COMPETITION AND MONOPOLY IN WORLD OIL MARKETS: The Role of the International Oil Companies

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Introduction

Since the early 1870s, when John D. Rockefeller began assembling Standard Oil of New Jersey, the large, usually American-owned and -managed, oil companies have been the most famous and controversial business enterprises in the United States as well as throughout most of the world.[1] Even if there had never been a Rockefeller or a Standard Oil, however, the oil companies' long-standing worldwide notoriety was almost certainly inevitable in view of oil's importance in fueling most of the world's nations as well as the special characteristics of the crude-oil production process and the huge, multinational enterprises that have evolved to provide crude oil and refined petroleum products. Past and present attitudes toward the international oil companies have arisen for eight reasons that merit brief review:

1. Access to energy is essential for nations to industrialize and achieve sustained economic growth. In the century prior to 1970 oil became the dominant source of the world's energy. Oil's ascendancy was propelled by three forces. First, although crude-oil prices have always fluctuated because of short-run demand and supply

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[1]Rockefeller's Standard Oil of New Jersey was forced to split (or divest) itself into thirty-eight companies in 1911 as a result of an adverse ruling in an antitrust case. One of the successor companies was also named Standard Oil of New Jersey. Subsequently its name was changed to Exxon.

changes, prior to 1970 the general worldwide trend in crude-oil prices was downward. Second, as the twentieth century progressed motor vehicles and airplanes became the primary form of transport. Indeed, their widespread ownership and use has frequently been identified as the most obvious sign that a nation's citizens were enjoying the fruits of economic prosperity. To date, refined oil products have had no reasonable substitutes as a fuel to power these vehicles.[2] Third, because crude oil and refined oil products proved to be much easier (hence cheaper) to ship, store, and consume than alternative fuels such as coal or wood, customers for these less convenient fuels began to use greater quantities of oil products.

2. At least since the British and American navies converted from coal to oil just prior to World War I, the major military powers have considered access to oil to be of vital importance for their military security. For example, just three months before the outbreak of World War I, Winston Churchill persuaded the British government to acquire a 51 percent controlling interest in the Anglo-Persian Oil Company (later renamed British Petroleum) by raising suspicions that the Royal Navy's access to oil supplies might be endangered if these supplies continued to be provided by privately owned, largely foreign firms. More generally, because of oil's perceived importance to the major industrial nations' economic and military vitality, the governments of most such nations have long histories of regulating many of the activities of oil companies doing business within their borders. These nations have also concerned themselves with securing "assured" access to foreign sources of oil by promoting the interests of international oil companies headquartered within their borders. Promoting these two somewhat contradictory ends has entailed close dealings (at times friendly, at other times adverse) between the national governments and the oil companies whose activities they attempt to regulate or whose interests they attempt to promote.

[2]In the early years of the automobile industry a few firms sold products that were not powered by internal combustion engines (e.g., the Stanley Steamer) and could be fueled by coal or wood. However, because of such features as the ease and speed of starting a cold engine as well as compactness of fuel storage, it was quickly evident that these alternatives to the internal combustion engine were obsolete. It is technically possible to fuel an internal combustion engine with natural gas or liquified petroleum gases, although such fuels have never been widely used. Recently there has been a growing enthusiasm for gasohol – a mix of gasoline and alcohol – as a partial substitute for gasoline. However, absent a large tax subsidy, gasohol prices would not be competitive with gasoline prices.

These dealings have always been complex, and confused, and, as a result, they are difficult to categorize accurately.[3] For example, the 1950s are frequently described as a period when the American oil companies could get virtually any policies they desired from the American government because representatives from the major oil-producing states dominated the Congress and because President Eisenhower was regarded as generally sympathetic to business.[4] Unfortunately, the description is too neat. It fails to take proper account of both the heterogeneity of oil company interests (discussed below) and the complexity of the U.S. government. To illustrate, the United States began to enforce oil import quotas in the 1950s—a policy that allowed prices for domestic oil to be higher than they would otherwise be. However, although many oil companies supported restricting imports, the oil industry's position on quotas was certainly not monolithic. Several of the largest oil companies (in particular, such internationals as Standard Oil-Exxon and Mobil) opposed quotas because they were seeking to import more oil into the United States. In addition, during the 1950s the United States began enforcing natural gas wellhead price controls as a result of a Supreme Court decision extending the purview of the Natural Gas Act of 1938. Yet, although controls were opposed by all segments of the oil industry, natural gas prices were not deregulated.[5]

3. Crude oil has been discovered in large quantities in only a few regions of the world, many of which are located far from major population and industrial centers. Because oil is cheap to transport in comparison to most other fuels, the geographical separation of sources of supply from markets has required the oil business, from its early days, to maintain an international orientation. Since at

[3]Dealings between oil companies and governments have always been a subject of great controversy. Whether they should be classified as too cozy or too hostile usually depends on the vantage point of the analyst. Thus, during the 1970s virtually all of the popular books "critically" examining oil companies lamented the almost incestuous nexus they asserted existed between oil regulators and the regulated. In contrast, virtually all oilmen would agree that the principal difficulty with the oil business has been the plethora of pricing, allocation, environmental, and tax regulations with which they must now comply.

[4]For example, Sam Rayburn of Texas was Speaker of the House of Representatives, Lyndon Johnson of Texas was Senate majority leader, and Robert Kerr of Oklahoma, a founder of the Kerr McGee Oil Company, was one of the principal Senate leaders.

[5]I do not doubt that the oil industry's opposition to natural gas price controls was primarily for selfish rather than altruistic reasons. Nevertheless, virtually all academics who have studied these price controls agree that they have been very costly to the U.S. economy and led directly to the natural gas shortages (and the higher oil imports) that plagued the United States in the 1970s.

least World War II, oil's importance in world trade has been unrivaled by any other product.

4. Finding and developing large new sources of oil is an extremely risky business requiring capital resources and substantial technical sophistication as well as considerable luck. Three types of risk are endemic to the crude-oil business: the geological risk of whether a previously undrilled geographical region or geological strata will contain commercial quantities of oil-bearing sediments; the engineering risk that arises because it is difficult to evaluate, given the very limited data base actually available to the reservoir engineer, either the geological potential or the production characteristics of a complex geological environment; and the political risk that arises because governments frequently make changes in the rules of the oil game that do not favor investors. Privately owned oil companies (frequently sharing risks by forming consortia) have been virtually the only organizations having both the means and the will to be successful in discovering substantial oil reserves in virgin areas.[6]

5. Many oil companies are large, and the larger oil companies are among the largest firms in the world. Moreover, since the early days of Standard Oil of New Jersey most larger oil companies have been integrated vertically into all major stages of the oil business: the discovery and production of crude oil, the processing of crude oil into refined products and petrochemicals, the marketing of petroleum products, and the transportation (primarily via tankers, barges, and pipelines) of both crude oil and refined petroleum products. Although the oil business is famous for spawning huge firms, the failure to take account of the fact that the industry contains tens of thousands of firms of all sizes has distorted many industry analyses and the public's reactions to them.

The major oil companies are no longer owned and managed by a few fabulously wealthy individuals or families. Instead, like most other large private corporations, they are highly structured organizations with hundreds of thousands of owners, and their top executives have climbed up through corporate ranks, usually after being trained in either finance or one of the petroleum-related scientific or engineering specialties. These well-paid executives are basically managers rather than wildcatters and entrepreneurs.[7] To the extent

[6]The Mexican government must be counted a notable exception. For details on the Mexican experience see Richard B. Mancke, *Mexican Oil and Natural Gas: Political, Strategic, and Economic Implications* (New York: Praeger, 1978).

[7]An interesting, and I believe accurate, discussion of the management of one giant

that there do exist rough-and-tumble, fabulously wealthy characters of the type familiar in popular fiction, they are more likely to be found in the independent sector of the petroleum business. Nearly all of the independent oil companies are relatively small. Their ownership and senior management is often dominated by one or a few families frequently well-connected with local and state political leaders.[8] When oil sells for $36 per barrel, an oil company need only produce 761 barrels per day to gross $10 million annually.[9] There are thousands of oil companies selling at least this amount of oil. By banding together, these oil "independents" have frequently been able to exercise more political influence than oil's "majors," who tend to be subject to much greater public scrutiny

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oil company can be found in Anthony Parisi, "Inside Exxon: Managing an $85 Billion-a-Year Empire," *New York Times Sunday Magazine,* August 3, 1980, p. 18.

[8]Certainly all "independents" are not like the infamous J. R. Ewing of television's "Dallas." *Newsweek* (September 29, 1980, p. 67) described one oil independent as follows:

> Hollywood would never cast 64-year-old I. W. (Ike) Lovelady as a high-rolling Texas oilman. He dresses in conservative business suits, drives a Mercury instead of a Cadillac, lives in a middle-size town house in Midland, Texas, and has never been known to flash fancy jewelry or clomp around in hand-tooled cowboy boots. But Ike Lovelady is worth . . . as much as $10 million, money won by gambling that he could find oil in West Texas. *Precisely because they are willing to gamble,* Lovelady and 12,000 other independent drillers like him are crucially important in America's drive to wean itself from dependence on OPEC oil.
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> Last year . . . the independents drilled roughly 80 percent of the exploration wells in the United States. And while giants like Exxon and Shell command the headlines, Ike Lovelady, Inc., is actually more typical of the American oil industry. The firm employs 30 executives, geologists, accountants, production supervisors and clerks, who work out of a spartan suite of offices in Midland's C&K Petroleum Building and oversee 160 wells producing a total of 1,200 barrels of oil and 15 million cubic feet of gas daily. Assets of Lovelady, Inc., will hit between $9 million and $12 million this year—roughly half of Exxon's daily tax bill.
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> For the independents, it's a constant struggle to stay alive. "The only way we can beat the majors is by being faster than they are," says Lovelady. To find promising situations, Lovelady and his staff constantly pore over maps and charts, looking for geological anomalies that might indicate a rich reservoir of oil or gas. "When you see something that looks promising, you've got to get off your butt, get all the information and then go out and buy your leases," says Lovelady.

[9]The Getty Oil interests and the Hunt brothers' Placid Oil Company are examples of huge "independents." The 1979 sale of Belridge Petroleum—an independent producing about 43,000 barrels of oil per day—to Shell for about $3.6 billion illustrates the fabulous wealth possessed by some oil independents. A block of Belridge stock valued at $7 million in 1975 when it was given to a San Francisco foundation was sold to Shell for $253 million in 1979.

and are more vulnerable to criticism precisely because they are so much larger and more visible. Evidence of the special political power of the oil independents, even on the national level, is provided by such policies as the exemption from federal price controls of all oil produced by low-output stripper wells, which are owned predominantly by independents; the elimination of the oil depletion allowance for all except low-volume producers of crude oil; and an entitlements program that grants a preference to small refiners in the distribution of the valuable entitlements to buy cheap, price-controlled, domestic oil.

6. In the years prior to World War II the governments of many oil-exporting nations, especially those bordering the Persian Gulf, were chaotic and primitive, frequently subservient to the United States or Great Britain, and far weaker than the rather small number of oil companies seeking their permission to search for, produce, and export oil. In dealing with these governments it was not uncommon for oil companies to resort to a variety of ethically questionable tactics such as bribing government officials or supporting insurgents. Although these past actions continue to color both public and official reactions to the international oil companies, there is no evidence of their having been continued in the post-World War II years.

The opportunities for oil companies to exploit oil-exporting nations diminished rapidly after World War II because of three factors: Ever-growing numbers of profit-seeking oil companies were competing to acquire oil concessions; British and U.S. hegemony over the developing world was eroding rapidly; and—as their oil wealth mounted—the governments of the oil-exporting countries became more sophisticated about oil matters. By 1960 the interaction of these three factors had so strengthened the relative power of the oil-exporting countries that a group of the leading oil exporters formed an organization—the Organization of Petroleum Exporting Countries (OPEC)—committed to raising their per-barrel oil revenues. Ten years earlier it would have been unthinkable for these countries to challenge the international oil companies and, indeed, the U.S. and British governments, by forming a cartel of oil producers.

7. To varying degrees all nations consider their reserves of crude oil to be a part of the national patrimony that belongs to the nation and should be used to promote the interests of the nation's citizens and their posterity. To the extent that a nation considers its oil to be part of its national patrimony, the export of oil is controversial and

the purview of private, especially foreign-owned, oil companies has been limited.

8. Prior to the 1970s all of the larger international oil companies were owned and managed primarily by Americans and, to a lesser extent, by the British and Dutch. Because of oil's economic, political, and strategic importance, this national concentration of oil company ownership and control has prompted criticism from many other countries.

For the reasons outlined above, oil companies have been controversial throughout the world. However, the principal argument of this paper is that because of changes that began sweeping the oil world following World War II and that culminated in the revolutionary events of the 1970s, most of the present concern about large or multinational oil companies and their alleged abuses is misplaced and frequently diverts the oil-importing countries from facing their energy problems directly.

The Evolving Circumstances of the International Oil Companies: From Lords to Vassals

The Postwar Preeminence of the Seven Sisters—1945–49. In the years immediately following World War II about 98 percent of the total non-Communist oil production outside of North America was produced by seven giant, international oil companies: Exxon, Mobil, Socal, Texaco, Gulf, British Petroleum, and Shell.[10] In addition to producing all of the crude oil necessary to feed their own refineries, these seven companies were the principal suppliers of crude oil for independent refineries throughout the world. Thus it is accurate to conclude that these seven companies were the only firms possessing both the talents and resources to market crude oil on world, i.e., non-North American, markets in the late 1940s. Because these companies shared common goals and concerns and were tied together to varying degrees by their interlocking participation in numerous joint ventures throughout the world, they came to be called the seven sisters. The fact that these seven companies exercised virtually total domination over both the production of crude oil outside of North America and the worldwide marketing of this oil at least raises the possibility that they may have been able to realize either monopsony profits in their dealings with the oil-exporting countries or monopoly profits from the production and sale of oil during the early postwar years.

[10]M. A. Adelman, *The World Petroleum Market* (Baltimore: Johns Hopkins University Press, 1972), p. 80.

Monopsony profits are earned whenever the potential buyers of a product or a service are somehow able to suppress competition among themselves so that they can acquire that product or service at a price less than it would command in a competitive market. In the early postwar years several oil-producing countries wanted to increase their crude-oil exports in order to earn higher royalties. However, because of the seven sisters' virtual domination of non–North American crude-oil production and of international oil sales, each of these countries realized that it could increase its crude-oil exports only by persuading one or more of these companies to produce and market more of its oil. Available public evidence suggests that, in most instances, the individual seven sisters did not bid independently for the rights to produce and market a nation's oil.[11] Instead, they were able to minimize independent bidding for most countries' oil exploration and production rights by participating in joint-venture production companies and by agreeing among themselves (with the active endorsements of the American and British governments) to divide up the world by assigning specific companies or groups of companies exclusive exploration and production rights within certain countries or regions. Thus, for example, Exxon and Mobil produced crude oil jointly (sometimes with others) in Iraq, Saudi Arabia, Iran, and Indonesia, and British Petroleum and Gulf were joint operators in Kuwait. Most of these joint ventures were governed by complicated production-sharing agreements that severely limited each participant's discretion to set independently the joint venture's investment and production plans. In view of this nexus of relationships linking the seven sisters in the early postwar period, I think it likely that they were able to exercise *some* monopsony power in their dealings with at least some of the oil-exporting countries. If my inference is correct (and I do not know how to test it empirically with the available information), the implication is that the royalties paid to the oil-exporting countries were somewhat lower than they otherwise would have been.

Monopoly profits are earned whenever the suppliers of a product or service are able to act in concert to reduce their aggregate production and sales to a level lower than it would be if each supplier decided, independently of its competitors, how many units to produce and sell. Because the total supply of products available for

[11] U.S. Senate Foreign Relations Committee, Subcommittee on Multinational Corporations, *Report on Multinational Corporations and U.S. Foreign Policy* (93rd Cong., 2nd sess., 1975).

sale is reduced in a monopolized market, the product's price and the aggregate profits of its sellers will be higher than they would be in a market that was identical except for a more competitive market structure. The prospect of sharing the potentially higher industry profits induces sellers of a product to try to limit competition. However, because the price of products sold in a monopolized market exceeds the costs of producing additional units, every seller has an incentive to attempt to garner even higher profits for himself by increasing sales. Thus a fundamental problem faces all multiple-firm monopolies: To earn monopoly profits each seller must sacrifice his own immediate interests and act for the good of all the firms by restricting his sales below the level he believes to be most profitable. In short, for a multiple-firm monopoly to succeed, each individual seller of the monopolized product must somehow be persuaded to ignore the incentive to cheat by increasing his sales and thereby gathering higher profits at the expense of his competitors. Because the profits potentially available to successful cheaters will be higher the more successful the product's suppliers have been at restricting their aggregate sales and thereby raising prices, the incentive to cheat is positively related to the amount of success actually realized by the monopoly. To the extent that sellers do cheat, competition can be said to have broken out, and the monopoly will become less successful. (The preceding analysis assumes that the firms presently selling products in a monopolized market need not fear competition from new entrants. To the degree that higher prices are thought likely to entice other firms to enter the business, however, the price-raising potential of those firms already selling the product will be constrained even if they are able to collude closely.)

In the immediate postwar years the seven sisters shared concessions for producing what was believed to be virtually all of the non-North American crude-oil supplies. In view of the strong control these concessions gave the seven sisters over the crude-oil resource base, it was thought unlikely that there would be significant entry of new competitors into world markets. The facts that these seven firms did not need to fear significant new entry and that their individual fortunes were linked by interlocking agreements and joint ventures, support the inference that they may have been able to earn some monopoly profits from the production and international sale of non-North American crude oil.

It is difficult to find detailed information about arm's-length prices of Persian Gulf crude oil in the immediate postwar period. However, the available information compiled by Professor M. A.

Adelman shows that the price of crude oil sold at the Persian Gulf fell rather steadily from $2.22 per barrel in 1947 to $1.65 per barrel in September–December 1949.[12] These falling prices suggest that even though the market structure of the world petroleum market appears to have been conducive to the exercise of monopoly power by the seven sisters, these companies were not especially successful at limiting increases in their total output and thereby holding prices at a high level.

Two Decades of Eroding Market Power—the 1950s and 1960s. Although crude-oil prices were falling substantially on world markets in the late 1940s because of the much lower costs of finding, developing, and producing oil from the prolific Persian Gulf fields, the seven firms producing nearly all of this oil enjoyed enviable profits. These profits precipitated two mutually reinforcing responses that resulted in steady diminution of the seven sisters' market power during the 1950s and 1960s.

1. The oil-exporting countries recognized increasingly that their huge, relatively low-cost oil reserves were the ultimate source of the international oil companies' attractive profits. As explained later in this section, such profits (more accurately, scarcity rents) would persist as long as there was not enough of the very lowest-cost oil being produced to supply all of the oil consumed internationally. Rather naturally, the oil-exporting countries felt justified in demanding a larger fraction of the total oil revenues for themselves. As the years passed it became increasingly evident that the most effective tool available to the oil-exporters for getting higher oil revenues was to encourage large numbers of oil companies to compete for the privilege of producing their oil.

2. At least three classes of firms were envious of the high profits being reaped by the seven sisters and sought to divert some of these profits to their own coffers: large American domestic oil companies such as Standard Oil of Indiana (Amoco), Phillips Petroleum, and Continental Oil; American independents such as John Paul Getty, H. L. Hunt, and, perhaps most notably, Dr. Armand Hammer's Occidental Petroleum; and consuming countries' national oil companies such as Italy's ENI. Because of extensive entry by these three classes of firms, by the late 1960s it was

[12]Adelman, *The World Petroleum Market,* p. 134. Because these prices are not deflated to take account of the high postwar inflation, they understate the "real" price fall.

> no longer accurate to identify the seven sisters as the only set of firms that could be described by the phrase "international oil companies." Thus, hereafter, whenever the term international oil companies appears unadorned by qualifiers, it is intended to refer to those firms – whether major or independent, privately or publicly owned – actively seeking to produce or acquire crude oil for sale on world markets.

Together the efforts by oil companies and oil-exporting countries to win for themselves higher oil revenues caused the structure of the international petroleum market to change slowly, but irreversibly, over the two decades prior to 1970.

Because of the steady inroads of what ultimately proved to be scores of new entrants eager to supply oil for sale in international markets, the seven sisters' share of the total non-Communist oil production outside of North America declined from about 98 percent in 1950 to about 76 percent in the first six months of 1969.[13] Although the decline was significant, the market-share data reveal that the seven sisters continued to be the most important firms in the international oil business – they still produced most of the world's oil and, because they continued to produce more oil than they refined, they continued to be the principal marketers of crude oil throughout the world. However, the following evidence compels me to conclude that the market share of the seven sisters considerably overstates their relative power in world oil markets in the late 1960s.

The interlocking concessions and joint ventures, which had benefited the seven sisters by restricting the entry of new firms into the international oil business and by fostering parallel actions, weakened significantly as the oil-exporting countries developed into stronger national entities. Thus during the 1950s and 1960s the oil-exporting countries succeeded either in abolishing or in repeatedly liberalizing most of the generous prewar concessions they had granted to the seven sisters (either individually or in varying combinations). Moreover, potential new oil-exporters never agreed to grant exclusive concessions. Thus, in perhaps the most dramatic example, Libya's King Idris threw open to the highest bidder the rights to explore for and produce his nation's oil. One of the winners of the resultant competitive brawl was Occidental Petroleum, a small American firm at the time that it outbid the seven sisters. Subsequently, Occidental discovered large quantities of high-

[13] Ibid., p. 81.

quality oil in Libya. Financed initially by the high profits earned on its Libyan production, Occidental grew rapidly and today can be classified as a large international energy and petrochemical company.

By the late 1960s there were many new firms participating actively in the international oil business, and all participants, whether old or new, now recognized and, indeed, admitted that the oil-exporting countries exercised exclusive sovereignty over the oil on their lands. Because sovereigns have the power to change the rules of the game, there were growing doubts as to the value to the seven sisters of their huge international reserves of oil.

With the exception of periods of temporary supply shortages such as those triggered by the 1956–57 Suez crisis and the 1967 Arab-Israeli war, crude-oil prices trended lower on world markets between 1950 and 1969. In consequence, crude oil could be purchased at Persian Gulf ports for about $1.00 to $1.10 per barrel in 1969.[14] However, although crude-oil prices were falling during the 1950s and 1960s, the per-barrel royalties paid to the oil-exporting countries were growing ever higher as, repeatedly, the companies were compelled to offer terms that would assure that they remained in the oil-exporters' good graces. By 1969 the average payment by the oil companies to the Persian Gulf exporters was from eighty cents to ninety cents per barrel. After making these high payments the oil companies had net revenues of only ten cents to twenty cents per barrel. Moreover, out of these net revenues they had to pay all the costs of exploration, development, and production. After deducting these costs the oil companies' profits must have been less than ten cents per barrel—an amount much too low for the companies producing this oil to be considered to possess significant monopoly power.

The international oil companies' twenty-five-year postwar record of eroding per-barrel net revenues implies that even in the early postwar years (which appear in retrospect to be the high-water mark of the seven sisters) there was always some question as to the ability of the oil companies to obtain net revenues appreciably higher than their total incremental costs. In short, whatever monopoly power the international oil companies did possess was always severely constrained.

The oil companies' costs of producing crude oil were of two basic types: (1) resource costs, which were unavoidable if crude oil was to be found, developed, and produced; and (2) payments of royal-

[14]Ibid., p. 191.

ties and taxes to the oil-exporting nations for the right to use their oil reserves. Although a real cost to the oil companies, their payments to the oil-exporting countries consisted of a mix of scarcity rents and monopoly profits. Scarcity rents arise whenever the costs of producing a product are not uniform and supplies from the lowest cost sources are inadequate to meet demand. For example, suppose at a price of $12 per barrel 2 million barrels of oil are demanded and there are two sources of oil—one able to produce 1 million barrels at a resource cost of $1 per barrel and the other able to produce 5 million barrels at a resource cost of $2 per barrel. In a competitive market the price of oil would be $2 per barrel, each of the sources would produce 1 million barrels, and the owners of the lower-cost source would receive scarcity rents of $1 per barrel. In the early postwar years, before the true wealth of the Persian Gulf oil fields was fully understood and appreciated, most of the payments to the oil-exporting countries probably constituted scarcity rents. By the late 1960s, however, it was apparent that, if they chose to do so, the Persian Gulf nations could expand their oil exports substantially. Thus, a substantial fraction of their eighty cents to ninety cents per barrel oil receipts appears to have been monopoly profits.

This analysis suggests that by the late 1960s the balance of power in the world oil business had shifted significantly from the international oil companies to the oil-exporting countries. Perhaps the strongest evidence of this power shift is provided by two facts: (1) Even though they invested no funds and bore no financial risks, the Persian Gulf oil-exporting countries received four-fifths of the total revenues from the sale of their oil in world markets; (2) in contrast, in return for the remaining one-fifth of the oil revenues the oil companies were competing to invest the funds and to bear all the financial risks associated with producing Persian Gulf oil. These facts undermine the belief that a few powerful international oil companies were exploiting the feeble and impoverished oil-exporting countries, but they are consistent with the conclusion that the international oil companies no longer possessed any appreciable monopoly power.

Years of Revolution—the 1970s. In the 1950s and 1960s, even though demand in the world oil market was growing rapidly, oil prices were trending downward. The falling prices demonstrate that the suppliers of oil to world markets had insufficient market power to prevent total supplies from growing faster than demand. The 1970s were to witness a revolutionary change in this rather comfortable (for oil consumers) state of affairs. In a rapid-fire series

of negotiations, confrontations, and ultimatums, the world price of crude oil soared ever higher—ultimately rising about twenty-five times during the decade. Moreover, there were two instances (the 1973–74 OPEC embargo and events surrounding the 1978–79 revolution in Iran) of sudden, disruptive interruptions in the flow of world oil. Although both of these reductions were modest (only 3 percent to 10 percent of the total world oil trade), they precipitated shortages, hoarding, and significant economic distress within the oil-importing nations.

The stormy events of the 1970s have had many consequences, including a dramatic shift in the focus of world economic and political power from the Organization for Economic Cooperation and Development (OECD) countries (especially the United States) to a small group of countries exporting large amounts of oil. Of special importance is the accelerating diminution in the relative power and importance of the international oil companies in their dealings with the oil-producing countries. At the beginning of the 1970s the international oil companies were still essential for performing two types of functions necessary for a nation to sell its oil in the world market. First, they were the only firms having or able to assemble the talents and resources necessary to find, develop, and produce crude oil. The oil-exporting countries believed that they had no alternative to acquiring the products and services provided by the international oil companies if they were to develop and produce their crude oil. Second, these companies were the only firms having the talents and resources needed to place a nation's oil on the world market. By the decade's close, however, the international oil companies were no longer necessary to perform either of these functions. A *Wall Street Journal* article defined "the new reality of oil" as "the success of the Organization of Petroleum Exporting Countries in taking over production and sale of the combined reserves of their 13 member nations.... It is estimated that since the early 1970s, the amount of the non-Communist world's oil controlled by the big companies has been halved."[15] Petroleum consultant Walter Levy elaborated on the decline of the international oil companies in a recent article:

> The producing countries, having taken full control over their national oil operations, in fact do not recognize as binding supply or price arrangements even if freely concluded by them.... Because of the fear of being arbitrarily cut off from supplies, West-

[15]Danforth Austin, "Gulf Oil Emerges from a Troubled Decade," *Wall Street Journal*, September 22, 1980, p. 27.

> ern nations and their companies now accept within a wide range practically any economic or political terms that a producing country may impose on them. This subservience, however, rather than safeguarding the remaining rights and position of the companies, in fact encourages the host countries to continue to proceed as they see fit. We have thus entered a period in international oil of near "lawlessness" in the relationship between producing countries, the oil companies and the importing countries.
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> The issues are not only supply and price stability. They also include exploration and development efforts that are now exclusively dependent on policies of importing countries. . . .
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> Moreover, especially since 1979, producing countries have cut back the oil they supply to the major international oil companies, frequently below the level of their direct requirements. The "Internationals," therefore, can no longer provide oil supplies to third parties as in the past. More and more of the oil is sold directly . . . by producing to importing countries. . . . [T]he share of the Internationals in world oil trade has declined from 78 percent in 1974 to about 44 percent in 1979, and is declining even further.[16]

The rapid decline of the international oil companies in the 1970s has two causes. First, by the early 1970s the oil-exporting countries had acquired considerable knowledge of the oil business. They had begun to realize that the role of the international oil companies in finding, developing, and producing crude oil was that of a general contractor. That is, for an agreed-upon price the oil companies provided a diverse bundle of exploration, development, and production services. However, as the oil-exporters' knowledge of the oil business grew and as they began to develop indigenous technical expertise, they began to observe that it was not necessary to acquire the entire bundle of oil services at a single price from a single supplier. Instead, they found they could cut costs and improve their skills by shopping around and buying only those services they desired from both oil companies and a large array of oil-service companies that specialize in one or a few areas and do business as subcontractors for oil companies. In sum, as the 1970s progressed the oil-exporting countries increasingly chose to supply for themselves the general contractor services previously provided by the international oil companies.

The second cause of the international oil companies' declining importance during the 1970s has been a direct consequence of the fact that oil prices began rising rapidly, instead of falling as they had done during the 1950s and 1960s. World oil prices fell during those decades only because supply exceeded demand at prevailing

[16]Walter Levy, "Oil and the Decline of the West," *Foreign Affairs* 58 (1980): 1003–4.

prices, which meant that if an oil-exporting country wished to sell more of its oil at those prices, it had to induce buyers to choose its oil rather than oil from some other country. With their long-established and extensive marketing channels, the large international oil companies were especially suited to do the inducing.

Oil prices began rising in the 1970s only because the OPEC countries were able to cut back the available supply of oil. The fact of rising world oil prices implies that there was no longer a surfeit of oil on the market, and thus, rather than being reluctant buyers as they had been in the 1950s and 1960s, consumers in the 1970s began clamoring for the privilege of buying more of a country's oil. In such circumstances the international oil companies' marketing channels became significantly reduced in economic value.

The declining role of the international oil companies has not been without its real costs. Most important, as long as the large international oil companies were marketing large volumes of oil that were surplus to their needs, they provided a buffer between buyer and seller that resulted in considerable flexibility in a wide variety of activities such as storage, transportation, refining, and exchange of oil. This flexibility was of substantial value in a complicated business where refineries costing hundreds of millions of dollars are designed to process a mix of crude having specific chemical and physical properties and to operate at a generally steady level of throughput. With the breakdown of the international oil companies' marketing function, bilateral relationships between individual oil-producing countries or their state-owned agents and individual customers have proliferated. This new pattern of bilateral trade has resulted in many refineries having to use as feed stocks crude oil of a quality they were not designed to process. Also, the transportation of crude oil has become much more fragmented, causing a substantial increase in the tonnage necessary to ship a given quantity of oil and the need to maintain large normal working reserves to ensure that refineries will not run short of oil. The higher costs of refined oil products due to these inefficiencies are relatively modest as compared to the higher costs attributable to soaring crude-oil prices. Nevertheless, the cost of refined oil has risen by several billion dollars annually and, if this increase had not been largely obscured by the effects of soaring crude-oil prices, would be a serious worldwide concern.

The Profits of the International Oil Companies

The postwar history of the international oil business contains a fundamental paradox: In the twenty-five years prior to 1970 world

oil prices fell almost without interruption even though a relative handful of international companies produced and marketed most of the oil traded internationally, but in the 1970s world oil prices rose twenty-five to thirty times, even though the international oil companies had seen their control over oil supplies plummet and, as a result, had lost whatever power they once had over its production and marketing. The obvious resolution to the paradox of oil prices falling when the international oil companies were relatively strong and rising as they became weaker is that these companies were never an especially important factor in setting postwar oil prices. Because of accelerating entry by other firms prior to 1970, the international oil companies' market power was declining rapidly enough so that world oil prices were principally determined by the fact that, except during military conflicts, additions to supply were increasing faster than demand. In addition, after 1970 the thirteen OPEC countries succeeded in accomplishing what the international oil companies had never even attempted – they were able to restrict supply sufficiently so that they could double, then redouble, then re-redouble, etc., world oil prices.

Although the paradox has an obvious resolution, a large number of policy makers and oil company critics have simply ignored it, largely, I suspect, because of intellectual inertia (it is hard not to blame such an easy target as the "monopolistic" oil companies for rising prices) and envy of the relatively high profits reaped by oil companies during the 1970s. The phenomena giving rise to high oil company profits merit brief examination.

The cost of crude oil purchased at the Persian Gulf jumped in sharp, sudden spurts from about $1.10 per barrel in 1969 to between $30.00 and $36.00 per barrel in late 1980. The largest price hikes accompanied the partial embargo of oil exports by OPEC's Arab members in 1973–74 and the reduction in Iran's oil exports in 1978–79. Because of crude oil's unrivaled importance in world trade and the difficulties most oil-importing nations have had in making substantial, rapid cutbacks in their consumption of oil or in shifting to alternative fuels, the soaring world oil prices during the 1970s inevitably resulted in enormous and disruptive wealth and income transfers from oil consumers. For example, an American family of four spent about $1,400 just to pay for its share of the oil that the United States imported in 1980. The cost of this family's energy is so high because crude oil must be refined prior to its consumption and because imported oil provides only about one-fifth of the total primary energy consumed in the United States. The high price of imported oil has also pushed sharply higher the prices of its

closest substitutes – domestic crude oil, natural gas, and, to a lesser extent, coal.

The oil-importing countries have been the principal beneficiaries of soaring world oil prices. Because of the low costs of developing and producing their prolific oil reserves, the typical oil-exporting country was netting at least $25 per barrel on its oil exports in mid-1980 as opposed to the eighty cents to ninety cents per barrel netted in 1969.

Consumers' attempts to adjust to the sharply higher costs of OPEC oil inevitably gave rise to two classes of beneficiaries in addition to oil-exporting countries: (1) Any individual, organization (including firms), or government that either owned or had control over access to economical substitutes for OPEC oil enjoyed higher profits as a direct consequence of the higher prices these OPEC substitutes brought; and (2) all individuals and firms having the scarce talents necessary to find, develop, and produce economical substitutes for the high-priced OPEC oil discovered that they could charge more for their services. Of course, to the extent that the international oil companies owned or had under lease substitutes for OPEC oil and had the talents necessary to find, develop, and produce new oil reserves, they were among those who profited from the events of the 1970s. Because the cause of these higher profits (fortuitous from the point of view of the oil companies) is the success the OPEC countries have had in restricting their crude-oil production and raising their prices enormously, the profits are frequently referred to as "windfall." The perception that the international oil companies are reaping enormous windfall profits because of the soaring world oil prices colors much of the debate about these companies and has influenced the design of energy legislation. It is of interest to estimate the actual magnitude of these profits.

Columns 1 and 2 of table 1 show the after-tax profits of the ten largest, U.S.-based international oil companies in 1972 (the last full year prior to the large price hikes that accompanied the 1973–74 oil embargo) and 1979. The total after-tax profits of these ten firms rose 3.4 times over this seven-year period. Algebraically this rise in profits has two multiplicative components: The average after-tax profit rate rose from 10.1 percent in 1972 to 18.5 percent in 1979, and their total equity increased 1.86 times because of either reinvested earnings or new stock issuings.

Because a firm is taking a positive step whenever it chooses either to raise new equity or reinvest earnings, the component of an oil company's higher total profits that is due to increased equity can

TABLE 1

ESTIMATED 1979 WINDFALL PROFITS OF TEN LARGE U.S.-BASED INTERNATIONAL OIL COMPANIES

	1	2	3	4
	After-Tax Profits (in millions)		1979 Profits Due to High Equity and Inflation (in millions)	Estimated 1979 Windfall Profits (in millions)
	1972	1979		
Exxon	$1,532	$4,295	$3,675	$620
Mobil	574	2,007	1,531	476
Texaco	889	1,759	1,721	38
Socal	544	1,785	1,262	523
Gulf	197	1,322	413	909
Standard of Indiana	375	1,507	1,078	429
Arco	192	1,166	517	649
Conoco	170	815	512	303
Sun	155	700	433	267
Phillips	148	891	452	439

SOURCES: "The Fortune Directory of the 500 Largest Industrial Corporations," *Fortune* (May 1973; pp. 220–47); *Fortune* (May 5, 1980; pp. 274–30). U.S. President, *Economic Report of the President* (January 1980), Table B-83.

not be a windfall profit. In addition, because there was a secular trend for all corporate profit rates to rise during the 1970s—primarily to compensate for the unusually high rate of inflation and the associated high interest rates—at least some of the higher oil company profits that are the result of higher profit rates are not windfall profits. Thus, according to data presented in the 1980 *Economic Report of the President,* the average after-tax profit rate of all U.S. manufacturing companies rose from 12.8 percent in 1972 to 16.7 percent in the first nine months of 1979. Column 3 of table 1 estimates the combined impact that high equity and inflation would have had in causing each of the ten firms' profits to rise between 1972 and 1979. This estimate is calculated by multiplying each firm's 1972 total profits (column 1) by (1) the ratio of its total equity in 1979 to its total equity in 1972 and (2) the ratio of the after-tax profit rate of all U.S. manufacturing companies in 1979 to their after-tax profit rate in 1972. Then, to estimate the magnitude of 1979 windfall profits one merely subtracts column 3 from column 2. The results of this subtraction are presented in column 4.

The profit data summarized in table 1 suggest that as a result of the events of the 1970s the largest international oil companies have

reaped some "windfall" profits. The question of whether these profits are excessive and thus unfair or a desirable stimulus to encourage new investment has no objective answer. However, even if one concludes that the oil companies' windfall profits are objectionable, two facts dictate that it is not in the United States' self-interest to continue in the direction it followed during the 1970s of introducing energy policies such as oil price controls and allocation regulations, which reduced the oil companies' profits modestly but only at the cost of enhancing the market power of the OPEC countries by increasing dependence on their oil. First, the oil companies' windfall profits (which are largely received by their American stockholders) are only a small fraction of the $250 billion in total profits reaped by the OPEC countries in 1980. Second, world oil prices would not have soared during the 1970s and the adverse consequences of any supply interruptions would have been far less if the OPEC countries had lacked sufficient market power to restrict their sales. Assuming that the United States' principal energy policy goal is to slow down or reverse soaring energy prices and costs, it is nonsensical to adopt policies that strengthen the market power of those oil-exporters who are the source of these rising prices.

Conclusion

The fundamental energy policy goals for the 1980s should be to end and, if possible, reverse the ten-year trend of upward-spiraling world oil prices and to reduce the economic and political disruption that accompanies any sudden reduction in the amount of oil traded internationally. If these goals are to be accomplished, OPEC's present control over the world's incremental energy supplies must be reduced. Two basic approaches can achieve this result: reducing demands for OPEC oil and encouraging greater competition among OPEC nations. Demand for OPEC oil can be reduced by promoting either greater energy conservation or greater production of substitutes for OPEC oil. The possible substitutes include oil from non-OPEC (including domestic) sources, other presently conventional fossil fuels such as natural gas and coal, less conventional but now apparently borderline economic fossil fuels such as oil shale and coal synthetics, and other types of energy such as nuclear and solar. For at least the remainder of this century fossil fuels will have to be the principal source of non-OPEC energy, however.

During the 1970s all U.S. energy policies were bound by a single common thread: The forces of the marketplace were modified or entirely replaced by governmental edicts and controls. For example, the prices of domestic crude oil and natural gas were control-

led; a proliferation of laws, regulations, and administrative rulings raised costs sharply by increasing investment uncertainty and extending the period of time necessary to bring in new sources of energy; and legislation was passed to provide multibillion dollar subsidies to develop less conventional, perhaps prohibitively expensive, energy technologies and sources. Although the direct cost to the government to date of its policies for responding to the oil problems of the 1970s is in the vicinity of $100 billion, the net result of this mix of planning and conflicting policies has been to hold domestic energy production substantially below what it would otherwise be.

To develop major, new fossil fuel energy sources entails high risks and requires investments of several billion dollars. Given their large assets, many skills, unrivaled knowledge of the energy business, and willingness to accept high risks, the large oil companies are especially well situated to develop fossil fuel substitutes for OPEC oil. One of the principal energy policy challenges for the 1980s will be to devise policies that will permit oil companies to develop these substitutes most efficiently. If the policies of the 1970s continue to be followed, however, this challenge will not be met.