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World Oil Market Outlook: Implications for Stability in the Gulf States

Robert E. Looney

Introduction

Since 1982, international oil prices have declined, except for a few short-lived rallies, and the major petroleum markets have been highly unstable. Starting in early 1986, these trends became even more severe. The net result has been extreme uncertainty regarding the economic prospects of the major oil-exporting countries.

The immediate impact of the 1986 decline in oil prices from a high of $28 a barrel in January 1986 to a low of $8 at mid-year has been a radical restructuring of the development plans of most of the major exporters, together with accompanying social and political strains. Whether or not many of these countries will be able to maintain stability will depend on future developments in world petroleum markets.

The main purpose of this paper is to gain some perspective on these issues by assessing the likely movements in world oil markets over the next decade.

Oil Market Dynamics

After more than two decades of experience in forecasting prices and production levels, analysts have developed several general principles concerning the functioning of oil markets.[1] One notable conceptual advance is that energy is no longer thought of as exempt from the laws of supply and demand. It was not very long ago that energy was viewed as a necessity and therefore unresponsive to price. Similarly, supply was thought to depend more on the whims of nature than on human ability to find and extract the mineral.[2]

The oil demand situation in the late 1980s contrasts sharply with that which prevailed at the beginning of the decade. In the first quarter of 1981, world oil consumption was about 56 million barrels per day, and the price of oil was $48.64 per barrel (in 1988 dollars). In the first quarter of 1988, world oil consumption was again about 56 million barrels per day. Yet, the price of oil had dropped to $15.47 per barrel, this despite worldwide economic expansion.

A recent study[3] has thoroughly documented the events, market responses, and adjustments that have contributed to this development.

1. The Iranian revolution and the onset of the Iran-Iraq War reduced world oil production between 1979 and 1981, pushing prices up. Because short-run oil demand is very inelastic (relatively insensitive to changes of price), the reduction in supply pushed prices sharply higher.

2. The oil consumption-and-price combination that prevailed in the first quarter of 1981 could not be sustained in the longer run. In the absence of economic growth, a sustained price of $48.64 per barrel would eventually have reduced U.S. oil consumption by about 40 percent — from 16.5 to 10.2 million barrels per day. On the other

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hand, for U.S. consumers to continue to absorb 16.5 million barrels per day without economic growth eventually would have required an estimated price of only $20.61 per barrel.

3. U.S. consumers require nearly a decade to adjust fully to changes in oil prices. Oil consumption responds slowly to price changes because substantial changes in the ratio of oil consumption to output require new capital investment.

4. As short-run demand adjusted to prices during the 1980s, the market price and quantity of oil consumed were pushed down. Non-OPEC oil producers added to the downward pressure on price as their production decreased. Beginning in 1981 however, OPEC moderated downward pressure on prices by reducing its own production.

5. Nonetheless, short-run demand continued to decline, and non-OPEC oil production continued to rise. OPEC's continued attempts to support prices reduced its production to about 14 million barrels per day by mid-1985, less than 50 percent of its total capacity.

6. OPEC's attempts to support prices ended in a well-publicized failure. Excess capacity and the incentive for OPEC members to cheat on quotas led to a surge in OPEC production. With demand being inelastic in the short run, that surge in production caused a price break in late 1985 and early 1986. Thereafter, OPEC was unable to restrain its production sufficiently to drive prices back up to earlier levels.

The above analysis indicates that consumption responds symmetrically to rising and falling oil prices. Given this adjustment mechanism, the price of $15.47 per barrel in early 1989 will eventually increase U.S. oil consumption by an estimated 35 percent — from 17 to 23 million barrels per day. On the other hand, for U.S. consumption to remain at 17 million barrels per day, prices in the long run must rise to an estimated $26.63 even without economic growth.

While longer-run movements in oil price are easily explained in terms of market responses and adjustments over time, shorter-run movements are still difficult to predict. In fact, it is fair to say that we have only begun to understand the mechanisms controlling month-to-month (or even year-to-year) changes in price. Even the dramatic fourfold increases in oil prices in 1974 and the threefold increase in 1979 during a period of stable supply appear to defy the normal laws of supply and demand. It is now clear that inventory demand fluctuations set off by supply interruptions can contribute a great deal more to the shortage in the market and to the severity of the price shock than can the initial supply reduction.

Similarly, we lack complete explanations of the price declines in January 1986 — not of why prices fell, but of why the price drop took so long to happen and then fell so far. The downward pressure had been enormous for years, as world-wide consumption declined by 23 percent between 1979 and 1985 and remained steady through 1985. Even the futures market anticipated a price decline for nearly three years before it actually occurred, as suggested by the discounts on long-term contracts relative to shorter maturities during most of that time. Moreover, we have indications that the market was surprised by new information in January 1986. Saudi Arabia announced its intention to increase production three months before the price drop, and OPEC failed to reach a new accord in light of the Saudi action one month before.

The most popular explanation of recent oil price movements is that, beginning around 1972, OPEC began exerting its market power to control the world oil price.[4] Certainly, OPEC possessed the potential market power to control the oil price: during most of the 1970s, OPEC countries not only produced more than two thirds of total free world output, but also accounted for nearly 90 percent of all oil involved in international trade. Nevertheless, little evidence exists that OPEC actually exercised its market power. Political events — not OPEC decision making — were the catalysts that initiated the two oil price shocks and, as noted,

these are not explained by reductions in supply.

OPEC production slowed slightly during the first three months of 1974 and again during the first three months of 1979. However, total OPEC production for 1974 matched that for 1973, and total production for 1979 exceeded that for 1978. Not revealed by the production figures from these two events, however, is the extent of the shortages caused by the demand side of the market, in particular, surges in inventory demand.[5]

Unfortunately, the extent of the inventory demand-shock cannot be fully described because the only available inventory data refer to primary stocks in OECD countries, whereas the magnitude of the stocks held outside the OECD countries is unknown. Still, more than just anecdotal evidence exists to indicate that considerable hoarding occurred downstream from refineries. Immediately after the Iranian revolution began in October 1978, refined product stocks fell sharply in all OECD countries even though crude oil supplies and refining throughout continued unabated.

Deliveries from refineries to downstream markets continued at an unusually rapid pace through the first three months of 1979 — indeed, at too rapid a pace to be explained by consumption increase — until the process finally slowed in mid-1979 and refiners began to rebuild their stocks. By this time, most of the price increase had already occurred. Refiners continued to build their stocks to record levels over the next 12 months, and in prices offset this slow-down in consumption that would soon dominate the market.

In short, past forecasting errors can be blamed partly on the one- to two-year lag in completing accurate data and the inventory adjustments underway in the oil market during this period. Long term trends were difficult to identify, much less to quantify. One thing is clear, however: the results of a sound projection methodology should be relatively insensitive to current events. In this light, it is interesting to compare various Department of Energy (DOE) crude-oil price forecasts for 1990 with the average price for the year in which each report was prepared.

In 1977, the DOE projected that oil prices in 1990 would average $24 — the same price level that prevailed in the year the forecast was made. In 1981, after prices had nearly doubled, the DOE projected a nearly 50 percent increase during the following nine years. Subsequently, as current prices have declined, projected oil prices have declined even more rapidly. Projections made by Data Resources Inc., Chase Econometrics, Wharton, and the other major forecasting services show a similar pattern.[6]

Clearly, projecting oil prices, particularly specific figures for specific years, is highly speculative. More realistically, it is better to view oil price movements as cyclical. In this regard, the rise and fall of oil prices from 1969 to 1986 is unlikely to be repeated in the extreme.[7] The depths to which prices sank during the 1960s drove out most competing fuels.[8] When prices ascended a few years later, most fuel-using equipment was designed to burn only a narrow range of petroleum products. In the short term, consumers had little choice other than to pay higher fuel prices.

As time went on, however, consumers learned to conserve energy and adopted flexible burner tip designs. Worldwide, coal and gas consumption expanded while oil demand contracted. If historical experience is any guide to future behavior in global energy markets, the active presence of competing fuels again will tend to hold down the oil price cycle. In this event, competition among fuels will most likely prevent a complete collapse of oil prices.

In world energy markets, oil penetrates very rapidly into the bulk fuel market when its price is less than $10 per barrel. Under such circumstances, global oil consumption could increase by 2-3 million barrels per day within a few months, largely at the expense of coal, and could continue to grow by as much as 5 percent per year as oil captured virtually the entire increment in world energy demand. Thus, oil prices below $10 are stable only if very substantial oil reserve discoveries occur, such as those that took place during the 1950s and 1960s.

On the other hand, competition among fuels prevents oil prices from sustaining a level much above $20 per barrel. In the longer term, coal from South Africa, Australia, the United States and other producing areas can easily be delivered into major European and Asian markets for $20 to $25 per barrel equivalent. Natural gas is an even stronger competitor.

A final fact that we have learned from experience is that day-to-day oil price changes are driven by Saudi Arabian production decisions more than by any other factor. Since the drop in demand and price peak in 1981, oil prices could stabilize above their earlier levels only because the Saudis and a few other OPEC members were willing to decrease production in order to balance the market. In the summer of 1985, however, Saudi production had fallen to 2.5 million barrels per day — about one half of the country's OPEC production quota and a drop of nearly 50.9 percent from the production levels of the previous summer.

The only way the Saudis could restore their production and stem the erosion of their export revenues was to retreat on price. They did so through a set of complicated "netback" agreements that guaranteed profit margins to refiners buying Saudi crude oil. As they executed these agreements, Saudi officials warned that they were no longer willing to act as swing producer. Simply stated, the Saudis lost control of the marginal barrel of crude oil and thus the ability to set prices.

It is now clear that in the last year or so, oil suppliers outside the core of the Persian Gulf have been unable to support further demand-growth at prevailing prices, and Saudi production rates have therefore risen. When its market is restored, will Saudi Arabia meet the world's incremental oil demand by raising price or raising production? As late as 1972, the major oil companies projected Saudi crude oil production potential as in excess of 20 million barrels per day. Such an output is still possible, and the investment required to arrive at this production level is an order of magnitude lower than the cost of providing a similar increment in primary energy supply from any other set of resources. It is a reasonable assumption that the Saudis now realize that higher capacity levels should have been installed during the mid-1970s to prevent the price run-ups of 1979 and 1980. (The Saudis themselves wittingly or unwittingly helped engineer those price increases by holding back on production).

So long as Saudi Arabia's leaders are rational, they will price their energy just below the costs of their closest competitors. In the short run, that competition is from other sources of energy such as from natural gas in North America and Europe, where the long distance transmission infrastructure is more than adequate to meet current demand. In the longer run, the competition is from coal and new natural gas supplies, including the substantial cost of adding to transport capacity. Thus, the most important determinant of oil prices in both the short and the long run should be competition among fuels in the bulk fuel market. Put another way, the marginal supplier of energy to the world will base its price on the marginal uses of energy as well as on the marginal development costs of fuels competing in that market.

Because the Saudi reserves are unlikely ever to be worth more than the value of substitute bulk fuels, the Saudis have little economic incentive to restrain development of their fields. In short, Saudi Arabia has both the incentive and the ability to meet the world's incremental energy-demand through the rest of the century, and at prices comparable to those that prevailed in mid-1986.

In sum, the interpretation of oil markets put forth here assumes that:[9]

- *1.* The tenfold increase in crude-oil prices during the 1970s can be explained by major shifts in market forces, without the need of a cartel theory.

  2. From 1980 through mid-1985, evidence of some cartel behavior appeared, including dominant producer(s) control over output.

3. The ability of OPEC or dominant producers within OPEC to attain its (their) price objectives will continue to reflect the basic problems of a non-government enforced cartel — strong incentives first to agree and then to cheat; the lack of any enforcement mechanism; and the fact that about 70 percent of world crude-output is outside OPEC. These basic problems have not been eliminated by recent agreements.

4. Higher oil prices have led consumers worldwide to conserve on their use of oil. This market mechanism will constrain future oil-price increases. But in the early 1990s, crude prices must increase due to the non-renewable character of crude oil.

5. The important and large-scale immediate substitutes for oil, which led to oil price reductions in the mid-1980s and which will constrain future price increases, include large reserves of tar sands, heavy oils, coal and nuclear energy in electric power generation, and wind energy conversion. These substitutes are sufficiently large and low cost so as to be expected to prevent crude oil prices from again rising above approximately $20 per barrel (1986 dollars), at least until 1993.

The Realism of Recent OPEC Agreements

As a result of these developments, by mid-1988 OPEC member countries were faced with six major issues.[10]

1. The desired price level. The countries with high crude reserves, mainly the Gulf states, are not unduly concerned at the low oil price. Others, such as Iran, Libya, and Venezuela, were anxious to raise prices. There were political implications — although lower prices helped ensure long-term demand for OPEC crude, lower prices also decreased Iran's oil revenues by 22 percent in the first half of 1988, while increasing Iraq's revenues by 25 percent during the same period.

2. Iraq's quota. Iraq had refused to accept an OPEC allocation that was less than Iran's. Indeed, Iraq had increased its production in the two preceding years to reach an average of 2.5 million barrels per day. This forced the organization into the position of either having to raise the overall quota-level of the organization, or to seek reductions from other members if it were to accommodate Iraq. With prices lower than $18 per barrel, no country was willing to sacrifice production. It was clear, however, that without some reduction, prices would not rise to the targeted $18 per barrel.

3. Over-production by the United Arab Emirates. The UAE had unilaterally increased its quota to 1.5 million barrels per day from its agreed 948,000 barrel-per-day quota.

4. Neutral Zone Quotas. With the end of the Gulf war in sight, Saudi Arabia and Kuwait came under increased pressure to include neutral-zone production in a future quota agreement. As of mid-1988, zone production of about 200,000 to 400,000 barrels per day was not included in either country's quota, largely because each government contributed part of its revenues from this oil to Iraq's war efforts.

5. Definition of Oil. In recent years, the Arab Gulf producers have questioned the exportation of Algerian and Venezuelan condensates as "non-oil" products. The Arab Gulf States claim these products are being produced and sold in amounts that exceed the allowed levels. The debate centers on the sales of very heavy and very light oils, which account for nearly 2 million barrels per day of the organization's exports.

6. Cooperation with non-OPEC Producers. Six non-OPEC members — Malaysia, Mexico, Egypt, Oman, Angola and China — conditionally agreed at the full OPEC meeting in June 1989 to cut production. OPEC members failed to agree on a reciprocal package. The danger for the organization is that

production by non-OPEC members is continuing to increase at a rate that exceeds the growth in world oil demand.

In light of these considerations, the agreement hammered out by OPEC in Vienna on November 28, 1988, has been greeted with a familiar mixture of doubt and optimism. On the positive side, it has been seen as a realistic compromise involving concessions and gains for all 13 member states. Moreover, it reflects the improved political atmosphere that has resulted from the ceasefire between Iran and Iraq.

On the other hand, it is clear that adherence to quotas will be an ongoing problem:

> Within 24 hours of their agreement's signing, doubts had begun to surface about the commitment of the UAE, one of the most persistent OPEC quota violators. UAE Petroleum & Mineral Resources Minister Manaa Bin Said al-Otaibah was quoted in the emirate's press as saying that the new quota was not official, but the UAE had promised to co-operate with OPEC.[11]

The problem with the UAE indicates that many of the conflicts between OPEC members, and even within the restrictive political establishments of OPEC countries, will continue to test the organization's ability to keep the terms of oil trade in the collective interest of the 13 member states.

In short, there is no real reason to suppose that the new production quotas will be followed. Given likely cheating within the cartel and the inability to control non-OPEC production, the glut in supply will most likely persist for the next several years. In short, while the OPEC members hoped prices would reach $18 by the time the agreement ends in June 1989, actual prices will most likely be somewhat lower.

On the brighter side for OPEC, non-OPEC oil producing nations are gradually approaching their production limits and without a noticeable increase in oil prices, production from the more expensive oil fields of Alaska and the North Sea becomes uneconomical (production cost per barrel in these areas ranges between $5 and $20). Beyond 1990, only two non-OPEC oil exporters, Norway and Mexico, will be able to increase their oil production. By contrast, a 15 to 20 percent decline in production is expected in the US and Britain, while net exports from Communist countries will drop to very low levels.[12]

Implications for the Future

For the purposes of assessing likely developments over the next decade or so, these general considerations can be translated into a picture of likely price movements.

The most likely scenario is assumed to be one where oil markets continue the adjustments that began the early 1980s. This scenario assumes that oil markets have not yet completely adjusted to worldwide excess capacity in the producing countries, with the net result that prices and/or production levels will continue to fall in 1989.[13] Given these assumptions, the oil market of the 1990s will likely manifest the following characteristics.[14]

1. Short-run demand can be expected to rise from the unsustainable combination of oil consumption and price that characterizes the late 1980s. Adjustment will be slow. Nevertheless, together with a growing world economy, and low initial prices, the adjustment will contribute to strong growth in oil demand from the mid-1990s onward.

2. As a first approximation, given the low prices in the late 1980s, the growth rate in consumption should begin to increase from around 2 percent per annum in 1989 to 9.5 percent by the end of the century.

3. This rate of consumption cannot be sustained throughout the 1990s, however, since it would result in levels of demand greater than the world capacity to produce oil — little capacity is likely to be added with the low oil prices that will bring about the rapid growth in oil consumption.

4. Clearly, given the demand they are likely to stimulate, 1989 prices cannot be sustained throughout the decade of the 90s. Previous studies[15] have shown

that as OPEC is pushed to full capacity, oil prices rise.

5. Nearly all excess capacity to produce oil is in OPEC. Given a wide range of consumption scenarios, OPEC should come close to full capacity between late 1992 and early 1993. At or below a price of $25 per barrel, OPEC could reach full capacity no later than early 1993. By that year a price of $25 per barrel could prove too low — if world capacity does not rise.

6. Similarly, with world economic growth rates between 2.0 percent and 3.0 percent, oil prices could reach $30 to $40 per barrel by the year 2000.

Of course, these price forecasts are dependent upon a number of assumptions. *If* world capacity to produce oil is decreased, *if* OPEC restricts its production, *if* oil supplies are disrupted or *if* economic growth is stronger, *then* oil prices will be higher. On the other hand, *if* world capacity to produce oil is increased, *if* economic growth is weaker or *if* energy taxation is increased, *then* oil prices will be lower than forecast above.

Conclusions

The assessment of world oil markets developed above contains both good and bad news for the Arabian Gulf exporters. Given likely movements in oil prices over the next several years, it is unlikely that any will be able to maintain the level of non-oil income reached in the early 1980s. While these results are not necessarily indicative of a "dismal" future for these countries' citizens, they should alert their respective governments that they will be in for a long period of sustained internal, social, and political tension. On the other hand, it appears that if they can survive the next few years, they should be in an excellent position to begin a long and sustained expansion of their economies.

The positive impact of low oil prices in the mid-to-late 1980s and higher demand for oil into the 1990s should be most pronounced on the Arabian Gulf countries. The forecasts presented above imply that by the mid-1990s Saudi Arabia, Kuwait, UAE, Iraq, Iran and Mexico will account for around 85 percent of world oil exports. Countries like Indonesia, Venezuela, Nigeria, Algeria, Libya, and Britain may become by then either self-sufficient or net importers of oil.[16]

By the mid 1990s, the world may become once again heavily dependent on oil from the Gulf. Crude oil revenues and revenues from the sales of petrochemicals, fertilizers and refined oil products will finance high growth prospects in the GCC countries, and the 90s could very well see the region experience boom conditions reminiscent of the 70s.[17] ■

NOTES

1. Douglas Bohi, "Evolution of the Oil Market and Energy Security Policy," *Contemporary Policy Issues* (July 1987): 21.

2. *Ibid.*

3. Stephen Brown and Keith Phillips, "Oil Demand and Prices in the 1990s," Federal Reserve Bank of Dallas, *Economic Review* (January 1989): 1-2.

4. Several recent studies demonstrate that this interpretation is at best misleading and at worst simply incorrect. See for example: Abbas Alnasrawi, *OPEC in a Changing World Economy* (Baltimore: Johns Hopkins University, 1985); Ali D. Johany, *The Myth of the OPEC Cartel: The Role of Saudi Arabia* (New York: John Wiley, 1980); and Mohammed Ahrari, *OPEC: The Failing Giant* (Lexington, Kentucky: University of Kentucky Press, 1986).

5. The following is based on Bohi, *op. cit.*, 23-25.

6. Samuel A. Van Vactor and Arlon R. Tuissing, "Retrospective on Oil Prices," *Contemporary Policy Issues* (July 1987): 12-14.

7. A view also put forth in George C. Georgiou, "Oil Market Instability and a New OPEC," *World Policy Journal* (Spring 1987): 295-312. See also: Arlon Tussing, "An OPEC Obituary," *The Public Interest* (Winter 1983): 3-21; and Jahangir Amuzegar, "A World Without OPEC," *The Washington Quarterly* (Autumn, 1982): 60-70.

8. The following is based on Van Vactor and Tussing, *op. cit.*, 15-18; and Walter J. Mean, "The OPEC Cartel Thesis Reexamined: Price Constraints from Oil Substitutes," *The Journal of Energy and Development* (Spring 1986): 239-42, for a fuller analysis of this position.

9. See: Walter J. Mean, "The OPEC Cartel Thesis Reexamined: Price Constraints from Oil Substitutes," *The Journal of Energy and Development* (Spring 1986): 239-42, for an in depth analysis of this position.

10. Toby Odone, "OPEC: Six Big Questions," *Middle East Economic Digest,* (August 19, 1988): 13.

11. David Butter, "OPEC: New Realism Tested," *Middle East Economic Digest,* (December 9, 1988): 11.

12. Henry Azzam, *The Gulf Countries in Transition* (New York: St. Martin's Press, 1988): 27.

13. This fall should be at a much more modest rate than in 1986. A slightly more optimistic forecast is given in Yasuhiro Watanabe, "Supply and Demand for Petroleum — Results for 1986 and Forecasts for 1987," *JIME Review* (Spring 1987): 1-29.

14. Following the approach of Browth and Phillips, *op. cit.*, 4-6.

15. Dermot Gately, "A Ten-Year Retrospective: OPEC and the World Oil Market," *Journal of Economic Literature* (September 1984): 1100-14.

16. Azzam, *op. cit.*, 32.

17. A conclusion shared by Azzam, *op. cit.*