

International Oil Prices: Where Are They Going?

History

The two surges in oil prices that marked the 1970s shocked a generation of oil company executives and analysts who had known decades of oil price stability. Many—though certainly not all—of those same executives and analysts were shocked again by the sharp price drop of 1985 to 1986. The surges convinced most observers that the world was entering an era of energy scarcity, and touched off an expensive search for alternative energy sources and a new round of governmental intervention in energy markets. The price drop has served to remind us, however, that oil is a commodity, albeit one whose concentration of low cost reserves in the Persian Gulf establishes some real potentials for price manipulation . . . and, like other commodities, it may undergo periods of rapid price movements in either direction.

The era of stable prices that preceded the first price shock—1935 to 1972—was a reflection of continuing intervention in the marketplace by both State and Federal forces and the major oil companies, with the Texas Railroad Commission (TRC) playing a critical role. The United States' leverage on the world market was made possible by the dominant role played by Texas and the United States Gulf of Mexico in world oil production during this period. In 1951, for example, world crude production was 4.3 billion barrels, of which 2.2 billion barrels, or 52 percent, was supplied by the United States. Texas' production of 1 billion barrels was 45 percent of the United States and 24 percent of the world's production. (In comparison, Saudi Arabia in its peak year produced only 17 percent of the world's oil.) Using this leverage, the TRC controlled the amount produced by Texas producers (through "rationing") and, along with similar actions by other producing States and with Federal import restrictions, was able to balance domestic sup-

ply and demand and maintain a stable domestic price. A stable price in the United States, in turn, meant a stable world price.

For this to work, the TRC needed cooperation. Texas producers and property owners had to accept a stable price as adequate compensation for sometimes operating their best wells at less than half capacity. In addition, the other major United States producer States needed to be supportive in their own State policies. And finally, the major companies that dominated the rest of the world markets had to honor the status quo in their behavior.

In the period 1930 to 1970, the United States had a substantial surplus production capacity; in the last two decades of the period, the surplus was as high as 2 million barrels per day. In addition to the older major fields still producing in California, Kansas, and Oklahoma, there were the later, major discoveries that stretched from West Texas to Southern Louisiana, including the huge East Texas field (discovered in 1931). In the absence of restrictions on production, the price wars that were triggered by the discovery of East Texas would have continued until the excess supply had been absorbed by the financial exhaustion of the industry.

Despite these four decades of relatively stable oil markets, the long-term history of oil has been one of price volatility. Even with the inclusion of the Commission's 37 year reign, the real price of oil has swung up or down by an average of about 20 percent per year during the 125-year period of U.S. oil production.¹ More importantly, the slow but sure response of oil supply and demand to prices tended to guarantee that periods of scarcity and high prices would be followed by periods of oversupply and falling prices, and vice versa.

¹A. R. Tussing, "How To Think About Energy Prices," Society of Petroleum Engineers Paper No. 13193, 1984.

In retrospect, the price increases in the 1970s and the subsequent price decline and then free fall can be easily explained. In the decade or two prior to the Arab Oil Embargo and the first price shock, oil's ready availability, low price, and convenience had won it a rapidly increasing share of the world's energy consumption: from a 28-percent share of primary energy consumption in 1950, oil had risen to a 43-percent share by 1968. The rapidity of oil's rise in consumption and the absence of apparent supply problems had led oil-importing nations to ignore the fact that their consuming sectors had little fuel flexibility in the short term. With OPEC, and specifically the Persian Gulf nations, producing a large share of the oil in international trade, the importing nations were vulnerable to any artificial manipulation of supply. As a consequence, when the Persian Gulf nations wrestled control from the United States oil companies and prices began to rise in response to their manipulation of supply, the importing nations attempted to secure assured supplies by competing among themselves, thus further driving up prices.

Over the long run, however, the resulting restraint in demand and the increase in supply, natural consequences of a quadrupling of price, created an oversupply that OPEC could not manage and drove the price right back down. For example, although in the early 1970s the demand for oil seemed to display little response to the higher prices,² between 1979 and 1985 world oil consumption declined by 7 mmbd (13 percent) while economic output rose 15 percent. Oil's share of worldwide primary energy consumption dropped to 45 percent from 55 percent. Although a substantial part of this decline came from greater efficiency in use, much of it represented a shift to cheaper energy forms: at prices above \$20 per barrel, oil often found itself at a competitive disadvantage against alternative fuels—such as coal—in

markets for electric-utility and industrial boiler fuels, cement and brick making, distillation of water, alcohols and petroleum itself, metallurgy, the drying of materials, and every other application where the object of demand is raw calories.³

²In the United States, price controls masked the price increases.

³A. R. Tussing, "Oil Prices Are Still Too High," *Energy Journal*, vol. 6, No. 1.

At the same time, there was an explosion of successful oil exploration and accelerated development of previous large discoveries which resulted in stabilization of or actual increases in production among the mature producing regions, such as the United States Lower 48 and Mexico, and the opening up of major new provinces such as the North Sea. Non-OPEC production, 26 mmbd in 1974, had surged to 37 mmbd by 1985. Coupled with the reductions in worldwide demand, the new production forced OPEC into dramatic cutbacks in its own production—a 50 percent reduction between 1979 and 1985—to prop up prices. Saudi Arabia, which bore the brunt of the cutbacks, had seen its production drop to 2.2 mmbd from a peak of about 10 mmbd. The eventual Saudi reaction to the drastic reduction in its revenues was its late 1985 doubling of production to 4.5 mmbd coupled with enactment of attractive "netback" deals⁴ to consumers to assure sales. These actions caused an almost immediate collapse of worldwide oil prices. This seems, in retrospect, an almost inevitable conclusion to the pressures caused by the 1979 to 1980 price hike and the radical changes in oil supply and demand that had been set in motion 10 years earlier. And although the first half of 1987 has seen oil prices firm and rising back above \$20/bbl, the potential for renewed price instability and a repeat of 1986 price levels is now an accepted "fact" in the industry.

Alternate Projections of Future Oil Prices

Before the strong upward price movement in mid-1987, there were a wide range of projections of future oil prices, but with a central theme to which many oil analysts appeared to subscribe: that oil prices would undergo a fairly brief period of instability around a relatively low mean price (perhaps \$15, or possibly as high as \$18 to \$20), ranging in length from a year to perhaps 5 or 6 years, and would then begin a moderate although not inconsequential rise. The uncertainty in the timing for a settling down of prices was based primarily on differing estimations of the potential for a successful **and sustainable production agree-**

⁴A "netback" deal ties the price of crude to the sales price of refined products, effectively guaranteeing to the refiner a minimum profit margin on product sales.

ment in OPEC. A shorter time period was based on the thesis that OPEC members would soon see the strong self interest in reining in production and profiting from the resulting higher prices even at decreased sales volumes. A longer interlude of instability presumed that such an agreement must wait until increased worldwide demand and a significant decline in non-OPEC production, both in response to the lower prices, tightened the market. A tighter market would in turn allow an agreement to succeed with only moderate production cutbacks required among those OPEC members who traditionally have found it difficult to stay within their allowable production levels. The gradual rate of increase was based on the assumption that OPEC's, and primarily Saudi Arabia's, goal is to stabilize the market and maintain price levels that allow high production profits without stimulating excessive competition or stifling demand.

Two other price projections had a number of adherents. The first presumed that prices would stay low—at or below \$15—long enough for higher cost production to be severely damaged or even crippled and for oil demand to increase substantially. At this time, prices would soar back to or above 1981 peak levels. These projections generally presumed a Saudi strategy of crippling its high cost competition; alternatively, an ascendance to OPEC power of the price "hawks," led by Iran, would do equally well as a baseline assumption for this scenario.

The second projection foresaw an indefinite continuation of price instability, with prices cycling about both short term events (rumors, wars, temporary production cutbacks) and long term supply and demand trends responding to changes in mean price levels. The long term cycling would generally fall inside the \$10 to \$20 range in today's dollars, in line with the long term average price of oil over most of its history; shorter excursions considerably above and below this level are possible and probable. This projection is based on the conclusion that oil is essentially a commodity and will follow the same unstable price paths followed by most other commodities. The \$10 to \$20 range is based on the loss of sub-

stantial production capacity below \$10 and the large fuel substitution and conservation potential above \$20.5

Notwithstanding the recent apparent return to a semblance of price stability, these alternative views of future prices still demand attention. In the absence of a functioning and effective institutional control of prices, the history of oil price projections has been one of abject failure. For example, a recent report⁶ concludes that, during the last decade and a half, there has been a succession of strong consensuses about future prices, each clearly based on an extrapolation of price trends of the immediate past, and each dead wrong. Thus, the history of oil prices implies that policy makers would be unwise to accept the price path of the past six months as a forerunner of future prices. Also, if the "central theme" described above actually does represent a general consensus among oil analysts, a prudent businessperson or government executive should still hesitate before using it as a planning tool. Additionally, there are substantial reasons for industry spokespersons to be circumspect about their true beliefs, including competitive pressures and ongoing legislative initiatives with important implications for future industry profits.

The petroleum industry's investment decision process is guided to a considerable degree by its future price expectations and the potential for profits they imply.⁷ A reasonable way to guess industry's true belief about future prices is to examine its behavior, although interpreting recent behavior is difficult because the past several months and the coming year or so represent a transition period with a high "noise" component. Nevertheless, drilling costs are now quite depressed, and the potential profit from many longer term prospects would be very high if oil prices were to rebound near the time when production could

⁵For a more detailed examination of future price trends, see J.J. Schanz, Jr. and L.C. Kumins, *The Many Faces of Oil*, Congressional Research Service Report No. 86-136S, July 24, 1986.

⁶*The Future of Oil Prices: The Perils of Prophecy*, D. Yergin, J. Stanislaw, B. Kates-Garnick, and I.C. Bupp, Cambridge Energy Research Associates and Arthur Andersen & Co., CERA 497-6446, 1984.

⁷Although decisions about the overall magnitude of spending depend as well on capital availability, and particularly on the industry's internal cash flow.

be brought on line. Despite this, the industry has been showing lessened interest in drilling for prospects that have a delayed prospect, as demonstrated by the drop in exploratory drilling offshore. Consequently, this may indicate that most producers are not confident that prices will increase significantly within a few years, and perhaps not even within 5 or 6 years. Unfortunately for the reliability of this conclusion, however, the industry's investment behavior is also a response to its recent poor cash flow and earnings, which would tend to focus investment onto projects which can add quickly to cash flow.

Determinants of Future Oil Prices

An examination of the factors influencing current and future oil prices shows a mixed picture

with regard to pressures for high or low price levels. In general, arguments for a future of high oil prices focus on the immediate depressing effects of low prices on oil and gas exploration and development and subsequent expected declines in future supply, the likely increases in oil demand in response to current prices, the tremendous financial incentives for OPEC nations to cooperate with one another in limiting production, and finally the concentration of basic oil resources within OPEC and especially within the Persian Gulf. Arguments for continued low prices, or for instability centered around a low price level, focus on the entrenchment of oil use efficiency in the economy, the availability of cheaper substitutes for oil, especially natural gas, at prices above \$20, the low marginal production costs and low replacement cost for much of the world's

Table 5.—“Why Oil Prices Will Remain Low”- Arguments Used by Forecasters of Low Future Oil Prices

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| <ol style="list-style-type: none"> 1. The current worldwide excess of producing capacity is larger (absolutely and relative to consumption) than during the late 1960s and early 1970s, and the worldwide Reserves to Production ratio is just as high. 2. The diversification of major oil producing countries is considerably greater than when OPEC established market control. In addition, the concentration of commercial control in a few multinational firms no longer exists. 3. Natural gas, given its availability, can readily substitute for more than half of world oil use, and can potentially substitute for much of the rest. Also, availability is becoming less of a problem. Natural gas resources and producing/distributing capacity have exploded since the early 1970s. Since 1973, global gas reserves have increased by the energy equivalent of 30 years of OPEC oil production. The United States has gone from apparent shortage to surplus, Europe's available supply has exploded, and West Africa and the Middle East can displace oil in space heating, industry, and electric generation if delivery systems can be built. 4. Coal capacity and delivery systems are in surplus. 5. A large percentage (some say more than half) of the existing fossil electric generating capacity—and virtually all of the new capacity—has dual fuel capacity. 6. Despite current low prices, oil consumption still is likely to stagnate because oil intensity is controlled by the replacement of facilities and equipment and the substitution of goods and services . . . and this will continue to be in the direction of the less efficient to the more efficient, and more oil intensive to less oil intensive. This tendency will be reinforced by consumer skepticism about the stability of low oil prices. 7. Contrary to conventional wisdom, world oil production capacity is not likely to decline dramatically in the face of lower oil prices; it may even be able to increase over time. In the past, higher prices had the perverse effect of depressing investment in new capacity in low cost areas, where most of the world's known reserves occur. At lower prices, these nations will be more likely to seek | <ol style="list-style-type: none"> to increase capacity in order to maintain revenues. (Likely candidates for expansion include Kuwait, Iraq, Mexico, and Saudi Arabia) Also, initial declines in drilling have spurred many current and prospective producing countries towards greater flexibility in their dealings with oil companies, and this should lead to expanded investment. 8. Also, the costs of replacing oil and gas reserves have followed prices down, primarily because many of these costs were inflated during the drilling boom and are now at distress levels. The production levels in the so called high-cost regions will not suffer as much as is supposed as investors become better aware of the new cost/price relationships. 9. Oil prices do not occur in a vacuum, and oil will not readily recapture the markets it lost when oil prices soared, because prices for natural gas and coal will follow oil prices down in order to compete and retain the markets they now have. 10. Importing nations are in a far better position now than in the past to beat down attempts by OPEC to create artificial shortages and raise prices. In particular, strategic reserves and agreements on oil sharing will serve as buffers. In addition, past experience has taught the importers some important lessons about strategic behavior, especially about the futility of seeking to attain unilaterally assured supplies at the expense of other nations. Nor will they, given the uncertainty about price behavior, be willing to risk too much on a dependency on low oil prices as a permanent condition. 11. Arguments about declining supplies ignore the strong potential for new technologies and expanded knowledge. For example, producers are likely to push development of new cost-saving technologies to allow them to prosper in a low-price environment. 12. The 1973 to 1985 period was an anomaly as far as oil prices are concerned; during the entire 125-year period of oil production, prices averaged less than \$15 in today's dollars. Thus, \$15/bbl or less is likely to be the world long-term oil supply price. |
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**Table 6.—“Why Oil Prices Will Increase”-
Arguments Used by Forecasters of
High Future Prices**

1. Past successes in exploration provided the Middle East with known oil reserves, both developed and undeveloped, well beyond the immediate needs of this region given their current rate of production. Outside of the Middle East, on the other hand, there is little excess production capacity and far less undeveloped reserves. This imbalance in both present and future production capacity, coupled with the worldwide slowdown in exploration and development caused by current low prices, and with the dominance of the Middle East in undiscovered resources, will lead inexorably to a resumption of OPEC market control and, subsequently, to higher prices.
2. Oil demand is bound to increase during a period of low prices, planting the seed of future market tightening. Although the demand increase will not mirror the decrease caused by high prices, any expectations that our interest in energy efficiency and other energy savings is “locked into” the energy system are as incorrect as were past expectations that high levels of growth in oil demand would continue despite high prices.
3. Low prices have already begun to stifle oil production in high cost areas; failure to continue intensive exploration will result in substantial losses in worldwide producing capacity within a few years.
4. An increase in demand for OPEC oil of only about 5 mmbd caused by demand growth and loss in non-OPEC production capacity (or drop in production in cooperation with OPEC) would restore OPEC’s leverage in its efforts to influence world oil prices.
5. Expectations that the availability of natural gas as a substitute boiler fuel will provide a buffer to oil price increases ignore the likely declines in gas production capacities as a result of the overall slump in drilling, especially in the United States, and, elsewhere, the difficulty—and great expense—of building the gas transmission infrastructure needed to allow effective competition with oil.
6. The incentive for OPEC nations to manipulate production—i.e., the potential to maximize revenues over time because price increases can be balanced against lower sales volumes—is sufficiently high, and sufficiently well understood, to eventually lead to a higher level of cohesion and cooperation within OPEC.

oil, and the historic inability of cartels to sustain high prices. Tables 5 and 6 summarize the arguments for low and high oil prices.

Clearly, these differences in the alternative views of future oil prices are based in large part on differences in judgments made about the response of supply and demand to price, as well as on the expected actions of major players such as the OPEC nations. The major uncertainties in the direction that future prices will take are the following:

1. the response of oil demand to lower prices;
2. the possibility of increases in production capacity in the low cost oil regions⁸;
3. the uncertainties in OPEC actions, based on uncertainties about the underlying motives of the Saudis, if any, the potential for the “hawks” to gain control of OPEC and to seek higher prices immediately, and the ability of the OPEC nations to maintain production discipline;
4. the potential for new oil disruptions; and
5. the future levels of non-OPEC production, including the uncertain ability of supposedly high-cost oil producing regions to find an answer to maintaining production levels in a low and unstable price environment.

⁸High oil prices and the attempt to control supply actually led to stifling expansion of productive capacity in the low-cost oil regions; most investment went into relatively high-cost regions. Some analysts now speculate that the reverse could happen at low oil prices.