

A Bushel of Wheat for a Barrel of Oil: Can We Offset OPEC's Gains With a Grain Cartel?

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NEAR the end of 1973 the Organization of Petroleum Exporting Countries (OPEC) increased the average price of crude oil to about \$10 per barrel, more than four times the prevailing price earlier that year.¹ This price was increased another 10 percent in 1975, nearly 15 percent from 1975 to early 1979, and about doubled from early 1979 to early 1980. By December 1980, the price of United States imported oil averaged \$35.63 per barrel, more than 12 times the price in mid-1973. These sharp increases have adversely affected the U.S. economy by reducing both potential output and productivity, raising the general price level and slowing real business investment.²

OPEC's actions in raising oil prices and restricting production have given rise to numerous proposals designed to offset the higher petroleum costs. One widely discussed proposal has been for the United States to organize a grain cartel that would significantly raise grain prices to the OPEC nations. Many suggest that the terms of trade between the two cartels should be a bushel of wheat for a barrel of oil, i.e., about the same terms that prevailed in early 1973 when wheat sold for about \$2 per bushel and imported oil sold for about \$2 per barrel.

This article assesses the potential success of such a grain cartel. It describes the attributes of a cartel and shows why a grain cartel could not succeed. It argues

that OPEC's success in influencing petroleum prices results from certain economic conditions in the market for oil that do not exist in the market for grain.³

Competitive Firms Versus Cartels: Prices and Output

The impact of a cartel (a combination of firms, states, or groups whose purpose is to restrict output and increase profits) can best be described by contrasting its profit-maximizing operations with those of firms in a competitive industry. Every cartel or competitive firm produces at the rate of output that maximizes its profits. However, given market demands and cost structures, the rate of output consistent with profit maximization will differ between firms organized into a cartel and those in a competitive industry. These different rates of output imply different prices. In a competitive industry, output and price levels are determined by the intersection of the industry demand and supply curves. The demand curve indicates the varying amounts of a commodity that buyers will purchase at each price, while the supply curve indicates the varying amounts of a commodity that sellers will supply at each price. At the point where these curves intersect, competitive producers will supply the quantity of a good that consumers wish to purchase at that price; any firm that attempts to raise its price by producing less will simply lose sales to other firms in the industry.

If the firms form a cartel, however, they can influence market price in their favor by restricting output.

¹The OPEC nations were originally composed of Saudi Arabia, Iran, Iraq, Kuwait and Venezuela; Qatar, Indonesia, Libya, Algeria, Nigeria, Ecuador, Gabon and the United Arab Emirates later became members. *OPEC: Questions and Answers* (New York: Exxon Corporation), pp. 7, 12; *Middle East Oil*, 2nd ed. (New York: Exxon Corporation, 1980), pp. 34-36; U.S. Department of Energy, *Monthly Energy Review* (December 1980), p. 72.

²See John A. Tatom, "Energy Prices and Short-Run Economic Performance, this *Review* (January 1981), pp. 3-17.

³The OPEC cartel may not meet the strict definition of a cartel in all respects, but this term is used to facilitate discussion. An alternative analysis, not pursued here, would treat OPEC as the dominant firm that sets and lets the small producers sell all they want at that price.

The profit-maximizing rate of output will thus be less and the price higher than would prevail in a competitive industry.

Cartels Are Typically Unstable

A cartel, however, is unlikely to survive unless its rules are enforced by government sanction. Historically, cartels have been fragile, lasting only a short time. Unless all producers in the industry are members of the cartel, the higher price of the good caused by the cartel's restriction of output provides a great incentive for nonmembers to increase their own output.⁴ Moreover, firms have a powerful incentive not to join the cartel. The higher price resulting from the restrictions on output by the cartel will increase nonmembers' profits even more since they can expand their rates of output. Consequently, each potential member of the cartel faces essentially the same incentive not to join, and actual cartel members will find their share of the market and profits reduced as nonmembers increase their production and sales.

The length of time that a cartel can survive depends in part on the elasticity of the supply curve of the industry's output. The less elastic the supply curve, the longer the cartel is likely to survive. If a large increase in price elicits only a small increase in output by non-cartel firms, there will be less pressure on the cartel.

Likewise, the more inelastic the demand curve for the cartel's product, the higher the price can be raised without drastically reducing the quantity demanded and the greater the potential cartel profit. If good substitutes are available for the cartel's product, however, this will not occur; sizable increases in the price of the cartel's product will result in larger purchases of these substitute goods. In this case, the cartel is unlikely to increase its profits for long by restricting output and raising prices.

Although both the demand and supply relationships may appear to be quite inelastic in the short run, demand and supply conditions will change over time in response to higher prices. These changes will reduce the stability of the cartel. First, over time, substitutes will always be found for the cartel's product. As the price of petroleum rises, people learn how to substitute other goods (e.g., coal, alcohol, nuclear energy, etc.) as sources of energy. Furthermore,

greater economies in the use of a good, which also reduce the quantity of the good demanded, can be achieved over the long run. For example, the increased use of smaller automobiles and insulation have reduced the quantity of petroleum demanded for gasoline and heating. Consequently, the quantity demanded decreases more drastically over time.

Second, new techniques of production, new discoveries and new investments will increase the quantity of the cartel's product (e.g., petroleum) supplied by others.

If the cartel is initially successful in raising prices sufficiently to increase profits, rivalry will arise between the cartel members over how the reduced output and the increased profits are to be allocated. Each member will want to sell more as the price is increased through general production restrictions — that is, each member has an incentive to cheat on the cartel's sales quotas. Intense rivalry for greater market shares will develop among cartel members. Therefore, it becomes increasingly difficult for cartels to exist for extended periods.

OPEC Not Immune from Pressures

The OPEC cartel has not been immune to these pressures. It is presently in the throes of relatively severe adjustments in output in response to market forces. It has already lost much of its international market to non-OPEC suppliers as shown in table 1. OPEC countries produced an *increasing* portion of the world's petroleum output until 1973, at which time they accounted for 55.5 percent of the total, up from 52.6 percent in 1972, 48.3 percent in 1970 and 37.6 percent in 1960. Their annual rate of production rose in excess of 8 percent per year through 1974, well above that of non-OPEC countries. Following the first major price increase in late 1973, total OPEC output dropped somewhat for two years and then rose moderately through 1977. Then, from 1977 to 1979 its output declined somewhat. Since late 1979, following the latest round of major price increases, OPEC's output has declined rapidly, dropping about 22 percent in the latest 12 months. Its share of the market, which totaled 55.5 percent in 1973, declined slowly to 49.6 percent in 1979. The decline has recently accelerated: OPEC's market share dropped to 44 percent by September 1980.

Higher oil prices have induced the non-OPEC world to increase output. Output in non-OPEC nations rose from 24.9 million barrels per day in 1977 to 32.6 mil-

⁴See George J. Stigler, *The Theory of Price*, 3rd ed. (New York: The Macmillan Company, 1966), pp. 230-38; and Jack Hirshleifer, *Price Theory and Applications* (Englewood Cliffs, New Jersey: Prentice-Hall Inc., 1980), p. 362.

Table 1
World Crude Oil Production (thousand barrels per day)

	OPEC	Growth Rate ¹	Rest of World	Growth Rate ¹	OPEC Share
1960	7,874		13,067		37.6%
1961	8,497		13,923		37.9
1962	9,954	10.8%	14,383	5.5%	40.9
1963	10,865		15,253		41.6
1964	12,082		16,081		42.9
1965	13,177		17,115		43.5
1966	14,217		18,693		43.2
1967	15,630	10.9	19,732	6.7	44.2
1968	17,660		20,983		45.7
1969	20,341		21,341		48.8
1970	22,134		23,692		48.3
1971	25,092		23,255		51.9
1972	26,711	8.5	24,070	1.5	52.6
1973	30,961		24,869		55.5
1974	30,683		25,192		54.9
1975	27,134	0.6	25,856	4.1	51.2
1976	30,711		26,684		53.5
1977	31,230		28,380		52.4
1978	29,800	-0.5	30,390	5.3	49.5
1979	30,928		31,472		49.6
1980 ²	26,743	-13.5	32,558	3.5	45.1
November 1979	30,770		32,370		48.7
November 1980	24,015	-21.8	32,335	-0.1	42.6

¹Annual rates of change

²Estimated for November and December

SOURCE: U.S. Department of Energy, *Monthly Energy Review*, (March 1981), American Petroleum Institute, *Basic Petroleum Data Book* (June 1977).

lion barrels per day in mid-1980 and has apparently maintained its pre-1973 rate of growth despite some decline in late 1980 in Mexico, and earlier declines in the United States and Canada where, until recently, price controls have reduced the incentive for oil production.⁵

⁵The profits accruing to OPEC were enhanced and extended over a longer period of time than they might otherwise have been by ill-advised U.S. policies. In attempting to cushion the impact of the sharply higher OPEC prices on the domestic economy, the U.S. government has subjected the oil industry to varying degrees of price controls, the last of which were lifted only this year. The industry was then subjected to an "excess" profits tax which will continue to retard its incentive to explore and develop petroleum.

These controls delayed the adjustment of domestic con-

OPEC's cutback on production to maintain the cartel price clearly caused stress among the colluding nations. Though the reduction in output is absorbed by the group, each nation's share in the reduction will differ. Per capita revenues also differ among individual nations. For example, oil revenue per capita varied from \$480 in Iran to \$17,300 in the United Arab Emirates in 1979.⁶ Such differences engender conflicts

sumption to the higher oil price, reduced the incentive for domestic production and led to greater reliance on imports, thereby enhancing OPEC's ability to influence prices. For a further discussion of this topic, see Hans H. Helbling and James E. Turley, "Oil Price Controls: A Counterproductive Effort," this *Review* (November 1975), pp. 2-6.

⁶*Middle East Oil*, p. 39.

about how additional reductions are to be shared. In addition, non-OPEC, producer/exporters like Mexico and Norway can obtain the existing high world price without resorting to output reduction. The OPEC cartel will face future problems in maintaining profit as the United States and other nations eliminate price and marketing controls in the oil industry.

WHY OPEC HAS BEEN SUCCESSFUL FOR SO LONG

OPEC's actions have led to a rapid rise in petroleum prices and revenues for all oil producers, both OPEC and non-OPEC. From 1973 to 1979, receipts from petroleum sales by Middle East governments rose about tenfold.⁷ Hence, OPEC has clearly succeeded in achieving its main objective.

An analysis of the supply of and demand for petroleum in the non-OPEC nations shows why OPEC has been so successful. First, there has been only a small increase in petroleum output by non-OPEC members following the sharply higher prices in 1973, indicating that supply of petroleum in non-OPEC nations is relatively price inelastic. Although, the price of petroleum has increased about twelvefold during this period, petroleum output in non-OPEC nations has increased only 24 percent.⁸ It is estimated that the long-run price elasticity of the non-OPEC oil supply is between .33 and .67. In other words, a 1 percent increase in price of oil will cause output to increase about .5 percent.⁹

Part of the reason for the short-run inelastic supply of petroleum by non-OPEC nations is the dominant position of OPEC in the petroleum industry. From 1945 to 1979, about three-fourths of world oil discoveries were in the Middle East (largely the OPEC area).¹⁰ In 1973, when OPEC began restricting production, it was producing about 31 million barrels of

oil per day, more than four-fifths of which was exported. OPEC supplied 83.4 percent of all petroleum exports in 1978 (table 2).

Also, petroleum demand by non-OPEC nations is clearly price inelastic, at least in the short run. The large increase in price has resulted in a relatively small decrease in quantity demanded as confirmed by petroleum consumption in the major free-world industrialized countries from 1973 until mid-1980. Although petroleum prices have risen about twelvefold, consumption in these nations has declined only 10 percent, from 34.2 to 31.1 million barrels per day.¹¹

Not surprisingly, most of the more developed nations are highly dependent on imports for their supply of petroleum. Western Europe, for example, produced only 12 to 14 percent of its domestic consumption. South Africa and Japan imported essentially all of their petroleum (table 3). Even the United States, one of the world's largest petroleum-producing nations, imported more than 50 percent of its petroleum. Furthermore, most of the less-developed, non-OPEC nations depend largely on imports for petroleum supplies. Thirty-seven of these nations produced an average of only 12 percent of their consumption. Among the non-OPEC nations, only Egypt, Syria and Mexico have sizable quantities of petroleum exports, and the combined exports of these countries totaled less than 10 percent of U.S. imports in 1978. Given OPEC's predominant position and the length of time required for the exploration and development of petroleum resources or substitutes for petroleum, the slow response of output by the non-OPEC world to the higher price of oil is to be expected. Hence, OPEC's ability to increase profits by restricting output is not surprising.

WHY A U.S. GRAIN CARTEL WOULD FAIL

The U.S. grain industry does not possess the attributes necessary for a strong cartel. Both the world demand for and supply of U.S. grain are relatively elastic. On the demand side, the price elasticity of foreign demand for U.S. output of food and feed has been estimated to be -1.9 in the intermediate run

⁷Ibid, p. 31.

⁸*Monthly Energy Review* (December 1980), pp. 88-89 and *Middle East Oil*, p. 26. Part of the apparent inelasticity, however, reflects the impact of the price controls in the United States and Canada.

⁹Michael Kennedy, "A World Oil Model," in Dale W. Jorgenson, ed., *Econometric Studies of U.S. Energy Policy*, (Amsterdam: North Holland Publishing Company, 1976), p. 139. On the demand side, the long-run price elasticity of demand for gasoline in the United States has been estimated at about -.8, which indicates that an increase in price of 1 percent causes a reduction of about .8 of a percent in quantity demanded, p. 132.

¹⁰*Middle East Oil*, p. 37.

¹¹*Monthly Energy Review* (December 1980), p. 90. These data overstate the inelasticity of petroleum demand at any one point in time since demand has been increasing (the demand curve was shifting to the right). Another factor contributing to the relatively high rate of oil consumption has been the price controls which assured gasoline to U.S. and Canadian consumers at less than world prices.

Table 2
Crude Oil Production and Exports, Selected Countries
(millions of barrels)

OPEC Members	Production	Percent of World Production	Net Exports	Percent of World Exports
Algeria	401.5	1.8%	366.0	3.2%
Ecuador	74.8	0.3	44.8	0.4
Gabon	917.9	4.2	870.3	0.6
Indonesia	596.8	2.7	503.4	4.4
Iran	1,898.0	8.7	1,645.4	14.3
Iraq	918.0	4.2	870.3	7.6
Kuwait	764.7	3.5	642.8	5.6
Libya	720.9	3.3	677.0	5.9
Nigeria	697.2	3.2	677.0	5.9
Qatar	176.5	0.8	175.2	1.5
Saudi Arabia	3,027.7	13.8	2,812.7	24.5
United Arab Emirates	667.9	3.1	663.1	5.8
Venezuela	790.2	3.6	453.4	3.9
TOTAL OPEC	10,810.7	49.4	9,595.1	83.4
Other Major Producing Nations¹				
Argentina	165.2	0.8%	14.9	0.1%
Australia	157.0	0.7	-69.7	—
Canada	480.0	2.2	-127.5	—
Egypt	169.5	0.8	47.8	0.4
Mexico	443.5	2.0	133.2	1.2
Norway	127.2	0.6	71.8	0.6
Oman	115.0	0.5	115.0	1.0
United Kingdom	394.2	1.8	-315.1	—
United States	3,178.1	14.5	-2,278.1	—
Sino-Soviet Area	4,978.0	22.8	130.0	1.1
TOTAL	10,207.7	46.7	-2,277.7	—
WORLD TOTAL	21,874.5		11,501.8²	

¹Those producing 100 million barrels or more per year

²Total exports

SOURCE: U.S. Department of Energy, *International Petroleum Annual 1978*.

(three to four years) and -6.4 in the longer run. Thus, a price hike of 1 percent would result in a decrease of 1.9 percent in quantity demanded in three to four years and a 6.4 percent decrease in the longer run.¹²

The supply of grain is also relatively elastic. On the

basis of real prices, Peterson found that a 1 percent increase in the real price of farm products leads to an increase of about 1.5 percent in total world output.¹³ Similar results have been observed in the United States. For example, one study found that for each

¹²The Demand for United States Farm Output, reprinted from *Food Research Institute Studies* (Stanford, California: Stanford University, 1967), pp. 360, 363.

¹³Willis L. Peterson, "International Farm Prices and the Social Cost of Cheap Food Policies," *American Journal of Agricultural Economics* (February 1979), pp. 15-16.

Table 3
Self-Sufficiency in Grain and Petroleum Consumption (1978¹)

Region	Grain Consumption			Petroleum Consumption		
	Number of Countries	Million Metric Tons	Production as Percent of Consumption	Number of Countries	Million Barrels	Production as Percent of Consumption
More-Developed Areas						
United States	1	178.4	152%	1	6,879	46%
Canada	1	22.6	183	1	634	76
European Community ²	9	119.3	98	9	4,010	12
Other Western Europe ³	8	43.7	84	8	1,018	14
South Africa	1	9.2	110	1	107	0
Japan	1	34.4	35	1	1,877	0
Oceania ⁴	2	6.7	394	2	257	63
Centrally Planned Countries ⁵	10	564.2	97	10	4,376	100
OPEC Nations	13	59.4	73	13	817	1,323
Other Less-Developed Nations						
With Grain Production of:						
90+ percent of consumption	30	233.4	108	11	818	136
80-89 percent of consumption	13	70.7	73	1	57	83
70-79 percent of consumption	6	11.2	76	0	—	—
60-69 percent of consumption	7	8.1	64	0	—	—
0-59 percent of consumption	21	36.1	51	37	1,395	12

¹Petroleum data for calendar year, and grain data (wheat, coarse grains and milled rice) for marketing year 1978-79.

²Belgium, Denmark, France, West Germany, Ireland, Italy, Luxemburg, Netherlands, United Kingdom

³Austria, Finland, Greece, Norway, Portugal, Spain, Sweden, Switzerland

⁴Australia, New Zealand

⁵Albania, Bulgaria, Czechoslovakia, East Germany, Hungary, Poland, Rumania, Yugoslavia, USSR, China

SOURCE: U.S. Department of Agriculture, *Global Food Assessment, 1980*, and U.S. Department of Energy, *International Petroleum Annual 1978*.

1 percent increase in price, crop output would rise about 1.5 percent in the long run.¹⁴

Given the elastic export demand for and an elastic world supply of grain in the long run, the effectiveness of a U.S.-enforced grain cartel in increasing profits to U.S. farmers or to the nation for more than a year or two is unlikely. In the longer run of four to five years, such a cartel would be disastrous.

Similar Policies Have Failed in the Past, . . .

The United States has had some experience with cartel-type policies in the farm sector. Production restrictions and commodity loan programs have been

used since 1933 to raise farm prices and increase returns to U.S. farmers for a number of major exported crops, such as wheat, cotton, tobacco and rice. These programs were successful in increasing farm profits for a few years. The higher price of these commodities increased profits to the U.S. farm producers and foreign producers, and food prices to U.S. and foreign consumers. However, these farm production control and price support programs have been considered failures by many people over the long run.¹⁵

The United States accounted for 62 percent of world cotton exports and its share of world cotton produc-

¹⁴Luther G. Tweeten, *Foundations of Farm Policy* (Lincoln: University of Nebraska Press, 1970), p. 244.

¹⁵See, for example, George Leland Bach, *Economics: An Introduction to Analysis and Policy*, 8th ed. (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1974), pp. 292-303.

tion had risen slightly during the 10 years prior to the adoption of these programs for cotton in 1933 (table 4). Following the adoption of the cotton program, the United States became the residual supplier of cotton (as OPEC has become the residual supplier of oil). Other cotton-exporting nations such as Mexico, Peru and Egypt sold all of their cotton output at the higher world prices, while the United States exported the remainder of world imports. The higher world cotton price predictably induced other nations to increase cotton production and induced consumers to increase their use of cotton substitutes such as rayon and other synthetic fibers.

The higher price likewise induced U.S. growers to increase domestic cotton production. Production controls were necessary to limit output to domestic consumption and export levels at the fixed prices. As a result of this program, the U.S. share of world cotton production declined steadily, dropping from 56 percent in 1930-32 to 42 percent in 1940-42, 36 percent in 1950-52, 31 percent in 1960-62 and 20 percent in 1970-72. Exports declined from 8.4 million bales in 1930-32 (62 percent of world exports) to 4.4 million bales in 1952 (36 percent of world exports).¹⁶

The International Wheat Agreement, initiated in 1949 and renewed at intervals until 1965, resulted in an organization that included both net-exporting and net-importing nations.¹⁷ The stated purpose of the agreement was to stabilize the price and quantity of wheat in international trade. Originally, each exporter was to furnish a specific quantity of wheat for export and each importer to purchase a specific quantity. The organization soon evolved into a cartel with the United States and Canada as the price leaders. The United States supplied the residual wheat demanded at the specified price. The cartel broke down in 1964, when the United States decided to regain the Japanese market captured earlier by the Canadians. Although U.S. production controls and price supports to farmers were maintained, the breakdown of the cartel and a reduction of U.S. wheat prices were quickly followed by accelerating U.S. wheat exports. U.S. wheat exports through commercial channels had averaged 141.2 million bushels per year during 1955-59, 12 percent of total world wheat exports. By 1964, when the cartel was dismantled, such exports totaled 157.7 million

¹⁶U.S. Department of Agriculture, *Statistics on Cotton and Related Data 1920-1973* (GPO, 1974), pp. 40 and 49-50.

¹⁷See Alex McCalla, "A Duopoly Model of Wheat Pricing," *Journal of Farm Economics* (August 1966), p. 711. The U.S. wheat surplus that could not be sold at the established price was transferred to the less-developed nations through major government subsidy programs.

Table 4
World Production of Cotton
(annual average 1,000 bales)

	Production		United States as Percent of World	
	United States	Foreign Countries	Production	Exports
1920-22	10,376	8,497	55.0%	57.1%
1930-32	14,677	11,439	56.2	62.3
1940-42	12,042	16,776	41.8	23.6
1950-52	13,434	23,441	36.4	36.0
1960-62	14,449	31,860	31.2	31.6
1970-72	11,378	44,967	20.2	22.3

SOURCE: U.S. Department of Agriculture, *Statistics on Cotton and Related Data 1920-1973*, October 1974, Washington, D.C.

bushels, only 9 percent of world wheat exports. By 1970, such exports had risen to 508.0 million bushels or 26 percent of world wheat exports.¹⁸

A grain cartel composed of a number of the major grain-producing nations might increase profits from grain exports for a somewhat longer period than the U.S. could acting alone. However, within a few years, demand for the cartel-produced grain would become more elastic, profit from grain sales by the cartel would decline sharply and the problem of allocating production among the nations would become more intense.

. . . the Potential for Punishing OPEC Nations Is Limited . . .

A U.S.-sponsored grain cartel will not succeed in punishing OPEC because there is a relatively small demand for grain imports in most OPEC nations. Incomes in some OPEC nations are sufficient to purchase large quantities of grain. Most OPEC members, however, have relatively small populations and/or small per capita incomes and, hence, relatively small demand for grain; those with large populations such as Algeria, Indonesia, Iran, Iraq and Nigeria have relatively small incomes per capita, and grain demand is relatively small because of low income (table 5). In contrast, Saudi Arabia with a population

¹⁸U.S. Department of Agriculture, *Agricultural Statistics*, (GPO, 1966 and 1972).

Table 5
Population and Per Capita Income,
Selected Nations

OPEC	Population ¹	Per Capita Income ²
Algeria	18,145,000	\$ 780
Ecuador	7,763,000	741
Gabon	637,000	3,725
Indonesia	148,085,000	304
Iran	37,430,000	1,986
Iraq	12,906,000	1,561
Kuwait	1,277,000	11,431
Libya	2,920,000	6,335
Nigeria	74,595,000	682
Qatar	210,000	12,500
Saudi Arabia	9,292,000	6,089
United Arab Emirates	871,000	11,000
Venezuela	14,529,000	2,772
Other Nations		
Argentina	27,210,000	1,388
Australia	14,417,000	7,515
France	53,478,000	7,908
Italy	56,877,000	3,076
United Kingdom	55,901,000	4,955
United States	222,020,000	8,612
West Germany	61,302,000	9,278

¹Data are 1980 estimates for the United States and 1979 estimates for all others.

²Years for which estimates were made vary from 1974 for Qatar to 1978 for nine nations.

SOURCE: *The World Almanac and Book of Facts 1981.*

of 9.3 million and an income per capita of \$6,089 has both a relatively large population and high income per capita; Venezuela, with a 14.5 million population is likewise not far behind Western European nations with per capita income of \$2,772.

Commercial demand for imported grain by the group is a relatively small portion of the world total. In 1978, the OPEC nations consumed only 59 million metric tons of grain, less than one-third of U.S. consumption, and they produced almost three-fourths of their consumption domestically, importing only about 16 million metric tons. At this level of imports, the approximate grain price that a cartel would have to charge in order to offset the wealth transfers achieved

by OPEC would be astronomical. U.S. petroleum imports from the OPEC nations totaled about 1.6 billion barrels in 1980, which cost about \$34 per barrel and totaled about \$54.4 billion. In 1973, prior to the cartel, imports from OPEC totaled about 1.1 billion barrels, which at \$2 per barrel totaled \$2.2 billion. Excluding the impact of inflation, the cartel gained \$52.2 billion in revenue from its petroleum sales to the United States alone.

In early 1973; a bushel of wheat and a barrel of petroleum were selling for about the same price (\$2); hence, if a food cartel attempted to maintain this relationship, it would require a wheat price from the OPEC nations of about \$34 per bushel or about eight times the January 1981 average of \$4.21. The 16 million metric tons of grain imports (588 million bushels) by OPEC (assuming it was all wheat and all supplied by the United States) totaled only \$1.2 billion in revenue at the \$2 per bushel price. Even at \$34 per bushel and with no change in bushels purchased, revenues would total only \$20.0 billion. Thus, the gains from the grain cartel (\$20.0 billion - \$1.2 billion) of \$18.8 billion would still be less than two-fifths of the OPEC revenue gains of \$52.2 billion (\$54.4 billion - \$2.2 billion). To offset this level of OPEC gains would require a wheat price in excess of \$100 per bushel.

Furthermore, if the objective of the grain cartel is to offset total OPEC gains, it would require an even higher wheat price. Assuming that 83.4 percent of 1980 OPEC petroleum production was exported (the same percent as in 1978), exports would have totaled 8.24 billion barrels. At \$34 per barrel this equals \$280.2 billion in revenue compared with 9.42 billion barrels at \$2 per barrel or \$18.8 billion in 1973. This difference in OPEC's revenue of \$261.4 billion would require a wheat price to OPEC of \$445 per bushel.¹⁹

. . . And a U.S. Grain Cartel Would Cause Famine in Some Nations

One factor generally ignored in a discussion of an anti-OPEC grain cartel is its impact on the well-being of the non-OPEC world, especially the less-developed areas. As this nation has recently discovered with its Russian grain embargo, it would be futile to attempt to sell grain only to the OPEC nations at cartel prices. If a U.S.-sponsored grain cartel sold grain at lower prices to non-OPEC areas, the OPEC group would buy the grain from these other nations at a lower

¹⁹*Middle East Oil*, p. 26; U.S. Department of Agriculture, *U.S. Wheat Industry*, Agricultural Economic Report No. 432 (August 1979), pp. 51-52; and *Monthly Energy Review*.

price while reducing their purchases from the grain cartel.

There are only two ways to deal with this problem. One way is to have a grain cartel consisting of *all* non-OPEC nations of the world. But just as with the oil cartel, every nation, especially the less-developed ones heavily affected by OPEC price increases, would have a tremendous incentive to remain outside the cartel. They could then sell the OPEC nations *all* their wheat at a price slightly below the cartel's price. The other possibility of a successful grain cartel, even in the short run, is for a few nations to somehow limit total world exports. This policy would cause starvation and famine in many non-OPEC nations. Although OPEC has largely ignored its impact on the well-being of non-OPEC nations, this is not an acceptable political possibility for the United States.

SUMMARY

Forming a grain cartel to retaliate against OPEC's oil cartel would be ineffective. The OPEC cartel has been successful because of special supply and demand conditions for petroleum, which assured an increase in profits to cartel members when production was restricted.

A grain cartel composed of the United States alone

or the United States and a few other leading food-exporting nations would not succeed. Although it might raise world grain prices and increase profits to the cartel members for a year or two, the higher prices would soon lead to increased production in the rest of the world and sharp reductions in the quantity of grain exported by the cartel members. Hence, revenue to the cartel would soon decline to less than pre-cartel levels.

Moreover, the United States and other nations have had unfavorable experience with cartel-type farm export programs. Attempts to maintain cotton prices at artificially high levels after 1932 resulted in reduced exports as the United States became the residual supplier, while other producing nations profited from our production control and price support programs. Similarly, the International Wheat Agreement collapsed under increased competition by member nations.

Another factor limiting the ability of a food cartel to punish OPEC is that a food cartel cannot be effective without doing great injury to people in less-developed nations. Attempts to provide less-developed, non-OPEC nations with food on more favorable terms than the rest of the world would result in reshipment to OPEC members, thereby nullifying the objectives of the cartel. A food cartel would, thus, reduce food supplies for the near destitute masses of people in the less-developed nations.

