
The importance of the Middle East oil resource base is exceptional, in quantitative as well as economic terms. The region's role as supplier is of crucial significance for the world oil market. Those who control this resource wealth have a considerable power to manage the market, to the detriment of consumers. The users of oil also suffer from the supply disruptions that have repeatedly resulted from the long lasting political instability characterizing the region.

Les ressources pétrolières du Moyen-Orient sont d'une importance exceptionnelle, tant sur le plan quantitatif que sur le plan économique. Le rôle de fournisseur que joue la région sur le marché mondial du pétrole est capital. Cette ressource donne à ceux qui en disposent un pouvoir considérable de contrôle du marché au détriment des consommateurs. Les consommateurs de pétrole ont également à subir les perturbations des approvisionnements qui se produisent fréquemment sous l'effet de l'instabilité politique chronique qui caractérise la région.

The Middle East — Its Role in World Oil: A Survey of Issues

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Introduction

Oil is the dominant energy material in human use. In recent years, it has accounted for almost 40% of world primary consumption of commercial energy. Oil is also a leading commodity in world trade. The annual export value of this material (including oil products) in the late 1980s exceeded US\$250 billion, and accounted for more than 10% of global international trade. Disturbances in oil supply and shifts in oil prices have important repercussions for the world economy.

Given the Middle East's exceptional oil resource wealth, it is important to assess the dimensions of the world's dependence on oil from that area, and to clarify the problems of, and prospects for, Middle East supply. This is the purpose of the present paper.

In the following analysis, the Middle East is defined to include Abu Dhabi, Bahrain, Dubai, Iran, Iraq, Israel, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, and Syria (*BP Statistical Review*, 1991). Nine of these 13 countries are oil producers of international significance. The paper begins by presenting numbers that depict the importance of the Middle East oil resource base, in quantitative as well as economic terms. The region's role as supplier in a global context

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is also elucidated.

The concentration of resources and output in the Middle East has been a crucial precondition for the price-raising policies pursued by OPEC since the early 1970s. It is argued that those who control Middle East oil wealth have the power to set oil prices within a broad band at their will, even in the long run.

The region has, however, been characterized by considerable political instability, at times severely disturbing oil flows. The major political shocks that have affected it in recent decades are enumerated below, and their background briefly described. The implications for oil supply are then reviewed.

The Resource and Production Potential of the Middle East

The antecedents of the oil industry in the Middle East go back to the beginning of the century. Major discoveries were made in Iran in 1908 and in Iraq in 1927, while the wealth of the Arabian Peninsula was gradually uncovered during the 1930s. The exceptional role of the Middle East as a source of world oil supply did not emerge fully until the 1950s. At the beginning of that decade, the area held almost half of the world's proved reserves, and accounted for 16% of global output. Since then, the significance of the Middle East for world oil has been greatly expanded.

Table 1 demonstrates the absolute growth of oil reserves in the Middle East, and their increasing global importance. In 1990, the Middle Eastern countries accounted for close to two-thirds of the world total.

As is apparent from Table 2, Middle Eastern production expanded steadily, both in absolute and relative terms, until the mid-1970s. There was a sharp decline in the ensuing 10 years, followed by an impressive recovery between 1985 and 1990. Oil from the Middle East accounted for 27% of world output in the latter year.

The Middle East shares of world reserves and world production, as recorded in the statistics of recent years, provide a gross underestimate of the area's potential importance in world oil sup-

Table 1: Proved Oil Reserves in the Middle East

Year	Billion barrels	Share of world total (%)
1951	48	48.8
1970	340	54.8
1975	368	55.5
1980	362	55.3
1985	390	54.2
1990	660	65.2

Sources: *Resources for Freedom* (1952); *BP Statistical Review* (1975, 1985, 1991).

Table 2: Middle East and World Production of Oil (million barrels per day)

Year	Middle East	World	Middle East Share of World (%)
1938	0.3	5.5	6
1950	1.7	10.4	16
1955	3.2	15.5	21
1960	5.2	21.1	25
1965	8.3	31.3	27
1970	13.8	47.3	29
1975	19.5	54.7	36
1980	18.5	61.6	30
1985	10.7	56.1	19
1990	17.9	66.7	27

Sources: Darmstadter *et al* (1971); *BP Statistical Review* (1975, 1985, 1991).

ply. Several factors are at work.

Data on proved reserves, like those given in Table 1, should, in principle, indicate the volume of well-defined oil in the ground that can be economically exploited at prevailing oil prices. In practice, the assessments are quite ambiguous, and subject to large revaluations. For instance, the big jump in Middle East reserves between 1985 and 1990 is explained, not by new discovery, but by a one-time upward revision of existing reserve figures in Abu Dhabi, Dubai, Iran, Iraq, and Saudi Arabia by a total of 245 billion barrels, more than 80% of the previously recorded volumes in these countries.

As has been pointed out repeatedly by Adelman (1986, 1992), Blair (1977), and others, the cost of producing oil in the Middle East is only a small fraction of the cost of production else-

where. The unexploited reserves of the Middle East, too, have, on average, much lower production costs than reserves of oil in other countries. Given the extraordinary resource potential of the region, there is no incentive for expending money to prove reserves that promise to yield no more than a "normal" return on capital at prevailing prices. Hence, even the least economical proved reserves in the Middle East have estimated exploitation costs substantially below the prices that have prevailed since the early 1970s.

The absence of economically marginal reserves in the Middle East is demonstrated by the insensitivity of the region's reserve volume to price changes. Economically marginal deposits would have been removed from the reserve figures in consequence of the sharp price fall that occurred in 1986. In fact, the Middle East reserves did not change at all in consequence of that price change.

Table 2 demonstrates the leading role of the Middle East in OPEC's efforts to manage the oil market. The area carried the major cartel burden, and accounted for three-quarters of total production cuts in OPEC between 1975 and 1985. The sharp fall of Middle East output in this period, and the decline in the area's share of global supply was the cost incurred for the maintenance of a high oil price. (In addition to the output reduction due to conscious efforts to manage the market, there were declines in production caused by revolution and war. See below.) A significant recovery in Middle East output has been recorded in the late 1980s, as the high price policy was abandoned, but the 1990 figure, depressed in some measure by the Iraq-Kuwait crisis, is still far below the 1975 peak, and even more below the level that would have been attained in the absence of market management.

The restrictive production policies, along with an ample reserves/production ratio, which exceeded 50 in 1975 and 1980, and rose to more than 100 in 1985 and 1990, made it economically pointless to expand reserves by further exploration (Adelman, 1992). And indeed, exploration became insignificant in the Middle East. For example, out of 2346 active exploration rigs in 1987 in the world outside the Socialist countries, only

four were doing work in Saudi Arabia, the country with probably the greatest potential for economic discovery (OPEC, 1991). The entire Middle East occupied no more than 55 rigs (2.2% of the total number), a disproportionately small figure, in relation to the area's existing reserve stock and production level, or discovery prospects.

In conclusion, therefore, the reserve and production figures presented in Tables 1 and 2 underestimate the Middle East's potential. Both series have been sharply curbed by OPEC's policy to keep prices high. Furthermore, the figures fail to demonstrate the superior economic quality of the Middle East oil reserves.

The Middle East and the Viability of OPEC's Market Control

Considerable confusion has surrounded the question of OPEC's role in determining oil prices. Writing 11 years after the quadrupling of prices in 1973, Gately (1984) notes that there remains much disagreement about what happened, and about what can be expected in the future. Though the most widely accepted view is that OPEC effectively cartelized the market, an influential but dwindling minority has regarded the price increases of 1973 and 1979 as a consequence of an emerging scarcity of an exhaustible resource in a basically competitive market.

After surveying the many efforts to explain the nature of OPEC's actions, and to clarify their impact on the oil market, Gately concluded that it remains an open question how best to design a model of the oil cartel. "There are a large number of alternative theories, but a much smaller number of sensible applied models."

Griffin (1985) continued the work by empirically testing alternative model assumptions, and concluded, with a number of caveats, that a market-sharing cartel model provides the most reasonable explanation of what went on within OPEC and the oil market.

The issue is of great significance, given the importance of oil in the world economy. A better grasp of what happened in the past will provide, if not a tool for prediction, at least a handle for

understanding the future.

Leaving the 1970s aside, it is pretty obvious in retrospect that the high price that prevailed through the first half of the 1980s could be maintained only with the help of substantial cuts in OPEC's capacity utilization and output. Towards the middle of the decade, the production restrictions needed to defend the high price became untenably burdensome and threatened to explode the producer group.

A relaxation of the restraint in production in the middle of the decade explains the price collapse early in 1986, and the ensuing resumption in demand growth. But even the lower price level of the latter half of the 1980s was far above the prices that would have emerged in the absence of monopolistic output restraints. This assertion was convincingly supported during the crisis of 1990, when the lost Iraqi and Kuwaiti output, some 5 million barrels per day (Mb/d), was speedily and easily replaced by increased utilization of idle capacity in other OPEC countries. Withholding supply in a market with a low price elasticity of demand is a behaviour characteristic of price-raising cartels.

The viability of such cartels is importantly dependent on producer control of a crucial resource base, be it rich and geographically concentrated mineral deposits, a patent, or leadership in technological innovation. In the case of oil, the extraordinary resource wealth of the Middle East has greatly facilitated OPEC's market management. As indicated above, the Middle East oil producers assumed the major burden of production restraint in the defense of high oil prices. It is doubtful that a price-raising oil cartel would have survived for any longer period of time if the world's oil resources had been more evenly spread geographically.

With the existing skewed resource distribution, those who control Middle East oil resources have the power to determine oil prices at their will, even in the long run, within a very broad band. Precisely how they will use that power remains an open question. However, economic rationality suggests a few decision rules which are likely to be applied:

- Unrestrained capacity expansion in the Mid-

dle East, leading to truly competitive oil prices, is unlikely, for it would provide far less than the maximum feasible economic benefit to the resource owners.

- The defense of very high prices like those in the early 1980s, is untenable, for it would sharply erode the market for Middle East oil.
- From the Middle East producers' perspective, the economically rational long term policy would appear to be to restrain capacity expansion and output so as to keep the oil price substantially above the competitive level, but not so high as to induce large scale oil capacity expansion outside the region and sharp competition from other fuels. The determination of the "optimal" price and the change over time of that price is an important research issue to tackle for energy market analysts.

Political Instability in the Middle East and Its Impact on Oil Supply

Though economic rationality will undoubtedly play a role in determining oil policies and oil supply in Middle Eastern countries, many other factors could be even more important in shaping future events. Judging from the past, political instability is one such factor.

Historically caused tensions between the Middle East and several western European countries and the US, major consumers of oil from the area, have been important causes of the sharp political conflicts in the past, and of the ensuing disturbances in oil supply. Hence, it is worthwhile exploring briefly the origins of these tensions.¹

Excepting Iran, most of the Middle East was part of the Turkish Ottoman Empire early in the century. The Empire fell apart during the First World War, in which Turkey participated on the losing, German side. The British and French encouraged the Arabs of the Middle East to rise against Turkish sovereignty, promising them independence after the war. Thus a first cause of the historical tension alluded to above is that this

1/ For a fuller treatment see Mabro (1992), below in this issue of *ESR*.

promise was not fulfilled. In 1920, Iraq, Jordan and Palestine became British protectorates, while Syria and Lebanon were similarly assimilated by France. Independence came much later. By 1939, only Iraq and Saudi Arabia had become politically independent nations.

Even after political sovereignty had been attained, there followed extended periods of economic bondage, exercised through political means and through the far-reaching rights of the multinational oil companies that operated in the area. This bondage led to economic, political and even military eruptions, like the embargo on Iranian oil in response to the Iranian takeover of the Anglo-Iranian Oil Company in 1951, or the war that followed Egypt's appropriation of the Suez Canal in 1956. In the 1970s, there were large-scale nationalizations of the remaining multinational oil interests in the Middle East, but times had changed, and these moves did not arouse any violent counter-reactions from the former owners.

Political support for Israel from western Europe and the US has added to the tensions between the Middle East Arab nations and the "Western Powers." The establishment of Israel as an independent state after the Second World War has itself been a perennial cause of political tension and disruption in the Middle East. Wars have been fought between Israel and its Arab neighbours in 1948, 1967, and 1973.

Political instability has also been brought about by causes other than tensions with the rich industrialized nations of the "West." The speedy transformation of Iran caused by a fast rising oil wealth led to a violent religious revolution in 1978. Unclearly resolved border issues erupted into a war between Iran and Iraq in 1980 that lasted almost through the decade. The use of oil income for armaments, unrestrained power politics, and a lack of respect for recently established national boundaries in the region led to the Iraqi annexation of Kuwait in 1990, and to the ensuing liberation war in 1991.

Several of these events have had important repercussions on oil supply and oil prices.

The embargo on Iranian supply in 1951 was highly effective. Pre-crisis output in Iran, some

650,000 barrels per day, or 6% of world production, came to a virtual stand-still for a few years, and did not recover fully until after the middle of the decade (Darmstadter *et al*, 1971). However, excess capacity elsewhere permitted almost undisturbed deliveries to consuming areas, and there was little impact on prices. The Suez crisis led to some upward movements in price in 1957 and 1958, but the fundamental impact was on ship-building, and on a wholesale change of transport routes. The closure of the canal resulted in a proliferation of super-tankers which could economically transport oil from the Middle East around Africa to the consuming markets in Europe and North America.

Political events in the 1970s had a much greater impact on the oil market, possibly because utilization of accessible oil production capacity, worldwide, was very high throughout that decade.

The embargo by Arab oil producers late in 1973, triggered by the Yom Kippur war between Israel on one side, and Egypt and Syria on the other, though selective and of short duration, was an instrumental precondition for OPEC's doubling of prices in January 1974.

The revolution in Iran at the end of the decade, led to a fall in the country's output, from 5.7 Mb/d in 1977 to 3.2 Mb/d in 1979, with oil prices more than doubling to above US\$30 by 1980. The outbreak of war between Iran and Iraq in September 1980 curtailed Iran's output further, down to 1.3 Mb/d in 1981, and that of Iraq from 3.5 million in 1979 to 0.9 million in 1981. The production decline caused by these events, though temporary, greatly facilitated OPEC's efforts to maintain a very high price level through the first half of the 1980s decade.

The political events of 1990 led to an output loss of some 5 Mb/d (4.8% of world output), with prices doubling temporarily, but, as noted, the loss was swiftly compensated by increased output in Saudi Arabia and elsewhere.

In conclusion, the political history of the Middle East suggests that the area exhibits more than an average level of political instability. The events of the past have had a strongly destabilizing impact on oil supply and on the world oil

markets. With a high global dependence on oil from the Middle Eastern countries, there are strong reasons for oil consumers to keep an awareness of the political legacy of the region and an understanding of what may ensue in the future. Such understanding can be helpful for designing international policies to reduce Middle Eastern political tensions, or to protect the importing countries from future oil shocks if Middle East instability nevertheless perseveres.

Conclusion

The Middle East is endowed with an extraordinary oil resource potential that has no match elsewhere in the world. Those who control this resource have the power to manage the world market, even in the long run, and have an incentive to keep prices substantially above the competitive level. Political events in the Middle Eastern countries have repeatedly disturbed oil supplies from the area and destabilized international oil prices.

Given the significance of oil for the world energy sector and for the world macro-economy, it is important to clarify the dimensions of the oil wealth of the Middle East, to improve public understanding of the problems raised by the world's dependence on oil from that region, and to delineate international policies that would ameliorate the problems. The papers which follow this introductory article try to attend to precisely these needs.

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