market, making it more difficult for OPEC to maintain a balance in the market. In the short run, each market participants had the potential to influence both the structure and the development of the oil market.40

The above mentioned factors have affected the OPEC position in terms of percentage share, export, and production during the eighties. These facts are shown in the following tables:

Table 5
"Percentage share of OPEC in world oil production"

<table>
<thead>
<tr>
<th>Years</th>
<th>Percentage Share</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>48.14</td>
</tr>
<tr>
<td>1980</td>
<td>44.05</td>
</tr>
<tr>
<td>1981</td>
<td>39.61</td>
</tr>
<tr>
<td>1982</td>
<td>35.05</td>
</tr>
<tr>
<td>1983</td>
<td>32.64</td>
</tr>
<tr>
<td>1984</td>
<td>31.86</td>
</tr>
<tr>
<td>1985</td>
<td>30.0</td>
</tr>
<tr>
<td>1986</td>
<td>32.50</td>
</tr>
<tr>
<td>1987</td>
<td>31.72</td>
</tr>
<tr>
<td>1988</td>
<td>33.94</td>
</tr>
<tr>
<td>1989</td>
<td>36.57</td>
</tr>
</tbody>
</table>

Source: BP Statistical Review

Table 6
OPEC total value of exports for, 1979-89
(Million U.S. Dollars)

<table>
<thead>
<tr>
<th>Years</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>219, 204</td>
</tr>
<tr>
<td>1980</td>
<td>306, 604</td>
</tr>
<tr>
<td>1981</td>
<td>285, 177</td>
</tr>
<tr>
<td>1982</td>
<td>223, 938</td>
</tr>
<tr>
<td>1983</td>
<td>179, 210</td>
</tr>
<tr>
<td>1984</td>
<td>167, 155</td>
</tr>
<tr>
<td>1985</td>
<td>150, 783</td>
</tr>
<tr>
<td>1986</td>
<td>101, 908</td>
</tr>
<tr>
<td>1987</td>
<td>119, 604</td>
</tr>
<tr>
<td>1988</td>
<td>116, 676</td>
</tr>
<tr>
<td>1989</td>
<td>150, 780</td>
</tr>
</tbody>
</table>

It is therefore evident from the above table that there has been wide fluctuations in total value of exports of OPEC during the eighties. The OPEC share in the world oil production continuously declined from 1979 till 1985 and substantial increase took place from 1986 to 1989, as it is clear from table no. 5. The share of OPEC in the world oil production declined and even in 1989 it had not reached the position of 1979 (48.14%) despite the recovery in oil market during the late eighties.

In terms of percentage growth rate between 1979 and 1989, it registered -31.21% which was the negative growth rate. It was caused by the above mentioned factors especially recession in the oil market in the eighties and collapse of oil price in 1986. Not only total values of exports have declined but values of petroleum exports has also declined between 1979-89. 41 would be clear from table 7:

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41. Ibid, p. 129.
<table>
<thead>
<tr>
<th>Year</th>
<th>Oil Exports in Million U.S. dollars</th>
<th>Oil Exports as a Percentage of Total Exports</th>
</tr>
</thead>
<tbody>
<tr>
<td>1979</td>
<td>203,193</td>
<td>92.7</td>
</tr>
<tr>
<td>1980</td>
<td>284,491</td>
<td>92.8</td>
</tr>
<tr>
<td>1981</td>
<td>263,337</td>
<td>92.3</td>
</tr>
<tr>
<td>1982</td>
<td>202,789</td>
<td>90.6</td>
</tr>
<tr>
<td>1983</td>
<td>156,945</td>
<td>87.6</td>
</tr>
<tr>
<td>1984</td>
<td>143,569</td>
<td>85.9</td>
</tr>
<tr>
<td>1985</td>
<td>127,182</td>
<td>84.3</td>
</tr>
<tr>
<td>1986</td>
<td>76,741</td>
<td>75.3</td>
</tr>
<tr>
<td>1987</td>
<td>92,602</td>
<td>77.4</td>
</tr>
<tr>
<td>1988</td>
<td>84,731</td>
<td>72.6</td>
</tr>
<tr>
<td>1989</td>
<td>114,280</td>
<td>75.8</td>
</tr>
</tbody>
</table>

Source: OPEC Annual statistical Bulletin 1990

As it is evident from this table that since 1982 the value of oil exports has declined continuously till 1988 whereas increase substantially in 1989 from 1985. But in terms of percentage growth between 1979 and 1989, it was -43.75% which was negative growth rate of the value of exports in the eighties. It is therefore clear that OPEC's position has adversely affected in terms of value of oil exports in the eighties. The responsible factors were low demand for OPEC oil and substitution of oil to other sources.
of energy as mentioned in the preceding pages of this chapter.

It is therefore evident from the above analysis that the 1980s witnessed great turmoil in the oil market with fundamental structural changes took place. All the active participants including OPEC have had to adapt to these changes in order to survive. A major conclusion can be drawn from the study is that seeds of market glut were sown in the 1970s by the adoption of substitution and conservation measures, even though it took some times to recognise and ultimately its impact was felt in the 1980s. The price level which was adopted after the Iranian supply shortfall were brought by most oil industry analyst including OPEC to be defencible. OPEC abandoned the defence of the price structure in favour of a severely eroded market share. A more detailed study is needed, to know how OPEC tackled the turmoil situation which was entirely different from the seventies. This has been dealt with in the second chapter of the thesis, entitled "OPEC agenda in eighties".