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ANOTHER CASE OF CRYING WOLF

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PREFACE

Following the oil shocks of the 1970s, many analysts predicted that both the price of oil and the power of the OPEC cartel would continue to increase throughout the 1980s. The health of Western economies, it was warned, would be dangerously vulnerable to the vagaries of OPEC policy. Worse yet, this economic dependence would make the West, including the United States, susceptible to political blackmail by OPEC's leaders.

In actuality, these worst-case scenarios that dominated government and industry forecasting did not materialize. Instead, the price shocks of the 1970s called into play countervailing forces that resulted in a precipitous decline in oil prices by the mid-1980s. The economies of the Middle East oil exporters suffered badly from the sudden drop in revenues; to meet their growing domestic financial needs, these states found it necessary to compete against each other to gain market shares. Rather than the seller's market predicted by the "conventional wisdom," the oil market of the 1980s proved far more favorable to the buyers.

However, a moderate runup in oil prices in 1989 has once again set most analysts to warning about large price increases

in the 1990s and a resurgence of OPEC's economic and political power. Growing U.S. reliance on imported oil, rising Western energy demands and predictions that oil production from non-OPEC countries will decline are all pointed to as threats to American economic and political independence.

In this study, Professor Eliyahu Kanovsky challenges these forecasts. As he did in a 1987 paper for The Washington Institute, Professor Kanovsky argues that long-term economic pressures are now operating on the world oil market that will keep prices relatively stable for the foreseeable future. Most important, he claims, is the fact that major Middle East oil exporters were badly burned by the boom-bust cycle of the 1980s, and they are determined to avoid a recurrence and ensure stable prices for their oil over the long term.

Maintaining access to Middle East oil at reasonable prices remains a vital U.S. interest. Properly assessing the factors that may threaten the achievement of this strategic objective is therefore a critical task facing American officials responsible for formulating U.S. policy toward the Middle East. The Washington Institute is proud to contribute to this effort with the publication of Professor Kanovsky's important study.

Barbi Weinberg
President
June 1990

EXECUTIVE SUMMARY

Since the end of 1989, forecasts predicting an escalation of oil prices in the 1990s have proliferated. Hand in hand with these forecasts have gone warnings that the power of the OPEC cartel will increase significantly. Yet, reminiscent of the alarmist—and mistaken—predictions that followed the oil shocks of 1973-74 and 1979-80, today's forecasts fail to take into account certain key variables, while basing themselves on questionable assumptions. Indeed, a re-examination of the trends underlying the oil market of the 1990s indicates stable or lower prices.

The major fallacy of the “conventional” forecasts is their failure to analyze economic developments within the major oil-exporting countries of the Persian Gulf. The oil shock of 1979-80 raised tremendous revenues for these states, but also stimulated improvements in energy efficiency, fuel-switching away from oil and increases in non-OPEC oil production. By the mid-1980s, both world oil demand and prices had declined significantly. The budget surpluses and booming economies enjoyed by OPEC's Middle East exporters were replaced by severe deficits and economic recession. These states are now well aware of the dangerous consequences of high oil prices, namely the countervailing forces that eventually lead to de-

creased demand. To avoid the boom-bust cycle of the 1980s, they have committed themselves to policies that will increase revenues by increasing production, not prices.

Recent forecasts of higher oil prices are based on several assumptions, including a decline in non-OPEC oil production and rapidly rising oil consumption. However, both these assumptions are open to serious challenge. U.S. oil production may not increase, but factors are at work, particularly new technologies, that will make the decline far less precipitous than the pessimists suggest. Likewise, in the Soviet Union, the Third World and Europe, new technologies and changes in economic policies will likely allow for an expansion of oil production. Finally, environmentalism, improvements in energy efficiency and fuel-switching away from oil will keep increases in oil consumption more modest than the conventional forecasts predict.

While unforeseen events, such as wars and revolutions, could disrupt oil markets, resulting in higher prices, certain developments have taken place since the shock of 1979-80 that will limit price fluctuations. These "price stabilizers" include the already-discussed determination of the major Middle East producers to avoid price hikes; the completion of overland pipelines in Saudi Arabia and Iraq that allow much of their oil to circumvent passage through the vulnerable Strait of Hormuz; and the establishment in most Western countries of significant oil stockpiles.

While a deliberate decision on the part of OPEC to sharply raise prices is unlikely, the United States should take steps to further limit its vulnerability to unforeseen disruptions in supplies from the Middle East. These steps could include aid and incentives for Third World nations to explore and develop their oil resources and the introduction of fiscal and regulatory policies that will encourage domestic energy efficiency and conservation.

I EVALUATING RECENT OIL FORECASTS

A moderate runup in oil prices in 1989 has led many oil forecasters to project large price hikes through the 1990s and a far more powerful OPEC cartel; in short, another oil shock in the mid-1990s. A lead article in *The New York Times* recently headlined: "OPEC is Back and Feeling Flush."¹ A front page article in *The Washington Post* declared: "Four Arab states Seen In Position to Reclaim World Oil Control: Gulf Nations Could Dominate Market in 90s."² The reference was to Saudi Arabia, Iraq, the United Arab Emirates and Kuwait. Two months later, another lead story in *The New York Times* noted rising U.S. oil imports and the forecast of specialists that the "United States is now headed for permanent levels of dependence on imports that are higher than those that led to havoc in the 1970s," alluding to the oil shocks in 1973-74 and 1979-80.³ This was soon followed by a front page article headlined: "Greater Reliance on Foreign Oil Feared as U.S. Output Tumbles."⁴ At

¹ *The New York Times*, September 24, 1989.

² *The Washington Post*, October 23, 1989.

³ *The New York Times*, December 30, 1989.

⁴ *The New York Times*, January 18, 1990.

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the same time, a senior executive of British Petroleum predicted that oil shortages could occur as early as 1993 or 1994.⁵

OIL FORECASTS OF THE 1970s AND EARLY 1980s

In many respects, the recent forecasts are reminiscent of those made in the aftermath of the 1973-74 oil shock when prices jumped from about \$3 to \$11 a barrel, and the far more frightening scenarios depicted by oil “experts” following the second oil shock of 1979-80 when prices escalated to \$34-40 a barrel, and were even higher in the spot market. It would be wise to recall these forecasts.

A study published by the Central Intelligence Agency in 1977 concluded that

By 1985 . . . demand for OPEC oil will reach 47 to 51 million barrels per day (MBD) . . . Even if all other OPEC states produce at capacity, Saudi Arabia will be required to produce 19-23 MBD if (world) demand is to be met. Prices will rise sharply . . . no matter what Saudi Arabia does. Although Saudi Arabia has the reserve potential (about one fourth of the world’s known reserves) to meet increased demand between now and 1985, we doubt the Saudis will be able or willing to do so . . . the rates of Saudi production needed to satisfy (projected world demand) would . . . generate enormous (Saudi financial) surpluses.⁶

The CIA study based itself on economic analysis, not on predictions of supply disruptions due to wars and revolutions. Neither they nor other specialists foresaw the 1979 revolution in Iran, which had been the world’s second largest oil exporter, or the Iran-Iraq war which began in 1980. In a subsequent 1979 study, the CIA asserted that, “Supply disruptions caused by developments in Iran have advanced the timing of (the oil)

⁵*The New York Times*, January 26, 1990, p.D4.

⁶The Central Intelligence Agency (CIA), *The International Energy Situation: Outlook to 1985*, April 1977.

price increases" already projected in the 1977 study. In other words, the authors argued that prices would have risen to the \$34-40 level in any case as a result of economic forces, though the price rise might have been more gradual in the absence of the Iranian revolution. The study goes on to note that the "Saudis have long made it clear that they regard oil production much in excess of their revenue needs to be a concession to the West, and the United States in particular."⁷ The Saudis expected, and often received, a political *quid pro quo* from the major Western industrialized countries, and especially from the United States, for their willingness to produce oil beyond their presumed revenue needs.

The CIA forecasts were rather typical of the hundreds published during the 1970s and early 1980s by oil experts in government, academia, private consulting firms, the World Bank and elsewhere. A 1981 study by the Congressional Budget Office forecast that prices would rise during the 1980s from \$30 to \$115 per barrel. The study also concluded that OPEC states, and especially Saudi Arabia, would continue to accumulate enormous financial surpluses and that "as their surpluses grow, producing nations will keep their oil in the ground, while prices rise."⁸ A World Bank study projected real price increases (over and above inflation) of 3 percent per annum until the end of the century.⁹ A.Z. Yamani, the Saudi oil minister, warned that "existing world oil and gas reserves will be depleted at alarming rates . . . irreversible physical shortfalls in supply may take place as early as 1988 . . . the crisis which may then develop will be of such magnitude as to make the current situation (the oil shock triggered by the Iranian revolution) appear like a mere passing event of trivial importance." He projected that demand for OPEC oil would

⁷CIA, *The World Oil Market in the Years Ahead*, August 1979.

⁸Americans For Energy Independence, *U.S. Oil Supply and Demand: Projections to 1990*, pp.21-25.

⁹The World Bank, *Global Energy Prospects*, August 1981, p.15.

rise steadily from 30 MBD in 1980 to 42 MBD in 1990.¹⁰ The inevitable conclusion was that OPEC, led by Saudi Arabia, would dictate prices, would become a major financial as well as oil power, and would be in a position to exact political as well as economic tribute from the West.

These alarmist forecasts were accepted in toto by the U.S. Senate Committee on Energy and Natural Resources. After hearing a large number of expert witnesses, the committee concluded in 1980 that "the industrialized countries will remain heavily dependent on imported oil from unreliable or insecure sources for the rest of this century or well into the next, (leading) to higher prices, and greater political and military concessions in return for oil (from Saudi Arabia and other Middle Eastern oil exporters). Several producing countries (the small-population Arab oil exporters) are earning far more in revenue than they are able to spend on imports." James Schlesinger, formerly U.S. secretary of defense and subsequently secretary of energy, concluded ominously that "whoever controls the oil tap in the Middle East will possess sufficient leverage to dominate the world."¹¹ On the basis of these forecasts President Carter projected that U.S. annual oil imports would reach an astronomical \$500 billion by 1985.¹² In reality, they were \$52 billion in 1985, down from a peak of \$80 billion in 1981.¹³

THE FORECASTS AND REALITY

Economic forecasting is an inexact science, but rarely have forecasts, almost universally accepted, been so erroneous,

¹⁰A.Z. Yamani, "Energy Outlook: The Year 2000," *The Journal of Energy and Development*, Autumn 1979.

¹¹Committee on Energy and Natural Resources of the U.S. Senate, *The Geopolitics of Oil*, Washington, D.C., December 1980, pp.2-3, 69.

¹²*The New York Times*, December 30, 1989, pp.33-34.

¹³International Monetary Fund (IMF), *International Financial Statistics*, various issues.

misleading and costly. Instead of oil prices continuing to climb following the 1979-80 oil shock, they declined very sharply; instead of rising demand for OPEC oil, there was a sharp drop; instead of depleting world oil and gas reserves, they have risen very strongly both in OPEC and non-OPEC countries; instead of rising financial surpluses, many OPEC countries, including Saudi Arabia, have been incurring large and continuing deficits, both budgetary and balance of payments (the current account). There has, indeed, been an oil shock since 1982, but for the oil-exporting countries, not the oil importers.

Examining the nature and sources of past forecasting errors should aid in evaluating the plausibility of more recent oil forecasts. Oil prices peaked in 1981-82 at \$33-34 per barrel, followed by an almost steady erosion to \$27 in 1985, and then a drastic fall of 50 percent in 1986 to \$13-14. In 1987, oil prices averaged close to \$18 per barrel, followed by another decline to about \$14 in 1988 and then a rise to over \$17 in 1989. The above are average annual figures. Measured in constant 1985 dollars (i.e., corrected for dollar inflation), oil prices peaked at \$37-38 per barrel in 1981-82, dropped sharply to \$13-14 in 1986, and averaged about \$15 in 1989. If the above-mentioned projections of the Congressional Budget Office had been realized, 1989 prices would have been over \$100 per barrel. If the more conservative World Bank projections had been realized, 1989 prices would have been about \$70 a barrel.

Between 1973 and 1979, OPEC production was 30-31 MBD (other than in 1975) and then dropped drastically to 16 MBD by 1985. Subsequently it rose to about 22.5 MBD in 1989. The sharp decline in oil revenues impelled OPEC to join the battle for market shares. Saudi Arabia, the linchpin of OPEC, suffered the largest decline in output from a peak of about 10 MBD in 1980-81 to a low of 3.2 MBD in 1985. Large budgetary and balance of payments deficits impelled the Saudis to abandon their role as the "swing" supplier, and since 1986 they have aggressively sought to increase their market share. The new policy raised Saudi output to 5.5 MBD in 1989.¹⁴ The new

¹⁴See Appendix, Table 1.

policy of aggressively seeking a larger share of the oil market was motivated by its massive deficits since 1983.

The oil forecasts of the 1970s and early 1980s projected a strong decline in world oil and gas reserves, especially in non-OPEC countries. But precisely the reverse occurred. It is estimated that, as of January 1990, world oil reserves were slightly in excess of 1,000 billion barrels, as compared with 642 billion barrels ten years earlier, rising by a massive 56 percent during the decade. Much of the increase stems from revisions of earlier estimates of reserves in the Middle Eastern countries, and part from new discoveries in various non-OPEC countries. Excluding the United States and the Soviet Union, non-OPEC oil reserves rose by one third in the 1980s to 150 billion barrels. U.S. reserves dropped marginally from 26.5 to 25.9 billion barrels, while in the Soviet Union the decline was far greater, from 67 to 58.4 billion barrels. Though most of the world's increase in reserves in the past decade was in OPEC countries—mainly from sharp upward revisions of earlier estimates—non-OPEC reserves, as a whole (including the United States and the Soviet Union), rose from 100 to 140 billion barrels, mainly from new discoveries.¹⁵

No less important has been the rapid growth in natural gas reserves, which rose by 50 percent in the last decade.¹⁶ According to one reliable source, additions to reserves were two and one half times greater than the rate of production and, in terms of energy equivalent, world gas reserves had risen to a level only fractionally lower than oil reserves. Moreover, while the distribution of oil reserves is heavily concentrated in the Middle East, gas reserves are distributed far more widely.¹⁷ Furthermore, these estimates do not include “non-conventional” sources of gas. Shell Oil estimates that “even . . . less optimistic estimates . . . indicate that non-conventional gas

¹⁵ *Oil and Gas Journal*, December 25, 1989, pp.21-31.

¹⁶ *The Economist*, January 13, 1990, pp.66-67.

¹⁷ *Petroleum Economist*, August 1988, pp.255-258.

reserves are significantly greater than current estimates of natural gas reserves.”¹⁸

The ominous scenarios of the 1970s and early 1980s also forecast massive and growing OPEC financial surpluses (the famous petrodollars) and that OPEC producers would conclude that “oil in the ground” is more valuable than expanding current production in order to satisfy the insatiable thirst for OPEC oil. This was based on the assumption that Saudi Arabia and the other small-population Middle East oil exporters were unable to “absorb” the growing stream of oil revenues. The prevalent view that “the laws of economics do not apply . . . (to oil) . . . could be heard in the 1970s . . . OPEC . . . had repealed the market. The price of oil would rise forever (and by) 1985 Saudi Arabia would be rich enough to buy every firm quoted on Wall Street.”¹⁹

The projections of huge and growing OPEC financial surpluses were not just a corollary of the conventional oil forecasts. They were at the very heart of their analysis and of their predictions of rising oil prices. Economists are fully aware of the fact that various international commodity cartels have had a history of fragility and cheating, usually a consequence of the pressing financial needs of some members of the cartel. But the authors of the oil forecasts believed that OPEC was different since its leading members were, presumably, immune to financial pressures. The prevalent view was that Saudi Arabia and the other small-population oil exporters could, and would, readily reduce output should any temporary gluts occur, thereby bolstering the price decreed by OPEC. It was argued that the small-population Middle East oil exporters were “small absorbers” of revenues, and for them “oil in the ground” was presumably preferable to high levels of production. One British oil specialist argued that the oil glut could be eliminated “easily” by a “fairly modest” restriction

¹⁸Shell Briefing Service, *Natural Gas*, No. 4, 1988.

¹⁹*The Economist*, July 30, 1988, p.15.

on output by OPEC, or by Saudi Arabia alone.²⁰ As things turned out, Saudi Arabian output dropped very sharply from 9.8 MBD in 1981 to 6.5 MBD in 1982, and to far lower levels in subsequent years, but prices continued to fall. Other members of OPEC cut production marginally, while some even raised it.

²⁰Robert Mabro, "Can OPEC Hold the Price Line?," *Middle East Economic Survey (MEES)*, March 8, 1982, p.4.

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PERSISTENT SAUDI DEFICITS SINCE 1983

The second oil shock raised Saudi oil export revenues very sharply from \$40 billion in 1978 to \$116 billion in 1981.¹ Reassured by the predictions of the world's experts that the upward trend in prices and in demand for OPEC oil would continue at least until the end of the century, the Saudis announced a new five-year development plan (1980-85) which called for even more massive expenditures than during the preceding, very ambitious development plan. The Saudi authorities were convinced, as were the large majority of oil forecasters, that, despite higher expenditures, financial surpluses would continue to accumulate. The preamble to the 1980-85 plan, published in 1980, gave explicit expression to this confidence: "The Kingdom is now one of the world's foremost financial powers, in addition to its role as the major oil exporter of the free world."²

¹See Appendix, Table 4.

²Kingdom of Saudi Arabia, Ministry of Planning, *Third Development Plan 1400-1405, 1980-1985*, p.14.

Imports of goods and services rose sharply from \$42 billion in 1978 to \$81 billion in 1981, but export revenues climbed even more rapidly. The balance on current account (exports minus imports of goods and services and foreign aid) was unusually large—\$43 billion in 1980 and \$41 billion in 1981. As a consequence, central bank foreign assets rose very strongly to \$145 billion by mid-1982, as compared with \$60 billion in 1978.³

But instead of the predicted continued increase in oil prices, an almost steady erosion began in 1981, and instead of rising demand for OPEC oil, there was a strong decline. Saudi Arabia, which had undertaken the role of swing producer, suffered the most severe drop in oil output, especially since other OPEC members were offering price discounts, i.e., below those set by OPEC. Saudi oil export revenues fell precipitously from a peak of \$116 billion in 1981 to \$24 billion in 1985. Budgetary revenues (overwhelmingly from oil) fell from a peak of \$108 billion in fiscal 1981-82 to less than \$60 billion in 1983-84. In 1982-83, the authorities began to curb expenditures, but there were serious constraints. The bulk of the cutbacks actually implemented was in the "projects" budget, i.e., investment in infrastructure—roads, airports, water, electricity, telecommunications, health, education and housing. The authorities believed that since most of these projects were undertaken by foreign companies and the labor force working on these projects was almost exclusively foreign, these cutbacks would hardly affect Saudi nationals. But, in reality, the spillover effects of the sharp decline in construction did have a strongly negative impact on other sectors. Many local businesses were adversely affected, bankruptcies were widespread, and the booming real estate market, which, by law, is exclusively Saudi, came crashing down.⁴

There were much smaller reductions in Saudi Arabia's mammoth military expenditures, or at least that part included

³See Appendix, Table 3.

⁴*Economist Intelligence Unit (EIU), Country Report-Saudi Arabia, No.4, 1988, p.15.*

in the publicly announced budgets. The (published) military budget had risen from less than one billion dollars in fiscal 1972-73 to \$9-10 billion per annum during the late 1970s. Following the massive inflow of oil revenues in the early 1980s, the military budget was doubled to \$19 billion per annum. By way of comparison, Israel's annual military budget in 1981-85 averaged \$6 billion. Estimates of Saudi military expenditures in 1981-85 were \$21.4 billion per annum.⁵

The large deficits since 1983-84 persuaded the authorities to reduce annual military expenditures to \$13-14 billion in the latter half of the 1980s.⁶ However, foreign observers believe that at least part of the arms purchases abroad are not included in the announced budgets. One example is the mammoth contract with the British for the purchase of Tornado aircraft and other military equipment to be paid for by oil shipments. The contract is valued at 10-15 billion pound Sterling.⁷

In short, there was apparently a cutback in military spending in the second half of the 1980s, but the budgetary figures most probably exaggerate the magnitude of the decline. In any case, even according to the budgetary figures, military outlays were the equivalent of about 20 percent of GNP in 1984-87.⁸ Few countries incur such a heavy military burden in peacetime. The budget for 1990 calls for an additional one billion dollars in military spending. It is the only increase of significance in the 1990 budget.⁹

⁵Estimates are taken from the U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers 1988*, Washington, D.C., 1989, pp.47, 59.

⁶See Appendix, Table 2.

⁷*MidEast Markets*, January 22, 1990, p.6; *The Middle East*, June 1989, p.33.

⁸See Appendix, Table 4.

⁹See Appendix, Table 2; *Middle East Economic Digest (MEED)*, February 2, 1990, p.2.

Of far lesser importance, from the point of view of total Saudi expenditures, has been the sharp drop in foreign aid, from a peak of over \$7 billion per annum in the early 1980s to one billion dollars in 1988. However, there are strong indications that all or most of Saudi aid to Iraq since the beginning of the war in 1980 has been in the form of off-budgetary loans. The chances of repayment are almost zero. Unofficial reports also indicate that the Saudis had been financing arms purchases of other Arab countries (Syria, Jordan and others) in the 1970s and early 1980s, and that these expenditures were also off-budgetary. There is no doubt that Saudi foreign aid has diminished considerably, though here too the absolute figures are probably understated in the published budgets.

What is most noteworthy is that the large subsidies to local producers, as well as consumer subsidies on food, water, electricity, education, health, housing and social welfare have hardly been touched. Even autocratic regimes find that once the population—businessmen, employees or consumers—have been given various economic benefits, cutbacks are exceedingly difficult since they might engender discontent.¹⁰ The ostentatious wealth of the thousands of royal princes and of some other wealthy Saudis, makes it all the more difficult to curb subsidies or to impose taxes. In the 1989 budget, subsidies for food, agriculture and other items were actually raised by 35 percent.¹¹

During the “fat” years the regime unofficially committed itself to provide jobs in the public sector to the large and growing number of Saudi high school and university graduates. Despite official exhortations, Saudis remain strongly averse to employment in industry, construction and similar occupations. This is especially true of the most recent university and even high school graduates.¹² A survey taken

¹⁰*EIU, Country Profile-Saudi Arabia, 1989-90*, p.29.

¹¹*MidEast Markets*, January 22, 1990, p.6.

¹²*Financial Times Survey-Saudi Arabia*, April 13, 1988, p.VIII.

in 1988 showed that less than 10 percent of employees in the non-governmental sectors are Saudis. This was despite official regulations stipulating that in private sector firms at least 75 percent of employees should be Saudi nationals.¹³ Government employment rose from 399 thousand in 1980 to 469 thousand in 1985 and was budgeted for 520 thousand in 1988. These figures exclude both the military and internal security forces.¹⁴ These make-work positions in the public sector have been rising almost steadily and constitute a growing burden on the budget.

While the government has cut back strongly on new infrastructure projects, the large-scale investments of the past necessitate growing outlays on operations and maintenance. Furthermore, during the boom years a great many buildings were poorly constructed and now require extensive repairs and reconstruction.¹⁵ In short, internal political and social commitments, large military outlays and current payments for past mistakes have precluded sharper cutbacks to match the precipitous drop in oil revenues. As a consequence, large deficits have been the norm in every year since 1983-84. Between 1983-84 and 1989, total budgetary deficits were over \$90 billion. In 1986 and again in 1987, deficits were equal to about one fourth of the gross domestic product.¹⁶

For the Saudi monarchy deficits are anathema. They have been accepted because of fear that the alternative, namely, reducing the living standards of the citizens or failing to live up to the expectations engendered during the years of the oil boom, might be politically hazardous. However, the deficits rapidly exhausted the financial reserves accumulated in the "fat" years. The official accounts show that central bank foreign assets fell almost steadily from a peak of \$145 billion in

¹³*EIU, Country Report-Saudi Arabia*, No.2, 1989, p.12.

¹⁴*EIU, Country Profile-Saudi Arabia, 1989-90*, pp.12-13.

¹⁵*Gulf States Newsletter*, August 21, 1989, p.15.

¹⁶See Appendix, Table 4.

mid-1982 to \$63 billion at the end of 1988.¹⁷ However, these figures understate the magnitude of the loss. The \$63 billion in foreign assets held by the central bank in 1988 includes so-called loans to Iraq as well as much smaller loans to other Arab countries that have no prospect of repayment.¹⁸ No official figures are published regarding the composition of the central bank foreign assets. One unofficial estimate suggested that, as of 1986, these paper assets—loans to Iraq and other Arab countries—were \$35 billion.¹⁹ There is every reason to believe that Saudi aid to Iraq continued at least until the cease-fire in mid-1988. More recently, a Middle East journal estimated that the remaining official foreign assets are “to a large extent illiquid.”²⁰ Another unofficial estimate suggested that liquid reserves might be as low as \$15 billion at the end of 1989.²¹

The sharp constraints precluding further budgetary cutbacks and the rapid exhaustion of most of the financial reserves impelled the authorities to seek loans in order to cover all or most of the deficits. For the Saudi rulers this was a sharp and painful change in policy. In his presentation of the 1987 budget the king stated that, “The government has tried its best in these difficult circumstances to keep the welfare of its citizens in mind while not burdening itself with loans, either external or internal.”²² The following year the king was compelled to reverse course. The 1988 budget called for bond sales to the public to cover most of the projected deficit, in order to stem the worrisome decline in reserves. The last time the

¹⁷No later figures have been published at this writing. See IMF, *International Financial Statistics*, February 1990, pp.454-455.

¹⁸EIU, *Country Profile-Saudi Arabia, 1989-90*, p.34.

¹⁹*MidEast Markets*, March 16, 1987, p.7.

²⁰*The Middle East*, September 1989, pp.5-9.

²¹*MidEast Markets*, January 22, 1990, p.6.

²²The National Bank of Kuwait, *Kuwait and Gulf Cooperation Council, Economic and Financial Bulletin*, Fall 1987, p.24.

government borrowed was in the late 1950s, the result being that "King Saud, whose extravagance made this necessary, was gently asked to resign in 1964."²³

In reality, most of the bonds were bought by various state pension funds and other state agencies and a smaller share by the local commercial banks. The response of the private sector was most disappointing. The authorities had little choice but to seek an external dollar-denominated loan. In mid-1989, a governmental agency, the Public Investment Fund, received a \$660 million loan from a syndication of various banks.²⁴ This was expected to be the first of several foreign loans.²⁵

Another indication of Saudi financial problems are the increasing delays in payments due to contractors, mainly foreign. In some cases, the delays in 1988-89 were as much as eight months.²⁶ These actions are, in essence, loans extended unwillingly by the contractors. The U.S. Embassy in Riyadh reported in mid-1989 that "firms are frequently asked (by the Saudi authorities) to settle for less (than stipulated in the contract) in order to be paid. Payment delays are sometimes used to extract additional services, or to force a contractor to provide maintenance until a project is finally turned over to the government. There also appears to be an increasing number of capricious performance bond calls, which do not seem justified by the work performed by contractors."²⁷ A further indication of Saudi Arabia's financial problems is the marked growth in its trade-related external debt from \$9.9 billion in 1986 to about \$15 billion at the end of 1988.²⁸ In 1989,

²³*The Economist*, June 18, 1988, p.56.

²⁴*Wall Street Journal*, July 6, 1989, p.14.

²⁵*MEED*, December 29, 1989, p.XII.

²⁶*EIU, Country Report-Saudi Arabia*, No.4, 1989, pp.11-12.

²⁷U.S. Embassy in Saudi Arabia, *Foreign Economic Trends Report 1989*, June 26, 1989, p.11.

²⁸*EIU, Country Profile-Saudi Arabia, 1989-90*, p.35.

the Saudis were one of the main violators of OPEC quotas with output averaging 5.5 MBD, exceeding its quota by over 650 TBD. It is not hard to understand the motivations.

SAUDI FINANCES AND OIL POLICY

The forecasts of another oil shock in the 1990s and of the growing power of OPEC, led by Saudi Arabia, ignore, or hardly take account of, the impact of financial stringency on oil policy. At least since 1985, Saudi oil policy has been determined largely by the country's financial needs—and to a large extent this is also true of other OPEC members. Foreign analysts may assert that Saudi Arabia can manage nicely with smaller oil revenues, but it is clear that the Saudi authorities have different views. This is evident from their spending policies which resulted in seven consecutive years of deficits (thus far), the exhaustion of most of the country's financial reserves, and growing debts. Despite very large investments in industry and in agriculture designed to diversify the economy, it continues to be overwhelmingly dependent on oil. The official estimates show that oil's share of gross domestic product fell very sharply from 65.5 percent in 1980-81 to 34.2 percent in 1984 and 23.0 percent in 1987.²⁹ This would appear to imply far greater economic diversification away from the extreme dependence on oil. But, as a British journal phrased it, the official national accounts "try to conceal the almost umbilical link between oil revenues, government expenditures, and economic growth, whether in the private or public sector."³⁰ Industry, agriculture and the maintenance of living standards are all dependent on large-scale subsidies financed by oil revenues. The exhaustion of most of the country's financial reserves, as well as lower international interest rates, have sharply reduced the government's investment income (interest and dividends from abroad) from

²⁹Kingdom of Saudi Arabia, Saudi Arabian Monetary Agency, *Annual Report 1408-1988*, p.218 and earlier issues.

³⁰EIU, *Country Profile-Saudi Arabia, 1989-90*, p.10.

a peak of almost \$14 billion per annum in 1982-83 and 1983-84, to about \$3 billion per annum in 1988-89.³¹ In short, Saudi Arabia's finances and its economic welfare are inextricably linked to its oil revenues, and this is likely to continue into the indefinite future.

But while far higher oil prices might temporarily solve, or at least alleviate, the state's financial problems, the experience of the 1970s, and especially of the early 1980s, severely restricts its room for maneuver. The Saudi leaders are fully aware of the fact that oil price hikes would again give rise to powerful countervailing forces which would, within a few short years, reduce world oil consumption, stimulate energy conservation, fuel-switching into other sources of energy, and boost non-OPEC oil supplies. This was the experience of the 1970s and 1980s and there is every reason to believe that this would be repeated in the event of major price hikes, with even greater force. The Saudi leaders, as well as those of other OPEC countries with very large oil reserves and overwhelming dependency on oil revenues, are fully aware of the almost inevitable outcome of major oil price hikes. This awareness was lacking in the 1970s and early 1980s. The oil experts had assured them of both further increases in price and in demand. In short, the Saudis will make every effort to expand capacity and output in order to enhance oil revenues and, at the same time, prevent oil prices from rising, at least in real terms.

In the fall of 1989, the Saudi oil minister announced plans to expand (sustained) production capacity from 7.5 to 10 MBD. This would restore capacity to its level in 1979-81, when actual production was about 10 MBD. Since production dropped sharply in the following years, some facilities which had not been utilized for many years suffered from corrosion and other problems and now require extensive repairs.³² This neglect was due, in part, to budgetary stringency. In addition to the usual transfer of oil profits from Aramco and Petromin (the state-owned oil companies) to the treasury, the authorities

³¹See Appendix, Table 2.

³²*MEED*, November 10, 1989, pp.25-26.

appropriated about \$18 billion from these companies in 1984-87.³³ In recent months, the oil minister also announced plans to raise export capacity to 14 MBD.³⁴ This would be done by expanding the internal east-west pipeline (Petroline). In other words, even if hostilities would shut down Saudi exports through the Gulf, it would be in a position to maintain shipments by utilizing the pipeline.

Saudi Arabia's huge oil reserves surely permit far higher levels of production. The main problem is finance. There are various unofficial estimates of the cost involved in restoring capacity to 10 MBD. Some put the cost as high as \$30 billion.³⁵ Potential contractors seeking to implement the project claim that this figure is highly exaggerated. Reports published in early 1990 indicate that the Saudis have begun to take the initial steps to implement the expansion program.³⁶ It would not be surprising if, in light of the financial situation, the Saudis seek additional loans in order to carry out these projects.

The large investments in Saudi petrochemicals also influence its oil policy. Low rates of oil production reduce the output of associated gas utilized by these plants.³⁷ The gas used as feedstock enables Saudi petrochemicals to compete with foreign producers. The lack of sufficient gas (as a result of low rates of oil production) requires the use of far more expensive naphtha. This has hampered Saudi plans to expand production of ethylene.³⁸

Following the example set by Kuwait and some other oil exporters, Saudi Arabia paid Texaco \$1.2 billion in 1988 to become a partner in three U.S. east coast refineries and gain

³³See Appendix, Table 2.

³⁴*EIU, Country Report-Saudi Arabia*, No.4, 1989, p.16.

³⁵*MEED*, January 26, 1990, p.23.

³⁶*Petroleum Intelligence Weekly (PIW)*, January 29, 1990, p.1.

³⁷*Gulf States Newsletter*, May 1, 1989, pp.8-10.

³⁸*Petroleum Economist*, September 1988, p.311; *MEED*, July 15, 1988, p.236.

access to 11,450 gas stations, thereby effectively securing an outlet for 600 TBD of Saudi crude.³⁹ This is in addition to refineries in Saudi Arabia built for export. These investments add further pressure on the Saudis to maintain high levels of oil production.

THE POLICIES OF OTHER MIDDLE EAST OIL EXPORTERS

There are, of course, wide variations, but the Saudi financial predicament is not unique. Other small-population Middle East oil exporters, classified at one time by oil analysts as small absorbers of revenues and prime candidates for accumulating large and growing financial surpluses, have, like Saudi Arabia, been incurring large and persistent budgetary deficits since the early or mid-1980s. While Saudi Arabia's population is an estimated 8-9 million (of whom about three million are foreigners), Qatar's population is less than 400 thousand (of whom more than three fourths are foreigners). Following years of financial surpluses, Qatar has been incurring large deficits since fiscal 1986-87 averaging about \$1.5 billion per annum. Oil revenues had dropped from about \$5.5 billion per annum in the early 1980s to \$1.75 billion in 1986-88, and the authorities were unable to curb spending sufficiently to avoid deficits.⁴⁰ The deficits of recent years have been almost equal to state oil revenues. In relation to oil revenues, Qatari deficits have been even larger than in Saudi Arabia. As in Saudi Arabia, the government has delayed payments to contractors and has recently taken foreign loans both for current expenditures and in order to develop its very large gas field. As one analyst phrased it, "Qatar still faces a long haul to drag its economy out of the doldrums."⁴¹ It is, therefore, not difficult to

³⁹*The Economist*, July 9, 1988, p.15.

⁴⁰*EIU, Country Profile-Bahrain, Qatar, 1989-90*, p.34; *MEES*, November 20, 1989, p.D1.

⁴¹*MEED*, February 2, 1990, p.6.

explain recent Qatari plans to expand its oil production capacity as well as its gas fields.

The United Arab Emirates (UAE) is a federation of seven quasi-autonomous emirates. Oil revenues accrue to the individual emirates, and the federal government is dependent on subventions from the rich emirates, mainly Abu Dhabi and, to a lesser extent, Dubai. In 1989, Abu Dhabi accounted for 77 percent of UAE oil production and Dubai for 21 percent.⁴² In terms of oil reserves, Abu Dhabi is even more dominant, with reserves estimated at 94 billion barrels out of total UAE reserves of 98 billion barrels.⁴³ The population of the UAE is less than two million, of whom the large majority are foreigners.

Oil export revenues of the UAE dropped sharply during the 1980s from a peak of \$19.6 billion in 1980 to \$7.4 billion in 1988.⁴⁴ Though public spending was curbed, deficits soon became the norm, rising from \$1.1 billion in 1982 to \$3.1 billion in 1988.⁴⁵ It is not hard to understand why the UAE has been one of the major violators of OPEC quotas. The UAE's average output in 1989 of 1.9 MBD exceeded its quota by 850 TBD. Moreover, toward the end of 1989, Abu Dhabi announced plans for a major expansion of (sustainable) capacity to 2.7 MBD by 1994 and was also seeking refining and marketing assets overseas.⁴⁶ Abu Dhabi's output in the latter half of 1989 averaged 1.7 MBD, an all-time peak.⁴⁷ The past record would indicate that Abu Dhabi will utilize its expanded capacity, regardless of OPEC decisions. As for Dubai, it has never considered itself bound by OPEC decisions.

⁴²*Petroleum Economist*, February 1990, p.72.

⁴³*EIU, Country Profile-United Arab Emirates, 1989-90*, p.16.

⁴⁴*MEES*, November 20, 1989, p.D1.

⁴⁵*EIU, Country Profile-UAE, 1989-90*, p.3.

⁴⁶*PIW*, February 5, 1990, p.1.

⁴⁷*Petroleum Economist*, February 1990, p.72.

Kuwait presents a more difficult case for analysis. It is also in the category of major oil exporters with small populations, numbering about two million, of whom more than half are foreigners. In many respects it appears to be an exception insofar as, in sharp contrast with its neighbors, it has shown persistent budgetary surpluses—though they have diminished sharply from the peak of \$16.7 billion in 1979-80 to about \$5 billion per annum in recent years. And yet, Kuwait has, along with Saudi Arabia and the UAE, been a major violator of OPEC quotas. In 1989, its output averaged 1.8 MBD, exceeding its quota by about 700 TBD.

Kuwait has cut back very sharply on foreign aid—at least that part shown in the official accounts—from about one billion dollars in 1981 (the peak year) to \$140 million in 1988.⁴⁸ The cutback has been mainly in aid to Syria and Jordan. However, aid to Iraq—not shown in the budgets—has been largely in the form of “loans” from its reserve fund (as was the case with Saudi Arabia). Its close proximity to Iraq makes it all the more vulnerable to Iraqi “requests” for aid. It might be recalled, in this regard, that shortly after Kuwait declared its independence in 1961, Iraq laid claim to all of Kuwait. Loans to Iraq were one of Kuwait’s primary tools for defusing the crisis. Since then, Iraq has never relinquished its claim to parts of Kuwait and there have been some serious border clashes. Money has been the secret weapon in Kuwait’s arsenal in dealing with its powerful and aggressive neighbor.

Money is also the main tool for keeping internal peace. Kuwait must cope with a large, at times hostile, Shiite population. This may explain, at least in part, why Kuwait prefers money in the bank today to oil in the ground and insists on higher production despite OPEC resolutions. Moreover, Kuwait’s huge oil reserves also dictate a long-term policy of relatively low oil prices, in order to avoid a repetition of developments similar to those which occurred following the 1979-80 oil shock, including a major long-term shift away from oil in favor of other sources of energy.

⁴⁸IMF, *International Financial Statistics*, February 1990, p.328 and earlier issues.

Iraq and Iran are in a different category. Their populations are far larger, 18 million and 53 million, respectively, and their financial needs are, *a fortiori*, greater. Furthermore, the lengthy, costly and very destructive eight-year war, 1980-88, greatly magnified their financial needs—these can be satisfied only by oil sales. Both countries suffered massive destruction of their civilian economies which necessitate large allocations for reconstruction. Both countries must undertake long-neglected development plans. In addition, Iraq not only exhausted almost all of its pre-war \$35 billion in foreign exchange reserves, but also amassed a foreign debt of at least an equal amount. This estimate does not include so-called loans from Saudi Arabia and Kuwait which Iraq has no plans to repay.⁴⁹

Iraq is very secretive, disclosing few economic and financial facts and figures, but there are clear indications that, despite enhanced oil exports since hostilities ceased in mid-1988, its financial situation continues to be precarious. At a meeting with officials of the U.S. Export-Import Bank in the fall of 1989, the Iraqi finance minister requested rescheduling of debts to the United States, but was told bluntly that his country's credit-worthiness is poor, its budgetary deficits are growing, and that Iraq's financial situation will probably deteriorate, in part as a result of continued high levels of military spending.⁵⁰

Requesting the rescheduling of debts was Iraq's usual practice during the war and has continued since the cease-fire. In some cases, the creditors were and are compelled to accept oil shipments in payment of the debt. In February 1990, India was offered part payment in cash and the remainder in oil, in return for rescheduling the \$500 million in arrears to Indian companies.⁵¹ Similar arrangements were proposed to Japan on its \$4 billion debt, to Italy, France and others.⁵² In his

⁴⁹*Financial Times*, January 8, 1990, p.A4.

⁵⁰*MidEast Markets*, October 30, 1989, p.12.

⁵¹*MEED*, February 23, 1990, p.24.

⁵²*MEED*, January 26, 1990, pp.6-7.

presentation of the 1990 budget, the Iraqi deputy prime minister stated that it included a "reduction of the country's total foreign debt by \$3 billion this year, apart from other plans to pay part of the debts by oil."⁵³

The head of the Iraqi state-owned oil company recently stated that Iraq's potential oil reserves are at least equal to its officially claimed proved reserves of 100 billion barrels. He noted that only 104 exploration wells were drilled in the last twenty years.⁵⁴ While foreign observers agree that Iraq's oil potential is very large, probably second only to that of Saudi Arabia, they believe that official claims that production capacity is now 4.5 MBD are greatly exaggerated and is, in fact, closer to 3.5 MBD.⁵⁵ According to a former OPEC official, Iraq's production capacity is only 3.1 MBD.⁵⁶ Actual output in December 1989 was somewhat over 3 MBD.⁵⁷ In other words, if Iraq was adhering to OPEC quotas in 1989, in sharp contrast with its gross violations of quotas in previous years, it was only because it was unable to pump more oil.

Clearly, Iraq has the potential and the motivation to expand capacity and production to far higher levels. It has paid little attention to OPEC restrictions in the past and is not likely to do so in the future, especially in view of its dire financial straits and its enormous needs. One can, therefore, readily understand a recent change in policy, namely, the "political" decision (as the oil minister phrased it) to invite foreign oil companies to participate in the country's oil development plans and to raise capacity very sharply to 5.5-6 MBD. The constraint, heretofore, has been the lack of finances.⁵⁸ For Iraq this

⁵³*MidEast Markets*, January 22, 1990, p.6.

⁵⁴*MEED*, January 26, 1990, p.18.

⁵⁵*PIW*, February 12, 1990, p.3.

⁵⁶*Oil and Gas Journal*, December 25, 1989, pp.21-25.

⁵⁷*Petroleum Economist*, March 1990, p.104.

⁵⁸*Financial Times*, February 3-4, 1990, p.24; *PIW*, February 12, 1990, p.3.

constitutes a major shift in policy, requiring, as the minister stated, a political decision. Iraq nationalized the foreign-owned Iraq Petroleum Company in 1972, before the other Arab oil exporters in the Gulf, and is particularly sensitive with regard to foreign oil companies participating in its oil development. Even a limited role for the foreign oil companies represents a major change and is ample testimony to Iraq's financial problems and its determination to exploit its oil potential in order to cope with its economic difficulties and dire financial needs. Foreign participation in oil exploration and development also means that the plans to raise production capacity sharply are more likely to be realized.

Iran suffered even more destruction of its civilian economy, including oil installations, than Iraq during the war, and, as noted earlier, its population is three times that of Iraq. Its economy is more diversified than Iraq's, but in terms of hard currency earnings, its dependence on oil is overwhelming, despite efforts to expand non-oil exports. In January 1990, the Iranian parliament adopted a five-year plan for reconstruction and development. The plan called for total expenditures of \$394 billion, of which hard currency needs (imports of goods and services) would be \$119 billion. The financing of imports would be: crude oil exports, \$72.6 billion; gas exports, \$1.6 billion; refined oil products, \$8.8 billion; other exports, \$9 billion; and \$27 billion from foreign loans.⁵⁹ What is most striking is the decision to seek foreign loans on a large scale. Under the Khomeini regime this was considered taboo, and, as a consequence, Iran suffered from even greater deprivation of both civilian goods and military equipment during the war than Iraq. The change in policy is a reflection of the severe economic difficulties facing Iran. The gas sales referred to above are contingent on the recent agreement to export gas to the Soviet Union, as had been done under the Shah.⁶⁰ The planned \$9 billion in non-oil exports appears to be very

⁵⁹ *MEED*, February 19, 1990, p.14; *MEES*, December 11, 1989, p.B1.

⁶⁰ *MidEast Markets*, September 4, 1989, p.8.

ambitious and probably unrealistic. The implied annual average of over two billion dollars compares with recent annual non-oil exports of about \$800 million.⁶¹ Economic development and reconstruction will be even more dependent on oil than implied in the plan. Massive unemployment and years of economic stagnation or decline will surely compel the Iranian leadership to exploit its oil resources more fully.

The oil ministry claimed at the end of 1989 that production capacity was 3.5 MBD and that work on both onshore and offshore fields should raise capacity to 4.5 MBD in two years.⁶² Industry sources suggest that production capacity is currently lower than 3.5 MBD, about 3 MBD.⁶³ Actual production in the latter half of 1989 was over 2.9 MBD. For 1989 as a whole, Iran exceeded its quota by about 150 TBD. If it had the capacity it surely would have produced even more oil. Its pressing financial needs have taken priority over OPEC decisions in the past and will probably do so in the future.

⁶¹ *MEES*, December 11, 1989, p.B1.

⁶² *MEED*, December 29, 1989, p.17.

⁶³ *MidEast Markets*, December 1, 1989, p.10.

III LONG-TERM TRENDS IN THE OIL MARKET

In 1989, the news media headlined the views of oil specialists who asserted that oil markets are undergoing radical long-term changes entailing strong upward pressure on prices. They cite various studies which have concluded that real oil prices will be rising in the 1990s. The head of British Petroleum spoke of the world heading for oil shortages by the mid-1990s.¹

It is important to examine the determinants of the 1989 price rise and to distinguish between those factors which were one-time events and those which might be longer term:

- U.S. output began to decline in 1986, dropping by 844 TDB between 1985 and 1988. But in 1989 the decline was particularly steep—500 TDB.²

- Soviet production, which had been rising slowly from 12.0 MBD in 1985 to 12.5 MBD in 1988, averaged 12.2 MBD in 1989. The downward trend continued during the course of 1989, reaching a low of 12.0 MBD in the last quarter of the year.

- A series of accidents in the North Sea in recent years held down the United Kingdom's production to levels far below

¹MEED, February 9, 1990, pp.4-5.

²Unless otherwise stated, oil production data are from *Petroleum Economist*, London, various issues.

capacity. By June 1989, Britain's output had dropped to 1.4 MBD, down sharply from its peak of 2.6 MBD in 1985-86. During the second half of 1989 production rose strongly, averaging 2.0 MBD, but was still far below its 1985-86 peak.

- Annual fluctuations in world demand depend on many factors, including the weather. The unusual cold spell in the United States and Canada in December 1989, and the drought in Europe which reduced hydro and nuclear power, raised demand for oil beyond that which had been anticipated.³

One can assume that the adverse weather conditions in 1989 and the series of accidents in the North Sea were one-time events and should be discounted in longer-term forecasting. It is particularly noteworthy that despite the congruence of very favorable conditions for the oil sellers in 1989, the OPEC goal of \$18 a barrel adopted in 1987 was not realized even when measured in current prices, let alone in real terms. OPEC oil sold for \$17.75 in 1987, dropped to \$14.25 in 1988, and rose to \$17.30 in 1989. Measured in 1987 dollars, OPEC oil was selling for \$15.85 in 1989, far below the OPEC \$18 target.⁴ Moreover, it was not a spurt in world oil consumption in 1989 which raised prices. Preliminary estimates indicate that OECD (the Western industrialized countries) oil consumption rose by 1 percent in 1989, as compared with a 2.9 percent growth in 1988. Instead, in addition to supply cutbacks, notably from the United Kingdom, United States and Soviet Union, there was apparently considerable stockpiling which added to the upward push of oil prices. Despite declines by the above-mentioned three major producers, world oil production rose by 2.6 percent. In the noncommunist world (as it was defined before the recent revolutionary changes in Eastern Europe), excluding OPEC and the United States, there was a marginal increase in output, despite the strong decline in Britain's production.

³*The Economist*, January 13, 1990, pp.66-67.

⁴*PIW*, January 22, 1990, p.5.

What are the assumptions underlying the recent forecasts of much higher oil prices in the 1990s? There are variations, but, broadly speaking, they include the following:

- Both U.S. and Soviet production will continue to fall. This implies rising U.S. imports and declining Soviet exports. In recent years, Soviet output was 12-12.5 MBD, of which it exported about 4 MBD, somewhat over one half to Western Europe in exchange for much needed hard currency, and most of the balance to Eastern Europe.

- In the noncommunist world, oil consumption will rise by 7 MBD during the 1990s, or by 1.3 percent per annum, while non-OPEC output as a whole may decline by 3 percent, or, at most, remain stagnant. More than half of the projected increase in world oil demand will come from the developing countries. This implies an increased demand of 8 MBD from OPEC by the end of the decade. In other words, OPEC output will rise to 30 MBD by the end of the 1990s, approximating the same level as in 1973-79.⁵ Saudi Arabia and the other Arab oil exporters in the Gulf, with their huge oil reserves, would be the prime beneficiaries of the increased demand for OPEC oil.

- More recently, another variable has been introduced. The secretary general of OPEC, lecturing in the United States earlier this year, noted that the projected rise in demand for OPEC oil would soon outstrip its capacity and that OPEC would need about \$60 billion to finance the expansion required to meet world needs. He asserted that OPEC would be able to finance only a quarter of the cost from internal sources and would require additional investments by the international oil companies as well as "outright loans" from consuming nations. While the above-mentioned forecast spoke of demand for OPEC oil rising by 7 MBD by the end of the century, he projected a 6 MBD increase by 1995 and presumably additional demand during the latter half of the 1990s.⁶

- One American oil consulting firm has introduced yet another variable. It projects a decline of 3 MBD in non-OPEC

⁵*Petroleum Economist*, December 1989, p.366; January 1990, pp.26-28.

⁶*Wall Street Journal*, February 7, 1990, pp.A2, A6.

oil capacity by the end of the century and, hence, an even greater rise in demand for OPEC oil. But it believes that demand for OPEC oil will exceed OPEC's "preferred capacity." The firm concludes that "it is virtually inevitable that world demand will outstrip OPEC's "preferred capacity" by the turn of the century, implying growing market power for OPEC producers."⁷

Though the estimates of future supply and demand are not identical, all the above-mentioned forecasts tend to agree that the increment in world demand for oil will have to be met completely by a rise in OPEC exports. Those forecasters who predict an absolute decline in non-OPEC output project that demand for OPEC oil will have to rise even more rapidly than world oil consumption to compensate for the shortfall in non-OPEC output. As world dependence on OPEC oil rises, the cartel will exercise its growing power to raise prices.

One recent forecast by an executive of Royal Dutch Shell dissents strongly from what has become the conventional view. He concluded that the demand for OPEC oil will be quite modest and that OPEC will have to live under a quota system for much longer than expected if a price level of \$18 is to be supported. In other words, OPEC's production will exceed demand for its oil, and the cartel will have to restrict production in order to prevent a drop in prices. Moreover, he believes that oil prices above \$20 are not sustainable since higher prices lead to stronger measures to improve energy efficiency and accelerate fuel-switching away from oil.⁸ There are other dissenting views, but they are usually given scant attention.

What is clear from the current forecasts projecting higher prices is that some bugaboos of the 1970s and early 1980s have been implicitly discarded. One was the prediction that the world would soon be running out of oil and that oil reserves would be declining rapidly, especially in the non-OPEC

⁷*Petroleum Economist*, January 1990, pp.26-28.

⁸*Petroleum Economist*, October 1988, p.322; *Financial Times*, December 4, 1989.

countries. The inevitable conclusion was that the owners of the last remaining barrels of oil on earth, namely, the Gulf producers, would squeeze the buyers as much as they wished. As previously noted, however, during the last decade there was a sharp rise in oil reserves in both non-OPEC and OPEC countries.

The recent forecasts have also discarded, at least by implication, the projections of the 1970s and early 1980s that the OPEC countries, especially Saudi Arabia and other small-population oil exporters in the Gulf, would accumulate huge and growing financial reserves. This had wide financial as well as political implications, but, from the point of view of the oil market, it meant that the Gulf countries could restrain output in order to raise prices, or at least maintain high prices, and that they would prefer "oil in the ground" to higher levels of current production. But these countries have been incurring large budgetary deficits, their financial reserves have rapidly diminished, they bear a growing burden of debt, and they have been more than anxious to take advantage of the recent increase in demand for OPEC oil. Saudi Arabia, the UAE and Kuwait have been the main violators of OPEC quotas. Moreover, they and other OPEC countries have been investing in refining and marketing facilities in the industrialized countries, including the United States, in order to assure themselves of markets. In some cases they have been bartering oil for military equipment, and in other cases compelling foreign creditors to accept oil in lieu of cash payments. Instead of the projected huge and growing OPEC financial surpluses predicted ten or fifteen years ago, the authors of recent forecasts, as well as the secretary general of OPEC, note that many OPEC countries with large oil reserves suffer from a shortage of revenues required to expand production capacity in addition to satisfying their domestic needs.

While many in the oil-importing countries fear an oil price escalation and another oil shock, the OPEC countries possessing large oil reserves have an even greater fear of the longer-term effects of high oil prices. They do not wish to see a repetition of the boom and bust of the 1980s and its severe impact on their economies and societies. This was expressed

clearly by the Kuwaiti oil minister in February 1990, who stressed the need for producers to expand capacity in order to prevent “damaging price explosions” and to maintain the competitive position of oil in the overall demand for energy. He stated that he would like to see oil prices remaining in the “\$18-20 range” in nominal terms for at least the next three or four years.⁹ In other words, Kuwaiti policy favors a decline in real oil prices for at least the next three or four years. Following the OPEC meeting in December 1989, both the Saudi and Kuwaiti oil ministers expressed their optimism regarding future demand for OPEC oil, but warned that higher prices would subsequently reduce demand for oil generally and for OPEC oil in particular. The Saudi oil minister raised the specter of higher oil prices stimulating the use of “alternative sources of energy.”¹⁰ Moreover, in a press interview, the Kuwaiti minister conceded publicly that his country was producing far above quota—2 MBD. He argued that his country did not wish to permit prices to rise.¹¹ At the OPEC meeting of November 1989, Kuwait had been given a 350 TBD increase in its quota to 1.5 MBD, and the minister was reported to have promised to abide by this quota. Industry sources reported that Kuwait and Iraq were offering price discounts, selling at prices lower than those set by OPEC.¹² Though price cutting in periods of oil surpluses has been common, it is rather unusual during periods of relative tightness in the market.

The deep concern of the Saudi and Kuwaiti leaders regarding the longer-term impact of higher oil prices is well-founded. The record is clear. Whereas in the period between the end of World War II and 1973 oil was assuming a growing share of total energy supplies, the oil shocks reversed the trend. Oil’s share of world energy consumption dropped from 47.3

⁹*PIW*, February 12, 1990, p.1.

¹⁰*MEES*, December 4, 1989, p.D1.

¹¹*Financial Times*, February 22, 1990, p.34.

¹²*EIU, Country Report-Kuwait*, No.1, 1990, p.1.

percent in 1973 to 37.6 percent in 1988.¹³ The leading members of OPEC with large oil reserves see only one possible solution to their financial problems: not higher prices, but a greater volume of exports. They are, and will remain, one crop economies for the foreseeable future and have good reason to be concerned about the long-term demand for oil.

¹³ *BP Statistical Review of World Energy*, July 1989.

IV ASSESSING FUTURE OIL PRICES

Real oil prices will be stable or will trend downward during the 1990s. This does not rule out price fluctuations due to wars, revolutions in major oil-producing countries and accidents, such as those which occurred in the North Sea or off the Alaskan coast, as well as seasonal fluctuations. A recent article noting political instability in a number of OPEC countries suggested that this might bring about disruptions in supply in some of the larger oil-exporting countries.¹ This is certainly a possibility, but, even in the event of wars and revolutions, there are built-in price stabilizers today which did not exist in the 1970s and early 1980s:

- Possibly the single most important price stabilizer is the memory of the oil shocks and their destabilizing impact on the the economies of the oil exporters. The major oil exporters fear a price explosion even more than the buyers.

- Since the inception of the Iran-Iraq war in 1980, a large network of overland pipelines has been built by the Iraqis and the Saudis, which avoid passage through the Strait of Hormuz. These would be fully utilized in the event that hostilities in that area restrict passage of oil through the Strait. Petroline, the east-west internal Saudi pipeline, was completed in 1981 with a

¹*The New York Times*, March 6, 1990, p.D2.

capacity of 1.8 MBD. By 1986, capacity had been doubled to 3.6 MBD, and toward the end of 1989 contracts were awarded to expand capacity further to 4.8 MBD by 1992.² The latter approximates total Saudi oil exports in 1989. This pipeline is essentially an insurance policy purchased by the Saudis in order to protect themselves from hostile actions in the Strait of Hormuz which might cut off their oil exports.

According to the Iraqi oil minister, Iraq's pipeline capacity, half through Turkey and the other half through Saudi Arabia, was 3.3 MBD in early 1990. This does not include export facilities through the Gulf, built since the cessation of hostilities.³ Iraq's oil production toward the end of 1989 was 3.0 MBD and its exports about 2.7 MBD. In other words, the Iraqi pipelines suffice for the shipment of all of Iraq's exports, plus an increment of 600 TBD without transiting the Strait of Hormuz. At the inception of hostilities the Turkish pipeline had a capacity of only 650 TBD, and there was no pipeline through Saudi Arabia. The war provided the impetus for the construction of these pipelines.

Overall, the passage of oil through the vulnerable Strait of Hormuz has declined sharply from 17.5 MBD in 1975 to about half that level in 1989. Oil shipments through this passageway used to be called the West's lifeline. This is no longer the case. To be sure, the closure of the Strait, or even the fear of blockage, or revolutions and disruptions in major oil-exporting countries, would give rise to speculative price increases, but they would be of much smaller magnitude than in the past.

- The sharp rise in oil prices in 1973 and in 1979 was seriously aggravated by frenzied speculative stockpiling. The subsequent decline in oil prices caused severe losses to many oil buyers. They are likely to be more cautious in the future. It is noteworthy that the outbreak of hostilities in the Gulf in September 1980 had but a minor temporary effect on oil prices, though it reduced Iraqi oil exports to about one fifth or one fourth of their pre-war levels; Iraq had been the second largest

²EIU, *Country Report-Saudi Arabia*, No.4, 1989, p.1.

³MEED, February 2, 1990, p.18.

exporter, following Saudi Arabia. Huge stockpiles had been accumulated during the second oil shock in 1979-80, and prices were declining before the outbreak of hostilities. Despite widespread predictions following the inception of fighting that prices would rise from about \$36 to \$50 or more, they hardly budged, and within a half year prices resumed their downward trend.

- The U.S. Strategic Petroleum Reserve and similar stockpiles in other major oil-importing countries hardly existed in the 1970s and early 1980s. If utilized judiciously, these reserves could substantially reduce speculative price rises in the event of disturbances in any of the larger oil-exporting countries. Even a timely announcement by the leaders of the major industrialized countries that they would be used would go a long way toward dampening speculative fever.

What about the forecasts of an oil shock based on estimates of future supply shortages and the strengthened position of the cartel? The widely-quoted forecasts of an oil shock in the 1990s are based on economic analysis, not on future accidents and incidents. What can be said regarding these projections?

The concept of OPEC's "preferred capacity" suggested by one consulting firm is reminiscent of the earlier forecasts of OPEC's preference for oil in the ground. In view of the difficult financial position of most of the major Middle East oil-exporting countries, this concept seems wholly unrealistic. On the contrary, the major oil-exporting countries will maximize production and attempt to reduce any temporary price hikes.

THE DEMAND FOR OIL

The demand for oil is a function of the rate of growth of the economy and its composition; the relationship between economic growth and the incremental demand for energy from all sources; and the composition of the energy basket—the shares of oil, coal, natural gas, hydro and nuclear power in total energy supplies. The record shows that there have been very radical changes in these relationships since 1973. By and large, before 1973 there was a one-to-one relationship between economic growth and the increment in energy demand.

Moreover, the demand for oil was growing more rapidly than the demand for energy, since oil was displacing other sources of energy, especially coal. As a consequence, while world GNP was growing by about 5 percent per annum, oil consumption was growing by a massive 7-8 percent per annum. In other words, oil consumption was doubling about every ten years. These relationships changed radically since 1974 with oil demand rising at a much slower pace than economic growth. This was a result of the high prices which stimulated technological developments favoring energy efficiency, or the more widespread use of existing energy-saving technology. In addition, the trend in fuel-switching was reversed away from oil. The sum total of these forces was a much slower growth in oil demand. Thus between 1973 and 1988, energy consumption was rising world-wide by 2.1 percent per annum, far less than the rate of economic growth (about 4 percent), while oil consumption was rising by 0.7 percent per annum, one third of the growth rate of energy consumption. For the United States the average annual rate of economic growth between 1973 and 1988 was 2.3 percent; energy consumption, 0.5 percent; and oil consumption in 1988 was 3.5 percent lower than in 1973.

What about trends in more recent years, following the recession of the early 1980s and the decline in oil prices? Between 1983 and 1988, the respective figures for the United States were: economic growth, 4.2 percent per annum; energy consumption, 2.5 percent; and oil consumption, 2.2 percent.⁴ Preliminary estimates for 1989 indicate that in the United States real GNP rose 3 percent; energy consumption, 1.9 percent; and oil consumption was essentially unchanged.⁵ In short, energy efficiency was continuing to improve and fuel-switching away from oil, though not as strong as in earlier periods, was continuing.

⁴BP *Statistical Review of World Energy*, June 1989; *Economic Report of the President*, Washington, D.C., February 1990.

⁵*The New York Times*, January 18, 1990, pp.1, D5.

The future demand for oil will be restrained for a number of reasons. The growth of environmentalism will, over time, stimulate a movement toward natural gas which is far less polluting than oil. In Western Europe, gas consumption is projected to increase by 50 percent in this decade, as compared with 15 percent in the last decade. Gas supplies are plentiful and prices have become far more competitive as monopoly controls have been weakened. Various governmental restrictions on gas consumption imposed during the 1980s to conserve gas supplies for fear of shortages have been removed.⁶

In the United States, several large projects are underway to expand gas pipelines, including supplies from Canada. The 1989 abolition of remaining price controls on gas in the United States should stimulate more exploration and, over time, yield increased supplies.

World gas reserves have been rising rapidly and, in terms of energy equivalent, are not far below oil reserves. In recent years, additions to gas reserves have been increasing at 2.5 times the rate of current production.⁷ Moreover, in various oil-producing countries, increased investments in the utilization of gas should release a greater share of their crude oil production for exports. It was recently reported that an Italian-French consortium was formed to examine the feasibility of building a \$10 billion pipeline, mainly underseas, to export gas from Indonesia, Malaysia and Brunei to Thailand, Singapore and the Philippines. It would utilize the technology developed in the construction of the gas pipeline from Algeria to Italy. If implemented it would restrain the rapid growth in oil consumption in some of the newly industrializing Asian countries.⁸

It has been estimated that the recently proposed U.S. environmental regulations would add between \$1.50 and \$3.00 per barrel to the cost of refined oil products. Existing regulations

⁶*Petroleum Economist*, December 1989, p.370.

⁷*Petroleum Economist*, August 1988, pp.255-258.

⁸*Financial Times*, February 28, 1990, p.6.

added 70-75 cents per barrel.⁹ Higher domestic prices will stimulate increased investment in energy efficiency and fuel-switching away from oil. The environmental regulations, especially in the industrialized countries, will, over time, restrain oil demand.

The International Energy Agency estimated that existing technologies could reduce energy demand in the industrialized countries by at least one quarter by the end of the 1990s.¹⁰ Whether this will be implemented depends, in large measure, on governmental policies. The record shows that in many countries, such as Japan and West Germany, governmental policies have effectively boosted energy efficiency as well as fuel-switching.

While in the United States nuclear power has become taboo, in Japan there is continued expansion. Japan is the world's second largest oil importer, following the United States. U.S. experts sent to Japan by the National Science Foundation recently reported that the Japanese have developed new nuclear energy technologies which are safer and far cheaper. While in the United States construction of a nuclear plant takes eleven years, in Japan it averages five years.¹¹ The recent growth in Japanese oil consumption, as well as in other rapidly growing East Asian countries, has been one of the major factors accounting for the more than expected recent rise in world oil consumption. The rapid expansion of nuclear power should restrain, over time, the growth in oil demand. If past history is a guide, the Japanese will make a determined effort to reduce their dependence on oil, virtually all of which is imported.

West Germany, another major industrialized country almost completely dependent on imported oil, has also successfully implemented policies designed to reduce oil consumption. In 1988, its oil consumption was over 20 percent

⁹ *PIW*, February 5, 1990, p.2.

¹⁰ *The Economist*, January 6, 1990, p.65.

¹¹ *The New York Times*, February 27, 1990, pp.D1, D13.

lower than in 1973. In Japan, the decline was 17 percent and in the United States, 3 percent.¹² Preliminary estimates for 1989 indicate another decline in West German oil consumption.¹³ The downward trend was continuing even in recent years when oil prices were dropping. As for the future, Esso of Germany projected that the downward trend will continue well into the next century. The company projected that the rate of economic growth will be 1.9 percent per annum, while energy consumption will rise by a mere 0.2 percent per annum, and oil consumption will continue to drop.¹⁴ In other words, both energy efficiency and fuel-switching away from oil will continue. West Germany's absorption of East Germany may alter this projection, but there is every reason to believe that the policies of West Germany favoring energy efficiency and reduced oil demand will predominate in a unified Germany.

The above does not suggest that world oil consumption will decline in absolute terms. What it suggests is that there are important restraints on the future growth in oil demand. The memory of the two oil shocks will continue to affect the policies of many oil-importing countries.

FUTURE OPEC OIL SUPPLIES

Optimism regarding future oil supplies is justified mainly by the poor financial position of the major oil-exporting countries possessing large oil reserves, their drive to increase revenues by raising the volume of exports, and their fear of the longer-term adverse consequences of rising oil prices. The announced plans of various OPEC members to raise their production capacity in the next five years exceeds even the largest growth in demand for OPEC oil envisioned by various

¹²*BP Statistical Review of World Energy*, June 1989.

¹³*Petroleum Economist*, January 1990, p.5.

¹⁴*Reuters*, December 18, 1988.

analysts. The following summarizes the plans of major OPEC producers announced in the latter half of 1989 or early 1990:

- Saudi Arabia plans to return to a sustained capacity of 10 MBD, or about 4.5 MBD more than it produced in 1989.

- Abu Dhabi announced plans to raise sustained capacity to 2.7 MBD by 1994, one MBD higher than production in the latter half of 1989, which was an all-time peak.¹⁵

- Iran plans to raise capacity to 4.5 MBD in about two years.¹⁶ Iranian production was 3 MBD toward the end of 1989.

- Iraq announced very ambitious plans to raise capacity to 5.5-6 MBD. Actual production reached 3 MBD toward the end of 1989.

- Kuwait's capacity is estimated at 2.3-2.5 MBD and it plans to add one MBD by 1994.¹⁷ Production was 2 MBD in the latter half of 1989.

- Venezuela plans to raise capacity to 3.5 MBD by 1995. Actual production in 1989 was 1.62 MBD and is expected to rise to 1.95 MBD in 1990.¹⁸

- Nigeria plans to raise capacity to 2.5 MBD.¹⁹ In the latter half of 1989, production was 1.8 MBD.

Some other OPEC members announced small additions to capacity. However, these might be offset, at least in part, by declining Algerian output. In short, by the mid-1990s OPEC capacity might be 12-13 MBD above the highest rates of production in 1989. Even assuming that some of these planned additions to capacity are not implemented, or their implementation is delayed, the expansion is likely to exceed the increased demand for OPEC oil of 5-7 MBD, projected by various forecasters by the mid-1990s. Moreover, the above-

¹⁵*PIW*, February 5, 1990, p.1.

¹⁶*MEED*, March 2, 1990, p.16.

¹⁷*MidEast Markets*, October 30, 1989, p.10; *Wall Street Journal*, November 22, 1989, p.A5; *The Economist*, June 10, 1989, p.66.

¹⁸*Financial Times*, February 21, 1990, p.VI.

¹⁹*Wall Street Journal*, November 22, 1989, p.A5.

mentioned planned expansion of capacity is for the first half of the 1990s. There is every reason to believe that, in the event that demand conditions warrant further investments, these would be undertaken especially by those with large oil reserves. These countries are most anxious to increase their revenues. What this suggests is that excess capacity might well be the hallmark of the 1990s, as it was during most of the 1980s. The greater excess capacity, the more the downward pressure on prices.

Some analysts suggest that financial constraints will inhibit some of the countries from expanding capacity. The secretary general of OPEC estimated that planned additions to capacity might cost as much as \$60 billion. However, as noted earlier, others believe that this estimate is highly inflated. One specialist expressed his belief that adding 5 MBD to capacity would cost only \$6 billion.²⁰ What is encouraging—from the point of view of the oil buyers—is the recent change in policy favoring the greater utilization of the financial, technical and marketing resources of the Western oil companies. By and large, during the 1970s the prevailing philosophy of the oil-exporting countries was highly nationalistic. The view was that the West, represented by the oil companies, was “exploiting and robbing them of their patrimony.” During the 1970s most of the major oil-exporting countries nationalized the oil concessions awarded in earlier years. The current mood is quite different. Iraq has recently decided to seek the participation of foreign oil companies in the development of its oil resources. The Iraqi oil minister stated candidly that “foreign participation will give us the option of increasing production without putting pressure on our finances.”²¹ Nigeria and Algeria have also opened their doors to a greater participation of foreign oil companies.²² Iran has not gone that far, but, in a major change in policy, it is seeking foreign loans

²⁰*The New York Times*, February 24, 1990, p.34.

²¹*MEED*, February 16, 1990, p.23.

²²*Financial Times*, February 3-4, 1990, p.24.

for reconstruction and development, including its oil and gas resources.²³ Libya is providing greater incentives to foreign companies willing to undertake exploration. Since 1989 it has signed agreements with a number of Western oil companies, including an American firm.²⁴ The greater participation of the Western oil companies in the development of OPEC oil resources enhances the likelihood of successful implementation.

OPEC POWER

A cartel, by definition, aims to restrict production in order to raise prices above their competitive level and toward that end allocates production quotas among its members. In the 1970s, OPEC confined itself to price-fixing, though in practice many ignored these prices during the 1977-78 oil glut that preceded the Iranian revolution. Conversely, in 1979-80, most members charged their buyers prices higher than those decreed by OPEC. When the oil glut resumed in 1982, OPEC decided, for the first time, to allocate production quotas. More often than not they were honored in the breach. Following the complete breakdown of OPEC agreements in 1986, the organization resurrected quotas. Overall, the record of adherence to OPEC quotas since 1987 has been poor. What is noteworthy is that in 1988 most of the "cheating" was done by Saudi Arabia, Kuwait and the UAE.²⁵ As a result, 1988 oil prices dropped by 20 percent. The pattern was repeated in 1989 with the overproduction of Saudi Arabia, Kuwait and the UAE accounting for over 60 percent of OPEC's production above the agreed-upon quotas. However, in 1989, despite the overproduction, prices rose, almost returning to their 1987 levels when measured in current prices. As noted earlier, this was due mainly to unexpected large shortfalls in supply,

²³*MEED*, January 19, 1990, p.14.

²⁴*MEES*, August 14, 1989.

²⁵*MidEast Markets*, October 17, 1988, p.10.

especially from the Soviet Union, the decline in U.S. output, and various accidents in the British North Sea oil fields.

This is not to suggest that OPEC is a powerless organization and does not succeed in raising prices above the competitive level. It probably does, though it is difficult to quantify its magnitude. What it does suggest is that the cartel is fragile, as are other commodity cartels, especially when there is a "soft" market and its members are required to lower production and get along with less revenues. The financial needs of the various members stimulates and strengthens the proclivity of the members to cheat. It should come as no great surprise that in a press interview in February 1990, when the Kuwaiti oil minister publicly admitted that his country was overproducing, he was asked how his fellow members in the organization felt about these actions. He responded: "I'm not paid to make everybody happy."²⁶

The differences within OPEC stem from a clash of vital interests between those who have large oil reserves and those with small reserves. The former fear the longer-term impact of higher oil prices on demand, while those with smaller reserves are not concerned, or far less concerned with long-term effects. But more recently another important cleavage has emerged, stemming from the downstream overseas investments of some of the majors, including Kuwait, Saudi Arabia and Venezuela. These investments are in refineries and marketing networks in the United States and Europe, which aim to increase profitability from oil and to assure the producers of a market. At the same time, it obligates the investors to provide the overseas refineries with oil supplies and gives them a greater interest in price stability. Kuwait has gone further. It is investing in upstream activities—oil exploration and development—in the United States, the North Sea, Indonesia, Tunisia and Australia. A Kuwaiti company is exploring the possibility of taking part in exploration and production activities in the Soviet Union.²⁷ The Egyptian oil

²⁶*Financial Times*, February 22, 1990, p.34.

²⁷*MidEast Markets*, February 19, 1990, p.10.

minister stated recently that "The conflict of interest between OPEC members involved in the downstream business and those who are not, could sabotage OPEC."²⁸ Egypt, not a member of OPEC, has limited oil reserves and its financial situation is critical. It very much desires higher oil prices today.

The Kuwaiti oil minister has gone further, suggesting that OPEC quotas should be scrapped since, "from a practical point of view the quotas are already irrelevant."²⁹ The Saudi oil minister voiced similar views, stating that "very shortly both the (OPEC) ceiling and the quotas will be irrelevant."³⁰ The UAE, as noted earlier, has completely ignored quotas. If, indeed, OPEC quotas are scrapped, the organization's effectiveness will be further eroded.

U.S. OIL PRODUCTION

For many years there have been predictions of an imminent decline in American oil output. Between 1970 and 1976, there was a sharp drop totaling 1.6 MBD. The subsequent upward trend was due largely to Alaskan oil which began to flow in 1977. In 1985, production peaked. The ensuing decline between 1985 and 1989 was 1.3 MBD. It is uncertain that this time the decline will again be followed by another upward trend. The political climate does not bode well for the possibility of permits being granted to explore new areas in Alaska or offshore, though the administration favors this path. But the Bush Administration believes that there is a vast amount of oil remaining in the existing oil fields—theoretically up to 300 billion barrels. These fields were abandoned after only about a third of their oil had been extracted. The administration contends that with appropriate

²⁸*Mideast Mirror*, March 1, 1990.

²⁹*PIW*, February 12, 1990, p.1.

³⁰*MEES*, December 4, 1990, p.D1.

incentives recovery rates could be substantially improved.³¹ A report noted that “researchers are turning to an array of new high-tech equipment to help pinpoint and recover oil whose location is already known . . . some of these technologies are new and some are improvements on old methods.” It was also noted that one American company applying an old technique of drilling horizontally instead of vertically, with some modifications, was succeeding in raising production very sharply. In one field that had been producing 1,580 barrels per day, production was raised to 7,200 barrels per day, in addition to 4.3 million cubic feet a day of natural gas. The more than four-fold increase may be exceptional, but wider applications of modern technology may well slow down the decline in U.S. output.³²

There are also some recent indications that the downturn in exploration activities in the United States may have been reversed.³³ Even if U.S. production does not rise, a slower rate of decline would make a big difference in terms of the world supply-demand balance. Moreover, over time, new technologies are developed affecting both supply and demand.

SOVIET OIL PRODUCTION

The unforeseen developments in the Soviet Union and in Eastern Europe have wide ramifications, including their impact on world energy markets. Between 1973 and 1983, Soviet production rose rapidly from 8.6 MBD to 12.4 MBD. In the following two years, there was a drop of over 400 TBD, followed by an upswing to an all-time peak of almost 12.6 MBD in 1987. Output in 1988 was essentially unchanged, but 1989 production fell more than 360 TBD. The record of the 1980s indicates that the problems did not begin with the upheavals initiated by Mikhail Gorbachev, but the recent disorders,

³¹*Petroleum Economist*, February 1990, p.60.

³²*Wall Street Journal*, February 2, 1990, pp.B1, B6.

³³*The New York Times*, February 27, 1990, p.D13.

strikes and the loosening of discipline made a bad situation worse. As for the next few years, there are various "guesstimates." Some specialists believe that the declines will continue in 1990-91, while others suggest a continued decline until 1995.

What is significant from the point of view of world oil markets, however, is not Soviet production but exports. Since the Soviets rely on oil exports to the West for most of their hard currency earnings, they have been making every effort to maintain these exports. Though Soviet production in 1988 was slightly lower than in 1987, exports rose from 3.9 to 4.1 MBD, and the West's share of Soviet oil exports rose even more rapidly to one half.³⁴ In 1989, despite the 360 TBD drop in output, the reduction in exports to the West was only 100 TBD. While most specialists expect another decline in output in 1990, equaling or exceeding that of 1989, the International Energy Agency projects that the decline in Soviet exports will be held to 200 TBD.³⁵

The depressed Soviet economy implies that domestic energy consumption will also be restrained. Moreover, it is reasonable to project that the Soviets will make continued efforts to substitute the use of their vast supplies of natural gas, in order to release more oil for export. Furthermore, the growing environmentalist movement will push the authorities toward the greater use of cleaner natural gas. The vast changes taking place in the Soviet Union and in Eastern Europe favoring a market-oriented economy also imply a movement toward real market prices for energy. In these countries, domestic energy prices have been far below world market prices, stimulating large-scale waste and inefficiency in the utilization of energy. One observer who has compared the use of energy in Eastern European industry with its counterpart in the West calls the former "extremely wasteful." In what used to be called the Eastern Bloc, the Soviets sold their oil and gas for roubles. In view of the highly-overvalued exchange rate of

³⁴*Petroleum Economist*, October 1989, pp.305-307.

³⁵*Wall Street Journal*, February 26, 1990, p.A2.

the rouble, this amounted to a very large subsidy. The independence of the Eastern European countries and the adoption of market-oriented economic policies also implies that the Soviets will no longer sell oil and gas to Eastern Europe at what amounts to subsidized prices and will be demanding payment in hard currency. The critical financial situation of these countries implies that, in the short run, their oil imports from the West will be very limited. In the long run, even when their economies begin to expand, much higher domestic prices will limit growth in oil demand. In Hungary, loans from the World Bank are already being used to finance investments in energy conservation.³⁶

The movement toward a market economy also implies a greater likelihood of joint ventures or other forms of cooperation between the Soviets and Western oil companies in exploration and development. Since 1989, many foreign oil companies have been sending representatives to the Soviet Union to examine the possibilities.³⁷ Moreover, the U.S. administration is encouraging the export of oil technology and field services.³⁸ In short, though Soviet oil production may well decline in the short run, Western investment and superior technology should, over time, reverse the downward trend in Soviet oil output. It is not unlikely that, under these circumstances, Soviet production and exports will exceed their peak levels of 1986-88. The adoption of market pricing, even if implemented gradually, implies more efficient utilization of energy resources. It is, therefore, reasonable to project that, even in the short run, the decline in Soviet exports and its impact on world oil markets should be modest, barring more serious turmoil in the country.

³⁶*Petroleum Economist*, January 1990, pp.19-21.

³⁷*Wall Street Journal*, February 26, 1990, p.A2.

³⁸*Petroleum Economist*, February 1990, p.60.

OTHER NON-OPEC OIL SUPPLIES

The dismal forecasts of the 1970s did not foresee the rapid growth in non-OPEC production in the noncommunist world. The reference is to world production outside the Soviet Union, Eastern Europe and China, as well as OPEC. If we also exclude the United States, we find that output rose very strongly from 6.0 MBD in 1974 to 10.4 MBD in 1980 and 14.6 MBD in 1986. Geographically, production was widely diffused, but the largest producers were Mexico, Canada and North Sea oil mainly from the United Kingdom and Norway. Despite declines in British production in 1986-89 arising from a number of major accidents, non-OPEC output continued to rise to an all-time peak of 15.7 MBD in 1989.

Today's pessimistic forecasts project a decline, or at most stability, in non-OPEC output (including the United States) in the 1990s. But a more optimistic scenario could result when one considers the continued improvement in technology and the greater willingness of many Third World countries to invite foreign companies with their superior know-how and financial ability to participate in oil exploration and development.

Excluding North America and the Soviet Union, there has been a strong recovery in exploration activity world-wide since 1988. More important, new technology has greatly improved the success rate of finding oil. Discoveries have continued at an encouraging rate in 1989, especially in West Africa, Latin America and the North Sea.³⁹ Norway's production is expected to rise from 1.6 MBD in the latter half of 1989 to 1.9 MBD in 1992. British production from the North Sea has been far higher than Norway's, but was reduced since 1986 by major accidents. The aftermath of these accidents will still be felt in 1990 since the industry has had to shut down oil facilities in order to install improved safety procedures. However, high output levels should be restored by 1991. Moreover, drilling activity has been resumed and is expected to reach its highest

³⁹*Petroleum Economist*, October 1989, pp.312- 314; December 1989, p.387.

level ever.⁴⁰ Colombian output is projected to rise from 400 TBD in 1989 to 500 TBD in 1990.⁴¹ North Yemen, Syria, Turkey, India, Malaysia and others are also expected to expand output. Much of this stems from the greater tendency of Third World countries to invite help from foreign companies.⁴² In North Yemen, oil exports began toward the end of 1987 and two years later reached 200 TBD. In South Yemen, oil reserves are much larger, but the pace of development has been slower. In the neutral or disputed zone between the two countries there have been much larger discoveries and both countries have agreed to establish a joint company and invite an international consortium to develop these reserves. Both countries are very poor and most anxious to enhance their oil revenues as rapidly as possible.⁴³ Oman has been raising its output steadily from 300 TBD in the mid-1970s to almost 600 TBD in 1989. Production is expected to reach 700 TBD in 1990 and new discoveries should permit a continued rise in output. Though Oman is not a member of OPEC, its oil minister expressed the view that a strong rise in prices would have "disastrous consequences."⁴⁴ Like its neighboring Gulf states, it is almost solely dependent on oil revenues and fears the consequences of another oil shock.

Advances in technology have both increased the success rate of exploration and have substantially reduced costs. In one new offshore field in Norway, costs of development were reduced by one sixth as compared with original estimates.⁴⁵ Another field was developed at a cost 25 percent below original

⁴⁰*Wall Street Journal*, March 2, 1990, p.A2.

⁴¹*PIW*, November 27, 1989, pp.4-5.

⁴²*Oil and Gas Journal*, December 25, 1989, pp.41-43; *Petroleum Economist*, May 1989, p.143.

⁴³*MEED*, January 19, 1990, pp.4-5.

⁴⁴*PIW*, February 5, 1990, p.1.

⁴⁵*Financial Times*, April 4, 1989.

estimates and production was initiated four months ahead of schedule.⁴⁶ Moreover, oil fields in the North Sea, which were not considered economically viable, are now being developed as a result of cost reductions.⁴⁷ One report estimates that costs of exploration have been reduced by more than one third in the past three years. It notes two technical breakthroughs of special importance: computer simulation of oil fields which considerably increases the amount of oil recoverable from many fields, and horizontal drilling into small fields, which had previously been viewed as economically unviable.⁴⁸

Analysts have generally underestimated potential oil reserves and have given insufficient weight to the impact of technology on production, as well as on demand. The tendency of many Third World countries in and out of OPEC to avail themselves of the advanced technology and financial ability of the Western oil companies, and their often desperate need for hard currencies to cope with their balance of payments problems and their development needs, makes it all the more likely that more oil will enter the world market.

⁴⁶*International Herald Tribune*, December 2, 1988.

⁴⁷*Petroleum Economist*, July 1988, p.235; *Oil and Gas Journal*, June 27, 1988.

⁴⁸*The Economist*, February 4, 1989.

V IMPLICATIONS FOR U.S. POLICY

Another oil shock is not in the cards for many reasons, but mainly because the major oil exporters dread that possibility. These exporters are now fully aware of the fact that, while an oil shock might inflict some temporary wounds on the United States and on other economies, the reaction could be catastrophic for their own economies and societies, jeopardizing their very lifeblood.

In October 1989, the Saudi oil minister stated that the oil flow from exporters to importers was "a purely commercial equation . . . We will add political variables only at our mutual peril. Let me simplify it further. You need the oil. We have the oil." He might have added "and we very much need the revenues today and in the foreseeable future."¹ A politically motivated oil embargo would inflict far more damage on the sellers than on the buyers. It is noteworthy that it is the United States which has imposed an embargo on oil imports from Iran and Libya, not the other way around. They would be more than happy to sell their oil to the "Great Satan."

While a deliberate decision on the part of the oil exporters to disrupt supplies or to sharply raise prices is highly improbable, there are issues which should be addressed. One is the

¹*The New York Times*, December 30, 1989, pp.33-34.

possibility of disruptions arising from wars, revolutions and the like. A deliberate policy of diversification of oil imports would reduce the effects of such disruptions occurring in one or more major oil-exporting countries. Aid and incentives could be provided to various Third World countries in exploration and development. This might include, for example, a large expansion of World Bank loans and technical aid to the poorer countries in the development of their oil and other energy resources, as well as energy conservation. In the past decade, there has been a very large increase in oil reserves discovered in non-OPEC countries. Such a policy would both aid the economies of poorer countries and, at the same time, reduce U.S. dependence on supplies from volatile areas, primarily the Middle East.

Much has been written recently about the impact of rising U.S. oil imports on the balance of payments. But this concern must be put into perspective. At the height of the second oil shock in 1980-81, annual oil imports (including refined oil products) were \$79 billion—over 30 percent of total U.S. imports. Subsequently, there was an almost steady decrease to \$34 billion in 1986 or 9.3 percent of total imports. This was followed by an increase in 1987 and a decline in 1988, mainly due to the sharp fall in prices. In 1989, oil imports rose both in volume and in price, reaching almost \$50 billion or 10.3 percent of total imports.

Many economists would argue that other countries, notably Japan and Germany, which are almost fully dependent on oil imports, have, nonetheless, large trade surpluses. Furthermore, one might just as well blame automobile imports for the trade deficit. In the past five years, they accounted for about 20 percent of U.S. imports. Even net automobile imports (after deducting U.S. automobile exports) exceeded oil imports. If one accepts the view that rising oil imports will have a growing negative effect on the balance of payments, there are a number of ways of dealing with this problem or at least reducing its dimensions.

Various studies have shown that the cheapest oil is the barrel that is not consumed. In other words, the emphasis should be on energy efficiency or conservation. Examples are

numerous. By one estimate, equipping American factories with the latest in motors and lighting fixtures would very substantially reduce electric power consumption. West German cement plants use far less energy than American factories.² A substantial tax on gasoline would spur energy efficiency and cut back oil imports, since well over half of U.S. oil consumption is for transportation. In the more colorful phraseology used by one journal, "If Americans had to pay European or Japanese petrol prices, their love affair with the gas guzzler would end more quickly than a Las Vegas marriage."³ Improvements in energy efficiency would both reduce oil imports and further the goal of a cleaner environment. If a gasoline tax and similar fiscal incentives for improved energy efficiency are not politically feasible, then regulations, such as those setting fuel-efficiency standards for vehicles and electrical appliances, are preferable to a do-nothing policy.

A reduction in U.S. oil consumption would not only reduce the volume of oil imports, it would probably have a depressing effect on international oil prices, as was the case in the first half of the 1980s. The United States alone accounts for one fourth of world oil consumption and is by far the largest importer. What this suggests is that a gasoline tax and other fiscal measures designed to improve energy efficiency would be offset, in part, by lower crude oil prices.

Many domestic oil producers favor an oil-import fee, for reasons not hard to understand. Economists, by and large, favor free or freer trade. Such a fee would be partially offset by the oil exporters. Indirectly, the foreign oil sellers would bear part of the burden of the tax. In other words, internal U.S. fuel prices would rise by less than the oil import fee. Market forces would compel the foreign sellers to absorb part of the fee.

Another way to reduce international prices is by using America's large buying power (oligopsony power in the terminology of economists) to offset OPEC's oligopoly power.

²*The New York Times*, September 3, 1989, pp.4-5; *The Economist*, January 6, 1990, p.65.

³*The Economist*, January 13, 1990.

OPEC is a far weaker organization than depicted in the media, but it probably succeeds in keeping prices higher than what they would be in a freely competitive market. Not long ago the Justice Department successfully took action against some 100 Japanese firms for bid-rigging on contracts for an American naval base at Yokosuka.⁴ Yet U.S. administrations appear to accept, with equanimity, price-rigging by OPEC. There may not be legal remedies, but some economists have suggested ways and means of exploiting America's immense buying power to offset, fully or partly, whatever ability OPEC has to set prices above the competitive level.

In conclusion, there is no need for the West to panic about the future oil market. The underlying trends discussed above suggest that oil importers will find themselves in far better circumstances than most forecasts predict. Moreover, there are measures available to the United States, at no great cost, that can further improve America's position *vis a vis* the major oil exporters and enhance its ability to cope with any unsuspected developments in the oil market of the 1990s.

⁴*The Economist*, February 3, 1990, p.80.

STATISTICAL APPENDIX

TABLE 1. OIL PRODUCTION

TABLE 2. SAUDI ARABIA: BUDGETS

TABLE 3. SAUDI ARABIA: BALANCE OF PAYMENTS - SELECTED DATA

TABLE 4. SAUDI ARABIA: SELECTED ECONOMIC INDICATORS

TABLE 1. Oil Production (millions of barrels per day)

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>	<u>1989</u>	<u>Quota 1989</u>
Saudi Arabia	8.5	7.1	8.6	9.2	8.3	9.5	9.9	9.8	6.5	4.5	4.1	3.2	5.0	4.2	5.0	5.5	4.7
Kuwait	2.5	2.1	2.1	2.0	2.1	2.5	1.7	1.1	0.8	1.1	1.2	0.9	1.4	1.2	1.4	1.8	1.1
Iraq	2.0	2.3	2.4	2.3	2.6	3.5	2.6	0.9	1.0	1.1	1.2	1.4	1.7	2.1	2.6	2.8	2.7
UAE	1.7	1.7	1.9	2.0	1.8	1.8	1.7	1.5	1.2	1.1	1.1	1.2	1.4	1.5	1.5	1.8	1.0
Qatar	0.5	0.4	0.5	0.4	0.5	0.5	0.5	0.4	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.4	0.3
Libya	1.5	1.5	1.9	2.1	2.0	2.1	1.8	1.1	1.1	1.1	1.0	1.0	1.0	1.0	1.0	1.1	1.1
Algeria	1.0	1.0	1.1	1.2	1.2	1.2	1.1	1.0	1.0	1.0	1.0	1.0	0.9	1.0	1.0	1.1	0.7
Iran	6.0	5.4	5.9	5.7	5.2	3.2	1.5	1.3	2.4	2.4	2.0	2.2	1.9	2.3	2.2	2.9	2.7
Nigeria	2.3	1.8	2.1	2.1	1.9	2.3	2.1	1.4	1.3	1.2	1.4	1.5	1.5	1.3	1.4	1.6	1.4
Gabon	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2
Ecuador	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.3	0.3	0.3	0.2	0.3	0.3	0.2
Venezuela	3.0	2.3	2.3	2.2	2.2	2.4	2.2	2.1	1.9	1.8	1.7	1.7	1.7	1.7	1.8	1.9	1.7
Indonesia	1.4	1.3	1.5	1.7	1.6	1.6	1.6	1.6	1.3	1.5	1.3	1.2	1.3	1.3	1.3	1.3	1.3
Total - OPEC	30.7	27.2	30.7	31.3	29.9	31.0	27.0	22.6	19.3	17.3	16.7	16.1	18.7	18.2	20.1	22.4	19.2
Total - World:	58.2	55.2	59.7	61.9	63.4	65.8	63.0	59.1	56.6	56.0	56.8	56.6	59.8	59.8	62.0	63.4	
U.S.	10.5	10.0	9.7	9.9	10.3	10.1	10.3	10.2	10.2	10.2	10.5	10.6	10.2	9.9	9.7	9.2	
U.S.S.R.	9.2	9.2	10.4	11.0	11.5	11.8	12.1	12.2	12.3	12.4	12.3	12.0	12.4	12.6	12.5	12.2	
Non-communist world excludg U.S. & OPEC	6.0	6.2	6.6	7.5	8.4	9.7	10.4	10.8	11.7	12.8	13.8	14.4	14.6	15.1	15.5	15.7	

Source: *Petroleum Economist*, monthly, London.

Notes: 1. 1989 figures are based on preliminary estimates published in *Petroleum Economist*, January 1990.

2. The quotas are averages for 1989 as they were fixed by OPEC agreements for 1989.

3. The figures in this and in the other tables do not always add up due to rounding.

TABLE 2. SAUDI ARABIA: Budgets (billions of dollars)

	<u>1974-5</u>	<u>1975-6</u>	<u>1976-7</u>	<u>1977-8</u>	<u>1978-9</u>	<u>1979-80</u>	<u>1980-1</u>	<u>1981-2</u>	<u>1982-3</u>	<u>1983-4</u>	<u>1984-5</u>	<u>1985-6</u>	<u>Annual</u> <u>1986</u>	<u>Prelim</u> <u>1987</u>	<u>Prelim</u> <u>1988</u>	<u>Project</u> <u>1989</u>	<u>Project</u> <u>1990</u>
Total Revenue	28.4	29.3	38.5	37.9	39.3	63.0	104.9	108.2	71.7	59.5	48.4	36.6	26.0	31.3	22.6	31.0	31.5
Oil	26.8	26.5	34.3	32.7	34.4	56.5	96.2	96.6	54.2	41.8	29.3	16.8	12.8	16.1	12.9	21.1	
Investment income	1.2	2.2	3.2	3.3	3.0	4.4	6.4	8.9	14.0	13.5		6.3	5.7	4.8	3.2	2.9	
Special transfers from oil companies											4.3	7.1	2.1	4.6			
Other	0.5	0.6	0.9	1.9	1.9	2.1	2.2	2.7	3.5	4.1	5.8	6.4	5.4	5.8	6.5	6.9	
Total expenditures	10.0	23.2	30.2	39.3	43.7	56.2	71.3	83.7	71.4	66.3	61.1	50.4	45.7	49.5	36.0	37.6	38.2
Projects	5.6	12.3	15.5	19.1	19.2	31.2	37.1	42.8	36.3	23.8	22.5	14.7	11.8	15.4	6.8	7.6	8.2
Opertns/Maintenance										7.7	7.3	6.6	6.1	6.1	5.3	5.0	5.0
Military	2.5	6.7	9.0	9.1	10.6	16.9	16.5	19.3	19.4	18.5	19.3	16.7	13.9	14.1	12.8	12.8	13.9
Foreign aid	0.8	1.2	2.4	3.2	1.9	2.9	7.4	7.1	4.0	3.7	3.0	3.0	2.6	3.1	2.0	1.0	
Other	1.0	3.0	3.3	8.0	11.9	5.3	10.3	14.5	11.7	12.6	9.1	9.4	11.2	10.8	9.1	11.3	11.1
Balance	18.5	6.1	8.3	-1.4	-4.4	6.8	33.6	24.5	0.4	-6.8	-12.7	-13.8	-19.7	-18.2	-13.4	-6.7	-6.7

Sources: Saudi Arabia Monetary Agency *Annual Reports*. *Middle East Economic Digest*, various issues.
Economist Intelligence Unit, Saudi Arabia: Country Reports and Country Profile, various issues.

- Notes: 1. All the figures are actual revenues and expenditures until 1986. 1987 and 1988 figures are preliminary estimates and 1989 and 1990 figures are budgetary projections.
2. Until 1985-86 the fiscal years were based on the Muslim calendar. Since 1987 the fiscal years approximate the common calendar. 1986 was a transition year of less than ten months. The figures for 1986 in the table are annualized.
3. Investment income is from public sector deposits held in the central bank. The bulk of these deposits is held abroad.
4. Special transfers from the state-owned oil companies, Aramco and Petromin, began in fiscal 1984-85 and ended in 1987. These profits had previously been retained by the oil companies to finance further investment in the oil sector.
5. Other revenues consist mainly of customs duties and various fees. These have been raised in recent years in order to reduce the budgetary deficit.
6. The projects budget consists mainly of investment by the public sector in infrastructure. Until fiscal 1983-84 the budget for operations and maintenance of the infrastructure was included in the projects budget.
7. There are various off-budgetary expenditures consisting of some arms imports, so-called loans to Iraq and others.
8. The budgets are given in Saudi *riyals*. The dollar figures are based on the official exchange rate.

TABLE 3. SAUDI ARABIA: Balance of Payments - Selected Data (billions of dollars)

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Export merchandise (FOB)	30.1	27.3	35.6	40.4	37.0	58.1	100.7	111.9	73.9	45.7	37.4	27.4	20.1	23.1	24.3
Export serv	2.6	3.3	4.6	6.1	6.5	7.7	11.3	16.0	19.0	20.2	17.6	16.1	13.9	13.1	12.8
Total exports	32.7	30.6	40.3	46.4	43.5	65.8	112.0	127.9	92.8	65.9	55.0	44.0	34.1	36.3	37.1
Import merchandise (FOB)	3.6	6.0	10.4	14.7	20.0	23.5	25.6	29.9	34.4	33.2	28.6	20.4	17.1	18.3	19.8
Imports serv	4.6	6.5	11.2	14.4	18.9	24.3	33.7	45.8	41.1	40.3	36.0	27.6	21.0	19.5	16.6
Worker remits	0.5	0.6	1.0	1.5	2.8	3.4	4.1	5.3	5.3	5.2	5.3	5.2	4.8	4.9	5.7
Total imprts	8.7	13.1	22.6	30.6	41.8	51.1	63.3	81.0	80.9	78.7	69.8	53.1	42.9	42.7	42.1
Foreign aid	1.0	3.1	3.3	3.9	3.9	3.5	5.9	5.7	4.4	4.0	3.6	3.2	3.0	3.3	2.5
Balance: currnt acct	23.9	14.4	14.4	12.0	-2.2	11.2	42.8	41.1	7.6	-16.9	-18.4	-12.9	-11.8	-9.8	-7.5
Foreign assets, central bank	22.0	38.7	51.2	59.4	60.0	61.7	86.8	126.5	137.7	125.3	109.7	87.7	73.7	68.9	63.3
Net Foreign Assets of banking system	22.2	39.2	52.3	61.4	61.7	64.8	93.7	139.4	153.7	141.2	126.3	104.2	93.1	89.7	86.3

Sources: International Monetary Fund, *International Financial Statistics*, various issues.

- Notes:
1. Merchandise exports are dominated by oil. See Table 4. The figures include re-exports.
 2. Service exports are dominated by investment income. They also include income from tourism, mainly from the Muslim pilgrims.
 3. Service imports include payments to foreign contractors. They apparently include some military imports.
 4. The foreign aid figures apparently exclude so-called loans to Iraq during the Iran-Iraq war in 1980-88, and some other loans to other Arab countries.
 5. Since much of the aid to Iraq, and aid to some other Arab countries was in the form of loans, they are included in the foreign assets held by the central bank. In other words, the foreign assets of the central bank are realistically much lower than shown in the table.

TABLE 4. SAUDI ARABIA: Selected Economic Indicators (billions of dollars)

	<u>1974</u>	<u>1975</u>	<u>1976</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>	<u>1982</u>	<u>1983</u>	<u>1984</u>	<u>1985</u>	<u>1986</u>	<u>1987</u>	<u>1988</u>
Oil exports	35.5	29.5	38.2	43.3	40.3	62.9	105.8	116.2	75.5	42.8	34.2	24.2	17.0	19.3	20.5
Non-oil merch expts	0.1	0.2	0.1	0.2	0.4	0.5	3.3	3.7	3.6	3.1	3.3	3.3	3.2	3.9	
GDP	28.0	39.7	46.6	58.2	56.4	74.3	116.0	153.9	153.1	120.2	105.6	90.2	75.3	71.5	70.2
GNP	24.0	39.9	46.8	58.9	55.5	72.3	114.6	150.3	156.6	120.7	95.0	85.9	72.1	69.0	68.0
Military expenditures	2.5	6.7	9.0	9.1	10.6	16.9	16.5	19.3	19.4	18.5	19.3	16.7	13.9	14.1	12.8
Arms imports	0.3	0.3	0.6	1.3	1.5	1.3	1.8	2.9	3.1	3.9	3.1	3.8	3.8	3.8	
RATIO IN PERCENTAGES															
Military expendtrs/GNP	10.4	16.8	19.2	15.4	19.1	23.4	14.4	12.8	12.4	15.3	20.3	19.4	19.3	20.4	18.8
Budgetary balance/GDP	22.2	46.6	13.1	14.3	-2.5	-5.9	5.9	21.8	16.0	0.3	-6.4	-14.1	-26.2	-25.5	-19.1
Budgetary balance/GNP	25.9	46.3	13.0	14.1	-2.5	-6.1	5.9	22.4	15.6	0.3	-6.9	-14.8	-27.3	-26.4	-19.7
Balance: currnt acct/GDP	82.2	36.3	30.9	20.6	-3.9	15.1	36.9	26.7	5.0	-14.1	-17.4	-14.3	-15.8	-13.4	-10.7
Balance: currnt acct/GNP	96.0	36.1	30.9	20.4	-4.0	15.5	37.4	27.3	4.9	-14.1	-18.6	-15.0	-16.5	-13.9	-11.0

Sources: International Monetary Fund, *International Financial Statistics*, various issues. Saudi Arabian Monetary Agency, *Annual Reports*. U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers 1989*, and earlier issues. *Middle East Economic Survey*, November 20, 1989.

- Notes:
1. Non-oil merchandise exports includes re-exports.
 2. The figures for military expenditures are from the budgets. See Table 2. For most years, the U.S. Arms Control and Disarmament Agency has higher estimates. The figures for Saudi arms imports are from the U.S. Agency. The Saudis do not publish estimates of arms purchases from abroad.
 3. Where a minus figure is indicated for the ratio of the budgetary balance and the balance on current account of the balance of payments, with respect to GDP or GNP, there was a deficit in that year.

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