
FRBSF WEEKLY LETTER

June 6, 1986

OPEC and Oil Prices

In the first week of April 1986, spot market prices for oil briefly fell below \$10 a barrel — or one-third the \$30 price that prevailed as late as November 1985. Analysts interpreted this decline as marking the end of OPEC's (Organization of Petroleum Exporting Countries) dominance in world petroleum markets. In this *Letter*, we review the behavior of the price of oil, and discuss some of the economic forces that have been, and are likely to remain, instrumental in influencing the price of oil. Our analysis suggests that oil prices will recover from their recent lows but that they will not rise to the levels of the early 1980s.

Oil prices: 1973-1986

Chart 1 shows the dollar price of Saudi Arabian light oil — a benchmark for world crude oil prices — from 1973 to March 1986. (Also shown is the price of oil adjusted by an index for the value of the dollar, as described below.) Nominal oil prices more than tripled from 1973 to 1974, and crept up another 30 percent in the following four years. A second round of price increases began in 1979 and saw the price of oil increase about threefold once again — from an average of \$13 in 1978 to \$33 in 1982. A progressive erosion of oil prices followed and culminated in a sharp decline in late 1985.

Effects of OPEC oil price policy

OPEC did not have to pay significantly, in terms of reduced output or market share, for the tripling of oil prices after 1973, as shown in Chart 2. In 1978, just before the second round of oil price increases, OPEC's share of total crude oil production was 47 percent — a small decline from its 53 percent share in 1973. Over the same period, its output declined 4 percent. In contrast, the second set of oil price hikes (over the period 1979-81) resulted in a decline of 20 percentage points in OPEC's share of total world production between 1978 and 1985, and a 46 percent drop in its total output.

An important cause of the latter decline was the development of alternative sources of supply. Higher petroleum prices — made possible in North America by the lifting of oil price controls

— encouraged petroleum development, notably in North America and the North Sea, that would have been unprofitable at lower prices. As these suppliers came on line, OPEC was forced to cut production to maintain the established price. The large price increases also led to a contraction in demand. World demand for refined petroleum products fell by 7.1 percent in 1980 and a further 2.4 percent in 1982, and remained roughly unchanged over the next two years despite the world economic recovery.

Another influence on the oil market has been the sustained rise of the dollar until early last year. Since oil is priced in dollars, changes in the foreign exchange value of the dollar influences the demand and supply of oil in world markets. The rising dollar raised the price of oil when measured in non-dollar currencies and thus further discouraged demand while encouraging increased non-OPEC oil production.

Chart 1 illustrates the price of oil adjusted by an index for the dollar. The index measures movements in the dollar against the currencies of major oil importers, weighted by their shares of total oil imports in 1980. It reveals that, while the dollar price of oil rose by 262 percent between 1978 and 1982, the exchange-rate-adjusted cost of oil to importers rose 317 percent over the same period. Furthermore, while the nominal oil price has been declining since 1982, the oil price adjusted for exchange rates was almost the same in 1985 as in 1982, with the 16 percent decline in the oil price almost fully offset by the 15 percent rise of the dollar.

Understanding OPEC's behavior

To understand developments in the oil market, it is useful to highlight supply conditions. OPEC has substantial power in the oil market because its costs of production are much lower than those of other producers. Few countries would be able to compete if the cartel chose to hold prices very near its production costs. However, OPEC will benefit from sharing the market by setting prices at a level that allows the entry of higher cost producers, as long as the resulting decline in its market share is more than made up

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for by the increase in revenues allowed by the higher price. There is, of course, an upper limit to this price. If the price were set too high, the low-cost producer's share may fall so much that its total revenue declines.

This structure implies that the cartel's share of the market is determined by the price it sets for oil. For any price it chooses, competing suppliers will choose a quantity to sell, and the difference between this quantity and world demand at that price determines the cartel's sales. Since OPEC's market share depends on a deliberate pricing decision, market share does not provide a useful way of assessing OPEC's power. The widespread view that OPEC's declining market share over the last few years signals its growing weakness is based on incomplete analysis. One should also examine what motivates OPEC to choose a particular price for oil. Clearly, revenue considerations play a major role. We return to this issue below.

An additional complication is that because OPEC is not a monopolist but a cartel, its group dynamics also matter. One source of conflict is the uneven distribution of oil reserves among members. Producers with smaller reserves are likely to be more concerned with maintaining higher prices in the present because their reserves are not likely to last very long. Smaller producers may also face tighter revenue constraints, and, during periods of declining demand, may have an incentive to "cheat" at the expense of larger producers by exceeding their allotted production share. If demand were subsequently to decline, the prevailing price could be maintained only if larger producers (Saudi Arabia, in this case) were willing to make the necessary cutbacks in production. As suggested in the next section, revenue considerations determined the extent to which Saudi Arabia was willing to reduce its own production to preserve the cartel.

OPEC's revenues

As mentioned above, the adoption or rejection of any strategy depends to a significant extent upon the effect of the decision on total revenues. For OPEC, the first round of price increases appears to have been successful since it raised oil export revenues to a high of \$138 billion by 1977 — six times above the 1972 levels. The

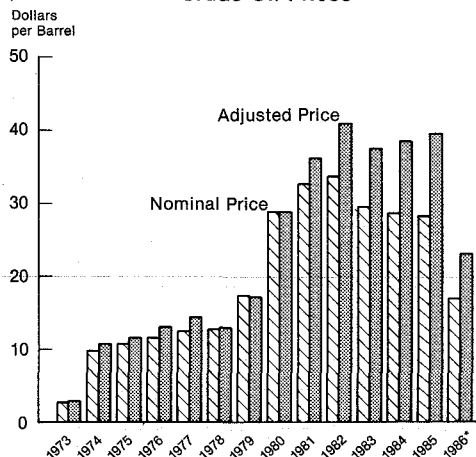
second round of price increases, in contrast, was associated with sluggish demand and the entry of higher cost producers. (Of course, some of these changes may have been set into motion earlier.) Nevertheless, OPEC oil export revenues continued rising until 1980 when they peaked at \$279 billion — more than double their 1978 levels. These revenues subsequently dropped nearly 40 percent to \$157 billion in 1984.

It is remarkable that OPEC appears to have been unwilling to decrease the price of oil by an amount sufficient to eliminate the "glut" in the oil market over the last several years. Instead, it has sought to cut production to defend the prevailing price. This strategy has proved futile as the entry of higher cost producers nullified OPEC's efforts to maintain the high price.

One reason for OPEC's reluctance to reduce prices may have been that it did not understand the extent to which the dollar appreciation was raising the cost of oil to importers. Furthermore, while revenues started declining along with OPEC output after 1981, they continued to exceed pre-1979 levels until 1984. Still another reason for OPEC's reluctance to reduce prices may have been that smaller OPEC producers expected larger producers such as Saudi Arabia to absorb the necessary output reductions (as discussed above). The cartel's stability would then depend on the willingness and ability of the major producers, notably Saudi Arabia, to absorb revenue losses.

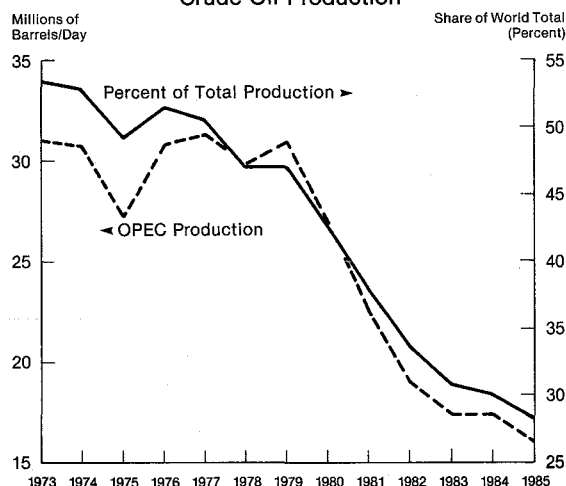
The second round of OPEC price increases certainly put Saudi Arabia in a position to absorb large reductions in output, as it was initially the largest beneficiary of OPEC pricing policy. Its share of OPEC production rose from 28 percent in 1978 to 42 percent in 1981, while its oil export revenues tripled to a peak of \$113 billion in 1981. However, the subsequent contraction in Saudi Arabia's output nullified these gains. The decline accelerated in 1985, so that, by the third quarter of that year, Saudi Arabia's share of OPEC output had fallen to 18 percent — substantially below its 25 percent share in 1984. Saudi Arabian oil export revenues declined from a high of \$113 billion in 1981 to \$34 billion in 1984 and an annualized \$25 billion by the third quarter of 1985 — their lowest level in ten years.

**Chart 1
Crude Oil Prices**



* 1986 yearly averages through March.

**Chart 2
Crude Oil Production**



Faced with this sharp drop in revenues, Saudi Arabia increased output to over 4 million barrels a day (25 percent of OPEC production) in the fourth quarter of 1985. This led to plummeting oil prices and forced OPEC to abandon fixed prices. The present collapse of the cartel therefore appears to be due to unacceptable losses imposed upon its dominant member by the strategy of defending the OPEC price.

Is the cartel finished?

Much of the market euphoria at the recent decline in the price of oil reflects the belief that the cartel has lost market power as a result of its reduced market share, and that it will not be able to raise oil prices again. However, as we have discussed above, OPEC lost market share because it was trying to defend a particular price. The resulting reduction in market share in no way signifies a loss of power. It simply reveals that there is an upper limit to which OPEC can push the price of oil. More specifically, it reveals that the cartel can charge a somewhat higher price in the short-run than it can in the long-run when the entry of new, higher cost suppliers and conservation efforts begin to take effect.

The cartel's strength is due to its relatively low costs of production, as clearly demonstrated by

recent events. As the lowest cost producer, Saudi Arabia successfully forced down the price of oil — a move which is already causing considerable hardship to competing producers and will also discourage conservation efforts. These developments will tend to strengthen OPEC in the long-run. Furthermore, at 700 billion barrels, OPEC's proven reserves at the end of 1985 were 68 percent of the world total — roughly the same proportion as in 1973. In terms of available oil reserves, OPEC thus remains as important as it was in the early 1970s.

There is still the question of whether conflicts among OPEC members will prevent them from effectively cooperating to enforce their cartel. While there may be friction in the short-run, it is worth recalling that OPEC members can obtain larger revenues when they function as a cartel than when they compete against one another. Thus, the incentive that led to the cartel's creation and its success in the 1970s still exists. Notwithstanding errors in OPEC's pricing policy in the 1980s, which are currently disrupting the operation of the cartel, and the short-term benefits of lower oil prices, the effectiveness of this incentive in restoring unity among OPEC's members should not be underestimated.

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BANKING DATA—TWELFTH FEDERAL RESERVE DISTRICT

(Dollar amounts in millions)

Selected Assets and Liabilities Large Commercial Banks	Amount	Change	Change from 5/15/85	
	Outstanding 5/14/86	from 5/7/86	Dollar	Percent ⁷
Loans, Leases and Investments ^{1 2}	202,037	— 24	10,338	5.3
Loans and Leases ^{1 6}	183,178	— 177	10,074	5.8
Commercial and Industrial	52,875	— 114	423	0.8
Real estate	66,724	217	3,706	5.8
Loans to Individuals	38,970	— 24	4,959	14.5
Leases	5,635	— 4	257	4.7
U.S. Treasury and Agency Securities ²	11,016	151	— 589	— 5.0
Other Securities ²	7,843	2	852	12.1
Total Deposits	201,810	98	5,609	2.8
Demand Deposits	49,943	115	2,503	5.2
Demand Deposits Adjusted ³	34,442	9	4,499	15.0
Other Transaction Balances ⁴	15,757	— 206	2,514	18.9
Total Non-Transaction Balances ⁶	136,111	191	594	0.4
Money Market Deposit Accounts—Total	46,000	147	2,711	6.2
Time Deposits in Amounts of \$100,000 or more	36,439	117	— 1,794	— 4.6
Other Liabilities for Borrowed Money ⁵	24,259	— 1,756	1,852	8.2
Two Week Averages of Daily Figures	Period ended 5/5/86	Period ended 4/21/86		
Reserve Position, All Reporting Banks				
Excess Reserves (+)/Deficiency (—)	— 15	96		
Borrowings	39	43		
Net free reserves (+)/Net borrowed(—)	— 55	53		

¹ Includes loss reserves, unearned income, excludes interbank loans

² Excludes trading account securities

³ Excludes U.S. government and depository institution deposits and cash items

⁴ ATS, NOW, Super NOW and savings accounts with telephone transfers

⁵ Includes borrowing via FRB, TT&L notes, Fed Funds, RPs and other sources

⁶ Includes items not shown separately

⁷ Annualized percent change