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FINAL REPORT

AMERICAN SECURITY
AND THE
INTERNATIONAL ENERGY SITUATION

Volume II: *World Energy and the Security of Supply*

HI-2239-RR

15 April 1975

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AMERICAN SECURITY AND THE INTERNATIONAL ENERGY SITUATION.
VOLUME II.
WORLD ENERGY AND THE SECURITY OF SUPPLY.

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PREFACE

This study sets down the results of research on one of the most significant problems relating to energy and national security--the relationship of the peacetime security of oil supplies to prevailing patterns of interdependence. As such, any by going beyond elementary detail, it differs from other recent studies of the international aspects of energy policy and their implications for national security. ^{volume,} In this study, the primary ~~objective has been~~ ^{intent is} to uncover the objective functional relationship between import and export dependencies as they affect the reliability of supply in the past and the future. ^{Until recently,}

Accordingly, the study is divided into two parts. In the first part, the problem is retrospectively examined. It is argued in Chapter I that under the aegis of American hegemony, and due to the role the oil multinationals played, both oil exporting and oil importing countries exhibited a sufficiently high degree of dependence on the trade in oil to bring about a symmetry in their reciprocal conditions. The manipulation of oil supplies during the 1956-57 and 1967 Middle East crises is shown in Chapter II ^{was} to have been ^{an} ineffective ^{as} instrument ^{of} international influence due to the particular balanced form of interdependence, analyzed in the previous chapter. ^{Beginning in 1970,} ~~as surveyed in Chapter III,~~ the rise of OPEC, against the background of American decline disrupted the fragile ^{oil} systemic symmetry and caused a widening disequilibrium between importers and exporters of oil. The serious consequences of that imbalance for the dependability of oil supply are demonstrated in Chapter IV as they manifested themselves during the 1973 supply crisis. The emphasis taken

(cont on p. 11)

in Chapter V is on the extent to which oil security is manipulable and the constraints to which it is subjected.

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The second part of the study is prospective in its approach. Having argued that market conditions are singularly important to the question of oil security, the outlook of the world energy market is speculated upon in Chapter VI and the resulting patterns of interdependence are subsequently described. ^gThe scope of the remedial policies ^gdesigned to restructure the energy system so as to enhance its security ^{(15) o} are surveyed in the last two chapters. ^gIn Chapter VII, two cooperative strategies are analyzed: horizontal multilateralism and vertical bilateralism. The study concludes ^gby ~~positing~~ that either of two unilateral approaches are more likely to characterize the future ^gcourse of events in the energy area than ^gthe complex cooperative arrangements ^gpresented in the previous chapter. Specifically, in Chapter VIII the drive to escape energy interdependency by withdrawing into autarkic or semi-autarkic postures is discussed.

The subject of energy and its various attributes is not bounded by neat disciplinary lines, nor is there a relevant inter-disciplinary body of theory from which to draw. Analyses of the energy scene vary therefore in their degree of vigor, aggregation and depth. This study is deliberately comprehensive in its time and space scopes but narrow in its focus. This is so primarily because it is intended as an input into the ongoing debate on energy policy, with that debate also being its frame of reference.

Chapter I

THE SYSTEM IN EQUILIBRIUM

The relationship between a nation's self-sufficiency in raw materials on the one hand and its security on the other has long been recognized as central to the planning of economic and national defense policies.* The axiom that unrestricted imports of strategic commodities often clash with the national interest has led to comprehensive examinations of the question in search for the optimum tradeoff between economic efficiency as expressed in liberalized trade, and national security as manifested in protection and self-reliance. In 1955, a U.S. Cabinet committee found that unrestricted oil imports were not compatible with the nation's security, since they tended to discourage domestic oil exploration and made the U.S. excessively dependent on foreign supplies. In 1959 President Eisenhower, through Presidential Proclamation 3279, imposed mandatory oil import quotas, basing his action on the legal requirement to "safeguard the national security" as stated in the Trade Expansion Act and its predecessors.** But the fundamental issue of the relationship between oil imports and national security is still hotly debated.

*See, for example, the Special Report, "Critical Imported Materials," of the Council on International Economic Policy, Washington, D.C., December 1974.

**For a comprehensive survey of U.S. energy policies up to the late 1960's, see Hans Landsberg and Sam H. Schurr, Energy in the United States: Sources, Uses and Policy Issues (New York: Random House, 1968). Obviously, the policymaking process which resulted in past or present national oil policies is more complex than suggested here. For a superb analysis of the domestic forces at work see Robert Engler's Politics of Oil: A Study of Private Power and Democratic Institutions (Chicago: University of Chicago Press, 1967).

In 1970 a special Task Force of Cabinet members appointed by President Nixon released a widely publicized document entitled The Oil Import Question--A Report on the Relationships of Oil Imports to the National Security. Although the Task Force rejected the total abandonment of all import controls, its findings on the key problem of import dependence and security did not reflect a clear conviction that a meaningful relationship existed between these two issues. The report held that a liberalization of import controls would not impair national security as long as Eastern Hemisphere imports did not exceed ten percent of total U.S. demand. Some four years and an oil embargo later, the same Administration reversed itself; in announcing Project Independence, President Nixon asserted that, in the interests of security, the U.S. should strive to become self-sufficient in energy as soon as practical. There seems, then, to be some confusion about this question. The ambiguity results to some extent from the question itself, or more precisely, its formulation.

It is correct that a nation's security is, to some degree, a function of its dependence on imports. Nevertheless, the security of worldwide supplies depends less upon the degree of dependence of single nations than upon the inter-relationship between import dependence and export dependence patterns on the international level. The approach to the issue of reliability of supply, even for a specific country, should therefore be global rather than national. The aggregate of national dependence patterns forms the energy sub-system. Within the system it is the interplay between the interdependent components which ultimately affects the general security of supplies and their availability to any specific nation.

One central theme of this study is the relationship of interdependence which characterizes the world energy system. From the standpoint of the international political economy, there are two ends to the oil axis; it is the interaction between these two which determines the actual state of the system at any point in time. At one end is the degree of dependence of the principal consuming countries upon imports of oil supplies. At the other end, and as a countervailing force to import-dependence, is the degree of export-dependence; that is to say, the extent to which principal oil-producing countries are dependent upon the income accruing to them from oil production and exportation. The consumers' need, then, is for a product; the producers', for a market. The balance or imbalance between these two patterns of dependence influences the political and economic character of the entire system.* Therefore, it affects its economic structure, whether it is skewed towards a sellers' or a buyers' market, as well as its political spill-over effects. The latter, of course, form the second central theme of this study.

* * *

For two decades following World War II, as was the case during the inter-war period, the transnational energy system operated as a complex,

* The proliferation of energy studies, with this project as the marginal example, suggests that shortages are only spot phenomena. But of all publications on the international aspects of the oil question only two addressed themselves to relationships among these reciprocal dependences-- Sam. H. Schurr and Paul T. Homan in their Middle Eastern Oil and the Western World (New York: American Elsevier, 1971) and Hayward R. Alker, Jr., Lincoln Bloomfield and Nazli Choucri's Analyzing Global Interdependence (Cambridge, Mass.: Center for International Studies, MIT, 1974). The former is a competent but outdated analysis. The latter is not only outdated but also unforgivably misleading. Analyzing the post-embargo and high-cost period with data describing the pre-embargo low-cost period yields patently fallacious conclusions. All pertinent statistics were available at the time of the submission of the study--November 1974!

orderly, and remarkably efficient distribution system. Comprised of governments, oil companies, shipping concerns, international organizations, and other actors on the global scene, the system did not exist in a political vacuum. Rather, it was an integral part, perhaps even an essential one, in a global order that can best be characterized as that of Anglo-American hegemony.* Throughout that period, three principal processes enabled the energy system to function smoothly. First, an overarching control exercised initially by Britain, and later by the United States, enabled them to protect their oil interests in whichever form they appeared. Second, the structural patterns of foreign trade that prevailed throughout the hegemonial era tended to favor commercial interests of the major consuming nations. In essence, the non-industrialized producing nations were more sensitive to their dependence on oil revenue than were the consuming nations to their dependence on oil imports. Third, the international oil industry, acting as the instrument of Anglo-American hegemony, spearheaded the global spread of the system and maintained the system's flexibility and resilience, primarily through multilateral management of a surplus market characterized by high volume and low unit cost.

In the postwar period, the modernized capitalist nations were soon integrated with the rest of the non-communist world into a worldwide supply and distribution energy system which experienced little interference by disruptive economic or political forces. The energy system thus became virtually multinational--or multilateral--in structure. It also acquired a high degree of flexibility, which insured its stability.

* See, for example, Robert Gilpin's "The Politics of Transnational Economic Relations," International Organization, Summer 1971, and David P. Collier and Benjamin M. Rowland, America and the World Political Economy (Bloomington, Indiana University Press, 1973) for an elucidation of the relationship of economic processes to the macro-political context in which they take place.

Energy difficulties, to be sure, occurred from time to time. But none of those troubles was sufficient to change the system more than peripherally. The system weathered various successive storms and continued to operate efficiently. Indeed, the ease with which the system rode out these occasional exigencies underscores its adaptability. This was no small achievement, given the salience of energy resources as strategic commodities and the immense geographical, physical, and economic dimensions involved.

Two fundamental reasons account for this performance. First, despite the high levels of mutual dependence in the international oil trade, the net disruptive effect of this situation was minimal during the period of stable multilateralism. Thus, although delicate situations of interdependence sometimes produce inter-penetration and mutual sensitivities, the actual patterns of such relationships in the energy area seemed to balance one another, and to cancel out the disruptive potential inherent in relationships of this kind.* The patterns of energy interdependence in the pre-crisis period, therefore, can be termed as symmetrical. That symmetry maintained the balance.

Secondly, the oil industry was not only the dominant actor in the system, but also the main source of the system's flexibility. The

*The concept of interdependence and the debate over its evolution over time is surveyed by Edward L. Morse in "Interdependence in World Affairs," in James Roseman, Kenneth Thompson, and Gavin Boyd (eds.), World Politics (New York: The Free Press, 1975). Power interactions as derivatives of interdependence relationships are described in Robert O. Keohane and Joseph S. Nye, Jr., "World Politics and the International Economic System," see Chapter 5 in C. Fred Bergsten (ed.), The Future of the International Economic Order (Lexington, Mass.: Heath and Company, 1974).

existence of a mature multinational oil industry translated the reciprocal dependence patterns described above into a continuous and dynamic relationship. The oil industry, true to its geocentric orientation, spread across boundaries rather than parallel to them.* Moreover, the industry acted as both the main protagonist in the system and the guardian of its multilateralism. Clearly, the growth and prosperity of the industry depended upon the existence of a market which was politically constrained only to a very limited extent. Care was therefore taken to cushion the system and protect it from disruptive forces of one kind or another. The industry served as a buffer which absorbed many political blows that otherwise might have exploded nations belonging to the system. But even at the high point of its existence, the multilateral energy system was extremely fragile. Its continued stability depended upon the system working along the carefully balanced multinational patterns. This internal symmetry enabled the system to withstand the vicissitudes of power politics that plagued it from time to time.

However, as the 1960's ended, the world energy system began to lose both its stability and its multinational character. Three types of disequilibrating forces precipitated this breakdown. First, the decline of the United States in the post-Vietnam period weakened its desire and ability to protect its strategic and commercial interests. Secondly, the multinational oil industry could no longer count on the support of its

*The multinational enterprise, the most interesting transnational institution and an inseparable part of modern interdependencies has, like energy, been overstudied. The institutional approach, not common in the United States, has produced some of the best analyses of the political economy of the international oil trade. Good examples are Christopher Tugendhat's Oil: The Biggest Business (London: Eyre and Spottiswoode, 1965) and Edith Penrose's The Large International Firm in Developing Countries (London: Allen & Unwin, 1968).

home governments. The industry therefore began to lose its grip on oil production, and, by allowing the price of oil to rise, set loose a host of disruptive forces which wrecked the delicate and symmetrical balance between patterns of import and export dependence. Thirdly, while certain Middle East oil exporting nations were lessening their dependence on the system, a rapid increase in import dependence began taking place, particularly in the United States. This distorted the balance of trade patterns even further, to the point of acute asymmetry between consumers and producers. The era of balanced interdependence connoted a high degree of security in the flow of oil; once the system became unbalanced, supply disruptions and strategies of issue-linkage became inevitable. The relationship between the system's interdependence and the reliability of its inherent processes will be discussed in the following four chapters.

The world energy system dominated by oil now finds itself in a state of crisis. Three major factors lie at the heart of that crisis: 1) an American drift from low to increasing oil and natural gas import-dependence; 2) significant reduction in the Arab world's dependence on a steady and high volume of exports; and 3) a shift in the general balance of power away from the Anglo-American axis, which tends to aggravate the absence of corrective mechanisms which could have compensated for the state of imbalance now characterizing the energy system.

Interdependence Patterns

No elaborate theories are needed to explain international trade in raw materials. Given a modicum of international order, demand alone served to generate some transnational commercial exchanges. The demand for

energy is a direct function of the industrial climate, and the ultimate constraints on energy production are much less political than physical and geographical. Since oil-rich regions simply do not happen to coincide with high-consumption areas, the flow of energy sources followed almost mechanical rules.

The expansion of global energy interdependence, then, has been a direct result of the processes of industrialization and modernization in a world of unevenly distributed natural resources. In this sense, energy interdependence has clearly been on the rise since the beginning of the century. As long as the prevailing political situation permitted, trade in energy sources grew in economic and strategic importance, geographical scope, and volume. In 1925, only 14 percent of the primary energy consumed crossed foreign borders; by 1968 the proportion had risen to 33 percent (see Table 1.1).^{*} Because much of the trade in energy in the earlier part of the period was intra-regional (e.g., exchanges of coal among proximate European countries), the long-term, petroleum-dominated expansion of inter-regional trade alone was even more rapid. For example, between 1928 and 1965 total energy trade rose by 4.8 percent a year, inter-regional trade went up by over 6 percent yearly, but the average rate of annual growth in world energy consumption was only 3.2 percent.

^{*} A most comprehensive collection for energy data, both historically and geographically, is Joel Darmstadter, Perry Teitelbaum, and Jaroslav Polach, Energy in the World Economy (Baltimore: The Johns Hopkins University Press, 1971). Other useful compilations are the United Nations Department of Economic and Social Affairs' World Energy Supplies series and the Organization for Economic Cooperation and Development's Statistics of Energy 1953-1967 (Paris, 1969) and Statistics of Energy 1956-1970 (Paris, 1972).

Table 1.1
WORLD ENERGY EXPORTS BY SOURCE, SELECTED YEARS, 1925-1968

	1925	1938	1950	1955	1960	1965	1967	1968
Million metric tons coal equivalent								
Solid fuels	145.8	129.7	120.2	157.2	133.0	158.7	159.3	168.5
Liquid fuels	67.9	169.4	375.6	606.9	871.7	1,395.4	1,657.7	1,852.0
Gas	0.005	0.1	1.3	1.3	6.4	18.4	24.3	30.4
Electricity	0.2	0.5	0.5	0.9	1.4	1.7	2.5	2.8
Total energy	214.0	299.6	497.6	766.4	1,012.3	1,574.2	1,843.2	2,053.7
Percent of world exports								
Solid fuels	68.2%	43.3%	24.2%	20.5%	13.1%	10.1%	8.6%	8.2%
Liquid fuels	31.7	56.5	75.5	79.2	86.1	88.6	89.2	90.2
Gas	-	-	0.2	0.2	0.6	1.2	1.3	1.5
Electricity	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1
Total energy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Exports as percent of world consumption of indicated energy source								
Solid fuels	11.9%	10.0%	7.5%	8.7%	6.7%	6.9%	7.2%	7.3%
Liquid fuels	34.5	45.1	52.0	55.5	58.2	64.6	66.6	68.5
Gas	-	-	0.5	0.3	1.0	2.0	2.3	2.6
Electricity	2.0	2.0	1.2	1.5	1.6	1.5	2.0	2.1
Total energy	14.4	16.7	19.1	22.8	24.1	26.8	31.3	32.6
Average annual percentage rates of change								
	1925-1950	1950-1960	1960-1968	1925-1968				
Solid fuels	-0.8%	1.0%	3.0%	7.3%				
Liquid fuels	7.1	8.8	9.9	8.3				
Gas	24.9	17.2	21.5	22.4				
Electricity	2.6	11.5	9.1	6.3				
Total energy	3.4	7.3	9.2	5.4				

SOURCE: Darmstadter et al., Energy in the World Economy

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About one-half of total International energy trade in 1929 took place within major world regions; by 1965 the share of intra-regional trade fell to only about one-quarter.

World energy trade has grown not only in absolute terms; its role in world trade has also expanded. Energy's share in the value of world trade rose from about 6 percent in 1925 to about 10 percent in 1967. As a part of the process, the network of International trade in oil constituted the dominant force and most dynamic element in the expansion of world energy interdependence. In 1925 liquid fuels comprised less than one-third of world energy exports; by 1968 they reached 90 percent. Incrementally, oil accounted for virtually the entire increase in energy trade over the four decades following World War I, and that process was clearly paralleled by a sharp decline of world trade in solid fuels. From two-thirds of the world total in 1925, solid fuels declined to 8 percent in 1968.

This shift of world energy trade from coal to oil in turn radically transformed the geographical structure of energy trade. Both Western Europe and Japan, since they are rather deficient in indigenous crude oil, drifted into a condition of high dependence on imported oil, first for products, and then for crude. The West European decline is also associated with the area's vanishing role as a coal exporter. In the case of the United States, even a moderately rapid rise in coal exports was insufficient to offset the country's declining oil exports and the tremendous expansion of oil shipments from other parts of the world which occurred after World War II. During this period, the United States stopped being a net exporter and became a net importer of oil. When this

happened, the American-European-Japanese triad of the future OECD came to share the common bond of dependence upon fuel imports. This shift away from self-reliance by North America, Western Europe, and Japan, as well as the rise of the Middle East as the world's largest supplier, is demonstrated in Table 1.2.

Table 1.2

NET ENERGY IMPORTS OR EXPORTS (-), BY MAJOR REGIONS, SELECTED YEARS

Region ^a	1925 - 1967 (Million metric tons coal equivalent)						
	1925	1938	1950	1955	1960	1965	1967
North America	- 4.7	-17.7	66.6	67.7	133.5	171.6	161.0
United States	-23.4	-37.8	19.9	27.9	102.1	152.8	147.4
Canada	18.7	20.0	46.7	39.7	31.3	18.6	13.6
Western Europe	10.1	47.2	93.4	201.4	318.0	591.1	710.5
Oceania	1.2	4.2	8.5	14.6	18.2	23.1	26.7
U.S.S.R. and Comm.							
E. Europe	-11.5	-17.9	-11.5	-22.3	-59.4	-95.7	-111.8
U.S.S.R.	- 1.6	- 1.0	11.2	- 0.9	-53.1	-112.8	-131.0
Comm. E. Europe	- 9.9	-16.9	-22.7	-21.4	- 6.3	17.2	19.2
Communist Asia	1.6	- 2.0	n.a.	1.0	4.4	- 0.1	- 0.3
Latin America	-10.9	-31.5	-86.4	-117.1	-162.6	-200.9	-204.5
Caribbean	-18.9	-40.2	-104.9	-147.5	-192.3	-232.1	-235.3
Other Latin Amer.	8.0	8.7	18.5	30.5	29.8	31.2	30.8
Asia	- 4.0	- 8.8	-105.4	-186.8	-285.6	-399.9	-442.6
Middle East	- 5.0	-15.9	-109.6	-212.6	-346.8	-560.5	-670.9
Japan	-	11.8	3.1	18.4	56.2	142.5	200.3
Other Asia	1.0	- 4.7	1.1	7.4	5.0	18.1	27.9
Africa	4.0	9.0	12.6	23.6	12.2	-81.5	-174.2
North Africa	3.9	5.8	6.3	9.7	- 2.5	-120.7	-176.0
Tropical Africa	1.5	2.5	5.4	9.7	10.2	- 4.7	- 9.0
South Africa	- 1.4	0.7	0.9	4.1	4.5	8.0	11.7

^aNet imports equal total imports minus total exports for each indicated region or subregion, irrespective of the direction of that trade. Thus, the net exports of say, the Middle East (a subregion under "Asia") refers to the Middle East's net trade whether within Asia (say, shipments to Japan) or outside Asia.

Source: Darmstadter, et al, Energy in the World Economy.

The most meaningful way of portraying the changing net energy trade picture in different parts of the world is presented in Table 1.3. Increased import dependence was experienced by all three industrialized regions of the non-communist world. The increase in import dependence was fairly modest in the case of North America: from .6 percent of energy production being exported in 1925 to over 7 percent energy consumption being accounted for by net imports in 1967. The increase in import dependence for Western Europe between 1925 and 1967 was enormously greater: from a mere 2 percent, the level of dependence rose to 60 percent by 1967. Of all areas shown in Table 1.3, Japan exhibited the most dramatic change: a zero trade balance in 1925 gave way four decades later to an import/consumption ratio of 80 percent.

The emergence of a tight system of energy interdependence in the pre- and post-war period marks the culmination of two long-term trends of expansion: first, the absolute and relative growth in the volume of world energy trade; second, the intensification of dependence on oil as an energy form. These dual processes--spatial spread and product concentration--brought about the acute kind of energy interdependence known today. The 1950's, and especially the 1960's, an era of trade liberalization within the non-communist world, were the epitome of multinational interdependence in the world energy system. The patterns of dependence crystallized at certain levels and then stabilized.

Throughout the decade of the 1960's, Europe sustained an extremely high degree of dependence which gradually grew, as shown in Table 1.4, from 92.1 percent in 1960 to 96.3 percent in 1970. The geographic pattern of dependence, however, changed considerably as the share supplied

Table 1.3
NET ENERGY IMPORTS OR EXPORTS IN RELATION TO CONSUMPTION OR PRODUCTION,
BY REGION, 1925 and 1967

Region	1925			1967			
	Net imports or exports (-) of:	Total energy ^a	Percent of net imports in energy consumption; or net exports (-) in production	Solid fuels	Liquid fuels	Total energy ^a	Percent of net imports in energy consumption; or net exports (-) in production
	(million metric tons coal equivalent)						
North America	-3.7	-4.7	-0.63	-32.2	198.4	161.0	7.22
United States	-18.5	-23.4	-3.1	-45.8	181.3	147.4	7.2
Western Europe	-8.1	10.1	2.0	37.6	671.3	710.5	60.8
Oceania	-0.2	1.2	7.4	-9.2	35.9	26.7	39.9
U.S.S.R. & Comm. E.							
Europe	-1.4	-11.5	-12.5	-25.0	-87.2	-111.8	-7.5
U.S.S.R.	0.3	-1.6	-6.1	-17.2	-115.9	-131.0	-11.7
Comm. E. Europe	-8.7	-9.9	-15.2	-7.8	28.7	19.2	5.0
Communist Asia	0.2	1.6	6.8	-2.0	1.7	-0.3	-0.1
Latin America	7.2	-10.9	-27.3	3.2	-206.2	-204.5	-45.3
Caribbean	1.4	-18.9	-55.9	0.5	-234.3	-235.3	-61.4
Other Latin America	5.8	8.0	60.3	2.7	28.1	30.8	31.4
Asia	1.0	-4.0	-5.7	26.6	-468.9	-442.6	-45.8
Middle East	0.1	-5.0	-64.9	-	-670.9	-670.9	-87.8
Japan	-1.0	-	-	25.6	174.7	200.3	80.4
Other Asia	1.9	1.0	3.4	1.0	27.3	27.9	18.1
Africa	2.7	4.0	28.5 ^b	-0.1	-172.5	-174.2	-61.3
North Africa	3.3	3.9	131.3	0.7	-175.1	-176.0	-88.0
Tropical Africa	1.0	1.5	80.7	0.5	-10.4	-9.0	-26.5
South Africa	-1.6	-1.4	-11.4	-1.3	13.0	11.7	20.2

^a Including gas and electricity, not shown separately.

^b Net imports exceeded consumption. It should be recalled that consumption refers to "inland" consumption, being measured exclusive of bunkers. Since North African consumption in 1925 was almost wholly dependent on foreign fuels (a moderate part of which went into bunkers after importation), this excess of net imports over consumption becomes arithmetically possible.

Source: Darmstadter et al, Energy in the World Economy

from the Middle East decreased--from 72.9 percent in 1960 to 50.1 percent one decade later. But no significant change occurred in Western Europe's general dependence on imports, for the decrease in Middle Eastern supplies was matched by an upsurge in imports from North Africa. In 1960 only 8 million tons (4.4 percent of total supply) came from North Africa; by 1970 this figure reached 194 million tons (31.4 percent). It was a period of rapid change in sources of oil, but stability in dependence on imports. In effect, as Table 1.4 indicates, import-dependence rose slightly between 1960 and 1970, from 92.1 to 96.3 percent.

Table 1.4

WESTERN EUROPE CRUDE OIL SUPPLY, SELECTED YEARS

	<u>1960</u>		<u>1965</u>		<u>1970</u>	
	<u>10⁶</u> tons	% of supply	<u>10⁶</u> tons	% of supply	<u>10⁶</u> tons	% of supply
Production						
Crude Oil	14.5	7.9%	20.0	5.7%	21.8	3.5%
Natural gas liquids	-	-	0.7	0.2	0.7	0.1
Total	14.5	7.9	20.7	5.9	22.5	3.6
Imports						
Crude oil:						
Western Hemisphere	17.8	9.7	24.9	7.1	24.2	3.9
Middle East	133.7	72.9	199.3	57.1	309.0	50.1
North Africa	8.1	4.4	76.2	21.8	193.7	31.4
West Africa	1.0	0.5	14.6	4.2	42.7	6.9
Other	8.4	4.6	13.2	3.8	24.2	3.9
Total	169.0	92.1	328.2	94.1	593.8	96.3
Total Supplies	183.5	-	348.9	-	616.3	-

Source: OECD Oil, 1973.

Japan's energy supply picture was similar, but even more extreme, as shown in Table 1.5. A degree of dependence much greater than Japan's is hard to imagine. The meagerness of its indigenous oil production left no alternative than to meet increases in demand by increasing oil imports. Thus, the amount of crude oil imported by Japan increased from 26.9 million tons in 1969 to 169.5 million tons in 1970--a six-fold increase. Japan's dependence was nearly total: It rose from 98.2 percent in 1960 to 99.5 percent in 1970.

Table 1.5

JAPAN'S CRUDE OIL SUPPLY, SELECTED YEARS

	<u>1960</u>		<u>1965</u>		<u>1970</u>	
	<u>10⁶ tons</u>	<u>% of supply</u>	<u>10⁶ tons</u>	<u>% of supply</u>	<u>10⁶ tons</u>	<u>% of supply</u>
Production Crude oil	0.5	1.8%	0.6	0.8%	0.8	0.5%
Imports of Crude oil:						
Middle East	21.5	78.5	63.5	87.2	144.5	84.9
Far East	4.1	15.0	5.3	7.3	22.5	13.2
Others	1.3	4.7	3.4	4.7	2.5	1.5
Total	26.9	98.2	72.2	99.2	169.5	99.5
Total Supply	27.4	-	72.8	-	170.3	-

Source: OECD, Oil, 1973.

The trends of North American dependence on oil imports over the ten-year period show a stability of an entirely different type, as illustrated in Table 1.6. If no change in dependence patterns for Japan and Western Europe meant extreme levels of dependence, the converse was true for North America. With roughly four-fifths of its oil demand satisfied from indigenous sources during the sixties, the North American continent enjoyed a far more favorable position than Japan or Western Europe. Although consumption rose from 512.8 million tons to 755.8 million tons, the increase in degree of dependence was only 2.2 percent, and the general level of imports remained at roughly 20 percent of total energy consumed.

Table 1.6

NORTH AMERICAN OIL SUPPLY

	<u>1960</u>		<u>1965</u>		<u>1970</u>	
	<u>10⁶ tons</u>	<u>% of supply</u>	<u>10⁶ tons</u>	<u>% of supply</u>	<u>10⁶ tons</u>	<u>% of supply</u>
Production						
Crude oil	358.8	70.0%	403.4	68.8%	517.0	68.4%
Natural gas and liquids	33.7	6.6	47.4	8.0	67.3	8.9
Total	392.5	76.6	455.8	76.8	584.3	77.3
Imports - Crude oil: *						
Western Hemisphere	35.1	6.8	35.8	6.0	37.9	5.0
Middle East	22.1	4.3	23.4	3.9	16.1	2.1
Other	3.8	0.7	6.4	1.1	12.8	
Total	61.0	11.8	65.6	11.0	66.8	8.8
Imports of Petroleum Products:						
Western hemisphere	39.3	7.7	55.5	9.3	89.2	11.8
Middle East	1.2	0.2	0.7	0.1	1.8	0.2
Other	0.4	0.1	0.5	0.1	8.7	1.2
Total	40.9	8.0	56.7	9.5	99.7	13.2
Total Imports	101.9	19.8	122.3	20.5	166.5	22.0
Total Supply	512.8	-	594.0	-	755.8	-

* Exclude movements between the United States and Canada

Source: OECD, Oil, 1973.

The international trade in oil, then, has produced a network of interdependence of virtually global proportions. It was a true state of interdependence in that a mutual relationship of complementary need clearly existed: Japan and Western Europe were highly dependent on foreign oil importation; the United States only moderately so. In order to assess the balance of the energy system, it remains now to examine the other side in the equation: the exporters' dependence on the revenues accruing to them from production and exportation of oil.

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The existence of this balancing form of dependence is obviously a normal by-product of the economic reality which underlies the trade in oil. As in any other instance of commercial exchange, there must be some mutuality of advantage. The fact that so much oil was produced and traded internationally implies the existence of strong interests common to importers and exporters alike. It is also clear that situations of interdependence involve economic interpenetrations, and the creation of sensitivities and vulnerabilities as nations grow more exposed to actions taken by their trading partners. Thus, the conspicuous absence of frequent political exploitation by the oil-producing countries of Western import dependence upon them is attributable to two structural elements. First, throughout that period, the consuming nations did not fail to exercise their undeniable economic, political, and military bargaining advantage over the producing nations. Second, in effect, the producing nations themselves had an equal or even greater stake in avoiding the disruption of peaceful trade.

Evidently, the world oil system had been protected since its inception by the colonial powers of Britain, the Netherlands, and the United States.* But in the postwar period, as the influence of these powers subsided, some compensating factor other than hegemony must have contributed to the maintenance of order in the system.

The condition of relatively high Western dependence on exports of oil from the countries which formed the Organization of the Petroleum Exporting Countries (OPEC) in 1960 is a postwar phenomenon. In reality, this dependence was more than offset by an even greater degree of dependence on high oil production and exportation on the part of the oil-producing countries. It is this symmetry of reciprocal need which accounts for the stability and dependability of supplies during the two decades following World War II, quite apart from the presence or absence of imperialist power.

The dependence of the oil producers was not only a quantitative matter, but also a qualitative relationship which presented them with few alternatives or substitutes. The oil exporting nations had no apparent alternate source of foreign exchange or revenues. This capital deficiency on the part of all exporting countries balanced and mitigated the otherwise dangerous aspects of Western energy deficiency. In a sense, the symmetry of mutual interest in the maintenance of systemic order derived from a fundamental asymmetry in the economic condition of the

* An analysis of the oil companies/home governments close alliance is persuasively developed in Michael Tanzer's The Energy Crisis: World Struggle for Power and Wealth (New York: Monthly Review Press, 1974). More recently, the Senate scrutinized some of the aspects of this relationship. See Multinational Corporations and United States Foreign Policy (Vols. I-IV), Hearings by the Subcommittee on Multinational Corporations (hereinafter, the Church Subcommittee), 1973 and 1974.

parties concerned: all the major oil-importing countries had highly developed, modern, and diversified economies, while all the major oil-exporting nations were developing and modernizing societies struggling in the first stages of economic growth. Inevitably, they relied on the consumers for most manufactured goods, but it was their financial dependence which figured most prominently. As a result, the respective patterns of high dependence between importers and exporters canceled each other out, creating a period of relatively balanced interdependence.

This North-South juxtaposition permitted stability in the system to prevail only so long as the oil exporters could put to constructive use all the earnings they could derive from their energy sources. This condition was satisfied without exception for all the oil-exporting countries until 1971. If oil earnings did not invariably constitute the sole source of governmental revenues for those nations, nevertheless the payments received per unit of production were low enough to stimulate them to increase output in order to increase their income. Low oil prices (which were still well above the costs of production), and correspondingly low receipts from oil were necessary to keep the system of interdependence in rough equilibrium. The other side of this coin was that these low government takes prevented Western energy dependence from being transformed into financial dependence. Quite the contrary; as noted, the pre-crisis period saw the oil-producing nations in a condition of capital deficiency. Moreover, most of them consumed these revenues as quickly as they were received precisely because they were engaged in ambitious economic development plans designed to catapult them into more advanced stages of growth. The achievement of such a goal was not

simply a vain pursuit of "growth"; it also appeared to be the only way that these countries could lessen their excessive reliance on oil as a source of revenue. Paradoxically, then, the road to reduced dependence for oil producers involved an interim period of intensified dependence.

The figures in Table i.7 show that during the sixties the share of petroleum in the exports of the oil-producing countries ranged from very high to nearly total. Venezuela, the leading oil exporting country during most of the period, relied on oil for more than 92.4 percent of her exports. For Saudi Arabia, the figure was between 97 and 99 percent (of the total value of visible exports). Although Iran's dependence was, relatively speaking, the least of the six largest exporters, her oil exports still were almost ninety percent of total exports. For Iraq, the oil sector's share in total exports hovered around 92 percent; for Kuwait 97 percent; for Libya, dependence almost reached unity by the end of the 1960's.

Since oil revenues accrue directly to the government exchequers, their most immediate impact on the host country was via the government's own budget. It is therefore revealing to measure the share of oil revenues in the disposable funds available to these governments. Table i.8 tends to confirm the original hypothesis that the producers were heavily dependent on oil operations. Not only did oil contribute the bulk--if not all--of the foreign exchange earned by these countries, it also provided a substantial part of the revenue of their governments, far surpassing any other domestic or foreign sources.

Table 1.7

SHARE OF OIL IN TOTAL MERCHANDISE EXPORTS
Selected Countries in Selected Years
 (Values in Million \$ U.S.)

	<u>1962</u>	<u>1964</u>	<u>1966</u>	<u>1968</u>	<u>1970</u>
Iran					
Oil share (%)	<u>88.0%</u>	<u>87.2%</u>	<u>88.3%</u>	<u>89.7%</u>	<u>89.9%</u>
Oil exports	<u>870</u>	<u>992</u>	<u>1229</u>	<u>1686</u>	<u>2358</u>
Total exports	<u>989</u>	<u>1137</u>	<u>1392</u>	<u>1879</u>	<u>2623</u>
Iraq					
Oil share (%)	<u>90.5%</u>	<u>94.0%</u>	<u>92.0%</u>	<u>93.0%</u>	<u>93.7%</u>
Oil exports	<u>626</u>	<u>789</u>	<u>860</u>	<u>966</u>	<u>1029</u>
Total exports	<u>692</u>	<u>840</u>	<u>934</u>	<u>1036</u>	<u>1098</u>
Kuwait					
Oil share (%)	<u>98.1%</u>	<u>97.5%</u>	<u>97.6%</u>	<u>96.0%</u>	<u>95.5%</u>
Oil exports	<u>1160</u>	<u>1310</u>	<u>1461</u>	<u>1380</u>	<u>1580</u>
Total exports	<u>1182</u>	<u>1344</u>	<u>1498</u>	<u>1438</u>	<u>1655</u>
Libya					
Oil share (%)	<u>94.3%</u>	<u>98.6%</u>	<u>99.3%</u>	<u>99.6%</u>	<u>99.6%</u>
Oil exports	<u>133</u>	<u>611</u>	<u>995</u>	<u>1860</u>	<u>2355</u>
Total exports	<u>141</u>	<u>620</u>	<u>1002</u>	<u>1867</u>	<u>2365</u>
Saudi Arabia					
Oil share (%)	<u>99.5%</u>	<u>99.9%</u>	<u>99.9%</u>	<u>96.8%</u>	<u>96.8%</u>
Oil exports	<u>992</u>	<u>1035</u>	<u>1536</u>	<u>1882</u>	<u>2259</u>
Total exports	<u>997</u>	<u>1045</u>	<u>1543</u>	<u>1945</u>	<u>2424</u>
Venezuela					
Oil share (%)	<u>92.7%</u>	<u>93.4%</u>	<u>92.4%</u>	<u>95.1%</u>	<u>92.7%</u>
Oil exports	<u>1774</u>	<u>2432</u>	<u>2431</u>	<u>2425</u>	<u>2496</u>
Total exports	<u>1914</u>	<u>2594</u>	<u>2630</u>	<u>2550</u>	<u>2694</u>
Total					
Oil share (%)	<u>93.9%</u>	<u>94.6%</u>	<u>94.6%</u>	<u>94.2%</u>	<u>94.0%</u>
Oil exports	<u>5555</u>	<u>7169</u>	<u>8512</u>	<u>10208</u>	<u>11774</u>
Total exports	<u>5915</u>	<u>7580</u>	<u>8999</u>	<u>10840</u>	<u>12529</u>

Source: OPEC, Annual Statistical Bulletin, 1972

Table 1.8

OIL REVENUES AS A PERCENTAGE SHARE OF TOTAL GOVERNMENT REVENUES

Selected Countries in Selected Years

	<u>1961</u>	<u>1963</u>	<u>1965</u>	<u>1967</u>
IRAN	--	56	62	57
IRAQ	--	--	68	--
KUWAIT	92	92	87	--
LIBYA	--	40	66	84
SAUDI ARABIA	86	90	89	90
VENEZUELA	48	51	68	64

Source: Schurr and Homan, Middle Eastern Oil the the Western World*

The relationship between oil and other revenues seemed to be essentially stable, with a trend of increasing dependence despite the relatively constant government takes discernible for Libya and Venezuela. In Iran, oil revenues have made up some 60 percent of composite government revenues; Iraq's budgetary dependence was much the same as Iran's, the share being two-thirds. The role of oil revenues in the fiscal balance in Saudi Arabia and Kuwait was also essentially constant, hovering in the vicinity of 90 percent since the early 1960's. Unlike the others, the fiscal dependence on oil by Libya and Venezuela rose sharply during the sixties.

* Schurr and Homan's Middle Eastern Oil and the Western World includes a pioneering analytical effort to measure the scope of export-dependencies. Their findings, however, pertain only to the period they investigated and are therefore completely out-of-date.

The Multinational Oil Industry and Prices

As noted earlier, the industry operated both as guardian of the system and as its most active member. The industry explored for, produced, and marketed oil; it was the industry more than anything else which endowed the system with its multinational character. The multinational oil firms were an integral part of the multilateral system; the order and stability that characterized the system can be attributed to the role and position that the oil industry came to occupy.

Oil companies were among the first to evolve into multinational entities. The tendency of corporations dealing in raw materials to integrate "backwards" by establishing a vertically integrated structure led them to operate on a global scale. The oil industry is not, in fact, merely a group of multinational companies: it is the multinational industry par excellence. As Table 1.9 reveals, on the eve of the crisis of multinationalism which occurred in 1971, the seven largest oil companies, often described as the "Seven Sisters," appeared among the top fifteen multinational firms (statistically, five of these companies operated in more countries than the median for the group). But it is not size and scope alone that accounts for the importance of the industry; the key factor is the salience of oil as a singularly strategic commodity. This reality enhanced the political awareness and activity of these companies, producing the symbiotic relationships between companies and their home and host governments which were typical of the energy system as it existed in the postwar decades. The major oil companies controlled the market, determined prices, and decided the amounts of oil to be produced and the size of the revenues to be paid to governments. Their very existence and modes of operation constitute the core of the system.

Table 1.9

THE TOP 15 MULTINATIONAL COMPANIES

Company	Total 1971 sales (billion of dollars)	Foreign sales as percen- tage of total	Number of countries in which subsidiaries are located
1. General Motors.	\$28.3	19	21
2. <u>Exxon</u>	18.7	50	25
3. Ford.	16.4	26	30
4. <u>Royal Dutch Shell</u>	12.7	79	43
5. General Electric.	9.4	16	32
6. IBM	8.3	39	80
7. <u>Mobil Oil</u>	8.2	45	62
8. Chrysler.	8.0	24	26
9. <u>Texaco</u>	7.5	40	30
10. Unilever.	7.5	80	31
11. ITT	7.3	42	40
12. <u>Gulf Oil</u>	5.9	45	61
13. <u>British Petroleum</u>	5.2	88	52
14. Philips Goelampenfabrieken	5.2	NA	29
15. <u>Standard Oil of California</u>	5.1	45	26

SOURCE: United Nations, World Economic Survey, 1972.

The existence of stable interdependence patterns, then, boils down to the existence of powerful firms which kept the interests of their home governments clearly in mind. Indeed, the entire evolution of the world energy system can be traced back to the emergence of the international oil companies. Edith Penrose, the leading student of the oil majors wrote:

"Were the story of the rise of the major companies to be told in detail, it would show clearly that superior efficiency in production and distribution, in invention and technological advance, could not account for the dominant position they achieved. Their record in finding, producing, and distributing oil and its products is indeed impressive, but efficiency in this respect would not have been enough to ensure their dominance. Hence the story of the rise of the great companies deals as much with financial power, commercial and political negotiations and intrigue, with cartel arrangements, marketing alliances, price maintenance arrangements, price wars and armistices, mergers and combinations, actions to avoid taxes, and the national and international political interests of government as it does with the economics of production and distribution."^{*}

The connection between national governments, particularly imperial powers, and international oil companies cannot be explained simply by reference to liberal notions of efficiency or evolution of the product-cycle, nor are leftist theories of imperialism complete. The political imperatives of economic conditions in advanced capitalist societies were not responsible for oil imperialism. In reality, the process was quite different. Oil imperialism was basically the economic consequence of political-strategic forces. Specifically, although the development of the international oil industry virtually began with the discovery of oil in 1859, more than half a century passed before the primacy of petroleum was perceived on the international level. Only shortly before World War I did the European powers and the United States realize that petroleum and its products were of primary military importance. In Britain, Admiral Lord Fisher and Winston Churchill established the first association between a home government and an oil company when they persuaded the government to break several well-established precedents in order to ensure the supply of oil. After investing government

^{*}"The Multinational Oil Corporations in the Middle East," mimeo., 1974

funds in the new international oil industry, the government acquired enough shares to hold a controlling interest. With Royal Dutch Shell and the Anglo-Persian (later British Petroleum) companies securing the allies' access to oil fields in the East Indies, Persia, and Venezuela, the British could justifiably boast in 1918 that "the allies floated to victory on a sea of oil."^{*}

The 1920's saw the emergence of two characteristic features of the modern oil world. As a result of pressures by American oil companies on the U.S. Government to secure access to Middle Eastern oil, the outlines of government-companies and the modern oil concessions system were consolidated. The multinational oil system dominated by Anglo-American firms crystallized during the inter-war period. In addition to creating symbiotic relationships with their respective home-governments, these companies also arranged a far-reaching international price-fixing and cartel agreement among themselves.

During the second half of the century following the discovery of oil, the world market outside North America and the Soviet Union came to be controlled by several large multinational corporations. Of these, five are American (Exxon, Texaco, Gulf, Socal, and Mobil); one is Anglo-Dutch (Shell), and one British (BP).

The Anglo-American cartel operating before World War II sought to prevent oversupply, entry into new markets, and price competition. The cartel was dissolved following the War, but its system of control remained intact despite attempts by certain consuming governments to establish

^{*} An excellent source for details about the major oil firms and their concessionary agreements is Benjamin Shwadran's The Middle East, Oil, and the Great Powers (New York: John Wiley & Sons, 3rd ed., 1973).

national companies and efforts by producing governments to nationalize concessionary firms. The system remained stable and resilient so long as symmetry between export dependence and import dependence prevailed, or, in other words, so long as the industry was able to maintain stable and low prices.* The price factor was first successfully challenged in 1970. The system collapsed then, as will be described in Chapter 3, into disequilibrium.

The determining factor, however, in the companies' role in the oil market lay in their instrumental relationship with the dominant power of the postwar era--the United States. American foreign policy in the area of oil had three objectives: first, the U.S. desired to provide a steady supply of oil to Europe and Japan at reasonable prices to stimulate their recovery after World War II and promote their economic growth. Secondly, the U.S. sought to maintain stable governments in the non-communist, pro-Western oil-exporting countries. Third, the U.S. wanted American-based firms to be a dominant force in world oil trade. These three U.S. foreign policy goals, as a Senate subcommittee report concluded, were generally attained during the 1950's and 1960's.** Thus, the world energy system erected by the United States in the immediate postwar years was predicated upon two basic assumptions: that the oil companies were instruments of U.S. foreign policy; and that the interests of the companies were basically identical with the American national interest.

* An extraordinarily useful analysis of the oil business in M.A. Adelman's *The World Petroleum Market* (Baltimore: The Johns Hopkins University Press, 1972.)

** The Subcommittee on Multinational Corporations' Report "Multinational Oil Corporations and U.S. Foreign Policy," 1975, pp. 2-3.

This design was put into effect through a restructuring of the relationships between the companies and the governments of host and home countries; more fundamentally it was accomplished through the creation of new payments mechanisms. In 1950 the U.S. National Security Council allowed the Saudi Arabian government's income tax to be credited against the U.S. income tax liability of the major oil companies operating in Arabia.* This crucial ruling was later applied to all U.S. concessionary companies overseas. This step has had the following effects: First, Saudi Arabia's demands for higher revenues from its oil concessions were satisfied by a decision which amounted to the direct transfer of millions of dollars from the U.S. Treasury to the oil-exporting countries. Second, the major American companies became the conduit for these transfers and in effect the agents of the consuming nations. Third, American companies obtained a solid foothold in the Arabian Peninsula. ARAMCO was established as a purely American group, and Saudi Arabia became the cornerstone of American global oil policies. This was the policy behind the structure of interdependence. So long as the U.S. Government was carrying out this strategy and upholding its underlying premises, the system survived and operated quite well. The loss of structural symmetry in the late 1960's would, in effect, be caused more than anything else by a radical change in American policy.

* * *

* The role of the NSC in managing U.S. global oil policies has been unveiled only in 1974 during the conduct of the Church hearings. See the Church subcommittee's Report p. 2 and pp. 85 and 87.

The oil-exporting countries were responsive to increasing Western demands for oil, then, because the resulting revenues did not exceed the absorptive capacity of the recipients, a situation attributable to the low government takes. These low receipts were in fact determined by the oil industry itself, which maintained firm control over the market throughout the period of multilateralism. In any case, those government revenues can be considered "low" only when compared with the taxes and royalties which OPEC members are currently levying. Since the early 1950's, payments by the concessionary companies were supposed to reflect open market prices and be divided on an equitable basis between host governments and companies. Thus, the producing countries received payments based on a tax formula of 50 percent of net company profits calculated on the basis of the posted price of oil. The 50/50 formula enhanced the revenues of host governments, but cost the companies little, because they could offset these increased payments against income tax liability to their home countries. In a buyer's market, with supply always greater than demand, and because of the vertical integration of the industry, the companies could actually increase net profits after taxes by reducing its posted price, thereby reducing revenues accruing to the host governments. This self-perpetuating process remained in effect for the two postwar decades: the surplus in the market forced competitive discounting and posted-price reductions, leading to decreased government revenues for the suppliers and at the same time pressures on them to increase production so as to compensate by volume for losses on unit sales. These increases in production in turn sustained the surplus. The game, of course, could not go on forever; it could last only so long as the industry participated in determining posted prices.

Burdened by their heavy dependence upon a single resource, the oil-producing countries had but two alternative means of increasing their revenues: either to increase production (and thereby sales volume), or to increase prices. For obvious reasons, the consuming countries preferred the first alternative and they relied on the oil companies to bring this about. Having no apparent choice in the matter and constrained by their acute export dependence, the producers willy nilly, went along. The long period of Anglo-American hegemony in the world oil market thus sustained low prices and excessive output--a perennial world surplus of crude oil. This self-reinforcing (and, from the standpoint of the producers, self-defeating) process characterized the domination by the West and the multinational oil companies of the world energy system until as recently as 1970.

Chapter II

STABLE INTERDEPENDENCE AND THE SECURITY OF SUPPLY

The sources of Arab oil power are not confined merely to their sovereignty rights over the world's largest oil pools but also extend to their control of the major transit routes and the transport system leading to those pools. The geographic concentration of most of the Middle East oil fields around the Persian Gulf implies, ipso facto, that many of the distribution channels which radiate from the center of the system pass through Arab lands,* thus offering the Arab world a dual grip over the world's energy system: first, through its control of the production facilities; second, through its control of the principal pipelines and waterways connecting those facilities with the rest of the world.

This handle on the system has, in turn, translated itself into two forms of oil power--the famed "oil weapon", both of which involve a capability to withhold supplies from consumers. On the one hand, oil might be denied by the curtailment of production and the creation of a supply shortage; on the other hand, the flow of oil might be disrupted by interference with transportation and the creation of a transportation shortage.** The direction of the flow of oil is such that production cuts

*The geopolitical dimension of the world's political economy of oil has often been considered the most appropriate background against which the problems ought to be studied. A typical analysis skewed toward the geographical end is T.T. Connors' "An Examination of the International Flow of Crude Oil, with Special Reference to the Middle East" (The RAND Corporation, P-4209, October 1969). Peter R. Odell's Oil and World Power (London: Penguin Books, 1970) offers a similar approach but skewed more toward the political end.

**The tanker market, although an integral part of the world's energy system, lies outside the producers' reach and therefore is not presented here in greater detail. In the future, however, as the producers integrate downwards, it is unlikely that control and manipulation of the tanker market will still remain the consumers' greatest defensive asset.

can automatically cause transportation problems; the converse, of course, is not true. For importers the two could have the same result--a shortfall in available energy for consumption. Such considerations would be academic if oil power, like oil itself, were not unevenly distributed, even in the Arab world. While the option of production restriction has rested primarily with the oil producers themselves, such as Saudi Arabia, Kuwait, and Iraq. (none of which is a "confrontation state"), the option of transit restriction is available primarily to Egypt, which controls the Suez Canal, and to Syria, through whose territory pass major pipelines from the Gulf to the Mediterranean. The initial push to exploit control over the oil system as a leverage for political power first came from these two countries, especially Egypt.

The 1956-7 Suez Oil Emergency

The evolution of Arab oil power is closely related to Arab nationalism and pan-Arabism. It is no coincidence, therefore, that the first effort to marshal the political potential inherent in the oil system occurred in Egypt. Indeed, Colonel Nasser always regarded the oil weapon as one of the three pillars of Arab nationalism and revolution, and he was the first leader to use it actively.

The oil emergency of 1956-57 began with the nationalization of the Suez Canal by Nasser on July 26, 1956. Although the Suez Canal Company expected to retain some control of the waterway for ninety-nine years after its opening in 1869, control did not really depend on the legal viability of the concession agreement. The Canal had been a cornerstone of the British Empire and the Pax Britannica ever since the British occupied Egypt in 1882. But once the British withdrew from the Canal

Zone in June 1956, there was nothing to prevent Egypt from nationalizing it, and the pattern of nationalization soon emerged as a prelude to a political oil offensive.

The nationalization of the Canal was preceded not only by Western withdrawal, but also by the first appearance of communist influence in an obvious effort to fill the regional political vacuum. Thus in 1955, an American offer to help finance the Aswan Dam was withdrawn, and the Soviet Union quickly lent its own assistance instead. The nationalization of the Canal, far from being the impulsive reaction it was believed to be at the time, was but the first stone cast at the withdrawing Western nations, and not without tacit Soviet support. Thus, Nasser

"...calculated that Britain would not be able to invade Egypt for four months because the bulk of her military equipment in the Middle East was locked up in the Canal Zone base under Egyptian guards. He knew that France had its army tied down in Algeria and assumed that Russia would have to support Egypt in order to preserve its newly-won prestige in the Arab world."^{*}

The nationalization of the Suez Canal gave the first warning signal that a potential emergency existed. The warning prompted the establishment of the Middle East Emergency Committee (MEEC) in the United States, a joint government-industry body, which first met on August 7, 1956, to prepare a plan of action to deal with the threat of supply disruptions. The Committee was specifically asked to come up with ways to meet contingencies which would arise if either or both Middle East pipelines and the Suez Canal were closed down. By the time the Canal was closed to traffic, some three months later, most of the information required for tanker

^{*}D. A. Farnie, East and West of Suez: The Suez Canal in History--1854-1956 (Oxford: Clarendon Press, 1969), p. 720.

redeployment and alternative sources of supply had been developed. The closure of the Canal and the disruption of the Iraq Petroleum Company (IPC) pipelines occurred following the outbreak of hostilities between France and England and Egypt on November 4.*

The approaching crisis, however, was much more alarming to the Europeans than to the United States. Eighty-nine percent of Europe's total imports of crude oil in 1955 came from the Middle East, nearly all of it via the Suez Canal and pipelines to the Eastern Mediterranean. The Canal was a transit point for 19 percent of the world's seaborne oil tonnage, or some 1.4 million barrels per day, of which 1.3 million were northbound. During the first six months of 1956, northbound tanker traffic rose to 1.5 million barrels daily. Thus, the 1.4 million barrels per day of crude passing through the Canal in 1955 amounted to 45 percent of total exports of Middle East crude, the equivalent of 64 percent of Europe's total imports of crude.

*Numerous studies of the 1956-57 and 1967 oil emergencies are available. The most useful official source, often relied upon in this paper, is the Department of Interior's "The Middle East Petroleum Emergency of 1967" (Washington, D.C.: U.S. Government Printing Office, 1969). Other major sources include Harold Lubell's Middle East Oil Crisis and Western Europe's Energy Supplies (Baltimore: The Johns Hopkins Press, 1963), and Shoshana Klebanoff's Middle East Oil and U.S. Foreign Policy (New York: Praeger Publishers, 1974). Only the latter work, however, attempts to relate the disruptions in the flow of oil to their political context, a perspective which is essential to the study of oil as a tool of political influence.

TABLE 2.1
NON-SOVIET WORLD PETROLEUM SHIPMENTS, 1955

	Millions of bbls/day			Per cent		
	Crude oil	Petroleum products	Crude & products combined	Crude oil	Petroleum products	Crude & products combined
<i>Origin:</i>						
United States	0.5	1.4	1.9	11.4	45.2	25.3
Caribbean*	1.0	1.2	2.2	22.7	38.7	29.4
Middle East	2.8	0.2	3.0	63.6	6.4	40.0
Other	0.1	0.3	0.4	2.3	9.7	5.3
TOTAL	4.4	3.1	7.5	100.0	100.0	100.0
<i>Destination:</i>						
North America	1.5	1.6	3.1	34.1	51.6	41.3
Caribbean & South America*	0.1	0.6	0.7	2.3	19.4	9.4
Western Europe	1.9	0.3	2.2	43.2	9.6	29.3
Other	0.9	0.6	1.5	20.4	19.4	20.0
TOTAL	4.4	3.1	7.5	100.0	100.0	100.0

SOURCE: Lubell, Middle East Crises and Western Europe's Energy Supplies, 1963.

By 1956, some 72 percent of Europe's oil imports (2.1 million barrels per day) came from the Middle East. As the role of indigenous coal declined, oil came to represent 25 percent of total European energy demand. This historical paradox might perhaps explain the recurrence of the unleashing of the oil weapon at the West. Just when Europe was withdrawing politically and militarily from the area, her dual dependence--on oil as a physical energy source and on the Middle East as a geopolitical source for its oil--reached dangerous levels.

The governments of Great Britain and France became acutely concerned with the possible ramifications of the nationalization of the Suez Canal. It was estimated at the time that Britain's reserves of crude oil would last for only six weeks (two weeks for oil products), and that the other Western European countries had even smaller stocks. More than half of Britain's annual imports were threatened by Nasser's control of the

Canal; furthermore, this vulnerability was expected to increase, since additional energy requirements could only be satisfied from the Middle East.

If Arab nationalism mixed with unpredictability was not sufficiently menacing, Soviet penetration into the region seemed to threaten European access to an area which had been traditionally considered vital to its interests. Since the mercantilist system had obviously depended upon the protection of strategic trade routes, the act of nationalization, coupled with a Soviet foothold in the area, could not be considered as anything less than a challenge to the entire Western economic order of the past several hundred years. When the new variant of the "Eastern Question," the thorniest problem of the nineteenth century, surfaced again, the Anglo-French reaction was typical and predictable. Their determination to safeguard their vital interests, specifically the preservation of their access to Middle East oil, became the prima facie cause for their joint attack on Egypt. The European response, then, was a preemptive military action aimed at preventing what seemed an inevitable economic challenge.

This Anglo-French concept was not shared, however, by the United States. The Suez Canal did not play the same strategic role for the U.S. that it did for Europe, and Arab nationalism was not interpreted as a potential challenge to American economic interests. In fact,

"In Washington, references to Middle East oil evoked unsavory odors of antiquated colonial policies. Liberals and isolationists alike were standing by ready to accuse the government of economic imperialism.... The U.S. government itself was self-conscious of its

position in relation to the new nations of Asia and Africa...The Eisenhower Administration regarded the Bandung Conference as a blow to SEATO, and great energy was expended to mend fences...the self-styled leaders of the Third World were energetically courted."^{*}

One of these leaders, Nasser, was wooed with equal vigor by the Soviet Union and the United States. In the manner of a well-rehearsed historical process, these policies of accommodation and appeasement served only to encourage further political demands. In this case, it took the form of Egyptian nationalization of the Canal.

The seizure of the Canal and its subsequent blockage on October 31, 1956, coupled with the sabotaging of the IPC pipelines on November 3, affected the movement of more than 2 million barrels per day. The Arab action hardly represented a comprehensive strategy; nor was the action managed in concert among the various Arab nations. But the effect of choking the key arteries of the transport system was to involve both production and transport. The hardest hit of the oil producers was Iraq, whose output dropped by 75 percent from October to November, 1956. (Almost 73 percent of Iraq's 1955 total output came from the Kirkuk fields, whose only outlet was through the IPC pipeline. This pipeline was, in fact, the biggest single component of Middle East production apparatus that closed down.) The disruption of the pipeline cut off the movement of some 599,000 barrels daily. Persian Gulf production was reduced by about half by the tanker shortage which resulted from the closure of the Canal.

^{*}Klebanoff, p. 125.

TABLE 2.2
OIL MOVEMENT TO WEST OF SUEZ
(EASTERN HEMISPHERE ONLY)

ROUTE	AMOUNT (BARRELS/DAY)	
THROUGH SUEZ CANAL		
FROM MIDDLE EAST	1,428,000	
FROM THE FAR EAST	50,000	1,478,000
THROUGH PIPELINES		687,000
		2,165,000
FROM WESTERN HEMI- SPHERE AND SOVIET BLOC		1,085,000
TOTAL		3,250,000

SOURCE: Klebanoff, Middle East Oil

The cutbacks were smallest for Iran, whose markets were primarily east of Suez, and for Saudi Arabia, since ARAMCO's Tapline to the Mediterranean was not damaged by the Syrians. The closure of the Canal stopped the normal movement of about 1,978,000 barrels daily. The virtual interdependence of the production and distribution system at their Middle East origin point spread the effects of the Egyptian-Syrian action both downstream, as intended, and upstream.

The oil weapon, in other words, became a collective Arab potential, triggered by a minority of Arab nations. The interdependence which endowed the market with a certain flexibility also brought about an overall systemic sensitivity. Thus, it did not matter much that Saudi Arabia symbolically chose to have the disruption of a total movement of more than 2 million barrels per day accompanied by a declaration that it was a selective embargo of crude oil deliveries to France and Great Britain. That was the first

example of the declaratory aspect of the oil weapon; it was almost totally divorced from the economic realities, causes, and consequences of the action, but necessarily tuned to the political end it was supposed to advance.

Nonetheless, neither the disruption in the flow of oil nor the production restriction had more than an ultimately marginal impact on availability of supply. During the period of the actual emergency, from November 1, 1956 through March 31, 1957, an average of 3,007,000 barrels daily, or 90 percent of the normally required supplies of 3,250,000 barrels daily, were made available to the affected areas. This rate of supply continued throughout April and May 1957; by July 1957 the total supplies to the affected areas, as well as movements to those areas through the Suez Canal, returned, for all practical purposes, to normal proportions.

Thus, two serious handicaps constrained the world oil system at that moment as a result of the Arab action. First, except for approximately 339,000 barrels daily available from the Eastern Mediterranean terminal of the Trans-Arabian Pipeline (Tapline), approximately 350,000 barrels daily of indigenous production in the affected areas, and imports from Iron Curtain countries, the bulk of the supplies had to be transported on long voyages from the Persian Gulf around the Cape of Good Hope and from the Western Hemisphere. Second, as of November 1, 1956, the world tanker fleet was so completely utilized that no excess tanker tonnage was available to compensate for the incremental burden of the long hauls. The Arab action did indeed create a shortfall of some 7.5 percent of pre-crisis consumption in Europe, and 5.6 percent on the East Coast of the United States.

The emergency brought about rationing in every major consuming country in Europe; but, by and large, the economic life of the affected areas was not disrupted because of a lack of petroleum supplies. To the extent, then, that the original purpose of the Arab stoppages and boycotts had been to bring about a substantial foreign petroleum supply shortage, they failed.

TABLE 2.3

**MIDDLE EAST EMERGENCY COMMITTEE ESTIMATES OF OIL MOVEMENTS
(CRUDE AND PRODUCTS COMBINED) TO EUROPE/AFRICA AND
EAST COAST NORTH AMERICA, PRE-SUEZ CRISIS AND NOVEMBER 1956-MARCH 1957**

From	To	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Pre-Suez			Crisis Period (Nov 56-Mar 57)			Change from Pre-Suez		
		Europe/ Africa	E. Coast N. Amer.	Total	Europe/ Africa	E. Coast N. Amer.	Total	Europe/ Africa	E. Coast N. Amer.	Total
(thousands of bbls/day)										
Western Hemisphere		722	2,470	3,198	1,380	2,740	4,120	652	270	922
U.S. Gulf		52	1,790	1,842	538	1,990	2,528	486	200	686
Caribbean		676	680	1,356	842	750	1,592	166	70	236
Middle East		2,115	471	2,586	1,275	35	1,310	-840	-436	-1,276
Suez Canal		1,428	328	1,756	--	--	--	-1,428	-328	-1,756
Cape of Good Hope		--	--	--	936	35	971	936	35	971
Pipelines		687	143	830	339	--	339	-348	-143	-491
Far East		57	--	57	2	--	2	-55	--	-55
Suez Canal		50	--	50	--	--	--	-50	--	-50
Cape of Good Hope		7	--	7	2	--	2	-5	--	-5
Sub-total		2,900	2,941	5,841	2,657	2,775	5,432	-243	-166	-409
Indigenous & Soviet		350	--	350	350	--	350	--	--	--
TOTAL		3,250	2,941	6,191	3,007	2,775	5,782	-243	-166	-409
TOTAL		100.0	100.0	100.0	92.5	94.4	93.4	-7.5	-5.6	-6.6

SOURCE: Lubell, Middle East Oil Crises.

Four factors of major importance were instrumental in contributing to the blunting of this first exercise of the Arab oil weapon. Two are related to the state of the system at that time; the other two with its management in conditions of crisis. First, petroleum supplies made available from the Western Hemisphere for shipment to the affected areas were substantially increased. Normally, supplies from the Caribbean and the United States to the area west of Suez amounted to about 728,000 barrels daily, or roughly 22 percent of the total supplies in the region. For the emergency period, November 1 through March 31, Western Hemisphere supplies moving to Europe and the other affected areas were almost doubled, averaging 1,380,000 barrels daily, and accounting for approximately 46 percent of the total supplies to the area. In addition to this increase of 652,000 barrels per day shipped from the Western Hemisphere, approximately 317,000 barrels daily of crude oil were made available from Western Hemisphere sources for the East and West coasts of North America to replace Middle East oil diverted to Europe. Thus, the total increase in supplies made available from the Western Hemisphere amounted to approximately 969,000 barrels daily during the five-month crisis period.*

Second, the effective carrying capacity of the existing tanker fleet was increased by radical deployments of tanker movements designed to eliminate cross-hauls and by the unusually large quantities of petroleum that were moved from the Persian Gulf by the long haul to Europe around the Cape of Good Hope. Because of the greater distances involved, the same number of tankers moving around the Cape of Good Hope could haul only about one-half as much oil as they had previously hauled from the Eastern Mediterranean terminals of the IPC pipeline.

* U.S. Department of Interior, "The Middle East Petroleum Emergency of 1967," 1969. This document compares the 1967 oil crisis with the Suez Crisis.

TABLE 2.4

ESTIMATED NUMBERS OF T-2 EQUIVALENT TANKERS ON OIL ROUTES FROM MIDDLE EAST AND WESTERN HEMISPHERE TO EUROPE AND EAST COAST U.S. BEFORE AND DURING SUEZ CRISIS

From	To	(e)	(b)	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
		Tanker Factor (b/d per T-2)		Number of tankers required (T-2 equivalents)								
		Pre-Suez			Nov. 1956-- March 1957			Change from pre-Suez				
		Eur./ Afr.	E. Coast U.S.	Eur./ Afr.	E. Coast U.S.	Total	Eur./ Afr.	E. Coast U.S.	Total	Eur./ Afr.	E. Coast U.S.	Total
Western Hemisphere		xx	xx	222	320	542	462	355	817	240	35	275
U.S. Gulf		2560	7600	20	236	256	210	262	472	190	26	216
Caribbean		3340	8050	202	84	286	252	93	345	50	9	59
Middle East		xx	xx	795	234	1029	733	27	760	-62	-267	-269
Suez		2170	1770	658	185	843	--	--	--	-658	-185	-843
Cape		1350	1280	--	--	--	693	27	720	693	27	720
Pipelines		5000	2920	127	49	186	40	--	40	-97	-49	-146
Total		xx	xx	1017	544	1571	1195	382	1577	178	-172	6

SOURCE: Lubell, Middle East Oil Crises.

Accordingly, rerouting the tankers around the Cape to Europe would have resulted in having only about 850,000 barrels of supply daily to Europe. However, largely as a result of the tanker redeployments (see Table 2.4) and other measures for increasing tanker carrying capacity during the emergency period, the supplying companies succeeded in moving an average of 936,000 barrels daily around the Cape, while at the same time moving an additional 652,000 barrels per day of emergency supplies from the Western Hemisphere to Europe. The total size of this virtual "oil lift to Europe" was 1,598,000 barrels daily. All this was accomplished without causing any reduction or shortage of supplies in the Western Hemisphere or in the Eastern Hemisphere east of Suez, although stocks were depleted significantly and rationing lasted until the late spring of 1957.

Third, the "oil lift" could not have succeeded without a major effort to increase supplies from the Western Hemisphere for the affected areas. This increase was made possible by 1) increased production in the Caribbean area and in the United States, the latter necessitating close coordination among the oil companies and government agencies concerned; 2) heavy stock withdrawals, both in the United States and the Caribbean area, mostly during November and early December; and 3) numerous rather unusual operations, particularly within the United States, by the MEEC and the American oil companies, including the reactivation of nonoperating pipelines and terminals, the reversal of pipeline flows, and the utilization of unusual barge and tank car movements.

Fourth, the international management of the emergency involved close cooperation between the MEEC and the Organization for European Economic Cooperation (OEEC), notably its industry advisory committee, the OEEC Petroleum Emergency Group. The Group not only facilitated making supplies available to Europe but also bore the sole responsibility for the allocation of supplies within Europe. This cooperation, which was initiated after December 3, proved essential for the duration of the emergency.

The most dramatic effect of the Arab action, in technical terms, was to bring about a sharp depletion of the world's stocks of crude oil; but such is their raison d'etre, after all. Withdrawals from stocks were indeed high: in November and December, the months of sharpest decline, they amounted to 600,000 barrels per day, or 4 percent of world (excluding communist countries) crude oil production. Some 58 percent of the withdrawals were accounted for by the American oil lift to Europe; Europe's share of withdrawals was only 29 percent. The impact of the oil emergency

on consumption was, however, much smaller than had originally been feared. The average European shortfall over the entire five-month crisis period was only 8 percent; in November the flow was 20 percent below normal; by March it was only 4 percent below normal.

It can be concluded, then, that the 1956-57 Suez crisis represented a rather weak initial use of the oil weapon. It did not involve a planned and carefully executed offensive, among other reasons, because the Anglo-French attack preempted anything of the kind. As a hasty punitive reaction, the transport stoppage could not nor did it create severe shortages in Europe of a type that could force, for instance, the invading troops to retreat. A massive production stoppage was inconceivable in any event, since none of the oil-producing countries could afford to be cut off for long from their oil revenues. The Arab nations had no "insurance" for economic warfare in the form of foreign exchange reserves. In other words, in 1956 the Arabs did not possess the necessary ammunition for a protracted barrage by the oil weapon.* Saudi Arabia's 1956 oil revenues, for example, fell by 14.8 percent relative to the previous year, a decline which could hardly be tolerated by a nation in a tight export-dependence situation.

*To speak of the Arabs as if they form a monolithic bloc can, of course, be quite misleading. Some Arabs will always be more inclined to bear the self-inflicted costs of production shutdowns; others would be less so. It is in this vein that a Kuwaiti sheik complained about the sabotage of his country's oil facilities by non-Kuwaiti Arabs:

"The saboteurs kept claiming that they were attacking British imperialism, but we were the sufferers--we Kuwaitis. It was our oil which was being sabotaged, our revenues which were being hit, our city which was threatened by a shutdown." [Quoted in Leonard Mosely's Power Play (New York: Random House, 1973), p. 264.]

The Western nations, on the other hand, were quite adequately prepared: with substantial idle capacity in non-Arab sources and a market flexible enough to undergo radical regrouping, the Western defense was more than capable of countering the Arab offensive. In certain ways, the Arab action was self-defeating in the sense that it alerted the West to its own potential vulnerabilities. Thus, diversification and storage programs were inaugurated, national oil companies were established in order to circumvent the majors, and the dangers of drifting into greater import-dependence upon Arab sources were regarded with increasing concern.

Nevertheless, the conclusion of the Suez episode did provide an unexpected twist. Despite such inevitable side effects as increases in crude prices by 25 cents per barrel and similar dramatic price increases in Europe, no severe economic damage was caused by the 1956-57 Arab oil action. The real test of the "weapon," however, is its effectiveness in attaining its political aims. Ironically, this initial exercise in oil pressure paid off politically in a most unexpected way. Rather than the Arabs putting the pressure on France and Britain, it was the United States which did so. The Arab action could not coerce the Europeans, but an American threat to withhold the "oil lift" from these countries played a crucial role in their decision to call off the Suez invasion. It was made clear to the Europeans that the United States would refuse to make up for the missing Middle Eastern oil on any other basis, and they promptly complied.* Thus, the U.S. acted to negate the effects of an oil

*"Dependence and Dependability: Political Prospects For Middle East Oil," by Dankwart A. Rustow in Oil Imports and the National Interest (New York; Petroleum Industry Research Foundation, Inc., 1971). Rustow quotes Sherman Adams to the effect that Dulles noted that "Europeans had come to believe that we were forcing Britain and France to withdraw from Suez by withholding oil from them," p. 41.

shortage while exploiting the opportunity to press for political objectives which the Arabs had sought from the outset. It must be concluded, therefore, that in the final analysis the 1956-57 Arab oil action was a technical failure but a political success, of a limited and defensive character to be sure, but a success nonetheless.

The 1967 Oil Embargo

It has become apparent since the nationalization of the Suez Canal in 1956 that Arab militancy on the oil front goes hand in hand with militancy against Israel. The relationship has been more than instrumental, or simply the use of the oil weapon to support the struggle against Zionism. Beyond that it is a two-pronged challenge: to the political status quo, i.e., the presence of Israel in the region, and to the economic status quo, i.e. Western ability to count on a steady supply of Arab oil at relatively low cost.

The Arab challenge to this state of affairs has followed cyclical patterns; following the failure of the first Nasserite onslaught of 1956, the area entered a decade of tranquility on all fronts. By the mid-sixties, however, a modicum of Arab capability and confidence seems to have been restored; in any case, matters were rapidly deteriorating into what would soon amount to a second Arab attempt to alter the status quo. Just as the radical Syrian regime was heating up Israeli-Syrian relations by frequent border skirmishes and oil facilities were being sabotaged sporadically, IPC's Syrian pipelines were closed for two and one-half

months in late 1966 and early 1967 as the culmination of a company dispute with Syria.*

Just as the struggle over the nationalization of the Suez Canal preceded and fueled the political and military battle which was later to explode, so was the 1967 June war preceded by a marked intensification in the Arabs' drive for nationalization which then spilled over into the political arena. In 1967 it was Syria which assumed the leading role in precipitating first a mild oil crisis, then a major regional war. The Syrian-IPC pipeline dispute, notes George Stocking, may be regarded as a battle in a war waged by militant Arabs to gain control of the oil industry and Syria, combining its political objectives with its economic interests, seized the leadership in that struggle.**

Again, the familiar spectacle of a radical element catalyzing an escalation process seemed to repeat itself. Syria, and the terrorists operating from Syrian sanctuaries, soon brought Egypt, too, into the action. By mid-May, Nasser crossed his own Rubicon: first by demanding the evacuation of UNEF contingents from the Sinai, then by announcing the blockade of the Straits of Tiran, and finally by massing troops in forward positions in the Sinai theater.

So far as oil was concerned, Nasser's closure of the Straits of Tiran on May 23 provided the necessary advance warning that another oil emergency was imminent; indeed, Israel's declaratory posture had long held that such an action constitutes a blatant *casus belli*. The unfolding

*The background and events which preceded the 1967 Six Day War are best described in Walter Laqueur's The Road to War (London: Penguin Books, 1968), pp. 51-206.

**That entire episode is covered in detail in Chapter 14 of his Middle East Oil (Tennessee: Vanderbilt University Press, 1970), pp. 300-315.

events only strengthened the notion that a major new Arab challenge was underway. U Thant's acquiescence in evacuating UNEF only stimulated further Egyptian demands, leading up to the closure of the Straits. As Western reluctance to abide by its obligations to Israel became manifest, the Arab oil weapon resurfaced. Thus, initial Western weakness in the face of the challenge only encouraged its further escalation.

Arab apologists often refer to the oil weapon as a "petroleum defense line." Since in terms of temporal sequence, the oil weapon was activated in all three instances only after the eruption of hostilities, it is indeed tempting to view the oil weapon as a reflexive reaction of self-defense. The explanation behind such a thesis runs as follows:

"On both [the 1956 and the 1967] occasions, the Arabs were engaged in hostilities with the Israelis and were on the verge of defeat. Their resort to the use of oil as a political weapon was an attempt, unsuccessful in the event, to stabilize a rapidly deteriorating military situation through the application of economic pressure on third part states which were deemed to have a special relationship with Israel. These efforts were reflex action sparked off by the war, and not the result of a studied plan of action."^{*}

The facts, however, contradict such an explanation and any thorough examination of them reveals that careful planning preceded the activation of the oil weapon. On June 3, two days before Israel preempted, and during the next day, the Foreign Ministers of the Arab oil-exporting countries conferred in Baghdad. They, too, like Jordan's King Hussein, wished to jump on the bandwagon of what seemed up to that time to be a surprisingly successful affront to Israel and the West. The Baghdad conference was designed to "consider the crisis and to develop a common policy on the uses of oil as a weapon against the 'aggression' of Israel."^{**}

^{*} Fuad Itayim, "Strengths and Weaknesses of the Oil Weapon," September 1974 mimeo. (Presented at the International Institute for Strategic Studies Annual Conference of 1974.)

^{**} Stocking, op. cit., p. 458.

The representatives of the U.A.R., Iraq, Algeria, Libya, Kuwait, Saudi Arabia, Syria, Lebanon, Qatar, Bahrain, and Abu Dhabi, unanimously approved a resolution announcing the shutdown of oil wells "in order to deny petroleum to the imperialist aggressors."^{*} This position was assumed prior to the outbreak of hostilities, while events were going the Arabs' way, and not in reaction to it.

Although in retrospect the Arab actions appear hasty and miscalculated, at the time they must have had a compelling logic. Western complacency, Israeli hesitation, and greatly improved Arab capabilities all converged to bring about the Arab action. Israel's preemptive attack confused the Arabs' plans and threw their ranks into disarray.

In a manner reminiscent of the Suez crisis, the main deterrent to the progressively menacing Arab challenge was a preemptive strike which blunted its full effect: in 1956 it was the Anglo-French-Israeli attack; in June 1967 it was Israel's strike at Egypt. By contrast, no such counteraction was taken in advance of the joint Arab economic and military attack in 1973. This negligence may well explain the different outcome of the third Arab challenge.

^{*}Z. Mikdash, The Community of the Oil Exporting Countries (Oxford: Oxford University Press, 1971). It cannot be denied that a concerted Arab oil action was being coordinated prior to the Israelis' preemptive strike against Egypt on June 5, 1967. Mikdash gives a full account of this strategy session. His analysis amounts to a rejection of the official Arab line that the ensuing embargo was a mere reflex rather than a premeditated action. Arab apologists, however, often tend to be more pious than the Pope. Attempting to reconcile the fact of the Baghdad conference with the official Arab line, Leonard Mosley arbitrarily pre-dates the day the Six Day War began (Mosley, p. 343). Thus, for him the war began on June 4 rather than June 5. Such distortion, however, cannot hide the fact that the Arab oil action in 1967, as in 1973, was an integral part of an Arab strategy against the West and not just a reaction to the eruption of the war.

The Egyptian concentration of troops in Sinai after the blockade precipitated an Israeli preemptive strike, and thus the Middle East was plunged into its second major crisis in a decade. Although the actual fighting was carried out within limited geographical confines, the war had a worldwide impact. Hastening to draw their trump card, the Arabs embargoed oil to the United States, the United Kingdom, and West Germany (under the false pretext that these nations aided Israel militarily).

The crisis interrupted the normal flow of some 10 million barrels of Arab oil daily, an amount roughly equivalent to 53 percent of total Free World production. In addition, the Suez Canal Tapline, and the IPC pipelines were immediately closed. Theoretically, the situation that prevailed in early June 1967 was much more serious than at the time of the Suez crisis. True, Middle East oil represented only 55 percent of Western Europe's oil imports (as against 72 percent in 1956), 4.6 million barrels daily. But North Africa was now making a substantial contribution of 25 percent of total West European imports, and more importantly, oil represented 50 percent of West Europe's total energy consumption (as against only 25 percent in 1956). Although the share of strictly Middle East oil in imports had declined since 1956, absolute quantities were much greater, since demand for oil had tripled within a decade, and geographical dependence on oil was exacerbated by the process of energy concentration. In 1967, almost 73 percent of OECD Europe's crude imports came from Arab sources. Japan, on the other hand, judiciously relied on non-Arab Iran for the bulk of her Middle Eastern supplies deriving only 41 percent of her crude imports from Arab nations.

Finally, North America's dependence on Arab imports did not exceed 12 percent of its total crude imports. However, these indices of direct exposure to Arab oil do not adequately reflect the degree of vulnerability sustained by those groups of countries at the time. Interpolating the share of Arab oil in total energy consumption (Tables 2.5 and 2.6) in 1967, it is clear that Japan and Western Europe did not differ all that much. Western Europe's reliance on Arab oil was for 34 percent of her energy requirements, and Japan's share was the same--34 percent.

Table 2.5

WESTERN EUROPE: CONSUMPTION OF ENERGY AND DEPENDENCE ON ARAB OIL, SELECTED YEARS, 1955-68

	Thousands of Barrels Daily of Oil Equivalent			
	1955	1960	1965	1968
Nuclear energy	-	-	125	215
Hydropower	968	1,406	1,802	1,933
Coal	8,855	8,377	7,929	6,904
Natural gas	108	244	431	921
Oil	2,791	4,393	7,607	10,433
Arab oil	1,686	2,511	5,196	7,361
Other oil	1,105	1,882	2,412	3,072
Total	12,722	14,422	17,894	20,406
	Percent of Total Energy Consumption			
Nuclear energy	0	0	0.7	1.1
Hydropower	7.8	9.8	10.1	9.5
Coal	69.8	58.1	44.3	33.8
Natural gas	0.9	1.7	2.4	4.5
Oil	21.9	30.4	42.5	51.1
Arab oil	13.4	17.4	29.0	36.1
Other oil	8.5	13.0	13.5	15.0
Total	100.0	100.0	100.0	100.0

SOURCE: Department of the Interior, The Middle East Petroleum Emergency of 1967.

Table 2.6

**JAPAN: CONSUMPTION OF ENERGY AND DEPENDENCE ON ARAB OIL,
SELECTED YEARS, 1955-68**

	Thousands of Barrels Daily of Oil Equivalent			
	1955	1960	1965	1968
Hydropower	205	264	438	400
Coal	711	864	982	1,130
Natural gas	3	18	42	50
Oil	236	877	1,771	2,820
Arab oil	110	443	1,041	1,838
Other oil	126	234	730	1,282
Total	1,344	2,010	3,243	4,400
	Percent of Total Energy Consumption			
Hydropower	22.7	18.1	13.5	10.3
Coal	57.2	47.8	38.6	28.3
Natural gas	0.2	0.7	1.3	1.1
Oil	18.9	33.7	64.6	62.3
Arab oil	8.9	22.1	32.1	34.8
Other oil	10.1	11.6	22.6	28.8
Total	100.0	100.0	100.0	100.0

SOURCE: Department of the Interior, The Middle East Emergency of 1967.

Of the major protagonists in 1967, only the United States remained aloof to Middle East oil. Dependent upon imports for only 10 percent of its oil, some 1.2 million barrels per day, the U.S. received less than 336 thousand barrels per day from the Middle East and North Africa, i.e., less than 3 percent of its oil requirements and only a little more than one percent of its total energy needs.

Table 2.7

DEPENDENCE OF SELECTED COUNTRIES ON ARAB CRUDE OIL, 1966
(THOUSAND BARRELS DAILY)

Area/Country	Total crude oil consumed	Imports from Arab countries (percent total)
West Europe:		
United Kingdom	1,408	69.0
Italy	1,564	82.2
West Germany	1,354	73.6
France	1,260	82.9
Netherlands	599	82.8
Belgium	327	58.4
Spain	326	81.6
Asia:		
Japan	1,701	61.5
Australia	322	61.5
India	148	61.1
Western Hemisphere:		
Brazil	227	48.9
Argentina	71	28.2
United States	8,316	3.6

SOURCE: Department of the Interior, The Middle East Emergency of 1967.

The sheer scope of European and Japanese oil vulnerability did not alone account for the perceived gravity of the situation. It was instead the refinement of the oil weapon to include a production as well as a transit dimension which raised the Arab oil strategy to a higher level of sophistication and potential effectiveness.* Accompanying the loss of production with the closure of the means of transportation marked the first time that these two aspects of Arab control of oil had been used together. In other words, a two-fold crisis faced Europe: threats

* For a discussion of the implications of such an exacerbation in the potential threat, see Odell, pp. 148-9.

of acute shortages of both supply and transportation. In fact, it was estimated at the time that continued Arab denial of oil and transit facilities would totally deplete European stocks within six months, even though these supplies had grown to a level of 55 to 60 days since 1956.*

With the outbreak of hostilities in June 1967, Western Europe's oil requirements were reduced by one third. The production loss potential, since from June 6 to June 14 all Arab countries shut down (with the exception of Abu Dhabi, Qatar, and Algeria) could have reached 10 million barrels daily. The closure of the Suez Canal interrupted the flow of 3.5 million barrels daily and the pipelines stoppage (both TAPLINE and the IPC pipeline) affected 1.5 million barrels daily. Only non-Arab Iran was still producing at a rate of 2.3 million barrels per day.

There were several ways for making up such huge production and supply losses. With excess productive capacity, probable increments in crude oil output from the major producing areas outside the Arab bloc could be anticipated. Presumably, West Africa could have speeded up production immediately by 200 thousand barrels daily with 350 to 500 over the next six months; Indonesia--100 thousand barrels daily, and 150-300 thousand barrels daily respectively; Iran--200 thousand barrels daily and 800 thousand barrels daily respectively. Only with massive Western Hemisphere utilization of its excess productive capacity could the total have been brought up to a potential 1.5 million barrels

* The main source for the figures used in this discussion is the Department of Interior's official report entitled, "The Middle East Petroleum Emergency of 1967" (Washington: U.S. Government Printing Office, 1969).

per day on an immediate scale and up to 3.8 million barrels daily to 4.3 million barrels daily within six months. But all this potential assistance fell far short of Europe's requirements. In the face of a potential loss of 10 million barrels a day of Arab oil, it was grimly estimated that the European stocks would be depleted in six months.

The Suez Canal closed on the afternoon of June 6, along with the Tapline and the IPC pipelines to the Eastern Mediterranean. By Wednesday, June 7, crude oil production and loading had been shut down in Libya, Saudi Arabia, and Iraq, but Kuwait was still in production and loading. Kuwait shut down on June 11, making a total of 8.4 million barrels a day of production shutdown in Arab countries.

* * *

Yet, Western fears never actually materialized. By June 14, barely a week after the Arab-Israeli war had erupted, producing operations had been restored in all of the Arab countries except Libya and Iraq. Indeed, Algeria, Qatar, and Abu Dhabi cheated all along and continued to produce at normal levels throughout the war. With the defusing of the production aspect of the oil weapon and early resolution of the question of crude oil availability, the 1967 oil emergency quickly became a matter of overcoming the small supply losses and manipulating the tanker fleet to the best possible advantage to negate the transportation aspect of the Arab action.

A pertinent question at this juncture is why the Arabs failed so miserably in their second and more promising oil offensive. Again, the answer rests in the nature of producer-consumer interdependence. In the abstract, the oil producing countries need consumers because the oil's

value lies precisely in the demand for it by industrial countries. In principle, therefore, any shutdown of production should hurt the producing country, too. It is, of course, this community of interest which keeps the oil flowing. Success in economic warfare depends upon the ability to absorb some of the damage resulting from the discontinuation of trade relationships in order to inflict greater damage upon one's adversary.

Thus, if Europe and Japan were highly vulnerable to an Arab oil boycott, the Arabs were equally, if not more, vulnerable. If none of the Arab oil producers resorted to production cutbacks in 1957 because of fiscal inability to forego oil revenues, 1967 did not offer a better basis for such self-denying actions. For example, in 1966, 63 percent of Iraq's total government revenues came from oil; Kuwait, 83 percent; Libya, 73 percent; and Saudi Arabia, 89 percent. It is this extent of their export-dependence which handicapped the Arabs and constrained the oil weapon most. Seldom can poor countries afford to engage in economic boycotts, and the Arab oil-exporting countries were for all practical purposes poor indeed. None of the Arab oil exporting countries, with the single exception of Kuwait, had foreign exchange reserves sufficient to cushion the loss of foreign currency resulting from the embargo without suffering adverse consequences in import levels and other government expenditures. In contrast to Kuwait's 31 months of import coverage, Iraq had only a month and a half, Libya 5, and Saudi Arabia 8.*

* Sam Shurr and Paul Homan, Middle Eastern Oil and the Western World (New York: American Elsevier Publishing Company, Inc., 1971), pp. 97-110.

Table 2.8

**CRUDE OIL PRODUCTION IN THE ARAB NATIONS, MAY-DECEMBER 1967
(THOUSAND BARRELS DAILY)**

Nation	May	June	July	August		September	October	November	December
				1967	1968				
Abu Dhabi	402	345	362	368	391	426	426	426	426
Bahrain	66	70	70	70	70	76	70	70	71
Iraq	1,388	395	1,038	1,456	1,587	1,648	1,648	1,648	1,628
Kuwait	2,158	1,310	2,155	2,305	2,067	2,392	2,392	2,392	2,412
Oman	90	120	120	120	120	161
Qatar	286	253	317	356	351	351	351	351	354
Neutral Zone	455	375	455	410	352	408	408	408	410
Saudi Arabia	2,723	1,675	2,692	2,273	2,492	2,633	2,633	2,633	2,555
Total Arab Gulf	7,478	4,423	7,089	7,328	7,430	8,054	8,048	8,048	8,017
Algeria	806	800	800	800	860	860	860	860	890
Libya	1,746	368	1,634	2,001	2,035	2,081	2,081	2,081	2,205
Tunisia	25	25	25	25	40	40	40	40	40
Egypt	150	70	90	140	140	115	115	115	105
Morocco	2	2	2	2	2	2	2	2	2
Total Arab Africa	2,729	1,265	2,551	2,968	3,077	3,098	3,098	3,098	3,242
Total Arab	10,207	5,688	9,640	10,296	10,507	11,152	11,146	11,146	11,259

SOURCE: Department of Interior, Middle East Petroleum Emergency of 1967.

Table 2.9

**CRUDE OIL¹ PRODUCTION PRIOR TO, DURING AND FOLLOWING
THE MIDDLE EAST CRISIS, MAY-DECEMBER 1967
(THOUSAND BARRELS DAILY)**

Area	May	June	July	August		September	October	November	December
				1967	1968				
Arab countries ²	10,207	5,688	9,640	10,296	9,250	10,507	11,152	11,146	11,259
Venezuela	3,328	3,593	3,750	3,718	3,189	3,638	3,558	3,565	3,596
Iran	2,310	2,450	2,720	2,760	2,000	2,580	2,747	2,673	2,363
United States	8,385	8,539	9,154	9,435	8,290	9,095	9,000	8,979	8,908
Cuba	928	990	1,027	1,047	892	998	950	960	986
Nigeria	580	578	148	55	400	55	55	55	55
Total	25,738	21,836	26,439	27,311	24,021	26,873	27,462	27,378	27,167

¹ Including condensate.

² This is an all-inclusion listing of Arab oil-producing countries: Arab Gulf - Abu Dhabi, Bahrain, Iraq, Kuwait, Oman, Qatar, Neutral Zone and Saudi Arabia; North Africa - Algeria, Libya, Tunisia, Egypt and Morocco.

SOURCE: Department of Interior, Middle East Petroleum Emergency of 1967.

As the limited embargo continued, it became evident that the Arab states were the chief sufferers. The precipitous Arab action cost Saudi Arabia \$30,264,900 for the twenty-four days of June (an annual loss rate of \$122,600,000^{*}). Kuwait stood to lose some \$1 million per day or \$195,000,000 annually in oil revenue.^{**} It is not surprising, then, that at no time was Europe even remotely threatened by economic catastrophe. The "reinforced" oil weapon, as the Arabs soon learned, was a body blow to their economy:

"As they all discovered within a few days, none of them had the financial reserves to carry on without the aid of revenue from the companies. Saudi Arabia was the first to feel the pinch acutely; one June 12, less than a week after the declaration of the boycott, King Faisal was informed by his finance minister that there was no more money in the till, and that for once Aramco was unable to help."^{***}

Consequently, Ahmed Zaki Yamani, the Saudi Oil Minister, proposed that ARAMCO be told to restart operations, with the proviso that all oil be withheld from the ambiguously defined "aggressor states." He reasoned that this strategy would pay lip service to Arab antipathies while doing the least damage to the country's economy. The lifting of the general boycott on these terms was announced on June 13, but it was not until the end of the month that normal shipments were resumed by ARAMCO: Kuwait followed suit. Thus, the loss of revenue caused by the temporary imposition of the oil embargo had adverse effects on all Arab national budgets, and several Arab nations found it necessary either to revise or postpone development programs.

^{*} Middle East Economic Survey, July 14, 1967.

^{**} MEES, August 4, 1967.

^{***} Mosley, p. 399.

The 1967 Arab oil action had even more lasting and self-defeating results. The closure of the Suez Canal, for instance, deprived Egypt of about \$250 million in hard currency fees annually. To offset this financial loss, Saudi Arabia, Libya, and Kuwait agreed to make regular contributions to Egypt. The flow of Iraqi oil was resumed in late June, with rather restrictive limitations, and Libya on July 4, also with restrictions. In mid-September, Saudi Arabia authorized the reopening of Tapline, and, by this time, substantially all of the restrictions on destinations and flags were removed. Arab oil exports returned to normal after the decision to lift all embargoes was made at the Khartoum Conference early in September. But the Suez Canal remained closed.

The remaining transport stoppage required a search for supplies as close as possible to the major consuming centers and the initiation of efforts to supply all markets via the shortest possible tanker hauls. The steps taken to improve transportation efficiency included primarily the elimination of shipments from the Eastern Hemisphere to the U.S. and Canada, diverting these to Europe, and utilizing crude oil from the U.S. Gulf Coast and South America to supply both Europe and North America.

Table 2.10

ACTUAL AND ESTIMATED ADDITIONAL¹ SHIPMENTS OF CRUDE OIL
FROM THE U.S. GULF COAST, BY DESTINATION, JUNE-DECEMBER 1967
(BARRELS)

Destination	June	July	August	September	October	November	December ²
U.S. East Coast	2,944,000	5,799,000	7,963,000	6,135,000	3,863,000	3,300,000	3,050,000
Canada East Coast	519,623	1,966,414	691,419	454,433	-	-	-
Europe	1,954,842	6,117,397	8,223,253	4,257,004	222,000	-	-
Virgin Islands	-	-	126,752	626,279	-	-	-
Total	5,418,465	13,882,811	17,001,424	11,512,716	4,085,000	3,300,000	3,050,000

¹ That is, in addition to what would have been regarded as normal shipments to these destinations.

² Estimated.

SOURCE: Department of Interior, Middle East Petroleum Emergency of 1967.

Table 2.15

ADDITIONAL¹ SHIPMENTS OF CRUDE OIL FROM THE
U.S. GULF COAST JUNE-DECEMBER 1967

	Million barrels	Percent total
U.S. East Coast	33.054	56.7
Canada East Coast	3.672	6.3
Europe	20.771	35.7
Virgin Islands	0.753	1.3
Total	58.250	100.0

¹ That is, in addition to what would have been regarded as normal exports to these destinations.

SOURCE: Department of Interior, Middle East Petroleum Emergency of 1967.

These sources, however, were not sufficient to meet the transportation shortage, and matters were not helped by the outbreak of a civil war in Nigeria, which was not dependent on the Suez Canal and was therefore looked to for additional supplies to Europe. The outbreak of the civil war had effectively denied an average of more than 500,000 barrels

dally to world markets. Consequently, steps were also taken to expand the tanker fleet. The combination of low seasonal requirements for tankers, plus the reserve provided by tankers in specialty trades, facilitated this effort--so much so that within three months Free World tanker availability had been increased by more than 19 percent. Although the severe demands inevitably placed upon the tanker fleet caused rates to increase rather sharply, for the most part consumers in Europe and Japan were not asked to bear the larger burden of these higher tanker rates and of the higher costs brought about by the replacement of Middle East oil with more expensive oil from the Western Hemisphere.

Not unlike the 1957 feat of the "oil lift to Europe," the 1967 oil balance did show the recurring pattern of American supply assistance to Europe, as indicated in Table 2.12. Still, the Arabs learned how much loyalty and solidarity they could expect from their non-Arab partners; at the same time it became clear that, without full Arab dominance over OPEC, the efficacy of the oil weapon was severely restricted.

During the emergency no major cuts in supplies to customers took place. Often the real constraint on adequate supply was the shipping shortage rather than a supply shortage. Also, rather than dipping into compulsory crude stocks, European affiliates of the major oil companies drew down their inventories. Because of the meager American import dependence on Arab sources (2.3 percent of 1968 supply), the denial of Arab oil had virtually no impact on domestic supply levels. But production was rapidly increased to provide oil to offset denied Arab deliveries. By August, production had been raised over May levels by about 1 million barrels daily. Clearly, such shut-in productive capacity offered the best means to respond under emergency conditions.

Table 2.12

ESTIMATED IMPORTS OF CRUDE OIL AND PETROLEUM PRODUCTS
BY WESTERN EUROPE, 1967

Origin	Before Arab-Israeli war		After Arab-Israeli war		Total 1967	
	(thousand barrels daily)	(percent total)	(thousand barrels daily)	(percent total)	(thousand barrels daily)	(percent total)
Western Hemisphere						
U.S.A.	50.0	0.6	165.0	1.8	118.0	1.3
Caribbean	700.0	7.5	810.0	8.9	765.0	8.3
Other	30.0	0.2	26.0	0.3	28.0	0.3
Total	780.0	8.3	1,001.0	11.0	91.0	9.9
Eastern Hemisphere						
North Africa	¹ 2,315.0	24.7	¹ 2,470.0	27.1	¹ 2,402.0	26.0
West Africa	502.0	5.4	62.0	0.7	253.0	2.8
Middle East	² 4,960.0	53.0	³ 4,670.0	51.2	⁴ 4,789.0	51.9
Soviet Bloc	750.0	8.0	900.0	9.9	832.0	9.0
Other	55.0	0.6	25.0	0.1	75.0	0.4
Total	8,582.0	91.7	8,122.0	89.0	8,311.0	90.1
Grand total	⁵ 9,362.0	100.0	⁶ 9,123.0	100.0	⁷ 9,222.0	100.0

¹ All Arab oil.² Of this amount, 700,000 barrels daily is Iranian oil, the remainder is Arab.³ Of this amount, 820,000 barrels daily is Iranian oil, the remainder is Arab.⁴ Of this amount, 770,000 barrels daily is Iranian oil, the remainder is Arab.⁵ Of this total, 70.2 percent (6,575,000 barrels daily) is Arab oil.⁶ Of this total, 69.3 percent (6,320,000 barrels daily) is Arab oil.⁷ Of this total, 69.6 percent (6,421,000 barrels daily) is Arab oil.SOURCE: Department of Interior, Middle East Petroleum Emergency of 1967.

As had occurred during the 1956 oil emergency, the multinational oil industry manipulated its potential for worldwide flexibility in operations and sources of supply. The full use of this potential cushioned consumers from the impact of the crisis, as the industry drastically changed worldwide supply, transport, and refining patterns to spread and minimize the effects of the crisis. These swapping and spreading activities were so successful that at no time was there a need for rationing anywhere. The 1967 Arab oil embargo, then, was an even greater technical failure than the 1956-57 oil action. The 1967 embargo did not

lead to any serious shortages and was soon called off. The action was so poorly managed that no political result could have followed.

The epilogue to the 1967 oil emergency came in the Arab summit conference in Khartoum. The conference removed the selective embargo instituted against the U.S., Germany, and England, arguing that the Arab oil should be used to strengthen the Arab economies damaged by the war. Earlier, Saudi Arabian Oil Minister Yamani expressed the Arabs' sense that the embargo had indeed been futile and questioned the wisdom of it:

"...injudiciously used, the oil weapon loses much if not all of its importance and effectiveness. If we do not use it properly, we are behaving like someone who fires a bullet into the air, missing the enemy and allowing it to rebound on himself."^{*}

Thus, in recognition of the adverse effects of the activation of the oil weapon on the economies of the oil-producing nations, especially since it had been triggered by Egypt and radical Syria and Iraq, three of the Arab oil-exporters, Saudi Arabia, Kuwait, and Libya, decided in January 1968 to form an Organization of Arab Petroleum Exporting Countries (OAPEC), designed to preclude any further use of their oil as a political weapon by radical Arab states. The new organization, stated Yamani, was essentially economic and commercial in nature, whose objective was "to maximize the benefits derived by its members from their natural resources."^{**} With the second Arab oil offensive so devastatingly defeated, once again tranquility seemed to have been restored to the Arab oil front.

^{*} MEES, July 21, 1967.

^{**} MEES, January 12, 1968.

Chapter III

THE SYSTEM IN DISEQUILIBRIUM

As the decade of the 1960s neared its end, it became apparent that the energy system was rapidly entering into a revolutionary period. Benjamin Shwadran, a veteran student of that system, summarized that change as follows:

"The rapid development in the Middle East oil industry in the last five or six years has been dizzying. Even as late as 1968 the concessionaire companies maintained a strong oil price structure; they have controlled the world oil markets; they reaped fabulous profits; the Organization of the Petroleum Exporting Countries put in an eight-year effort and failed to restore price cuts which the companies instituted in 1960 and 1961. The companies held on steadfastly to the 50/50 profit-sharing arrangement, and they refused the oil-producing governments' requests even for a small percentage participation in company ownership. The companies were dominant and powerful over the producing countries.

Since 1970 the process has been completely reversed. Price cuts were restored and soared upward constantly and rapidly; allowances of different sorts were eliminated; the governments' percentage profits were raised to 55 percent and royalties were expensed. The companies agreed to grant the governments 25 percent ownership participation which was to be increased to 51 percent by January 1, 1982. Later demands were made for immediate 51 percent or even 100 percent. Prices rose constantly through mutual agreements, and [beginning] in October were hiked...unilaterally by the producing countries....The producing countries have become dominant and powerful over the companies."^{*}

For Shwadran the explanation for this startling development lies in the long struggle between the producing countries and the concessionaire companies. This focus is wrong because it ignores the important position of the consuming countries. The international power interplay between importers and exporters, within which companies shift their positions, actually provides the background for the oil revolution. From all three groups, the producers, the consumers, and the companies, only

^{*}See his "Middle East Oil--The Latest Phase," occasional paper, Tel Aviv University, The Shiloah Institute for Near East Studies, January 1974.

one member changed its policy radically enough to bring about a crisis: the government of the United States.

The Organization of Petroleum Exporting Countries and Prices

The single most important disequilibrating event on the energy scene was the emergence of the Organization of the Petroleum Exporting Countries (OPEC) as a relatively effective cartel strong enough to revolutionize the price-determination process.* Spiraling prices became, in turn, the catalyst for a series of developments which avalanched into a state of acute crisis. OPEC was formed in 1960 with the declared objective of arresting a successive lowering of posted prices by the oil companies. The Organization's original members were Iran, Venezuela, Saudi Arabia, Kuwait, and Iraq, but since then almost all exporting countries have joined the organization. Initially, OPEC had various aims, but as it turned out, the cartel evolved into a negotiating group of producers versus companies, and finally into a body determining prices unilaterally. What started as an attempt on the part of exporters to improve their bargaining power versus the oil companies culminated in OPEC's becoming an international organization with great influence over the world oil market.

In its early years OPEC was ignored by the companies and its effectiveness was clearly minimal. Only ten years after its foundation could OPEC claim to have fulfilled its main aim of taking the power to determine

* Two sympathetic but perceptive descriptions of the structure and history of OPEC are Zuhayr Mikdashì's The Community of the Oil Exporting Countries (Oxford: Oxford University Press, 1971) and "Cooperation Among Oil Exporting Countries With Special Reference to Arab Countries: A Political Economy Analysis," International Organization, Winter 1974.

prices away from the companies. The Teheran and Tripoli agreements of 1971 marked a revolution of the system. The market has never actually turned from a "buyer's" into a "seller's" market in real economic terms. But 1971 was the year when sellers exercised their full power of negotiation with the oil companies, while the latter, having lost the backing of the U.S., were exposed as lacking the leverage to offset the effects of this reversal in power relationships.

A combination of events which occurred in 1970 facilitated this process, their effect being, however, circumstantial more than causal: mainly, the unexpectedly rapid increase in European demand, the "accidental" closure of Tapline by a Syrian bulldozer, and enforced production cutbacks on Libya which were used against vulnerable independent oil companies as a lever for higher prices. All these events served OPEC purposes by creating a tight supply situation. Consequently, demands for higher prices were made: first by Libya, followed by all the other exporters. The creation of a shortage atmosphere, as was even more glaringly obvious in 1973, was an absolute requisite for the producers' challenge to the price structure, and consequently to the patterns of interdependencies as they prevailed until then. The Tapline shutdown, lasting for eight months, denied Western Europe some 470,000 barrels per day. The Libyan cutback caused a loss of another 800,000 barrels daily of short-haul crude to European markets. Consequently, a tanker shortage due to increased transport distances was created. Although none of this affected the cost of extracting oil from the ground, prices rose as if it were scarce. In retrospect, the 1970-71 events seem a prelude to the big 1973 offensive, but that was still to come. Meanwhile there came the disastrous Teheran meeting in 1971.

In the Teheran meeting a company delegation led by British Petroleum reached an agreement with the Persian Gulf countries, which gave producers a 33 cent rise in posted prices, plus provisions for future price increases. In return, the companies were given a guarantee that there would be no further claims. Later, in a meeting in Tripoli, even better terms were concluded for Mediterranean producers. The two 1971 agreements sent oil prices skyrocketing at a rate unprecedented in the history of international trade. This watershed was to produce a crisis of global proportions.

* * *

The liberal economic order erected and dominated by the United States since World War II began to break down in the late sixties and early seventies. American involvement in Vietnam and growing economic tensions among OECD countries reduced America's ability to continue to sustain an economic order which was contrary to the nationalistic tendencies of most other nations. The energy system, which had been effectively cushioned against such effects, became at that time more exposed to governmental intervention, mostly at the production stage. The economic-strategic environment further aggravated these processes of disintegration from within. The explosion of the Arab-Israeli conflict in 1967 was paralleled by growing Western dependence on Arab oil. This created a dangerous spatial and temporal proximity of issue-areas, which the Arabs were later effectively to link as diplomatic leverage in the form of the oil weapon. Inflation in the Western world aggravated matters since it raised the price of goods imported by oil-exporting countries; furthermore, the sorry state of the international monetary system made it difficult for exporters to

find safe savings outlets. In short, the deterioration of one interdependent system, such as the monetary one, adversely affected related systems. The multilateral system had to cope with a far less hospitable world environment than before.

To be sure, the system had survived past periods of external pressure. The difference was that in the early 1970s the system also began to crumble from within. The delicate balances that characterized its internal structure were altered; as the system grew less stable, the greater became the strains that its presumed interdependence was called upon to withstand. To understand this changing balance of oil power, it is necessary to examine the evolution of the position of the oil producers and to analyze developments in the situation in which major consumer nations found themselves. The interdependence between these two groups was, after all, the heart of the system.

The basic sources from which the security of consumer relationships with the Arab oil producers depended were first, the oil companies and second, traditional Western influence. But this influence, which guided the producing states into a world economy working in favor of the industrialized countries, faded among Arab states for domestic and external reasons. Key developments were the growth of Arab nationalism and the increased influence of the Soviet Union as an alternative ally to the U.S., whose support for Israel deeply antagonized Arab leaders and masses alike. Iraq, and later Libya, best illustrate the progressive erosion of Western influence; however, even the conservative Persian Gulf

producers had to take into consideration the ascendancy of nationalist and anti-Western sentiments among their own citizenry.*

Despite the theoretical legal control over foreign enterprises within their boundaries which host countries had traditionally exercised, they were generally stymied in their efforts to improve the benefits accruing to them from oil production by the major companies. Relying on political support from their home countries, these companies had usually been decisive in setting the price and the level of output of crude oil. The de facto reversal of Iranian acts of nationalization under Mossadegh in 1951-53 was a dramatic example of consumer/corporate power. Iraq was more successful in achieving the nationalization of the Iraq Petroleum Company. But this occurred only in 1972 after a protracted struggle which began with the expropriation in 1961 of almost all the land conceded to I.P.C.; this depressed Iraqi oil revenues intended for development projects throughout the decade and substantially reduced her share of the market.

Some producers such as Iran and Iraq pressed for higher levels of output in order to increase their revenues, but the companies preferred to maximize their profits through a common price structure which avoided oversupply and exploited the cheapest production-transport areas. The industrialized countries were thus assured of cheap energy supplies to support the rapid expansion of their economies. The home countries of the major companies also benefited from substantial profits remitted by

* Documentation of these processes can be found in David Hirst's Oil and Public Opinion in the Middle East (New York: Frederick A. Praeger, 1966).

these companies. The majors managed this system quite successfully until the present decade.

The gradual erosion of Western political influence in the oil-producing countries of course reduced the security of the oil companies. This erosion was increasingly limited by the self-interest of the producer states. The host countries still needed the companies to carry out functions which only they could fulfill in actual production, refining, and marketing. New companies, including the American "independents" and the "nationals" (e.g., Italy's ENI, France's CFP and ERAP and Brazil's Petrobras), appeared on the scene, and were willing to accept terms more favorable to producers in an effort to break into the oil market. From 1963 to 1969 the share of the majors in the international market (excluding the U.S. and the communist bloc) fell from 82 percent to 77 percent; the independents' share climbed from 9 percent to 14 percent and that of the nationals increased from 9 percent to 10 percent. The refining sector experienced a similar trend.*

With large and rapidly growing supplies at their disposal during the 1950's, the major oil companies seemed to have entered into a period of active competition. For example, some of the companies responded to competition for rapidly expanding their share in the world market by discounting posted prices. Nevertheless, despite signs of weakness in market prices, the companies raised posted prices in 1957. However, the imposition of the mandatory controls on U.S. crude oil imports in 1959

*The most useful source of information about world oil is the annually published International Petroleum Encyclopedia, The Petroleum Publishing Co., Tulsa Oklahoma. The Chase Manhattan Bank's Energy Economics Division also publishes a yearly "Annual Financial Analysis of a Group of Petroleum Companies."

and the introduction of small quantities of Soviet oil to the market created a world surplus of oil that indirectly led to the formation of OPEC. Downward pressures on prices were so strong that companies had to choose between reducing posted prices or resigning themselves to seeing an increasing proportion of their profits going to the host governments in taxes. Indeed, in 1959, under pressure from the consuming governments, the oil companies reduced prices and thereby cut the revenues of the producer governments. In 1960 market pressures and prompting by the European governments brought about another lowering of posted prices. Threatened with revenue losses brought about by a 28 cent reduction in posted prices, representatives of Venezuela, Iran, Kuwait, and Saudi Arabia met in Iraq; from this meeting grew OPEC.

From 1960 on, the tax prices of crude oil were no longer under the sole control of the companies. OPEC first succeeded in preventing further cuts in posted prices, even though market prices--due to natural market forces--continued to fall throughout the decade. Indeed, the main objective of OPEC was to coordinate and verify the petroleum policies of member countries and determine the best means for safeguarding their interests, individually and collectively; and to devise ways and means of ensuring the stabilization of prices in international crude oil markets with a view to eliminating harmful and unnecessary fluctuations. In moving toward these objectives, OPEC obtained other benefits for its members, such as: the acceptance of "royalty expensing" by the companies which had had the effect of increasing the producers' reserves by roughly half the amount of royalties; the reduction and then elimination of marketing allowances for tax purposes; and the relinquishment of unexploited territory which made possible the entry of new companies and the

receipt of higher revenues and better terms from them. For the most part, OPEC's objectives were obtained without a great deal of difficulty or resistance. As Penrose puts it, "the [host governments] had a good case which the companies recognized." The major obstacle to OPEC's development, however, was not external but internal. As an embryonic cartel, OPEC's primary aim was to "stabilize" prices primarily through the joint regulation of production. From the outset, the OPEC strived to tighten supplies and increase prices. For Mikdashi, an economist close to OPEC since its establishment, production programming was essential to OPEC's effectiveness:

"The OPEC Secretariat criticized in no uncertain terms the adverse impact of free pricing on member countries. Free pricing in a period of surplus availability, it contended, would drive prices to lower levels. This would hurt low-cost producing countries (such as those of the Middle East) by depriving them of current economic rent, to the same extent it would hurt high-cost producers (such as Venezuela) by cutting down their production."^{*}

The adoption of a full-fledged cartel production-programming through quotas did not come to fruition, because it was opposed by several producing countries. Thus, the Organization's relative weakness in its first years was more the result of internal divisions, typical of cartel formations, than of strong resistance by the companies or the consuming nations.

Over the years, membership in OPEC has been expanded to include, in addition to the founding five countries, the following six countries: Qatar, Libya, Indonesia, Abu Dhabi, Algeria, and Nigeria. Although still ineffective as a producers' cartel, OPEC continued to develop the broad

^{*}Mikdashi, The Community of the Oil-Exporting Countries.

outlines of a common oil policy for its members. At its Sixteenth Conference in June 1968, OPEC drew up a set of objectives to guide the long-term development of its members' respective resources. The following concepts were emphasized:

- the principle expressed in a United Nations resolution of "the inalienable right of all countries to exercise permanent sovereignty over their natural resources";
- the desirability of direct exploitation of resources by agencies of the producing countries, rather than by outside agencies;
- the doctrine of "changing circumstances" which is said to justify countries in demanding changes in the terms of existing concession agreements;
- under the principle of changing circumstances, the right to acquire a participating ownership share for governments under the existing concession agreements;
- the right of governments to alter the financial terms of agreements where companies are receiving "excessively high net earnings";
- the right of governments to determine posted or tax reference prices;
- the accelerated relinquishment of concession territory.*

By 1968 progress was being made towards some of these goals in some OPEC countries, but the companies were not particularly worried by the Declaration. First, they could see little indication that any individual country was in a position to make sweeping gains without paying a cost which would prove unacceptable in the end. Second, the OPEC countries as a group did not appear to possess the degree of unity needed to enforce such demands. Third, only a year before, during the Six Day War, an oil

* For an official account of OPEC's history and objectives see OPEC - Past and Present by Abdul Amir Q. Kubbah (Vienna: Petro-Economic Research Centre, 1974).

sanction on the part of certain OPEC members had failed miserably, thus further straining internal cohesion. Such conditions, however, were soon to be reversed. Little more than four years later all Middle East oil-exporting countries would be in a position to attain the Declaration's objectives. The crucial question, then, is what caused the reversal?

Since its founding, OPEC had been considered a timid alliance of conservative states. As a cartel, OPEC could be no stronger than its weakest members, and its membership included--as it still does--some of the most fragile states in the world. At the time of OPEC's founding, Kuwait was still a British protectorate. Both Saudi Arabia and Iran were widely considered to be submissive clients of the United States, and all except Iraq seemed to be effectively dominated by the production consortia established on their soil. Even the relatively independent Iraqis carefully tempered their rebellious behavior and, as mentioned above, refrained from nationalizing the Iraq Petroleum Company until 1972. The constraints on Iraq were as much technical (i.e., production expertise) as political; in any case, Iraqi dependence on the West persisted until recent years. OPEC owed its survival to weakness of open opposition to it and some private support from some major companies who saw in OPEC a "decisive weapon in their fight to keep prices high in the face of aggressive competition from the 'independents,' and the nationals...and the Soviets."

In the view of both producing countries and the oil companies, OPEC achieved the modest success during the 1960s of avoiding the further erosion of oil prices. Meanwhile the Shah of Iran was pursuing a nationalist strategy to increase his country's position by a persistent

attempt to achieve a quantum jump in his oil revenues. Walter Lacqueur describes the Shah's endeavors as follows:

"Engaged in a large-scale programme of economic development and land reform with a prudently commensurate expansion of his army/police repressive base, the Shah began to press the Iranian consortium for a rapid increase in output and hence in his own tax revenues. But the interlocking ownership structure of Gulf oil meant that the partners in the Iranian consortium had no incentive to lift more oil there at the expense of growth elsewhere in the Gulf. The leading company in Iran, B.P., whose share of the output amounted to 40 percent, was already 'long' on crude and did not want more in Iran. It preferred to 'offtake' more in Kuwait, where its share was 50 percent, or in Abu Dhabi where its share was only 23.75 percent, but where its profit per barrel was also higher. Jersey (Exxon) was in a similar position. Its share of Iranian output was only 6 percent while it had 30 percent of ARAMCO liftings in Saudi Arabia, and ARAMCO rules penalized partners who did not take their full share of a production increase.

After toying with an 'economic' solution (i.e., a tax cut), the Shah tried the political highroad: he threatened retaliation unless the consortium agreed to lift much more oil at a rapid and specified rate. At the same time he skillfully diffused opposition from other Gulf producers (whose own production growth would thereby be curtailed) by propounding a new criterion, based on Iran's large population and vast developmental needs and, more to the point, by promising the political support and security assistance of a strong Iran to the weak states on the Arab side of the Gulf. In this first confrontation, the pattern of events that followed all the way to expropriation was set: the U.S. State Department strongly urged the 'majors' to be conciliatory; the French announced their willingness to help Iran if the consortium should show a fight."^{*}

Although the Shah's success in forcing increased output demonstrated the political strength of the producer states, by now OPEC members generally believed, along with the majors, that they should maximize profits per barrel, rather than total revenue through expanded total production. The oil price increases in the final quarter of 1970 indicated

^{*} A prolific commentator on Middle East issues and their relationship to superpower politics; see Walter Lacqueur's Confrontation: The Middle East War and World Politics (London: Wildwood House, 1974), and especially "Middle East Oil," (Tennessee: Vanderbilt University Press, 1970).

that, given the "sellers' market," the producers could actually increase their revenue by judicious cuts in production. This discovery finally transformed OPEC into a highly effective cartel. Thus, much of the ensuing success of the oil producers derives not from subtle diplomacy or a new master strategy, but reflects instead a growing awareness of the structure of the oil market and an absence of such awareness on the part of the U.S. Government.

OPEC was transformed from a weak coalition into a powerful cartel by a combination of favorable circumstances and judicious tactics. Paradoxically, the major source of weakness in OPEC--internal division among the member nations--was also the origin of tactical successes when directed against the companies. Thus, perhaps the most potent force available to OPEC has been that of resource nationalism as manifested in the processes of expropriation and nationalization. Although nationalist tendencies might have hindered an earlier emergence of a strong cartel, they certainly invigorated the struggle of individual member nations and thereby exacerbated divisions among the companies and the consuming nations--and ultimately spearheaded the rise of the whole cartel group.

Libya was the first OPEC member to demonstrate such keen nationalistic tactics. Like other producing nations, Libya was pushing for higher posted prices throughout the 1960s. But by the late 1960s Libya acquired two strategic advantages vis-a-vis the concessionaire companies. First, the closure of the Suez Canal in June 1967, and the sharp increase in freight rates that followed, strengthened Libya's bargaining position; her proximity to Europe gave her an increased advantage over sellers from the Persian Gulf. Second, quite a few companies operating in Libya were

American Independents. They were much more vulnerable to pressure from host countries because they lacked the global flexibility that the majors enjoyed. In particular, by 1969 Occidental Oil became the largest single producer in Libya, accounting for one-fifth of her exports in that year. For Occidental, the retention of Libyan oil was indispensable.

The structure of the oil industry had tempered tendencies toward nationalization in the past. First, the majors were fully integrated from production through marketing. Second, nationalization of the production stage would have increased rather than decreased producers' dependence on the majors for transport and marketing. Third, the potential surplus of oil prevailing in the market since the late 1940s deterred producers from trying to nationalize for fear of being faced with the need to sell at rather low prices. But with the entrance of the independents into the picture, the oil industry's Achilles heel became exposed. Mistrusted by the majors and lacking the flexibility provided by full integration and global spread, the independents offered a tempting target.

In September 1969 came the military coup in Libya. With the coup, a policy began to emerge of appeasing the radical nationalists who came to power. To quote the Church Report:

"Like the oil companies, the U.S. Embassy in Tripoli had not anticipated the Libyan coup....The U.S. Government believed that the Qaddafi regime had a firm domestic political base and that its religious fervor and strong nationalist bent were compatible with the U.S. objective of maintaining a secure American investment presence in Libya. It therefore acquiesced to the demand of the Libyan Government for the closing of Wheelus Air Force Base and U.S. military personnel were removed by the end of 1969. In 1970, when opponents of the Qaddafi regime sought to organize...the U.S. Embassy learned of the move and so informed the Libyan Government..."*

* Subcommittee on Multinational Corporations, Report on "Multinational Oil Corporations and U.S. Foreign Policy," p. 21.

Just as the Libyan challenge expressed a successful policy, the official American and corporate reaction exposed the failure of a policy. This failure combined the following general attributes of U.S. policy toward the oil producers: naiveté about the dynamics of Arab nationalism, a sense that accommodation would pacify the challengers, and total unawareness of the greater challenge as it was acquiring momentum.

When the Libyan Government became concerned in 1968 that the rate at which some companies, notably Occidental, were depleting oil reserves, it promptly imposed curbs on production. Thus, although OPEC's objective of a joint rationing of supply still was not realized, Libya became the second country (after Venezuela) to restrict output voluntarily. The squeeze was bound to be felt in Europe: Nigerian output was still limited due to the 1967-68 civil war, and Tapline, which connected Saudi Arabia with the Mediterranean, was sabotaged in 1970. Meanwhile, Libyan production had increased to the point where it was supplying about 25 percent of European demand, which was increasing at an unexpected rate. The new militant regime in Libya quickly took advantage of this opportunity by focusing pressure on Occidental. The Libyan strategy was clear: the enforced production cutbacks were used as a level to extract higher prices from the vulnerable Independents. By 1970, Libya required the companies operating within her boundaries to accept: 1) further output reductions to conserve reserves; 2) a large increase in the posted price of Libyan crude; and 3) a revised tax structure. The negotiations that ensued centered around posted prices. The significance of the negotiations derived from the realization on the part of the companies that a major Libyan posted price increase could "leap frog" into the Persian Gulf

countries. There was also the additional risk that Libya would then seek to "leap" ahead of more politically conservative Gulf producers as a further demonstration of its revolutionary vitality. The Libyan negotiations thus were of critical importance to the entire structure of international oil pricing.

As a first step, Libya demanded an additional 44 cents raise, the equivalent of a 20 percent increase in postings.* Libya's strategy was to play off the majors against the independents; specifically, Exxon against Occidental. Exxon's compromise offer was a fixed 10 cents and a variable 11 cents. Libya then demanded that Exxon make the 21 cents a fixed portion and add a variable freight element; but before reaching an agreement, Libya broke off negotiations with Exxon and concentrated on the more vulnerable Occidental. The latter company turned to Exxon for help with supplies, but Exxon rejected the request. Consequently, Occidental capitulated by agreeing to provide Libya with a fixed posted price increase of 30 cents, plus an additional 2 cents per year over the following 5 years. The tax structure was also changed by increasing the income tax rate from 50 to 58 percent. The 50/50 agreement which ARAMCO introduced in 1950 had been the pillar of the period of price and supply stability. Though the Libyan achievement was hardly the end of this era, it certainly was the beginning of the end.

The most distressing aspect of the critical Libyan episode is the complicity of the U.S. Government. The Department of State considered the

* For exact information about posted price by port, type of crude, gravity and country see OPEC, Annual Statistical Bulletin, 1972, pp. 99-111.

original Libyan demands for a 44 cent increase in the posted price reasonable and the companies' position unwarranted. As James Akins expressed it, "It was also to our interest, I thought, that the companies have a reasonable working relationship with the Libyans and with other producers. If the Libyans concluded they were being cheated, this I thought guaranteed a breakdown in relations with the companies and all sorts of subsequent problems."^{*} This State Department line of total appeasement spilled over into the oil question. Several of the major oil companies argued in favor of a tougher stand. Oil executives and oil economists alike felt that the U.S. could easily have convinced the oil companies to work out an insurance scheme whereby, if any single company was forced to shut down (as Occidental was), it would be supplied with crude oil from other sources at tax-plus-cost by other companies. At worst, the event called for a repetition of the strategy used during the Iranian crisis.^{**} But the State Department was determined to appease rather than resist the challenge. Following the Libyan agreement, the major and independent oil companies met in Washington to discuss bargaining strategies with Libya. The Church report has an account of that meeting:

^{*} Testifying before the Church Subcommittee in 1974. See Volume 5 of the Church hearings, pp. 1-28. For a fuller explanation of Mr. Akins' view of this crucial episode see "The Oil Crisis: This Time the Wolf is Here," Foreign Affairs, April 1973.

^{**} Resisting Mossadegh's nationalization of Anglo-Iranian called for a strategy which combined tough diplomatic bargaining, a boycott of Iranian oil, and even the participation of the CIA. Despite the fact that American involvement in Korea received most of the attention and energy at the time, the strategy worked then, and it could have worked again. For accounts of the Iranian crisis see Chapter 5, in Klebanoff's Middle East Oil and U.S. Foreign Policy and Chapters 15 and 16 in Leonard Mosley's Power Play (New York: Random House, 1973).

"Sir David Barran, then Chief Executive Officer of Shell, urged that 'the dangers to our own and the consumers' interests lay much more in yielding than in resisting the demands then being made upon us...our conclusion was that sooner or later we, both oil company and consumer, would have to face an avalanche of escalating demands from the producer governments and that we should at least try to stem the avalanche.' Barran, however, was 'left with the impression that the U.S. Government officials were not at all convinced by it.'"

This was a prophetic statement; but the State Department was adamant. Under-Secretary Johnson offered little hope for help from the U.S.; the U.S. had little or no influence with the Libyan government and the U.S. Government, he argued, would be "ineffective at best." That strategy of preemptive surrender had its consequences. With no prospect of U.S. Government support, companies which had not already reached a settlement with the Libyans swiftly did so. Before the year was over, virtually all the companies agreed to large increases in the posted price and a further rise in income tax rate from 50 to 55 percent.

Libya's example, following the crusade of the Shah of Iran, inspired a series of negotiations for better terms for Persian Gulf and Mediterranean producers. Walter Lacqueur points out that "from Italy to Japan the irresolution and disarray of the consumer nations were made very evident. That the Libyans went on to...raise taxes (repeatedly), and finally to expropriate BP (in 1972) and its U.S. 'Independent' partner, Hunt (in 1973) surprised no one."

The most outspoken critic of Washington's new submissive policy was M.A. Adelman. Quoting the Shah, who as late as 1972 said that,

"If the oil producing countries suffer even the slightest defeat, it would be the death-knell for OPEC, and from then on the countries would no longer have the courage to get together,"

* Report of the Subcommittee on Multinational Corporations, p. 125.

Adelman accused the State Department of blundering grievously when it took a position supporting OPEC's demands. Resistance to the OPEC demands could have shattered the nascent cartel, argued Adelman. Instead,

"The United States convened a meeting in Paris of the OECD nations on January 20 [1971]....American representatives and the oil companies assured the other governments that if they offered no resistance to higher oil prices they could at least count on five years' secure supply at stable or only slightly rising prices."*

This, concludes Adelman, was an advance capitulation. The OPEC nations received a signal to go full speed ahead because there would be no American (or other) resistance.

Meanwhile, however, there came a precarious and short-lived standstill in Teheran and Tripoli in 1971. The Teheran agreement reflected drastic shifts in the bargaining positions of companies and host countries. Although the majors joined forces to negotiate as a group, for the first time they perceived no option besides yielding fully to the producers' conditions in return for "a promise of stability" which "proved to be worthless." In the words of one high-ranking oil company official, Teheran turned the oil companies into "tax collectors for OPEC."

It should be noted that the demands imposed by OPEC were less than totally odious to the oil companies. As far as these were concerned,

* In his widely quoted 1972 article, "Is the Oil Shortage Real?" M.A. Adelman blamed James Akins for the mishandling of the Libyan and subsequent price negotiations (Foreign Policy, Winter 1972-73). Although Adelman's view was not accepted at the time by many, the Church subcommittee findings seem to vindicate him completely. Adelman's bitter criticism of James Akins produced a reply under the title, "The Oil Crisis: This Time the Wolf is Here," in Foreign Affairs, 1972. Excerpts from both positions, as well as a useful array of pertinent expert testimonies and background material are provided by the Senate's Committee on Interior and Insular Affairs in its Oil and Gas Imports Issues, 93rd Cong., 1st Session, 1973.

participation was a much greater concern, often traded off against price concessions. While profits could be protected or even enhanced by passing the burden of higher prices on to consumers, inflated rates made it economically feasible to develop Alaskan and North Sea crude oil reserves. American independent companies pressed for higher prices for imported oil to keep their domestic production competitive; this might help to explain the State Department's lenient attitude toward OPEC's demands.

Needless to say, the oil industry, even when negotiating on behalf of their home governments with their tacit approval, was in a totally different position from OPEC. OPEC, after all, was an international organization representing sovereign states; the oil companies, on the other hand, were commercial enterprises, basically following their own self-interest. Furthermore, by virtue of their buffer position, the companies could spread the increased costs and pass them onto consumers. Seen in this light, the very confrontation between oil firms on one hand and political entities on the other was loaded against the companies, and ultimately against the consuming countries.* The acceptance by the latter

* It was fashionable at one time to see the emergence of multinational firms with great awe as entities which could successfully confront nation-states on even terms. See, for example, Raymond Vernon's Sovereignty at Bay (New York: Basic Books, 1971). Thus, it was shown that multinationals have larger sales volumes than the GNP of all but fifteen or twenty of the largest nations. Such a comparison, however, was based on a wrong analogy. While sales is indeed a measure of corporate strength and GNP of national economic strength, it is far from clear that the two could be related in any meaningful sense. But even if they were, it should be observed that national power is developed from an economic base but cannot be equated with it. It all boils down to the question of how many troops Exxon has. Judging from the frequent rebukes to this most powerful of all multinationals, from such pitiful political entities as Abu Dhabi, one must conclude that in the MNC-host government dialogue, the latter has nothing to worry about. Interestingly, where MNC's do enjoy prominence is vis-a-vis their home governments. So long as the U.S. backed the majors, they had all the troops needed. The removal of that backing at a time when the major's investments and involvement reached its peak, left the oil MNC's all but powerless.

of this situation was a serious blunder, for which the United States bears the main responsibility.

At the same time it cannot be denied that staunch opposition to OPEC's conditions in Teheran might have damaged the companies' profits as well as their relations with host governments. Thus, Teheran established the OPEC member governments as potentially hostile powers with which companies would have to reckon in the future in order to continue their operations. A growing record of successes reinforced the producers' confidence in their ability to dictate oil prices, production levels, and, eventually, even political policies to their most dependent customers.

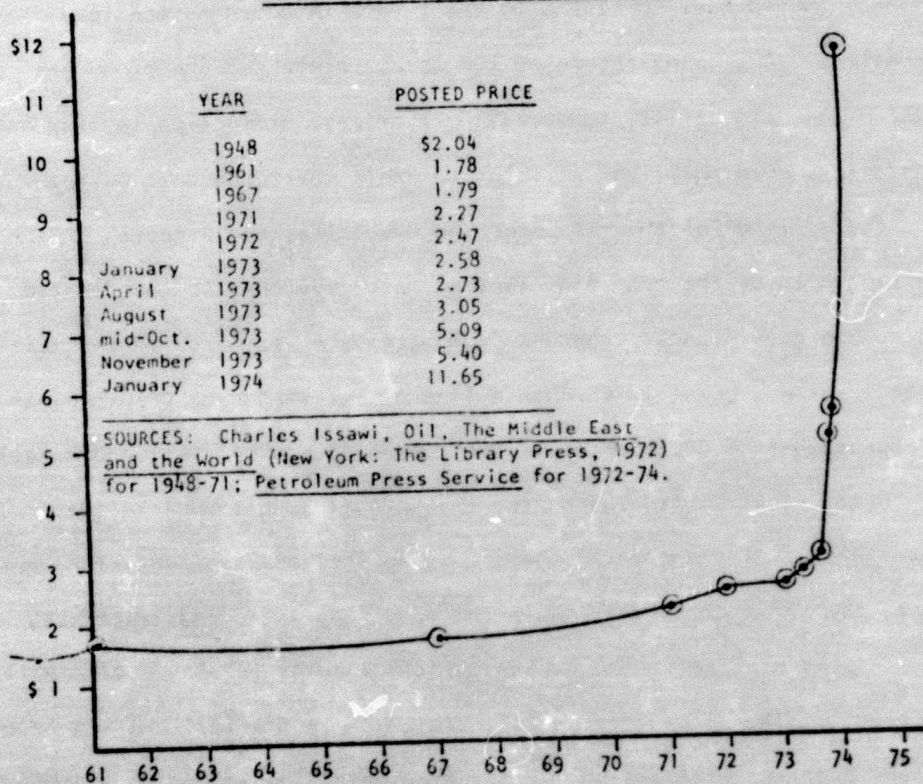
The attitude of the oil importing countries, as reflected in the position held by the companies (but in fact developed in coordination with their home governments), changed from attempting to preserve the multilateral system, possibly through a line of resistance to OPEC's demands, to appeasement of OPEC members. The two attitudes differ fundamentally. The former risks confrontation for the sake of long-term stability. The latter appears incrementally cheaper by deferring a confrontation, but can be even more destabilizing in the long run, as demands escalate.

This is precisely what happened following the Teheran and Tripoli agreements. The agreements, which were to run until 1976, were greeted in many quarters with a sigh of relief as heralding a long period of stability. It is now known that the opposite occurred, the usual fruit of appeasement. The adoption of the line of appeasement was in fact a signal that the Western commitment to the stable multilateral system had ended. Thus, regardless of whether or not the buyers' market was replaced by a sellers' market, a highly significant change had occurred in the

behaviour of the companies and home governments alike. Firm resistance to the OPEC challenge by a conservative defense of the status quo was superseded by a position designed to accommodate the revolutionary force that OPEC represented.

Diagram 3.1

PRICE HISTORY FOR IRANIAN LIGHT CRUDE



Within weeks after the agreements, the OPEC countries began renegeing on their commitments and imposing on the consuming countries a series of endless "supplementary agreements." Each was presented as a "last demand"; the companies acquiesced and passed the costs along. Prices

have been spiraling ever since, as is amply evident by the curve depicted in Diagram 3.1.

With OPEC price setting power well established, many producers turned their attention to wider goals in 1972, especially greater participation in the oil industry--extraction, refining, transportation and marketing. OPEC had stated as early as 1968 that the ultimate goal of members was total control over production. In 1972, Sheik Yamani, the Saudi oil minister, negotiated 24 percent ownership for Saudi Arabia of ARAMCO, the consortium of American companies that operates the Saudi oil industry. This share was supposed to rise to 51 percent by 1982. Qatar, Abu Dhabi, and Kuwait achieved similar agreements with the companies they host. (The Kuwaiti Assembly refused to ratify their agreements and demanded new negotiations.) In early in 1973, Iran took the major step of vesting control of all production with its national petroleum corporation, leaving a managing and contracting role to the companies, which were, however, granted a long-term guarantee of a prior option on supplies.

While "price stability" was a common denominator of mutual interest for all oil exporters, the support mustered in OPEC for participation in ownership and operation of the companies was less uniform. Each member had his own ideas of the proper role for national governments or national corporations to play. Also, by 1972 Iran and Saudi Arabia were competing for policy leadership in OPEC. Iran favored directing efforts toward further price increases (and in December 1973 succeeded in forcing price increases against Saudi Arabian opposition), whereas Saudi Arabia was most interested in increasing its "downstream participation," i.e., assuming a role in the processing and distribution of oil as well as in pumping crude.

Such participation is double-edged in that it creates "hostage investments" within consumer countries, thus increasing the possible costs to producers of applying the sanction of expropriation. Saudi Arabian interest in downstream participation has apparently flagged for the time being. In fact, only Iran, the challenger to Saudi Arabian leadership in OPEC, has made much progress in this direction, by concluding a minor downstream participation agreement at the beginning of 1974.

Numerous local participation agreements took place in 1972. Producers noticed that the share of the oil which they sold directly yielded higher revenues than could be garnered through taxes or royalties on the production of foreign oil companies. Besides the attraction of gaining revenues formerly lost to corporate profits, the interest of producers in participation in the oil industry reflected both the desire to gain control over production and serious concern about long-term economic prospects, specifically the need for alternatives to crude oil production in a future when oil reserves are depleted and production slacks off. Participation seems to offer economically underdeveloped (even if rich) countries a way to develop a variety of domestic industries, drawing on easy access to crude oil as both a cheap energy source and as a raw material for non-energy products.

In addition to price and participation agreements, a third area where producers could have influenced the oil market was the level of output. Long-run economic considerations have encouraged several states to conserve oil resources, typically by production ceilings. For example, Libyan output dropped from its 1970 peak of 160 million metric tons to 107 million metric tons in 1972. This was due, not only to limits on

production, but also to the arbitrarily high price of Libyan crude. Using high prices to supplement production ceilings as a means to conserve on reserves can reap the financial benefits of limited output. In April 1972, Kuwait also imposed a production ceiling (3 million barrels daily) in response to rumors that its estimated reserves were far less than had been previously believed.

Price hikes, participation agreements, and supply conservation all served the economic interests of producers and operated as "power increasing strategies." They have strengthened the control of host countries over actual production operations, tightened the squeeze between supply and demand in the international oil market, and delivered tremendous surplus revenues into the hands of major exporting countries. This latter development has in turn reinforced the ability of Arab producers to interfere with the oil supplied to the industrialized states by giving them sufficient accumulated revenues to live on in case of need. Excess reserves posed a powerful weapon in themselves. All in all, the bargaining position of major oil exporting states has been enormously strengthened since the U.S. seemed to have abandoned its commitment to a multilateral system dedicated to secure stable supply at adequate prices.

Interdependence Pattern:

Time was on the producers' side. Western consumption trends and import policies increased these nations' dependence on Middle East oil, and thus heightened their vulnerability to oil power. The past decade has seen dramatic increases in the reliance of industrialized economies on oil; by 1972 they accounted for 70 percent of world petroleum consumption. This growth in demand derived from both the overall growth of energy consumption

necessitated by expanding world production and from a structural shift in world energy consumption toward oil from alternative sources. This latter effect had two causes. The first was the relatively low cost of oil (current high prices should help counter this reason for increased reliance on oil). Secondly, petroleum intensive industries such as transportation, plastics, and other materials, have grown faster than industry in general. Total European energy consumption grew between 1960 and 1970 at 5.5 percent annually while gross product was increasing by a yearly rate of 4.8 percent. Oil consumption grew more than twice as fast--by 12 percent annually, so that oil's share of European energy demand climbed from 33 percent to 60 percent over the decade. Meanwhile, the portion of European oil demand supplied from local resources dropped from 7.9 percent to 3.7 percent. The share of oil imported from the Middle East remained fairly steady at about 84 percent. Japan's dramatic growth in productive capacity (11 percent p.a. from 1960 to 1970) was accompanied by a slightly higher growth in energy consumption (12 percent p.a.). This was far exceeded by a 20 percent average annual growth in oil consumption, raising oil's share in Japanese energy from 36 percent in 1960 to 72 percent in 1970. Domestic Japanese oil production is negligible. That imported from the Middle East rose from 80 percent in 1960 to 85 percent a decade later. The dependence of North America (for which American demand is the dominant component) on Arab oil was both belated and much smoother than that of Europe and Japan.** While

* OECD. Oil: The Present Situation and Future Prospects, Paris, 1973.

** The trend of growing dependence on oil as an energy resource and on OPEC as a source of supply combined to form what RAND's Horst Mendershausen called "the march into the energy ambush." See his "The U.S. and Western Europe in an Energy Ambush," WN-8598-ARPA, January 1974.

North American oil use from 1960 to 1970 increased in absolute size (at 4.5 percent annually compared to 4.1 percent average GNP growth), oil's share in total energy decreased from 45 percent to 43 percent due to the growth in consumption of natural gas. The share of total North American oil consumption provided by domestic production decreased only slightly, from 80.2 percent in 1960 to 78.0 percent in 1970. However, in 1970 American oil production dropped in absolute terms while demand for oil was accelerating.

The resultant tension between supply and demand led the United States to compete with Europe and Japan for the growing petroleum output of the Middle East.* Whereas the oil fields of North America and Europe were operating near capacity (with the notable exception of American Naval Reserves), the Middle East offered vast potential for expanded output. Since 62 percent of the world's proven reserves (550 billion barrels) lie in the Middle East, with 29 percent in Saudi Arabia alone, it was natural, from a strict commercial sense, that American as well as European industry should turn to the Middle East, particularly Saudi Arabia, as the producer of last resort. In 1965, 20.9 percent of American oil imports originated in the Middle East. In 1971, the figure stood at only 22.6 percent. By

*Secretary Kissinger, like other spokesmen concerned more with the political repercussions of a certain analysis than with its connection to reality, advanced the facile thesis that at the root of the current oil crisis lies Westerners' insatiable, wasteful, and growing demand for energy. The truth, of course, is different. General energy consumption in the critical years prior to the crisis in North America, Western Europe and Japan has actually dropped significantly. The average annual rate of increase in total energy consumption between 1965 and 1970 was 5.1 percent for North America, 5.3 percent for Western Europe, and a staggering 13.7 percent for Japan. These rates declined between 1970 and 1972 to 3.7, 3.1, and a meager 1.8, respectively. The problem, in other words, had little to do with demand, but with supply and suppliers.

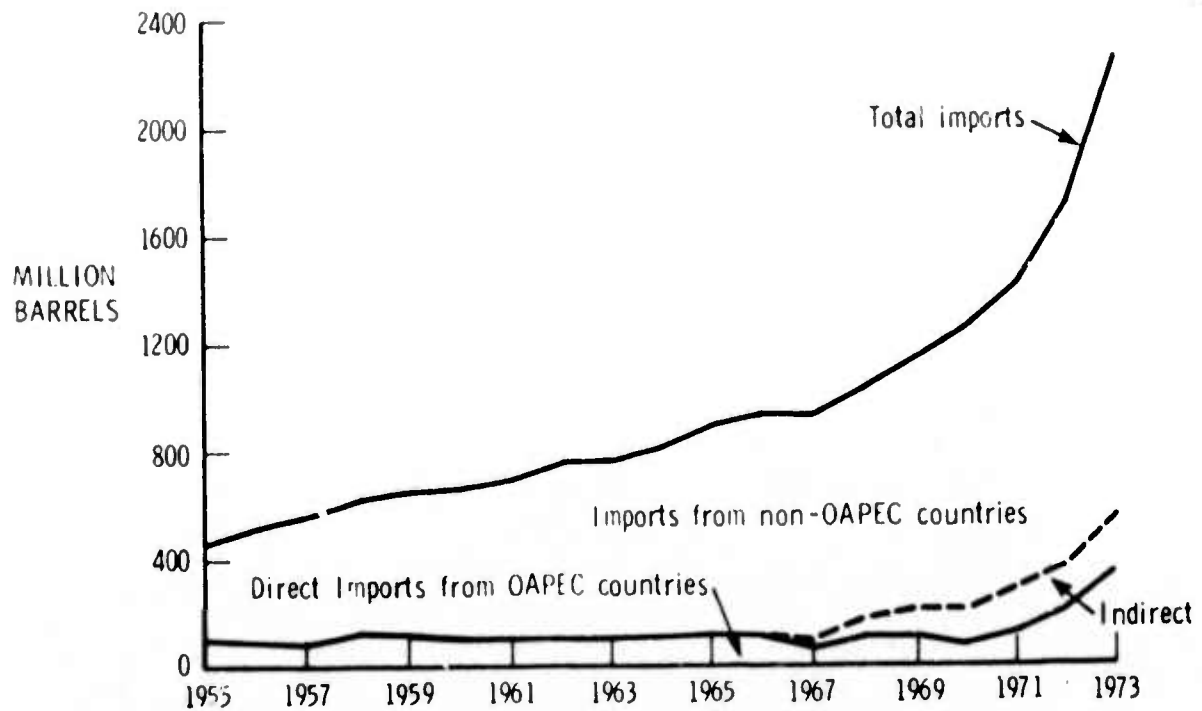
1973, however, the United States was relying on the Middle East for 42 percent of its imported oil. Between July and August 1973 alone, American crude oil imports from Arab states more than doubled (from 625,000 to 1,285,000 barrels daily). Nevertheless, Arab oil imports represented only 3 percent of total American energy consumption.

Europe and Japan were far more vulnerable. The degree of European dependence on Arab oil as a percentage of total energy consumption from all sources varied from 24 percent for Sweden to 72 percent for Switzerland (other European: France, 60.7 percent; Italy, 53.9 percent; Netherlands, 43.9 percent; Belgium, 39.1 percent; Germany, 35 percent; United Kingdom, 31.7 percent). Almost one third of Japan's total energy supply came from the Middle East. Thus, any significant disruption of the flow of Arab oil to Europe and Japan would result in severe impoverishment.

The oil import quota system had committed the United States to a high degree of energy dependence. Nevertheless, the growth of imports in recent years led to increasing American dependence on foreign energy sources, and Middle East oil in particular. If trends to mid-1973 were to continue unchecked, the 1980's would have found the United States tremendously dependent on Arab oil. Prior to the Arab oil embargo, OECD projected that at least 43 percent of American oil consumed would be imported by 1975. As suggested earlier, most of the increases beyond present levels presumably would have been drawn from the Middle East.

Diagram 3.2

TOTAL PETROLEUM IMPORTS BY SOURCE, OAPEC AND NON-OAPEC, 1955-1973

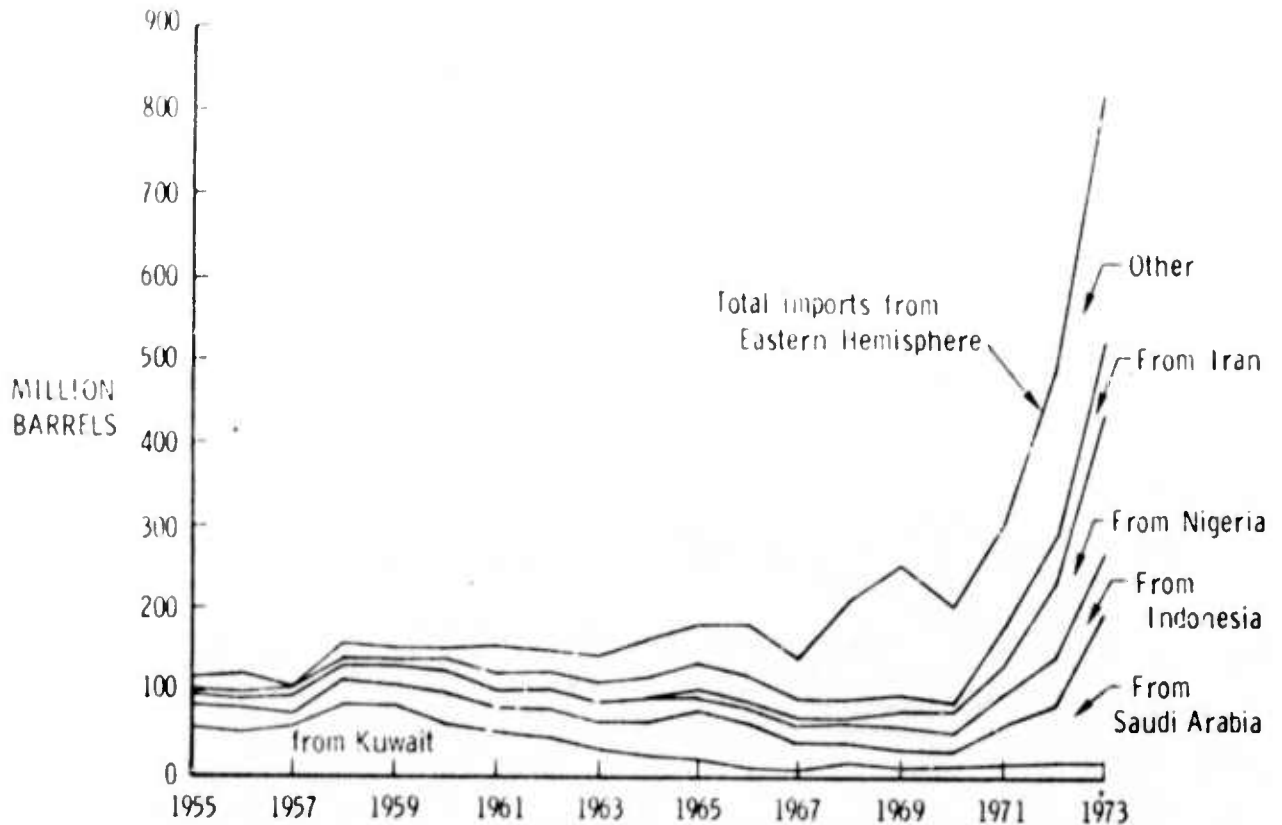


Source: Mendershausen, "The U.S. and Western Europe in an Energy Ambush."

Measuring American import-dependence as the share of imports in total oil consumption, it grew from 23.8 percent in 1970, to 26.5 in 1971, 29.6 in 1972, and in 1973--the year the crisis exploded--imports comprised 36.9 percent of U.S. oil requirements. Evidently, the security considerations which underlay the oil imports quota program were held sufficiently serious to warrant a prevention of this fast drift to high-import dependence. More alarming yet was that as the U.S. was becoming a major importer, its marginal supplies were no longer Western Hemispheric sources such as Venezuela and Canada, but the Eastern Hemisphere (see Diagram 3.3) and from the group of Arab oil exporting countries (OAPEC), as indicated in Diagram 3.2.

Diagram 3.3

PETROLEUM IMPORTS FROM THE EASTERN HEMISPHERE
BY SOURCE, 1955-1973



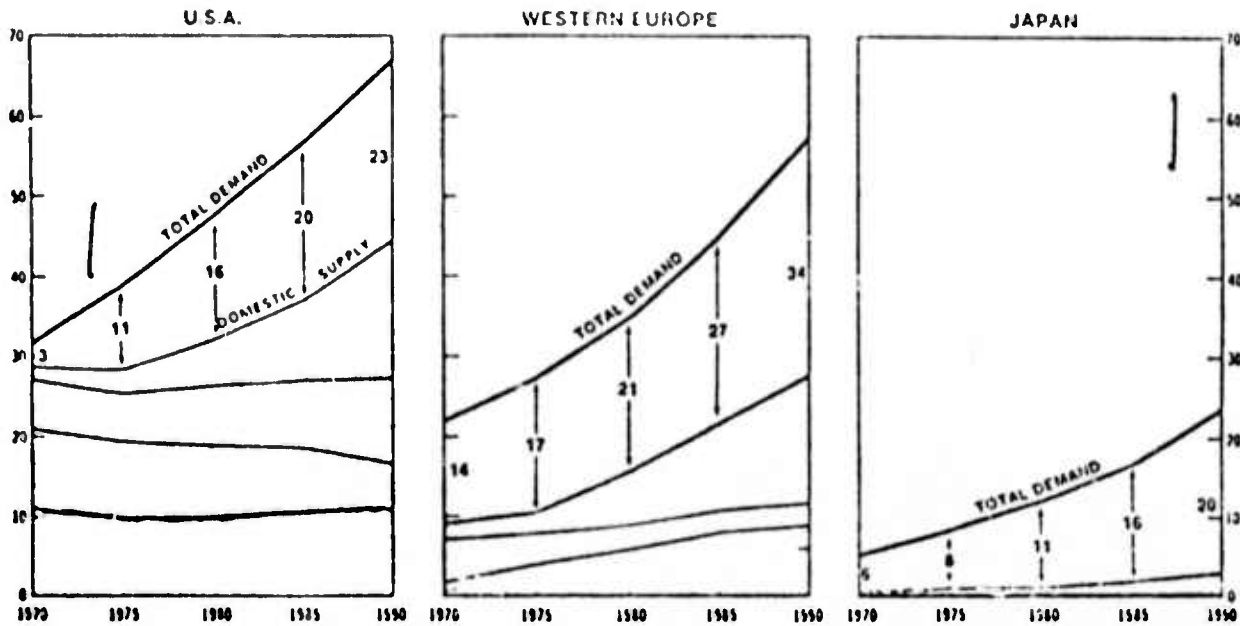
Source: Mendershausen, "The U.S. and Western Europe in an Energy Ambush."

Moreover, pre-embargo projections of future import levels (as shown in Diagram 3.4) all agreed on the continuation of the trend of growing import-dependence for Japan, Western Europe, and the U.S.--particularly for the U.S. The perception of such an "energy gap" became part of the general mood in 1972-73, and the expectation of a troublesome long-term future was quickly "telescoped" into a self-fulfilling short-run process.

Diagram 3.4*

PROJECTED ENERGY DEMAND VS. DOMESTIC SUPPLY IN
JAPAN, WESTERN EUROPE, AND THE U.S.A.

(Million Barrels Daily Crude Oil Equivalent)



Source: Shell Oil Company, "The National Energy Outlook."

Thus, on the eve of the 1972 oil supply and price crisis, as Table 3.1 indicates, the U.S., Japan and Western Europe all found themselves significantly more import-dependent than ever before.

* Diagram 3.4, a rather pessimistic view of future import needs, first appeared in a Shell document in March 1973. It was reproduced again in July 1974 in another Shell publication. Apparently, Shell's economists do not believe that the quadrupling of prices would have any effect on supply and demand. Rather than assuming that these gentlemen are unaware of price elasticities, it seems more probable that these projections are another example of the "numbers game" in which the manipulation of data is part and parcel of the politics of oil.

Table 3.1

IMPORT-DEPENDENCE IN 1972
(as percentage of import requirements)

	JAPAN	WESTERN EUROPE	CANADA	UNITED STATES
Kuwait	12.5%	13.0%	0.4%	1.0%
Abu Dhabi	5.7	2.6	5.4	2.1
Saudi Arabia	22.4	24.8	10.6	6.3
Libya	0.1	13.1	5.2	5.3
Algeria	--	4.8	0.1	2.1
Iraq	0.6	6.0	2.2	--
Iran	35.3	11.4	13.4	4.2
OAPEL	45.4	68.8	25.1	17.9
Middle East	80.7	80.2	38.5	22.1

In 1972, 81 percent of Japan's oil came from the Middle East, 80 percent of Western Europe's, and 22 percent of American Imports. Never has Western vulnerability reached such levels before. Theoretically, greater import-dependence could be offset if there were an equal or greater increase in export-dependence. That is, for the system to remain in equilibrium following this increase in importers' dependence, a similar increase should have taken place for exporters; i.e., their reliance on their revenues should have correspondingly increased. But, in fact, the contrary happened. The increase in prices following the Teheran and Tripoli agreements had the effect of reducing exporters' dependence on their revenues in direct proportion to the price hikes. Clearly, the higher the posted prices, the higher the government take. To the extent that the producers' dependence on oil revenues is determined by their absorptive capacity for such revenues, then the trends that could be extrapolated

following the 1971 revolution in posted prices showed a decrease in producers' dependence; in practical terms this meant an ever-increasing reluctance by producers to meet Western demands for their exports. Diagrams 3.5 and 3.6 show such pre-crisis extrapolations. Both price assumptions, one high and one low, show that the second half of the decade would have created maximum tensions between supply and unsatisfied demand, as revenue surpluses began accumulating in OPEC countries.

Diagram 3.5

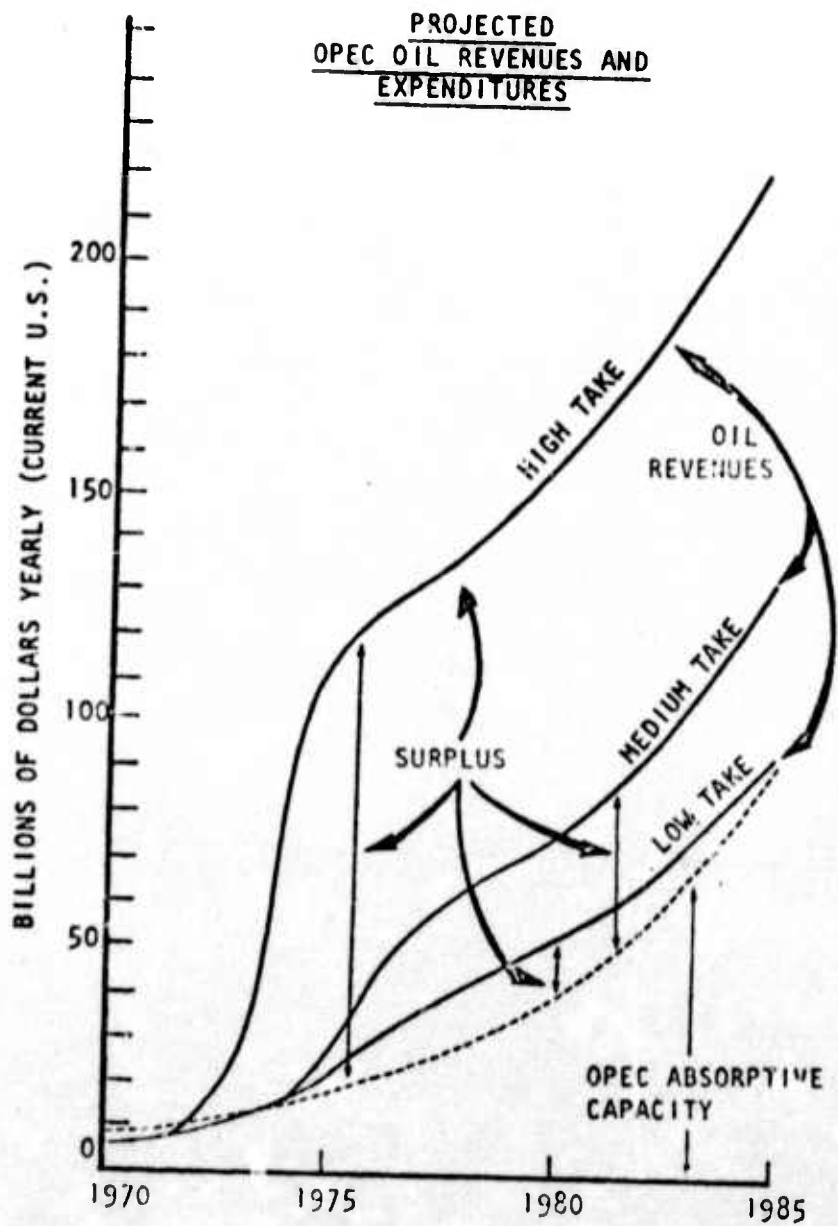
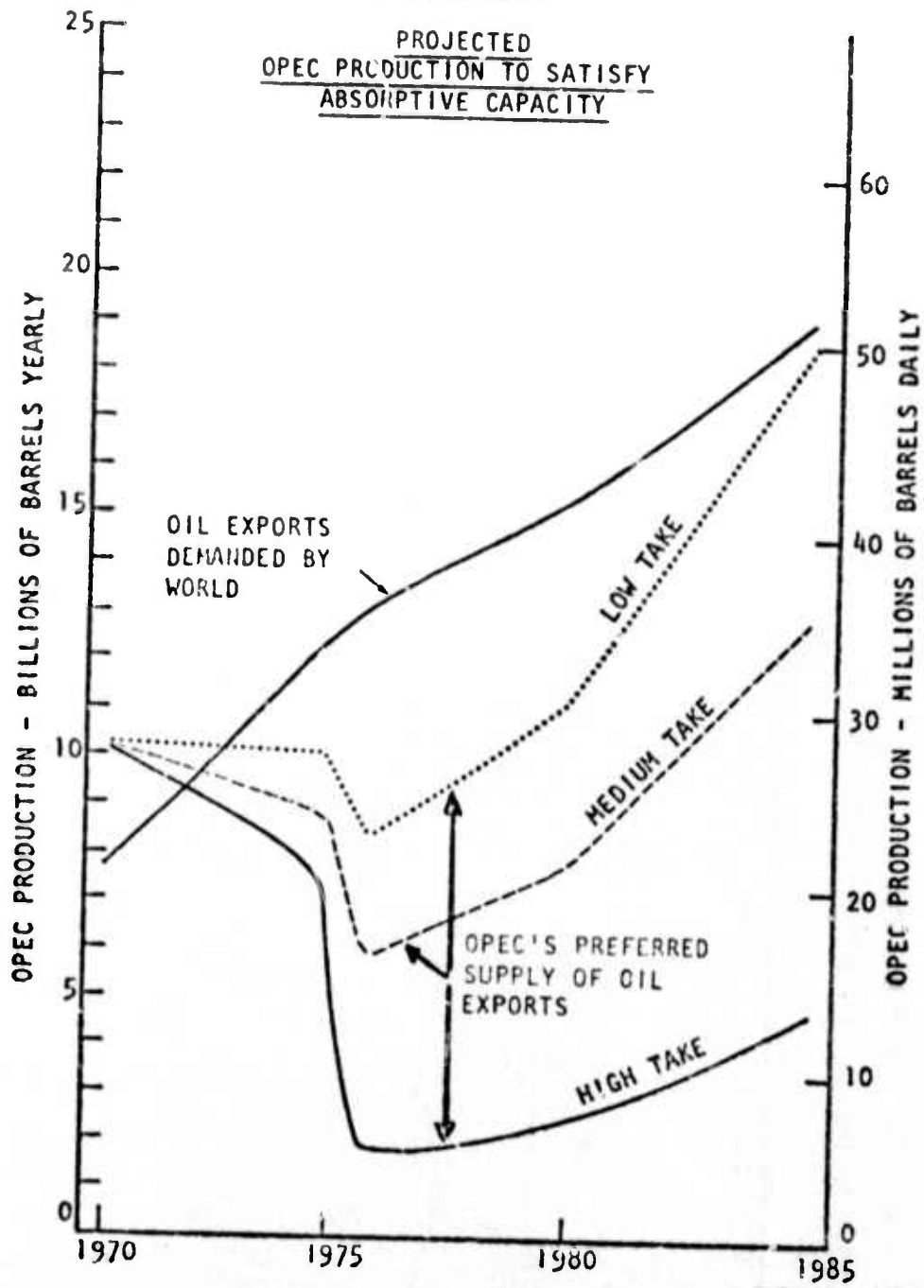


Diagram 3.6



Thus, much of the disequilibrium experienced by the world energy system was the result of an American movement away from a national policy of restrained import-dependence to one of increasing dependence adding a significant new burden to a multilateral system which had been designed to handle only Japanese and European dependencies. But just as the consumers were immersing themselves more and more in transnational interdependence, the producers were gradually lessening theirs. The oil exporting countries were responsive to Western demand for their non-renewable resources only so long as they did not exceed their absorptive capacity for oil revenues. The condition of high absorptive capacity, shared by all exporters throughout the 1950's and 1960's, was largely a product of the relatively low prevailing government takes. Once these began escalating, beginning with the 1971 agreements, absorptive capacities were bound to be lowered with consequent restrictions of output in countries whose low absorptive capacity passed a certain threshold.* Between 1970 and 1972 alone, the return per barrel of export for Kuwait jumped by 41 percent; for Saudi Arabia by 39 percent; for Iran by 37 percent; for Libya by 45 percent; and for Algeria--a high 52 percent. Substantial increases of that kind over such a short span of time, magnified by higher production levels, led to a virtual doubling of the oil producers' income from oil (see Table 3.2) and a subsequent decline in export dependence.

* Rigorous indices of the oil-exporting countries' absorptive capacity for either oil revenues or goods and services are lacking. The functional relationship between revenues and absorptive capacity hypothesized above seems valid nonetheless.

Table 3.2
PAYMENTS TO MAJOR OIL EXPORTERS 1955-1972
 (IN MILLION DOLLARS)

Year	Kuwait	Saudi Arabia	Iran	Iraq	Abu Dhabi	Qatar	Others	Total Middle East	Libya	Total ME & Lybia	Algeria	Nigeria	Venezuela
1955	307.0	287.8	90.5	206.5		34.1	9.0	934.9		934.9			536
1960	465.2	355.2	285.3	266.3		54.0	13.0	1,439.0		1,439.0			877
1961	464.3	400.2	371.2	265.5		51.3	13.0	1,497.5	3.2	1,500.7			938
1962	526.3	451.1	333.8	266.6	2.8	55.8	13.0	1,649.4	38.5	1,687.9			1,071
1963	556.7	502.1	398.1	325.1	6.4	59.5	13.0	1,860.9	108.8	1,969.7			1,106
1964	655.0	561.0	469.7	353.1	12.4	65.5	14.3	2,131.0	197.4	2,328.4			1,122
1965	671.1	655.2	522.4	374.9	33.2	68.5	16.4	2,341.7	371.0	2,712.7			1,135
1966	707.2	776.9	593.4	394.2	99.8	92.1	18.5	2,682.1	476.0	3,158.1			1,112
1967	717.6	852.1	736.7	361.2	105.0	101.8	23.6	2,898.0	631.0	3,529.0	191.1		1,254
1968	765.6	965.5	817.1	476.2	153.2	109.5	83.1	3,370.2	952.0	4,322.2	261.8		1,253
1969	812.2	1,008.0	937.8	483.5	191.1	115.2	118.2	3,666.0	1,132.0	4,798.0	298.8		1,289
1970	895.1	1,199.7	1,136.3	521.2	233.1	122.0	150.2	4,257.6	1,294.8	5,552.4	325.0	411.0	1,406
1971	1,399.8	2,148.9	1,944.2	840.0	430.7	197.8	192.6	7,154.0	1,766.0	8,920.0	350.0	915.0	1,702
1972	1,656.8	3,106.9	2,379.8	575.0	550.9	254.8	222.6	8,746.8	1,598.0	10,344.8	700.0	1,174.4	1,948
Total 1961-1972	8,837.1	11,776.3	9,935.5	5,049.4	1,815.8	1,186.7	852.5	39,108.3	8,527.0	47,635.3			13,327

SOURCE: Petroleum Information Foundation (New York), Background Information, Paper No. 16, October 1973.

It is, therefore, the price spiral that began in 1971 which drove the Arab states toward output restrictions, whereas before the price changed they were vying with each other as to who would produce more. One after another, these countries curtailed their production. Libya and Venezuela were first. Kuwait and then Saudi Arabia followed suit. Production restrictions had had a self-reinforcing effect--the less supply there was the higher the price and revenues and an even lesser need for production at as high a level as beforehand. The increase in price, however, had a secondary and no less disruptive effect on the system of international trade in oil. The delicate balance of dependencies between importing countries and exporting countries was radically altered by making at least some of the latter decreasingly dependent on their oil revenues,

and, more importantly, by making more consuming countries increasingly dependent on a smaller number of oil exporting countries. In other words, an erosion of the balance took place on both the demand and supply sides.

By a curious geopolitical accident, while most of the Arab oil exporters are desert countries, all the major non-Arab exporters, Iran, Nigeria, Venezuela and Indonesia are highly populated countries with an abundance of agricultural and other natural resources which could find good use for all their oil income, either for current needs or for the development projects against the day when they have exhausted their oil. Indeed, as shown in Table 3.3, the OPEC group was far from being a monolithic bloc in any sense. To the extent that the reserves-to-population ratio is related to a nation's absorptive capacity, then Kuwait, the U.A.E., Libya, and most importantly--Saudi Arabia, form a separate group unto themselves.

Table 3.3

THE OPEC GROUP AND THEIR ABSORPTIVE CAPACITY

		1974 PROVED RESERVES ¹	1972 POPU- LATION ²	RESERVES POP.	
MIDDLE EAST	I	KUWAIT	72.75	1.0	72.75
		ABU DHABI	21.50	.5	43.00
		SAUDI ARABIA	140.75	8.4	16.76
		LIBYA	25.50	2.1	12.14
	II	ALGERIA	7.64	15.7	0.49
		IRAQ	31.50	10.1	3.12
	III	IRAN	60.00	30.8	1.95
OTHERS		VENEZUELA	14.00	11.5	1.22
		NIGERIA	20.00	59.4	0.34
		INDONESIA	10.50	132.4	0.08

(1) IN 10⁹ BARRELS
(2) IN MILLIONS

Indeed, correlates of a nation's absorptive capacity, such as population, GNP, saving and investment factors, have been used in the past to distinguish among the OPEC countries. It is common, then, to find the

Organization's membership divided into three groups. Group I (Saudi Arabia, Kuwait, Libya, Qatar, United Arab Emirates); Group II (Iran, Algeria, Iraq, Ecuador, Venezuela); and Group III (Indonesia, Nigeria). Group III countries include the largest bloc of population--198.4 million in 1973. Group II countries have a population of 69 million and Group I, comprising those countries with the largest potential financial surpluses, accounts for only 11.5 million people.

Yet, while the members of Group I were least dependent on their exports, it was to them that the United States turned as it was planning its future imports. Specifically, the U.S. entertained the hope that Saudi Arabia would increase its production to 20 million barrels per day by 1980. It was a vain hope. Between 1970 and 1972, Saudi Arabia's international financial reserves quadrupled (see Table 3.4).

Table 3.4

GROSS HOLDINGS OF INTERNATIONAL RESERVES^a
1967-1973 (U.S. Million Dollars)

	<u>1967</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>	<u>1971</u>	<u>1972</u>	<u>1973</u>	<u>1974</u>
IRAN	324	294	310	208	621	960	1,237	6,211
IRAQ	368	453	476	462	600	782	1,553	3,035
KUWAIT	1,754	1,949	2,316	2,607	3,335	4,342	6,000 ^b	8,000 ^b
LIBYA	385	539	918	1,590	2,666	2,665	2,127	3,827
SAUDI ARABIA	<u>762</u>	<u>662</u>	<u>607</u>	<u>662</u>	<u>1,444</u>	<u>2,500</u>	<u>3,876</u>	<u>10,651</u>
TOTAL	3,593	3,893	4,627	5,529	8,686	10,249	14,793	31,724
VENEZUELA	<u>872</u>	<u>922</u>	<u>933</u>	<u>1,021</u>	<u>1,522</u>	<u>1,732</u>	<u>2,420</u>	<u>4,830</u>
TOTAL	4,465	4,815	5,560	6,550	10,208	11,981	17,213	36,554

a) INTERNATIONAL RESERVE = GOLD + RESERVES POSITIONS IN IMF & SDR'S & FOREIGN EXCHANGE

b) ESTIMATE

SOURCE: IMF, INTERNATIONAL FINANCIAL STATISTICS

Having seen its savings depreciating in dollar devaluations and lacking adequate investment channels, Saudi Arabia was not going to increase production at such rates, and it was quite imprudent on the part of the U.S. to expect Saudi Arabia to respond favorably and expand production.

Furthermore, the ability of some producers to forfeit short-term profit maximization policies was enhanced by the flow of revenues following the price increases. Table 3.4 shows a marked improvement in gross holding of international reserves by selected OPEC countries. Between 1971 and 1973 all the countries experienced an enormous accumulation of foreign exchange, a process which only strengthened the pull toward greater conservation of resources.

An appreciation of the full effect of the drastic shift in the export dependence patterns in the oil producing countries can be gained by comparing the 1970 ratio of import expenditures to export revenues with that of 1973 (see Table 3.5). Almost all oil-exporting countries (with the exception of Libya, which froze production, and Algeria) experienced a significant decline in their export-dependence. This came on top of the fact that of all exporters, Saudi Arabia had enjoyed by far the best import/export ratio with Kuwait next. It would be no coincidence that in 1973 these two countries would be the first to restrict production and do so most jealously when the political environment allowed.

By 1973, in sum, the energy system reached the climax of an acute disequilibrium caused by an increasing Western dependence on Arab oil more than countered by a great reduction in export dependence on the part of the producers. These processes, in turn, resulted from the emergence of a moderately effective producers' cartel--tacitly tolerated by the

Table 3.5

IMPORT COVERAGE COEFFICIENTS, 1970 AND 1973
(IMPORTS CIF DIVIDED BY EXPORTS FOB)

	1970	1973
ALGERIA	1.246	1.297
INDONESIA	0.863	0.731
IRAN	0.632	0.487
IRAQ	0.464	0.392
KUWAIT	0.378	0.275
LIBYA	0.234	0.422
NIGERIA	0.854	0.550
SAUDI ARABIA	0.293	0.231
UNITED ARAB EMIRATES	0.617	0.530
VENEZUELA	0.757	0.590

SOURCE: IMF, International Financial Statistics.

U.S.--which freed the producers from their previous excessive extreme export-dependence by linking prices and restricting production. Restrictions of supply, whether for ostensible political reasons, as a cartel policy, or because of national economic priorities, were to become the first direct manifestations of the newly unbalanced energy system.

Chapter IV

UNSTABLE INTERDEPENDENCE AND THE INSECURITY OF SUPPLY

While teaching at the University of Virginia, James R. Schlesinger wrote that the subject of economic warfare might be much discussed but is little understood. As a political economist he was all too aware of the paradox of modern economic warfare; namely, that while strategic possibilities are inherent in trade, economic warfare remains a weaker weapon than is generally realized, principally because "the use of the weapon blunts its cutting edge."^{*} The use of international trade in a direct coercive fashion, then, appears to be a short-run affair at best. The question that remains is whether the Arabs' oil warfare has succeeded over the long run.

The numerous discussions of the Arab deployment of their oil weapon seem to confirm Professor Schlesinger's observation about the pervasive lack of comprehension of the subtle mechanics of economic warfare in general, and oil warfare in particular. In the first place, following its third and relatively more successful use, its potency is often exaggerated.^{**} Secondly, in their generalizations and projections, most commentators seem to perceive a future which is very much a continuation of the

^{*} James R. Schlesinger, The Political Economy of National Security (New York: Praeger, 1960).

^{**} This view is obviously mostly characteristic of popular and periodic journalism. But the sentiment ascribing awesome economic power to the Arabs can also be seen coming from such respectable sources as London's International Institute of Strategic Studies. The Institute's Strategic Survey 1973 begins its evaluation of the oil weapon with the flat assertion that "an event that also marked 1973 was the Arab's successful use of the 'oil weapon' during and after the Middle East war." (P. 30.)

present or the recent past. That is, rather than looking for the possibility of a dialectical character in historical forces where challenges encounter response, or seeing that exposed vulnerabilities could give way to improved defenses, these observers exhibit a natural preference for simple extrapolation, which inevitably results in restricted--or tunnel--vision. Nothing would probably be further from reality. After all, to extrapolate from a situation of crisis is a contradiction in terms. Crises are episodes of sudden change, acute disequilibrium, and a general state of abnormality.* Unless one subscribes to the pessimistic view that crises will be gradually routinized and that the relevant systems would remain for long in a state of imbalance, then to project automatic recurrence of the 1973-74 oil crisis, specifically oil disruptions and embargoes, might involve a serious non sequitur.

It is important, however, to note that the forces which will shape future outcomes are the results of past interactions. Therefore, a post-mortem analysis of the Arab oil embargo is in order not because it is likely to be reinstated in the same mode; quite the contrary, future

* Interestingly, although the literature on crisis as a situational environment or as a political post-war phenomenon is enormous, (see, for example, Charles Hermann, International Crises [New York: Free Press, 1973] or Alastair Buchan, Crisis Management: The New Diplomacy [Boulogne-sur-Mer, France: The Atlantic Institute, 1966].), there has been no effort whatsoever to analyze the "energy crisis" as such a variable. One could venture to guess that the principal reason for the study of previous political crises has been their being an occasion for great decisions. Needless to say, that has not been the most noteworthy aspect of the energy crisis. Broader studies of the energy situation, however, are rapidly proliferating. Among the best are The American Academy of Political and Social Science's The Annals which in November 1973 was devoted to "The Energy Crisis: Reality or Myth?"; John C. Fisher, Energy Crises in Perspective (New York: John Wiley & Sons, 1974); and both volumes of Edward W. Erickson and Leonard Waverman (eds.), The Energy Question: An International Failure of Policy (Toronto: University of Toronto Press, 1974).

utilizations of the oil weapon--or of its derivations such as the "money weapon"--will be exercised in different ways and by different tactics. Nonetheless, the relevance of the Arab oil embargo lies in what it reveals about Western preparedness and vulnerability, about the mechanics of this unique type of economic warfare, about the subjective skill with which it was practiced, relative to the oil weapon's past performance, and about the objective results it has obtained.

As noted above, there is an inherent paradox in the existence of economic warfare. The rationale for commercial exchange of goods and services is that such an exchange is mutually beneficial. It is hard, therefore, to conceive of a perfect coercive use of what is essentially a voluntary and cooperative activity. Still, the deployment of the Arab "oil weapon" and its direct use in 1973 and 1974 suggest that there is a grey area in relationships among nations which allows for such tactics to take place. Most probably, the potential for economic warfare should be proportional to the degree to which a nation is unable to disengage itself from what appears to be an economic trap.*

The availability or absence, then, of the ability to control its patterns of international trade constitutes a nation's Achilles heel. Clearly, trade in raw materials allows little flexibility for such control. For this reason, strategic commodities always appear high on the

* Indeed, perhaps "a trap" is more accurate to describe the situation than "a crisis." Horst Mendershausen, in possibly the most clear-sighted analysis of the 1973-4 events, titled his study "The U.S. and Western Europe in an Energy Ambush: Problems of Cooperation," The RAND Corporation, WN-8598-ARPA, January 1974.

list of goods to be denied, in the case of offensive action, or to be protected, in the case of defensive action.

Quantitative limitations often exacerbate qualitative ones. Thus, raw materials which are traded intensively, in high volume over a large geographical span, exhibit even less ability to be freely managed in accordance with a nation's best interests. In other words, some of those global webs of interdependence which were supposed to usher in an era of peace and order, actually contain the seeds of conflict and disorder, precisely because of their complexity, the interpenetrations they generate, and the reciprocal vulnerability they create.

Since the international trade in oil is no exception, the use of the oil weapon should serve as an example of the manipulation of interdependencies and the exploitations by the vulnerabilities it gives rise to by nations which do not necessarily share Western liberal economic norms. The fact that interdependencies should be so precarious and dependent upon the political whims of those managing them should come as no surprise to the realist school of thought. But realism, unfortunately, is not a conspicuous feature of contemporary thinking. The commentary which follows attempts to illustrate the nature of this precariousness as it was exposed by the Arab oil embargo of 1973-74.

The Putative Phase

The transformation of the world energy system from one that is internally balanced, due to competitive market forces, to one which is imbalanced, with the oil-exporting countries enjoying growing monopoly power, has had its main effects in two areas: prices and the security of supply. Many analysts tend to separate the two issues, claiming that

the former is economic and the latter political. The argument advanced here is that the two are inseparable and predominantly economic. M. Adelman, perhaps the leading American oil economist, put the argument most succinctly in testimony to Congress in 1972:

"The OPEC cartel (not OPEC itself) is strong today because the consuming nations have so far shown no resistance. The cartel has gone from strength to strength, disregarding agreements and threatening embargo, and has been rewarded for it....The most effective threats are the 'assurances,' e.g. by the Saudi Arabian oil minister that supply will not be interrupted because the supplying countries feel a moral responsibility; or when he tells the United Kingdom that while they may approach self-sufficiency in oil, they had better not feel too secure because their Common Market partners on the continent can be shut down. 'We are aware of the power of our weapon, and we shall use it to build, not to destroy.' That is...a message we can't miss. Monopoly means control of supply, hence ability to stop it. High prices and insecure supply are two sides of the same coin."* [Emphasis added.]

The implication of Adelman's view is that the rise of OPEC during the early 1970's not only destroys the symmetry of interdependencies, but also threatens the continuance of an uninterrupted flow of oil to consumers. It is not the politicization of the market which made supplies insecure, the oil market always being highly politicized, but rather its cartelization by the producing nations. Seen in this light, the oil actions of the 1950's and 1960's failed because of the relative competitiveness of the market and its truly symmetrical interdependence. An embargo taking place under the cartelized market, when a sharp disequilibrium between importers and exporters has been created, should fare better. OPEC learned this lesson well and, as the following discussion argues, did not fail to apply it in 1973.

*U.S. Congress, Senate Hearing before the Committee on Interior and Insular Affairs, Oil and Gas Imports Issues, Pursuant to S.Res. 45, A National Fuels and Energy Policy Study, 93rd Cong., 1st Sess., 1973, pp. 1055-56. This document, incidentally, includes the most exhaustive survey of expert testimonies, as given at the beginning of that year.

Commentators on the geopolitical realities surrounding Middle East oil and hostilities can be separated into two distinct camps. Though not entirely mutually exclusive, they represent almost totally different interpretations of the nature of the global energy crisis and the "Israeli connection" to it. This divergence results more from differing world outlooks and disagreements about the interplay between economics and politics than from disputes over factual matters. The two approaches can be described either in terms of their underlying assumptions or the policy conclusions that follow from them. The first approach can be labeled a "political" approach. Its proponents include apologists for the Arabs, oil company executives, and scholars specializing in Arab oil, but few Arabs.* This approach is most easily recognized by its prescriptive argument, which--in the simplest terms--runs as follows: the Arab-Israeli dispute should be settled in a manner which will get the oil flowing safely again; i.e., on terms acceptable to the Arabs. More specifically, the "political" approach assumes that an imposed settlement, one which Israel would probably interpret as endangering her vital interests, is a practical way to guarantee the future security of Arab oil. The premise within this idea, of course, is that the Arab-Israeli conflict is the basis for the present oil crisis. The conflict is seen as having poisoned an otherwise orderly and peaceful economic activity, tranquility

* A good example of this approach can be found in William Griffith's writings for the Reader's Digest. Although no Middle East expert himself, Griffith unhesitatingly asserts that "at the nub of the [oil] problem are the Arab territories that Israel conquered in the 1967 war..." His recommendation is straightforward--that the U.S. pressure Israel into relinquishing Arab lands (see his "The Energy War--What we Must Do in the Middle East," Reader's Digest, February 1975). Recommendations aside, it is obvious that the occupied territories question cannot be construed as being "at the nub of the problem." There were no occupied territories before 1967; energy wars and plain wars there were.

would then be restored to the international petroleum market by resolving this essentially political problem. The oil problem, in other words, is exogenous to economics; its roots lie in the politics of Arab-Israeli relations.

By contrast, the "economic" approach sees the oil crisis as an indigenous affair brought about by natural forces inherent in the economics of Middle East oil. Specifically, the oil crisis is seen in its market context and the threat that OPEC implies for consumers in terms of prices as well as the dependability of supply. Advocates of this view, typically official spokesmen for the Administration, supporters of Israel, academic economists, and liberal scholars, see only a tenuous connection between the Arab-Israeli issue and the security of oil supplies. The existence of a rhetorical or instrumental connection between them is not denied, but causality as suggested by the proponents of the political approach is rejected as contrary to recorded facts.*

Although, as argued throughout this study, it is indeed the economic-- and not the political--core of the oil problem which accounts for the most recent explosion, the purely "economic" position is still somewhat deficient. One reason why the "tenuous connection" theory is not fully satisfactory is that it gives inadequate consideration to the temporal and spatial proximity between the oil crises and the Arab-Israeli confrontations, a proximity which suggests causality. Some causal connection seems

*The clearest expression of this view was given in a November 1973 statement signed by Professors Arrow, Fisher, Galbraith, Kuznets, Leontief, Peck, Samuelson and Solow. The statement, titled "Oil Shortages and Middle East Politics," was reproduced in its entirety in The Energy Problem and the Middle East, a collection of articles published in the Spring/Summer of 1974 by the American Academic Association for Peace in the Middle East's Middle East Information Series.

necessary to account for their almost simultaneous explosion in 1973. Moreover, neither view adequately explains the reasons behind the sharp reversal in Saudi Arabia's position in early 1973 and Egypt's decision to go to war later that year.

As demonstrated below, if anything could explain Saudi Arabia's policy reversal in 1973, it is its improved bargaining position, a totally unrelated economic development which can perhaps best be measured in terms of capital reserves as shown in Chapter III. The Egyptian-Syrian decision to go to war in 1973, neither earlier nor later, must therefore be assumed to have resulted from an inclination to exploit the opportune moment of a worldwide energy crisis in which the Arab camp possessed all the trump cards.

Thus, whereas both capabilities and intentions on the two sides of the Arab-Israeli conflict remained in 1973 very much as they were during the three preceding years, they were not the triggering mechanism of that explosion. It was on the oil front that things were developing fast, destabilizing the region in the process. The eruption of the oil crisis in mid-1973 facilitated or perhaps triggered the outbreak of hostilities, and not vice-versa.* Causality exists, in other words, but it is found in the predominantly economic difficulties which the world oil market had encountered since 1970. The fourth Arab-Israeli war was neither a cause of the

* Interestingly enough, although most observers understand the inadequacy of the analytical premise underlying the "political" view, they are nevertheless often tempted to follow its prognostic consequences. This inconsistency is bound to have severe repercussions if carried on by governments for long. Neither the oil crisis nor the Arab-Israeli issue will be settled if the symptoms get all the attention while fundamental causes are ignored. It is the policy implications of the second view which warrant implementation, i.e., an adequate strategy to counter the OPEC-OAPEC challenge. As to the Arab-Israeli conflict, it has long deserved a more constructive effort than it will receive over a barrel of oil.

oil crisis nor an unrelated event--it was a violent symptom or consequence of an existing global crisis of energy interdependence.

The 1973 explosion occurred as a result of a sudden economic exposure of Saudi Arabia to Arab pressures to link its production policies to the Arab cause in the Arab-Israeli conflict. This coincided with rapidly increasing American imports of Arab oil which heightened U.S. vulnerability in this area. From virtually no imports from OAPEC in 1970, the U.S. came to be dependent for 29.4 percent of its oil import requirements on OAPEC sources by 1973. The net effect of these parallel processes was that the balance of oil power was rapidly shifting in favor of those OAPEC members not dependent on a continuous flow of oil revenues. Strategically, the political and economic configuration in 1973 was conducive to a Saudi Arabian-led embargo of the United States. At the same time, an artificially created shortage facilitated the subsequent price hikes and the continuation of production cutbacks. The deployment of the oil weapon followed typical escalation dynamics. From a moderately ambiguous putative stage, it evolved into a concrete policy with economic and military dimensions of its own. In a sense, the military attack on October 6 was but the continuation of Arab oil policy--by harsher means.

* * *

It is a fact that Saudi Arabian oil played a paramount role in the background of the 1973 Arab-Israeli war. The acute disequilibrium between exporters and importers described in Chapter II and III should be juxtaposed against the political events with which it converged and brought about the October 1973 crisis. A detailed reconstruction of events concerning Saudi Arabian oil policies and their relationship to the Arab-Israeli dispute is necessary to demonstrate how this linkage was established and developed.

Ever since the end of the 1967 war, Egypt was determined to restore the status quo ante bellum. This has been the usual pattern of Arab-Israeli relationships: i.e., while Israel at each turn of the long conflict sought to equate its survival with the maintenance of any status quo, the Arabs elected to fight Israel by challenging any existing status quo, thus bringing about a confrontation which created yet another status quo, equally distasteful for the Arabs, etc. It was clear to Sadat that to achieve his goals he must alter the American role in the area. He believed such an alteration was possible through a constant appeal for American "even-handedness" and because of the latent leverage of Arab oil power. His strategy was two-fold: first, to cultivate a Riyadh-Cairo axis; then to use a carrot and stick approach to decouple the U.S. from Israel. This strategy could have worked only with the cooperation of Saudi Arabia.

Saudi financial and diplomatic assistance was essential for financially poor Egypt if it was ever to carry out the threat of war in any of these self-proclaimed years of decision. As the outcome of the war of attrition suggests, Egypt did not have the military means to expel Israel from Sinai; the Soviet Union was stalling on the supply of strategic weapon systems; and American-Israeli ties were stronger than ever, particularly in the aftermath of the joint American-Israeli maneuver during the Jordan crisis of September 1970.* American policy in the area was designed for the preservation of the balance-of-power as a means of maintaining regional stability. What the U.S. perceived as a stable framework which could lead

*This high point of American-Israeli strategic cooperation in the defense of American interests is discussed in the Spring 1973 issue of Foreign Policy, Number 10. See there Henry Brandon's "Were We Masterful..." and David Schoenbaum's "...Or Lucky?" pp. 158-181.

to fruitful negotiations between the parties concerned was viewed by Egypt as a deadlock. Egypt's policy was aimed at breaking that deadlock.

Egypt had proclaimed that 1971 and 1972 would be "years of decision." In plain language, the long-expected military effort to force Israel to evacuate the Sinai was due to take place. When nothing of the sort occurred, Sadat had to face internal criticism and a gradual loss of international prestige. At the same time, the United States seemed to have achieved the stable regional power balance within which it was ready to pursue diplomatic initiatives. Cairo, however, had no reason to welcome this prospect. Stability by definition meant that no urgency was attached to political movement on the Arab-Israeli question. Furthermore, a U.S. role of balancer in the region translated itself in practical terms into a rather explicit pro-Israel economic and military supply policy.

The United States did not favor the Israeli position that security considerations justified the retention of most of her territorial acquisitions. In fact, the U.S. has never explicitly changed the spirit of the 1969 Rogers Plan which provided a formula for an almost total Israeli withdrawal from lands occupied as a result of the 1967 war. But as long as the Soviet Union remained heavily involved on the Egyptian-Syrian side, an American stabilizing policy could not but take the form of support for Israel. Thus, in practice and for the short term, and in reaction to concrete regional realities, U.S. policy favored balance in pursuit of other regional objectives, such as maintaining the pro-American Jordanian regime. While a certain ambiguity and divergence characterized American policy in the area for a considerable period, it was clear that regional stability

avored U.S. interests,* and it was precisely on this point that Egyptian concerns ran counter to those of the United States.

Egypt's goal of restoring the status quo ante bellum, then, had to be pursued by breaking the balancing pattern of U.S. policy. This strategy of brinkmanship or "rocking the boat" could succeed only if pressure were exerted on the United States. This pressure could be a mixture of incentives and disincentives, an exercise of familiar "carrot and stick" tactics. Egyptian efforts to carry out this line on their own failed miserably in late 1970 and early 1972. The threat of war proved insufficiently menacing to bring about the kind of movement Egypt desired. She needed an ally, and the only other Arab country with the requisite leverage over the U.S. was oil-rich Saudi Arabia. Since Saudi Arabia was considering restraining its oil production policies, it suited perfectly Egypt's need for a carrot. Thus, by mid-1972, a Cairo-Riyad axis gradually took shape as the two countries coordinated a joint offensive. The purpose of the new alliance between nations who had been virtual antagonists as recently as 1967 was to upset the aura of stability in the Middle East as a prelude to pressing for resolution of their respective grievances on the Arab-Israeli and oil fronts. This strategy aimed at changing America's role in the area from that of a balancer supporting Israel to that of a neutral ("even-handed") party in a context favorable to the Arab struggle against Israel.

Saudi Arabian rapprochement with the Egyptians to be sure was not easy. The two countries were virtual adversaries during the Yemen war, and the presence of a large contingent of Soviet personnel in Egypt was

*For an insightful assessment of American policies in the pre-October war, see Steven Spegel's "The Fate of the Patron: American Trials in the Arab-Israeli Dispute," Public Policy, Summer 1973, pp. 173-201.

unwelcome to the staunchly anti-Communist Saudi government. But Sadat was willing to gamble and pay the price for courting Saudi Arabia.* At the urging of Faisal, Sadat agreed to expel Soviet advisers from Egypt in July 1972. Apparently, Saudi Arabia felt that such expulsion would by itself bring the desired American re-thinking of its Middle East policy. The expulsion indeed did have an effect on American policy but it fell short of an adoption of the French type of even-handedness the Egyptians hoped for. Consequently, Faisal became exposed to increasing Egyptian pressure to couple his country's oil policy to the joint anti-Israeli Arab cause. The official Saudi line up to that time was that oil and politics should not be mixed, a position which probably reflected the sobering impact of the futile 1967 gambit more than the monarchy's true sympathies.

Thus, as late as October 1972, exactly a year before the Yom Kippur war of 1973, Saudi Oil Minister Yamani offered a major deal to the United States in traditional commercial terms. He proposed that Saudi oil be admitted into the U.S. duty-free and that Saudi Arabia be allowed to invest in the U.S. oil industry in what are commonly called 'downstream' oil operations: i.e., from transport and refining down to the operation of gasoline stations across the country. In return, Saudi Arabia would "practically guarantee" the continuous flow of oil to the United States,

* In his "Arab Politics, Peace and War" (*Orbis*, Fall, 1974), Nadav Safran gives a reasonably full account of the regional politics prior to the 1973 October war. The role of the U.S. and the U.S.S.R. is examined by Abraham Becker in "The Superpowers in the Arab-Israeli Conflict, 1970-1973," The RAND Corporation, P-5167, December 1973.

"thus going a long way toward alleviating the energy shortage now facing the U.S."^{*}

The proposal was timely and attractive. The United States had grounds for concern about the long-term reliability of Saudi Arabia and other Arab countries as a major energy source; as their participation shares in ARAMCO were growing, the Saudi Arabians were increasingly eager to find safe and familiar outlets for their capital surplus in the downstream activities of the oil market. James Akins, then Director of the State Department's Office of Fuels and Energy, considered Yamani's idea "an extremely important proposal" that should be carefully weighed by the U.S.^{**} He argued that we "would welcome such investment as an offset to the payments for imported oil," and naively went on to urge Saudi Arabia to also invest in coal and nuclear energy, an idea which Yamani immediately rejected. Saudi Arabia's purpose, after all, was to secure a share of the energy market for itself, not to finance its future restriction. Thus, as late as a year prior to the Yom Kippur war, Saudi Arabia displayed a strictly businesslike approach to the question of reliability of supply. While perceiving that insurance of future supplies was a marketable commodity, the Saudis attached a price to such a guarantee which was purely commercial and, in terms of economic conditions, available

^{*}Shlomo Erel, in his Petroleum--The Phenomenon of a Modern Panic (Jerusalem: Orion Publishing, 1975), p. 93, evaluates the Saudi offer as "poisonous." A more charitable explanation is that the offer was raised during an academic conference and never carried sufficient weight to be considered at the highest American echelons. For Yamani's proposal and summary of the proceedings, see Middle East Institute, the 26th Annual Conference Record, "World Energy Demands and the Middle East," Washington, D.C., September 1972.

^{**}"Yamani Tempts Us with Vast Oil Deal," Oil and Gas Journal, October 9, 1972.

only to the United States. Despite support from Akins, the proposed U.S.-Saudi Arabia bilateral deal never got off the ground.

This was the political prelude to the creation of the linkage, but the immediate reasons for the establishment of the linkage lie in four developments related to the trade of oil. First, the Saudi offer to the U.S. was not accepted; second, the U.S. at the same time evolved into a potentially major customer of Arab oil; third, Saudi Arabia began facing growing monetary reserves whose value was being eroded due to world inflation; fourth, and most important, Saudi Arabia turned from an expansionist producer to a potential conserver. In addition, OPEC as a group saw 1973 as a year for major restructuring of the market relative to the terms of trade and the producers' sovereignty over their oil resources.* All these combined in bringing Saudi Arabia to the forefront of the conflict and thus made another economic-military offensive possible.

* * *

The Arab oil embargo of 1973 was neither a spontaneous explosion nor a quick reaction to rapidly unfolding crisis conditions. Instead, the embargo was the culmination of an escalation process which began almost a year earlier. The oil weapon was activated in several distinct phases, each more meaningful than its predecessor. It is important to trace the deployment of the oil weapon to its earliest manifestations.

During 1972 Arab leaders made about fifteen separate public threats to use oil as a political weapon against the United States. These threats, however, came from such radical sources as Ba'athist Iraq or Kaddafi of

* In March 1973, at a special Ministerial meeting of OPEC in Beirut, a demand was made for immediate negotiations with the oil companies to obtain a revision of the 1972 Geneva formula and full cooperation for the devaluation of the U.S. dollar ("Revision of Geneva Agreement Sought," Petroleum Press Service, April 1973).

Libya. In late 1972 a conservative Saudi Arabia was still adhering to the self-proclaimed doctrine that "oil and politics do not mix," and King Faisal reiterated the assertion that he would never use oil for political purposes. In January 1973 the first indications appeared that this doctrine was cracking. At the time, the National Assembly of Kuwait another conservative Arab regime, approved a proposal to halt oil supplies to the Western concession holders in the event of an outbreak of hostilities between Israel and the Arab states. In April, the Arab League Council, meeting in Cairo, urged all Arab countries to use their trade policies as weapons against the U.S. and other countries supporting Israel. The oil weapon was thus placed on the political agenda.

The month of April signaled the most important transformation to date in the complex constellation of oil economics and the politics of the Arab-Israeli dispute. In a major reversal of policy, Saudi Arabia decided to enlist its oil power in the Arab cause in that dispute. A coincidence of economic expediency and national zeal clearly caused this reversal.*

The American majors, ARAMCO's parent companies, wanted the Saudi government to commit itself to the ambitious production target of 20 million barrels daily by 1980. Indeed, Saudi Arabian exports grew at an astonishing rate from 3.2 million barrels per day in 1970 to 5.4 million barrels daily in 1972, and to 8.7 million barrels daily on the eve of the embargo. The majors wanted Saudi Arabia to keep on expanding production. Two considerations, however, militated against such expansion.

* It was in April, too, that the Defense Intelligence Agency procured a detailed, three-phase Egyptian attack plan which called for a crossing of the Suez Canal, the capture of the Mitla Pass, and the conquest of all of Sinai. See Tad Szulc's "Seeing and Not Believing," The Nation, December 22, 1973.

First, Saudi Arabia, the swing state in the oil business, having attained the embarrassingly high level of production of over 8 million barrels per day, lacked the ability to absorb or invest its huge revenues, and had to consider restricting output. It was expedient to obscure the compelling economic reasons for this action by linking economics to politics, a not uncommon practice in this business. After all, why should one admit greed and monopolistic practices when it is possible to use a political fig leaf and reap political benefits as a bonus? In 1971, for instance, Libya nationalized BP's interests ostensibly in retaliation for Britain allowing Iran to take over the Abu Musa and Tunbs Islands in the Gulf. Nor is the decision to restrict production new. In 1970, Libya cut its production by one-third and two years later Kuwait froze production at just over 3 million barrels per day. Whereas the production of oil, like participation agreements, is a process to which economics is paramount and politics subsidiary, politics often offers a convenient disguise. It almost seems that, if Israel did not exist, the Saudis would have had to invent it.

Secondly, ARAMCO itself could benefit from shifting the focus of attention from the economic and technical realms to the political. For instance, as early as 1972, ARAMCO argued that a cut in Saudi production was needed in order to protect the ultimate technical recoverability of the oil fields. That argument, it should be noted, must have disappointed ARAMCO's parent companies. Establishing a false connection, therefore, for the planned output restrictions took both Saudi Arabia and ARAMCO off the hook. It also gave Egypt the linkage strategy it sought. In other words, while future world demand for cheap energy was made to appear as hinging

upon an expansive Saudi production policy, Saudi Arabia's and ARAMCO's interests called for a restrictive policy instead.*

In the words of Youssef Saiygh, an Arab economist, "the ability to be patriotic while making a buck" facilitated the reactivation of the political linkage between the production and exportation of petroleum and the political context of the Middle East. In that month Minister Yamani told Secretary Rogers and Messrs. Haldeman and Erlichman at the White House that Saudi Arabia "will not significantly expand its...oil production level unless the U.S. changes its pro-Israeli stance." He called upon the United States to create "the right political atmosphere" for an expansion of Saudi Arabian production. At the same time Cairo's Al Ahram delineated in a most explicit fashion the oil strategy which was expected to persuade the U.S. to pursue "a more evenhanded policy." The strategy was to involve, first, cutting of exports to the U.S.; second, withdrawal of Arab deposits in U.S. banks to be redeposited in "friendly" West European countries.

* That Saudi Arabia was not necessarily going to expand production to 20 million barrels daily in 1980 can be learned from a SoCal memorandum dated August 9, 1973. The document gives three estimates of Saudi production, as shown below, with an indication that the most likely production growth rate was to be somewhat more modest than Case 2. Interestingly, SoCal was not unaware of the coming OPEC challenge. Its figures, as is explicitly admitted in the August memo, "are estimated on the basis that crude prices will increase substantially." That is the stuff on which conspiracy theories are established.

TEN YEAR CRUDE SUPPLY/DEMAND FORECAST

Case	MBPCD/Year	ARAMCO Production, MBPCD			SoCal Crude Surplus (Deficit), MBPCD		
		1977	1980	1983	1977	1980	1983
1	2	15.5	20.0	20.0	1.5	1.0	0.4
2	1	14.5	17.5	20.0	1.2	0.6	0.4
3	0	13.6	13.6	13.6	1.0	(0.1)	(0.5)

[see Church Hearings, p. 577.]

Once the linkage was established escalation became imminent. The same processes of inflammatory rhetoric and escalatory policy that characterized the pre-Suez 1956 months or those of May and June 1967 were now repeated. The escalation ladder, described below,* was composed of two principal putative phases. The first, from April to June involved a vague demand for a more pro-Arab American policy tied to a threat of an oil sanction in the form of a more restrained policy of production expansion than expected. The second putative stage, less ambiguous but more threatening, lasted from July to October. The threat was escalated to that of a straight restrictive oil policy in the form of a putative threat made actual.** The putative phase for which the medium was often as important as the message, involved the oil companies actively lobbying as agents of the Saudi government, receiving instructions and reporting to it in due order.***

First Phase

May - Iraq, Kuwait, Algeria and Libya stage a symbolic protest against Israel's continued existence as a nation by temporarily halting the flow of oil to the West. Stoppage lasts an hour to 24 hours.

- Egypt's Sadat calls for use of oil weapon against the U.S., telling Parliament "the case is one of a protracted struggle and not only the Suez Canal battle. There is the battle of America's interests, the battle of energy, the battle of the Arabs. These are big battles for which we must plan and coordinate."

* This chain of events is taken from U. Arad, 'The 1973-1974 Arab Oil Embargo--Facts, Figures and Analysis,' HI-2083-P, July 19, 1974.

** For a distinction between putative and actual power see Klaus Knorr, Power and Wealth (New York: Basic Books, 1973), pp. 13-20.

*** The full extent of this bizarre instance of American companies seeking to alter their government's foreign policy on behalf of a foreign country is given in the Church Hearing, part 7.

- On a tour of Latin America, Saudi Arabia's Sakkaf suggests that the momentous decision on the use of oil leverage will be taken in September during the non-aligned conference in Algiers. Sakkaf would like to have the effects of a Saudi production freeze at 8 MB/D limited to the U.S. but Europe would suffer, too.
- The Saudi government strongly suggests that ARAMCO and its parents mount a campaign to change the U.S. policy of supporting Israel. The companies follow these instructions and report on their activities to King Faisal. The capstone of their efforts is a joint memorandum to President Nixon signed by the ARAMCO chief executives which urges a change in the U.S. position. ARAMCO executives warn U.S. officials that Faisal is not bluffing when threatening "drastic actions."

Second Phase

- June - Pachachi, former OPEC Secretary-General, argues that by "merely holding production to its present levels, Arab oil exporting countries could bring the U.S. to the brink of a severe energy crisis within one year."
- In Geneva, Faisal tells ARAMCO representatives categorically that in principle the idea of a production freeze has his full support. He warns the oil companies that they would be the first to suffer and therefore must pass on his warning.
- July - Faisal "goes public" with a warning to the U.S. that "Saudi Arabia will find it difficult to continue close cooperation with the U.S. if American support for Israel remains at its present level."
- A strong debate over freezing production is being conducted inside the Supreme Petroleum Council appointed by Faisal in May. Yamani alone stands for continued expansion of production. A compromise plan is being drawn up on the assumption of a 10% annual increase. The Council also feels that there is little economic inducement to increase production substantially above present levels while monetary instability and inflation cause oil earnings to decline in purchasing power.*

* That a production freeze (at 8 million barrels a day) was contemplated as early as July can be learned from "An Arab Oil 'Freeze' in December?" Foreign Report, 11 July 1973. The article concluded by noting that Sakkaf had suggested that action might be taken at about the end of the year and that the "momentous decision" might be reached after the non-aligned conference to be held in Algiers in the first week of September.

- PLO's Arafat visits Faisal and advances his support of a production freeze.

Aug. - In an interview with NBC, Faisal claims that Saudi Arabia was not prepared to increase her oil production beyond the limits of funds she can absorb unless two conditions were met: "First, the U.S. and the West must effectively assist the Kingdom of Saudi Arabia in industrializing itself in order to create an alternative source of income to oil....Secondly, the suitable political atmosphere, hitherto disturbed by the Middle East crisis and Zionist expansionist ambitions, must be present."

The strategy to change the course of American foreign policy thus unfolded in several stages. The first involved the carrot of the expulsion of the Soviet Union and the second the stick of a putative use of the oil weapon; only the third phase called for actual military and economic warfare.

By late August the irreversibility of the imminent showdown became clear. At a series of intensive consultations top level Arab leaders discussed using a restrictive oil policy as an integral accompaniment to another military offensive against Israel. Juan de Onis of The New York Times concluded that "the Arab leaders believe that the present oil situation gives them tactical advantages that they did not enjoy in 1967."* In this frame of mind, the oil ministers of ten Arab nations met in Kuwait to coordinate OPEC's pricing imperatives with OAPEC's political objectives.

Specifically, the central issue of the September 4 conference was the question of combining the restrictive oil programs with a boycott of the United States. It is noteworthy that the debate crystallized into two opposing factions, both of which showed a marked tendency toward

* The New York Times, September , 1973.

greater aggressiveness. Saudi Arabia, Kuwait, and some other states favored a continuation of the putative phase, pending clarification of the American response to Faisal's warnings that production would be frozen if Washington failed to relax its support for Israel. Other Arab states supported even more radical moves, such as immediate production cutbacks or the imposition of selective export controls. Iraq, for instance, proposed a massive cutoff for a period of ten years. The meeting delegated final decisions to a forthcoming meeting of heads of state in the non-aligned summit in Algiers.

If the Arabs needed a last-minute encouragement to go ahead and actualize their oil threats, they received it early in September. At a news conference in the White House, President Nixon said that the U.S. was giving the highest priority "to achieving a Middle East settlement that would put an end to Arab threats to curtail future oil deliveries to Western countries."^{*} The admission of a linkage by the direct victim of the oil pressure marked the success of the putative phase. From an American point of view, the last-minute attempt to appease the Arabs by preaching "evenhandedness" proved pitiful and self-defeating. Within four weeks, the American pledge for peace encouraged the Arabs to embark on another war, and American hope that such a policy would contribute to the security of supply made it more insecure than ever.

At the Algiers summit, some two weeks later, the Arabs agreed to embark on a fourth Arab-Israeli war, supporting it by the oil weapon and oil

* Bernard Gwertzman, "A Mid-East Pledge--President is Seeking a Settlement to End Oil Threats by Arabs," The New York Times, September 6, 1973.

money.* The Soviet Union was notified of the decision, and a third Arab oil offensive against the West began.

The Actual Phase

The actualization of the oil weapon showed that it can indeed provide a political pretext for an economically motivated action.** Thus, the first move in the Arab oil offensive, overtly designated as the "oil weapon," was Iraq's nationalization of Exxon and Mobil's 23.75 percent share in the Basrah Petroleum Company which produced about one-third of Iraq's total crude output. Already suffering from depressed production levels, Iraq was evidently unable to make more cutbacks as its contribution to the oil offensive and preferred to advance its expropriation objectives under the banner of the "decisive reply...against the Imperialist-Zionist aggression on the Arab nation." Two weeks later, Iraq completed the nationalization process by taking over the 60 percent Dutch share of Shell's 23.75 percent share of BPC; Guibenkian's famous five percent share followed in due course.

As pre-arranged before the outbreak of the war, Yamanl and Foreign Minister Sakkaf warned the United States that Saudi Arabia would cut

* That coordination at the highest levels of the joint Arab oil and war offensives preceded the October crisis can be learned from Mendenschauen's "The U.S. and Europe in an Energy Ambush." The role of Algeria in engineering that offensive to establish the "new economic order" has still to be studied. The Arab strategy, as analyzed by a sympathetic journalist, is described in Juan de Onis' "Arabs' Emerging Oil Strategy," The New York Times, September 4, 1973.

** There are few thorough studies of the evolution of the Arab oil offensive in the fall of 1973. A concise but well-documented analysis is given in the Stockholm International Peace Research Institute's Oil and Security (New York: Humanities Press, 1974). The report was written by Bo Heineback, a member of the SIPRI staff.

back production by 10 percent immediately and an additional five percent each month if the U.S. undertook to rearm Israel. The Chairmen of the Boards of the four ARAMCO partners were assigned the task of delivering the message to the White House, which they promptly did.* The joint Arab strategy was aimed at engaging Israel in a high-intensity war of attrition and simultaneously isolating her from the United States. The strategy was based on the sound premise that Israel cannot fight a protracted high-intensity war; Saudi Arabia's effort was to harness her oil leverage to this postulate.

As the war began, Egypt pressed the Arab states producing oil to apply the oil weapon by withholding supplies. Saudi Arabia, however, feared a repetition of the self-defeating 1967 oil action; while its foreign exchange reserves had improved considerably since that time, Saudi Arabian leaders were apparently unsure of their bargaining position and uncertain about the altered circumstances in which they now found themselves, but their OPEC partners eased their misgivings.

While the fighting along the Suez and Golan fronts continued, the leaders of OPEC sought to revise crude oil prices. The Persian Gulf states, led by non-Arab Iran, undertook a price gambit aimed at revising the 5-year pricing agreement signed at Teheran in 1971. The first request for a fundamental redrafting of the agreement was made at a meeting at OPEC headquarters in Vienna. The announcement came from Kuwait that crude oil prices would rise by more than 70 percent, a result of unilateral price-fixing arrangements to replace the Teheran pact. Predictably,

*See the October 12 Memorandum to the President, reproduced in the Church Hearings, p. 547.

the oil companies were shocked and requested a fortnight's break in negotiations to study the OPEC package.

On October 9, representative officials of the major oil companies met with OPEC in Vienna. The companies submitted an offer providing for a 15 percent increase in posted prices and an upward adjustment for the inflation factor. OPEC refused and instead proposed a 100 percent increase in the posted price, plus an inflation adjustment in line with the wholesale price index. When the companies would not accommodate these demands, OPEC broke off negotiations after two weeks. Representatives of the six Persian Gulf state members of OPEC met in Kuwait to present a unilateral announcement of new price levels. The price mechanism established at the previous meeting, October 16, implied that the posted price of OPEC crude would float according to market trends. As one participant put it,

"I would like to tell the consumers just this: Now it is not we as producers that will determine the price but you as consumers, we will wait and see what the market prices are and then calculate....prices."*

*This report, edited by Leo J. Ryan, was written and submitted before the conclusion of the event. It provides a detailed account of the background to the embargo and the means by which it was applied (U.S. Congress, H.R., The United States Oil Shortage and the Arab-Israeli Conflict, Report of A Study Mission to the Middle East from October 22 to November 3, 1973, pursuant to H.Res. 267, Committee on Foreign Affairs, 93d Cong., 1st Sess., 1973), p. 12.

Table 4.1

POSTED PRICES AND GOVERNMENT TAKE, OCTOBER 1973

(US dollars per barrel)

		Posted Price		Government Take	
		Oct 1	Oct 16	Oct 1	Oct 16
Arabian Light	34	3 011	5 119	1 77	3 05
Iranian Light	34	2 995	5 091	1 75	3 02
Iraq Basrah	35	2 977	5 061	1 74	3 00
Kuwait	31	2 884	4 903	1 71	2 94
Abu Dhabi Murban	39	3 084	6 045	1 82	3 58
Qatar Dukham	40	3 143	5 343	1 81	3 15
Libya	40	4 604	8 925	2 83	5 45

The prices in this table include premiums for low sulphur crude and in the case of Libya a "Suez Canal Closed" element and a freight premium.

Source: Petroleum Economist, January 1974.

The ministers decided on a posted-price increase of Arabian light crude from \$3.09 to \$5.12, which meant a higher government take (70 to 95 per cent; see Table 4.1) than ever before. A U.S. House of Representatives Foreign Affairs Committee report concluded that,

"by their action in Kuwait, the Persian Gulf state members of OPEC enabled producing countries to greatly increase the amount of money made on each barrel of crude oil thus paving the way for the Arab producers subsequent embargo and production cutback activities."*
[Emphasis added.]

The Arab oil producers were thus placed under two types of pressure, both culminating in October. First, OPEC was pushing more vigorously than ever the classic cartel tactic of restricting output in order to drive prices up. The decision to float posted prices had the effect of

* The United States Oil Shortage and the Arab-Israeli Conflict (Report to the House of Representatives), p. 12.

stimulating cutbacks in production. Second, Egypt and Syria were calling for a real cutback in production once the Arab bluff was called by the U.S. decision to resupply Israel. That decision, reached on October 1 and made public two days later, was not sufficient in itself to produce an embargo. The OPEC meeting in Kuwait, however, did so. The economic incentive apparently was stronger than the political.

Thus, subsequent to the Kuwait decision, OPEC revealed on October 17 a plan to limit oil production and gradually reduce exports to certain countries until Israel was forced to withdraw from Arab territories captured in the 1967 war. The price increases which preceded the embargo were a master stroke in the Arab oil offensive. At the reduced production levels necessitated by the "oil weapon" the boycotting countries would incur few if any monetary losses. The reduction of output in itself obviously served to sustain higher prices. Of these two mutually reinforcing processes, as events were to demonstrate later, the profit motive still loomed larger.

At a brief formal meeting of the ten OPEC oil ministers on October 17, the first concrete step to curtail production was taken. The main points outlined were as follows:

- a) To cut oil production by a minimum of 5 percent, using the September 1973 level as a base. Additional 5 percent cuts were to be announced each month, using the previous month's production level as the point of reference. Each country was allowed individually to increase the percentage.
- b) To continue exporting the same quantity of oil as before the cutback and extend exceptional treatment to any state which either remained friendly to the Arab states or took "significant measures against Israel."

- c) To subject the U.S. to the most severe cuts in proportion to the amounts of crude and products it imported from each OAPEC member, with the aim that "this progressive reduction should lead to a total halt in Arab supplies to the United States."
- d) To notify the operating oil companies of the desired pattern of exports for any given months.*

Each OAPEC member was to take whatever action was necessary toward the concessionary firms to hold them responsible for carrying out the government's instructions, including threats of penalties for failure to comply.

Interestingly, the political conditions which the Kuwaiti action sought to attain fell short of the hardened position the Arabs were to adopt months later. Instead, the "oil weapon" was to remain in effect "until such time as total evacuation of Israeli forces from all Arab territory occupied during the June 1967 war is completed and the legitimate rights of the Palestinian people are restored."** Although this demand was highly ambitious in terms of political objectives, it reflected the initial Arab military successes; Arab reversals on the battlefield were yet to come. Despite the ambitious tone of this statement, it did not mention the "political" or "national" rights of the Palestinians; this, too, lay ahead.

The economic objectives and constraints which underlay the first Kuwait Agreement were even more important. In contrast to the political objectives, the decision reflected the uncertainties and counter-productive nature of economic warfare, and the precedence of economic over

*The official texts and communiques related to the embargo can be found in SIPRI's Oil and Security, pp. 118-123.

**The United States Oil Shortage and the Arab-Israeli Conflict, Report to the House of Representatives, p. 48.

political considerations. Thus, a second and more relevant time frame for the discontinuation of the oil action was determined as the point where the economies of individual countries would not "permit any further reductions without detriment to [their] national or Arab obligations." Nonetheless, this escape clause did not alleviate Iraq's reservations about the plan which it therefore refused to sign. Iraq argued against output restrictions and called instead for the severance of diplomatic relations between all Arab states and the U.S., as well as the withdrawal of Arab funds deposited there. Above all, Iraq pushed for its own version of the oil weapon, outright nationalization of American and other Western oil holdings.

Such disagreements within OAPEC regarding the form the oil weapon should take is indicative of the fact that each member country sought to advance its own political, and more importantly, its own economic self-interests under the banner of Arab solidarity in the struggle against Israel. For example, Iraq, an "expansionist" country in terms of its production programs, was lukewarm towards the gradual production limitations put forth by "conservationist" Kuwait, Libya, and Saudi Arabia--states which had implemented production restrictions in past years or were contemplating such actions in the near future. Each OAPEC member sought to exploit the opportune political moment as a pretext for drastic economic actions by suggesting that its own preferred oil policies be used as the common denominator. Similarities in ideology mattered very little in this debate. Deserted by radical Libya and Syria, Iraq lost the internal OAPEC battle when the Saudi Arabian formula carried the day. A communiqué which explained the

Kuwait decision and justified gradual reductions in production was subsequently signed by all OPEC members except Iraq: Saudi Arabia, Kuwait, Libya, Algeria, Egypt, Syria, Abu Dhabi, Bahrain, and Qatar.

The first Kuwait announcement was hardly the powerful instrument it purported to be; the reductions were too moderate and their pace too gradual to constitute the clear and present danger needed to make a mechanism of economic coercion effective. But it was certainly substantial enough to remove any potential surplus from the oil market, thus stabilizing prices at their new high level. The newly introduced element of oil shortage was compounded by supply interruptions caused by the military hostilities. On October 11, for example, an Israeli attack on the Syrian IPC terminals stopped the flow of 800,000 barrels daily. The Israelis apparently failed to realize that their strike would only serve to aggravate the potential impact of any future embargo.

The American decision to resupply Israel was not regarded by Saudi Arabia as a sign that the Egyptian-Saudi plan to exhaust Israel's military and economic capabilities had failed. The losses incurred by Israel in the first week and a half of fighting were such that, for the moment, it seemed that Israel might collapse under the financial burden of the war, regardless of its military outcome. Furthermore, the Saudi Arabian Foreign Minister, Sakkaf, a personal representative of King Faisal, was assured on October 17 by President Nixon that peace in the Middle East would be "just and honorable." It was only when Nixon subsequently asked Congress to approve a \$2 billion military aid program for Israel that Saudi Arabia reacted by announcing a total embargo on the U.S. and by

calling for a "jihad," or holy war against Israel.* Twice the U.S. called the Arabs' bluff, and twice the Arabs had to retaliate.

By October 19, the Arab oil action appeared to be slightly more severe than had been expected. The oil weapon had been strengthened by three additional measures. First, on October 18, Saudi Arabia and Qatar announced cuts of 10 percent instead of 5 percent for the first month following October. Second, the total embargo on the United States was joined by all OAPEC members. Third, OAPEC extended the total embargo to the Netherlands, whose port of Rotterdam is one of the most important entrepôt transit and distribution points in Europe, warning that any nation which transhipped oil to the embargoed countries would also be embargoed.**

Differences in application of the "oil weapon" among the Arabs reflected more the economic priorities of each than their degree of identification with the confrontation states. Egypt, Syria, and Tunisia, for example, did not announce any cuts. Iraq selectively embargoed supplies to the U.S. and The Netherlands, but at the same time tried to maximize its production. Were it not for war-related damage, Iraq probably would have exported even more. At any rate, Iraq's production rose between

* See, for example, Joseph S. Szyliowicz's "The Embargo and U.S. Foreign Policy," in The Energy Crisis and U.S. Foreign Policy, edited by Joseph S. Szyliowicz and Bard E. O'Neill (New York: Praeger Publishers, 1975), pp. 183-232. The book in itself includes useful articles concerning aspects pertinent to the issues of oil and its security.

**A good chronology of the embargo is given in Appendix 1 of the Federal Energy Administration's report to the Church subcommittee, titled "U.S. Oil Companies and the Arab Oil Embargo: The International Allocation of Constricted Supplies," 1975.

September and December by 7.5 percent. Nor did Libya exhibit much eagerness to make sacrifices; it cut production by only 5 percent, while exports to the U.S. amounted to approximately 11 percent, implying an increase of 6 percent rather than a decrease in deliveries to non-embargoed consumers.

Only Saudi Arabia and Kuwait applied incremental additions to the original percentage reduction, meaning production cuts greater than the announced 10 percent. But before the embargo could have any direct impact, a ceasefire went into effect on the Syrian and Sinai fronts on October 24. The two-pronged Arab offensive--oil and war--was suddenly decoupled as the initial Arab military successes were reversed, and hostilities ended with the Israelis controlling more Arab land than before the war. Although the thrust of the oil action had been to put indirect pressure on Israel to withdraw from occupied Arab lands, Arab military power failed to push Israel to the rear of Sinai, giving the Israelis instead a commanding strategic advantage.

The first Kuwait resolution was not taken from a position of strength nor of political self-confidence. For all practical purposes the putative embargo threat failed to prevent American resupply of Israel, and by October 21 it was also evident that initial Arab successes on the battlefield had been reversed. Reporting about his meeting with Yamani that day, ARAMCO's president Jungers cabled that "it was patently clear to us that they all felt glum and completely disillusioned with [United States Government] actions."^{*} Four days later, however, that mood would be radically changed. ARAMCO officials reported,

^{*}Church Hearings, Part 7, p. 516.

"No question that SAG [Saudi Arabian Government] mood now more relaxed but one of cautious anticipation. Their assessment is that Kissinger's moves so far have been effective and they are all too ready to give him credit and entire initiative a chance."^{*}

The reason for the sudden change in Saudi attitude is obvious: between October 21, when Egypt seemed on the verge of another crushing defeat, and October 25, when the ceasefire went into effect, the oil weapon seemed to have finally made its impact. Though the superpower bargaining was mostly responsible for stopping Israel short of victory, the Saudis nonetheless perceived it as an indication that at long last their oil offensive was taking effect. Once this perception was reached in Riyadh, political ambitions and willingness to escalate soared; Saudi Arabia suddenly gave to the world a first glimpse of its potential radicalism. As revealed by an ARAMCO official.

"It was forcefully pointed out that even implementation of Res 242 in H(is) M(ajesty's) view is bare minimum and Jerusalem definitely must be considered part of Res 242 and that while H.M. is moderate he is most radical on this issue. In fact it was pointedly mentioned that SAG (Saudi Arabia Government) never did even accept 242, thus their current position is movement." [Emphasis and parentheses added.]

and, as for the willingness to tighten the screws of the oil weapon,

"There is absolutely no question that oil cutback will remain in effect until entire implementation (of 242) is worked out. This was mentioned in a number of ways and in context that they were willing to live with this for a long period."^{**}

Since the 1956 Suez crisis, the use of the oil weapon was planned in advance on all three occasions it was used, but its subsequent escalation in each instance was consistently spontaneous. Another such escalation

^{*} Ibid., Part 7, p. 530.

^{**} Ibid.

took place following the Arab military setback and the cessation of hostilities in 1973. Between October 25th and the end of the month, the Arab oil action turned from an uncertain mild type of pressure into a rather severe threat. The escalation that occurred was also fueled by the visible effect it had on Europe during the October war, particularly during the American airlift and alert. The sense of frustration which the Arabs felt because of their limited military achievements was more than balanced by their enhanced confidence in the potential economic and diplomatic benefits which the oil weapon could bring about. Thus, one day after the war ended, Sheik Abd al-Rahman-Atiki, the Kuwaiti Oil and Finance Minister, summed up his government's reasons for hardening its position on the embargo:

"It would be wrong to imagine that the battle with Zionist enemy is at an end. What has ended is just one of several rounds in a running battle that has been going on for a quarter of a century. It will continue until the occupied territories are liberated. This particular round, involving the use of armed forces, may have come to an end, but there are many other weapons that can be used. Kuwait took the initiative in calling for a meeting of Arab oil ministers to consider the role of oil in the battle. Oil has both a negative and positive role to play. The negative role of the oil weapon is to make the world feel the bitterness and pain we are experiencing as the result of Zionist aggression, thereby persuading many countries which have relations with Israel to adopt a neutral stand. We cannot impose neutrality but we can make the countries concerned move towards it gradually. We decided to embargo countries without exposing our economy to ruin. Now the atmosphere is more propitious than in 1967 and we can accept a reduction in production at the same time denying supplies totally to any country which supports Israel materially and practically. This has certainly proved possible as far as the United States is concerned."* [Emphasis added.]

*U.S. Cong., House, The United States Oil Shortage and the Arab-Israeli Conflict, pp. 14-15.

In other words, so long as the U.S. resisted the oil threats, no real pressure was applied and OAPEC exercised great caution. At the moment that the U.S. seemed to veer off by not allowing Israel to bring the war to its natural military conclusion, OAPEC hardened its political demands and escalated its economic warfare. During the next two weeks, with the fighting over but with weaknesses of the Western Alliance and a hint of American susceptibility to be influenced quite exposed, Saudi Arabia emerged as the leader of the OAPEC camp and its most militant member. For the first time, a truly full-fledged economic warfare offensive unfolded. Even the American Ambassador to Saudi Arabia lent his good services to that purpose. As reported by Jungers,

"Akins...urged that industry leaders in USA use their contacts at highest levels of USG to hammer home point that oil restrictions are not going to be lifted unless political struggle is settled in manner satisfactory to Arabs. Akins also felt industry leaders should be careful to deliver message in clear, unequivocal way so there could be no mistake about industry[sic.] position.*

OAPEC escalated its cutbacks after the October war in this spirit. Two weeks after the first announcement of mild reductions, total Arab oil exports reached some 80 percent of the September level. By the end

*Church Hearings, Part 7, p. 517. There could be two arguments against the Ambassador's action, one procedural, one substantive. The former has to do with the somewhat unusual procedure whereby an American diplomat who obviously enjoyed direct access to his government also engages in active lobbying. The latter is more serious, for with the advantage of hindsight it can be categorically argued that Akins misled his government when he grossly exaggerated the projected duration of the embargo, claiming it would be continued until the conflict was resolved in a manner satisfactory to the Arabs. The embargo was lifted in early 1974, with Resolution 242 yet to be implemented.² To the extent that Akins by his alarmist assessment contributed to the FEA's worst-case view of a long embargo (a view which led to hoarding and failure to use stockpiles to alleviate the shortfall), he bears the responsibility for exacerbating the brief crisis.

of October the Arabs were taking some 4 million barrels of oil daily out of world commerce, the equivalent of a shortfall of nearly 12 percent of the total volume of oil moving in world trade.

Saudi Arabia was demonstrating its leadership by decreasing production 31.7 percent below the September level, roughly a cut of 2.63 million barrels per day as against 8.29 million daily in September. Taking ARAMCO's output plans for October as a base, the November 4 output constituted a drop of no less than 35.4 percent.

At the urging of Saudi Arabia, a second OAPEC meeting was held in Kuwait on November 4 to discuss additional ways of using the oil weapon. The situation must have been baffling. The October war was over, with no significant military achievements. The moderate October production cut-backs and embargo had obviously failed to deter the U.S. from supporting Israel. In fact, the entire oil offensive was as yet unfelt in world markets. Consumers were still getting their normal deliveries of crude, since the tanker journey from the Persian Gulf to Europe takes over a month, while the voyage to Japan is only a little shorter. A lifting of the embargo at that stage would have amounted to an absolute OAPEC defeat, costing its members not only any future credibility of their weapon, but also undermining the fragile price structure imposed on consumers by the unilateral OPEC action two weeks earlier. The OAPEC partners had had to improvise and adapt their strategy to the changing circumstances. Saudi Arabia, in the traditional pattern of Arab escalations,^{*} and adopting a

^{*} Compare this process with Nasser's actions in 1956 and in 1967. The alleged volatility, unpredictability, and irrationality of the Middle East has much to do with the tendency of leaders to be captives of the forces they set loose rather than being able to control them to the end.

militant posture, persuaded its partners to step up the production cutbacks. The immediate political objective was redefined as breaking the deadlock in the ceasefire negotiations on the Suez front.

This lowering of the political aims, however, was accompanied by reformulation of the OAPEC cutbacks at the more severe standard set by Saudi Arabia. The meeting effectively brought the Arab oil states to a common 25 percent production cutback level. This included the volumes deducted as a result of the embargoes against the United States and The Netherlands, and represented a substantial escalation of Arab oil warfare. In addition, the Arab states tried to enhance the political effectiveness of the weapon. For this purpose, three measures were adopted:

- a) A special committee, composed of the Oil Ministers of Saudi Arabia, Algeria, Kuwait and Libya, was set up to insure the implementation and enforcement of the two Kuwait decisions;
- b) In order to improve the accuracy of the oil weapon and penalize the U.S., it was insured that shipments of crude to refineries which shipped to U.S. markets would be embargoed by all Arab oil-producing states;
- c) In an attempt to reduce the collateral damage which would be caused by the escalated cutbacks and with a view to rewarding "friendly" countries, the Saudi embargo model was adopted by OAPEC as a whole.

It was decided to convene a meeting to decide on specific and uniform qualifications for the countries to be classified as "friendly" or "most favored" so that no disparity would exist in definitions used by the various Arab nations. Although no countries were categorized as "friendly," it was implicitly conveyed that the criteria for promotion into the most-favored list would include such actions as severing relations with and applying economic sanctions against Israel, and granting military assistance to the Arab states. France, the United Kingdom, Spain, and Pakistan

were obvious candidates. To articulate their demands, the Arab states decided to send the Oil Ministers of Algeria (Belaid Abdesselam) and Saudi Arabia (Zaki Yamani) to several European capitals and Washington to explain the Arab actions.

Decisions apart, the embargo was far from working adequately. In the first place, Iraq was more adamant than ever in its opposition to the self-serving production cutbacks advocated by the "conservationist" Arabs. At the November 4 meeting, the Iraqi representatives pointed out--with past and present history on their side of the argument--that a selective embargo was bound to be self-defeating, since the oil weapon was not accurate enough to differentiate sufficiently among friendly, neutral, and hostile nations. This technicality gave Iraq a face-saving pretext for disregarding OAPEC decisions. Secondly, Iraqi aloofness was not the only crack in OAPEC solidarity. Libya also produced more than permitted by the new OAPEC level and took no steps to boycott the U.S. In fact, exports of Libyan crude were still reaching Caribbean refineries for final shipment to U.S. markets. The November 4 decisions, then, were an improvised gamble by OAPEC. The meeting followed the well-rehearsed pattern of a spiraling escalation: upon the relative failure of an action, a renewed effort of greater involvement and commitment is undertaken in the hope that the incremental step will be the final straw needed to break the opponents' resistance. The oil emergency, then, as an average for the month of November, appeared as shown in Table 4.2:

Table 4.2

THE OIL WEAPON: ARAB CUTBACKS DURING ACTUAL PHASE I
(million barrels daily)

	SEPTEMBER	PERCENT CUT	CUTBACK	NOVEMBER	PRE-CRISIS PROJECTION FOR NOVEMBER
SAUDI ARABIA	8.6	31	2.7	6.3	9.2
KUWAIT	3.5	31	1.1	2.6	3.5
OTHER ARABIAN PENINSULA (NOT OMAN)	2.7	31	.8	2.2	2.8
ALGERIA	1.1	18	.2	.9	1.1
LIBYA	2.3	22	.5	1.8	2.4
IRAQ	2.2	10	.2	1.9	2.4
OTHER	.4			.1	
TOTAL	20.8	27	5.5	13.8	21.4

The Arab gamble paid off in one way only--it restored some credibility to the Arab oil weapon. It misfired, however, in its primary aim of affecting American policy toward Israel which remained unchanged. But the OAPEC decision did attract European and Japanese support. European behavior at that juncture demonstrated a sad picture of almost classic crisis mismanagement. During the military phase of the October crisis, Europe disassociated itself from the U.S. in the vain hope that the Arabs would redirect oil supplies destined for American consumption. When the embargo was instead escalated and Europeans began to feel the indiscriminate cutting edge of the oil weapon, they panicked and opted for political appeasement of the Arabs. Had they instead dipped into their relatively large stockpiles and stretched their supplies by such measures as rationing, Europe could have at least bought time for the Arabs to see the embargo through at no cost to themselves.

As the technical difficulties in implementing the selective embargo grew (see Chapter V), the tension between capabilities and intentions became more visible. Thus buoyed by the European and Japanese reactions, the Arabs oscillated in their ultimate political expectations. Notes Mendenshausen:

"It is noteworthy that when Secretary of State Kissinger during his November voyage to the Orient brought about the first understanding between Egypt and Israel on the management of the cease-fire arrangements and an approach to peace negotiations, Saudi Arabia gave no sign of budging from its maximalist position that Israel should withdraw from all Arab territories before the boycott could be lifted. It was evidently not holding out for proof of an 'evenhanded' U.S. policy between Israel and Egypt but for open U.S. partisanship for the Arabs against Israel, i.e. a reversal of U.S. policy."*

The pathetic aspect of Europe's accommodating policy was that it actually exacerbated the difficulties the Arabs encountered in trying to enforce the embargo. For the embargo to impact on the U.S. effectively, the Arabs had to cut production for the whole world, remove slack from the market, and prevent diversions to the U.S. A rush by the Europeans and Japanese to be included as "friendly" by the Arabs would not reward the Europeans for their appeasement unless the Arabs gave up their effort to penalize the United States. It is ironic, therefore, that the ultimate result of Europe's "beggars thy neighbor" policies and willingness to placate the Arabs politically was to take the U.S. off the hook and foil the Arabs' last attempt to succeed with their political oil strategy.

The European and Japanese political position interested the Arabs little because only the U.S. could deliver Israeli withdrawals. The Arab bluff of instituting a highly discriminating embargo in their November 4 meeting backfired when the Europeans pushed them into an awkward

* Horst Mendenshausen, "Enlisting Reliable Sources of Supply: Persian Gulf and Elsewhere," The RAND Corporation, WN-8582-ARPA, January 1974, p. 16.

position. Thus the Arabs had two unpalatable alternatives: 1) to admit their inability to carry out their promise to supply friends and deny supplies to enemies at the cost of losing whatever gains made through such divide et impera tactics; or 2) to remove the embargo completely before their bluff was called and thereby retain some credibility and support among their "friends." The Arab oil strategy collapsed at this point. By January, as shown in Table 4.3, the embargo was, for all practical purposes, lifted.

Table 4.3

THE OIL WEAPON: ARAB CUTBACKS DURING ACTUAL PHASE II
(million barrels daily)

	SEPTEMBER	PERCENT CUT	CUTBACK	JANUARY	PRE-CRISIS PROJECTION FOR JANUARY
SAUDI ARABIA	8.6	13	1.1	7.5	9.8
KUWAIT	3.5	20	.7	2.8	3.5
OTHER ARABIAN PENINSULA (NOT OMAN)	2.6	11	.3	2.3	3.0
ALGERIA	1.1	0	--	1.1	1.1
LIBYA	2.3	13	.3	2.0	2.5
IRAQ	2.2	10	.2	2.0	2.6
TOTAL	20.3	13	2.6	17.7	22.5

A third Kuwait meeting took place on December 8. OAPEC reaffirmed a 5 percent cut in oil production and exports for January 1974 and linked the resumption of supplies to Israel's progressive withdrawal from occupied Arab territories, including the city of Jerusalem. That watered-down political objective reflected the political limitations of the oil weapon's efficacy. During their European tour, the Saudi and Algerian ministers were squarely confronted with the problem that the embargo was hurting the

Arabs' friends without affecting the policies of the country which mattered, the United States. Accordingly, on December 25, OAPEC announced that it would instead increase January production by 10 percent. Thus, the actual oil weapon was removed, but a mixed actual-putative strategy emerged as OAPEC declared it would nevertheless continue its boycott of the United States and the Netherlands (while adding Belgium and Japan to the "friendly" list). As shown in Table 4.4, December was the beginning of the end.

In sum, using slightly different estimates than those presented in Table 4.4, by December OAPEC's reduction relative to the September output reached 4.8 million barrels daily or 24 percent below the September level. By the first quarter of 1974 the reduction relative to September would decrease to 2.7 million barrels daily or just 13 percent. Obviously, the shortfalls appear larger if measured against projected levels for the respective months. For example, relative to the projected December production, the reduction in OAPEC's supply amounted to 6.3 million barrels daily. As a percentage of the projected world production for that month, the December shortfall amounted to 11 percent or approximately 7 percent of total world energy demand.*

*The Petroleum Economist, January 1974, pp. 5-6.

Table 4.4
THE OIL WEAPON: A SUMMARY OF ARAB CUTBACKS

Millions of Barrels per day	Sept. 1973	Oct. 1973	% Change Oct. vs. Sept.	Nov. 1973	% Change Nov. vs. Sept.	Est. Dec. 1973	% Change Dec. vs. Sept.	Est. Jan. 1974	% Change vs.
Saudi-Arabia (ARAMCO)	8.3	7.6	-9	6.1	-27	6.4	-23	7.7	-7
Kuwait (KOC)	3.2	2.8	-13	2.4	-26	2.3	-28	2.5	-22
Neutral Zone	0.6	0.5	-15	0.4	-24	0.4	-23	0.5	-17
Arab States	2.6	2.5	-4	2.1	-19	2.0	-24	2.3	-12
Algeria	1.1	1.0	-7	0.9	-20	0.9	-22	0.9	-18
Libya	2.3	2.4	4	1.8	-23	1.8	-23	1.9	-17
Iraq *	2.2	1.7	-21**	2.0	-7	2.1	-1.0	2.1	-5
Other *	0.4	0.2	-50**	0.1	-75**	0.2	-50**	0.4	0
TOTAL ARAB PRODUCTION	20.7	18.7	-10	15.8	-24	16.1	-22	18.3	-12

* Egypt, Syria and other North African Arab.

**Affected by war damage.

SOURCE: Peter Hill and Roger Vielvoye, Energy in Crisis (London: Robert Yeatman, 1974), p. 67.

Some two weeks later Yamani was to admit that the oil embargo against the United States and the Netherlands had been ineffective. "Yamani's statement," reported the press, "was believed to be the first by a responsible Arab official openly admitting the futility of a selective oil boycott."^{*}

Two key questions pose themselves at this point. First, why did OAPEC lift the embargo well before the achievement of its original political conditions? Second, did the third Arab oil offensive fare any better technically in 1973 than it did in 1967 and 1956? The answer to the former, as will be argued in the next Chapter, lies largely in the answer to the latter. But a partial answer can perhaps be found in the suggestive fact that the denouement of OAPEC's supply crisis coincided with the climaxing of OPEC's price offensive. On December 22, three days prior to the relaxation of the boycott, OPEC announced yet another unilateral price increase. The posted price of the market Arabian light crude was set at \$11.65, more than twice the level it reached the day before the embargo was imposed, or a four-fold increase over its October 1 level. Government takes have increased proportionately. From \$1.77 on October 1, it was set at \$3.10 on October 16, then, at \$7.01 on December 22. The time to restore normal production had indeed come.

^{*}"Oil Embargo Futile: Yamani," The Washington Post, January 18, 1974.

Chapter V

THE OIL WEAPON AND THE MANIPULABILITY OF INTERDEPENDENCE

Upstream Management and Downstream Impact

In order to enforce the embargo, the Arabs had to keep detailed information on every barrel of oil leaving their countries. This was accomplished until the October 17 Kuwait meeting by requiring the companies to submit their computer data runs with figures showing the exports to the various countries for the first nine months of 1973 by grade, and by requiring tankers loading oil in Arab ports to provide certificates of destination and unloading points. The companies complied and the information was duly presented. Since the Arabs had no information-gathering system of their own, they were forced to rely on companies' reports, reinforced perhaps by spot checks at terminals to verify such reports. This system might have been satisfactory. Yamani, for example, boasted at one point that the Saudis "are tracking down every last barrel of oil that reached the United States."^{*} Another official added that "the Saudis know more about oil imports into the United States than the U.S. government does."^{**} This observation might have been correct since the U.S. government was indeed having trouble with conflicting figures. But it should not have provided much consolation for the Saudis since it was up to them, not the U.S. to administer and monitor the embargo.

^{*}The New York Times, November 6, 1973.

^{**}Cong., House, The United States Oil Shortage and the Arab-Israeli Conflict, December 2, 1973, p. 15.

Indeed, policing the embargo was the Arabs' most difficult problem. Using a carrot and stick approach with the oil companies operating in their countries, the Arabs delegated the task of administering the selective embargo to the majors. ARAMCO, for example, was told on October 21 that the Saudis "are looking to ARAMCO to police it."^{*} Any deviations from the ground rules by ARAMCO offtakers, warned the Saudis, "would be harshly dealt with." On the other hand, they indicated that compliance and cooperation "would be rewarded." The threats and promises were correctly interpreted by ARAMCO as references to future company growth, as contrasted to its outright nationalization, and, having been made hostages, they soon complied.

To administer the production cutbacks was easy enough, and the companies did not hesitate to obey OPEC's instructions. But the supervision of the strict ground rules of the OPEC selective embargo was a different matter. Saudi Arabia and the other Persian Gulf states instructed the companies to enforce a ban on both direct shipments to the U.S. and on indirect shipments of crude oil and refined products. The ban on exports to the United States included a long list of destinations--Trinidad, the Bahamas, Dutch Antilles (Curaçao), Canada, Puerto Rico, Bahrain (50,000 barrels per day normally supplied to the U.S. Navy), and refined products to Guam and Singapore (supplier of U.S. Navy). Shipments were also reduced to certain specific refineries which supply U.S. markets, including some in Italy, Greece (supplier of the 6th Fleet), and one in southern France. Saudi Arabia added that even this list may not have been

^{*} Church Hearings, Part 7, p. 516.

all-inclusive, and that therefore "it was up to ARAMCO to further refine this as necessary."

The entire period from October 17 through the end of November was to be considered as one unit for the purposes of the embargo as outlined in the first Kuwait meeting. That is, OAPEC considered the companies responsible for observing the average production figures (by grade and by country of destination) of that period only. Later, following the November Kuwait meeting which further tightened its selective embargo, OAPEC drew up a list which divided oil customers into three categories, as follows:

- 1) Those countries allied with Israel in any direct way--total embargo.
- 2) Those countries relatively neutral--only percentage cutbacks.
- 3) Those countries favorable to the Arab cause--shipment at prewar levels.

In order to appear on the most-favored list, a country had to fulfill one or more of these conditions: a) break off diplomatic relations with Israel; b) apply one or more economic sanctions against Israel; c) give some military assistance to the Arab states. During the embargo, it appeared that Saudi Arabia's most-favored list would include the following countries: Arab countries like Lebanon, Jordan, Egypt, and Tunisia; Islamic countries which import Saudi crude such as Pakistan, Turkey, and Malaysia; all African countries which had broken off diplomatic relations with Israel; and France, Spain, and Britain. Japan was conspicuously absent. In addition to the U.S., The Netherlands, and their intermediary suppliers, other countries were totally embargoed for political reasons other than direct connection to the Arab-Israeli issue: South Yemen, South Africa, Rhodesia,

and Portugal. The net effect of such additions was to blunt the political cutting edge in the anti-Israeli campaign, since it permitted more supplies to reach exempted countries.

The October 17th communiqué had displayed some deliberate ambiguity about the political objectives of the embargo, and the November 8th message was similarly obscure about listing specific countries. This evasiveness was doubtless prompted in the first instance by uncertainty over whether it could be implemented in its selective form. By shifting the weight of their action from production cutbacks to embargoing selected destinations, the Arabs crossed the point of no return and may thereby have overreached themselves. It is one thing to exploit a near-monopoly over production and quite another to pretend to control the distribution system.

The administration of the embargo, however, suggests that faulty management was not confined to the producers. While OPEC provided explicit instructions on the allocation of their production, the consuming nations gave no coordinated guidance to the oil companies regarding the global allocations of supplies. Unlike the Suez oil emergency and the 1967 oil embargo, when active government crisis management on the international level was provided, the U.S. government took no action in the far more menacing supply crisis of 1973-74. In each of the past supply and transit crises the Defense Production Act had been invoked to give the President authority to reallocate supplies. The Nixon Administration concentrated mainly on the domestic rather than the international allocation process.* The absence of governmental direction to the oil companies though perhaps explicable, as Adelman suggests, by the Watergate leadership crisis, is

* Church Hearings, p. 146.

nonetheless the most conspicuous single failure by the American government in the oil crisis of 1973-74:

"The conduct of the United States was the most important. The hearings of the Senate Foreign Relations Committee, Subcommittee on Multinational Corporations, have now revealed that Saudi Arabia lacked the personnel and facilities to run the boycott. So, the ARAMCO companies did, as Saudi agents on foreign soil, in Europe and Asia, helping to damage the economy of the United States. This is, to put it mildly, a rather anomalous role for American companies to play. Yet the companies were not disloyal. They notified the Pentagon and the State Department immediately, and were never told to desist. The Administration was concerned only to cover-up the facts, ultimately made known by the press and the Senate."^{*}

Left to their own devices, the international oil firms opted for a natural mid-course between trying to defeat the embargo altogether, and complying with its purposes to the letter. The companies worked at cross-purposes by trying to serve two masters. Being hostages to the producers, they could not be expected to work forcefully to advance the interests of consumers. So companies developed their positions individually.

Mr. Frank McFadzean, Chairman of Shell Transport and Trading and Deputy Chairman of the Managing Directors of the Royal Dutch Shell Group, has outlined his company's philosophy. He claimed that the oil industry had warned governments in Europe and Japan that a crisis of supply was likely, although the industry had not foreseen that it would arise in this particular fashion.

"We do not regard it as being a function of a multinational enterprise such as ourselves, to start allocating in scarce conditions... On the question of Arab oil we have complied strictly, as we are bound to do, with the destination controls imposed on us. Where we have got non-destination controlled oil, we will use that to meet the needs of the countries that would otherwise go short. And I don't think that an international enterprise such as ourselves has any alternative."^{**}

^{*} Morris A. Adelman, "How to Have an Oil Crisis--A One-Year-Later Critique," The Conference Board Record, Vol. XII, No. 1, January 1975, p. 44.

^{**} Quoted in Peter Hill and Roger Vielvoye, Energy in Crisis (London: Robert Yeatman, Ltd., 1974), p. 74.

It appears, then, that in the absence of alternative mechanisms, the International oil industry assumed the role of supply distributor, primarily through a policy of sharing out all supplies as fairly as possible--most importantly, non-embargoed Iranian, Nigerian, and Venezuelan oil. Though the criteria used by the oil companies to allocate their available petroleum supplies are not known, the aggregate data for a selected number of Western nations seems generally consistent with McFadzean's statement, and a more straightforward one by his colleague from Royal Dutch/Shell, Geoffrey Chandler:

"The allocation of oil as a percentage of demand to all markets appeared to be the most equitable and practicable course of action in the circumstances. Indeed, it was the only defensible course if governments were not collectively to agree on any alternative preferred system. For the companies, even if this seemed the only way to avoid inviting their own destruction, it was by no means the most economically effective."^{*}

The American oil companies individually decided that each would attempt to meet the requirements of the embargoed nations while strictly complying with the Arab directives. Like their British/Dutch counterparts, U.S. companies decided that the pain should be evenly spread to all major consuming nations, i.e., that the shortfall would not be transmitted directly to the targeted economies. In essence, the companies had to choose between two kinds of guidelines: a historical demand base (usually the same time-frame used by OAPEC in determining production cutbacks and desired imports levels, i.e. January-September 1973) or a current/projected demand base. While the historical base would have offered the more easily defensible legal position, it had inequitable aspects of its own. For

^{*} Geoffrey Chandler, "The Changing Shape of the Oil Industry," Petroleum Review, June 1974.

instance, under such standards the Japanese stood to lose a comparatively greater share of the reduced supplies, simply because their demand was growing at a much higher rate than U.S. or European. The alternative option, of allocating on the basis of current and projected demand, was no less problematic, due to inherent statistical uncertainties.

Nonetheless, once the allocation base had been established, each company sought to equalize supplies. In other words, a supply cutback of 10 percent should have ideally resulted in each consuming nation receiving 90 percent of its basic demand. The implication of such a policy was that companies did not seek to sell in markets where higher spot prices could have been achieved, but instead followed their long-term interest in supplying their customers quite fairly. The actual redistribution was hampered by a variety of constraints. In addition to technical refinery and pipeline rescheduling, political and commercial factors had to be considered, such as existing contractual commitments or restrictions imposed by certain consuming nations which forbade transshipments and re-exportation of oil imported solely for refining on export account.

Summarizing the scope of the worldwide oil shortfall, OPEC's production in November was 24 percent below the September levels; in December, 22 percent; in January, merely 12 percent. Obviously, if measured against pre-crisis production projections, the shortfalls would have been higher; e.g., 29 percent in the month of December. Such calculation, however, while taking into account the seasonal component, ignores the price-effects that could have been expected as OPEC's price increases began being felt in the market. On the other hand, taking 53.0 and 57.7 million barrels daily as the projected world production figures for December and the first

quarter of 1974 respectively, the shortage caused by OAPEC in December amounted to a shortfall of 11 percent of the projected world production, declining to 7 percent in the first quarter of 1974 as non-OAPEC oil producing nations increased production.

A sense of the scope of the supply equalization effort and the deviations from it can be learned from the following five tables. Table 5.1 estimates the flow of Arab oil exports prior to the embargo. Tables 5.2 and 5.3 give estimates of the American majors' and Independents' sources of supply. These companies, of course, do not exhaust the distribution network, but they are fairly representative. Finally, Tables 5.4 and 5.5 show the deliveries made by the American companies to their customers. Specifically, it can be observed that the total shortfall in supply to the majors was 6.9 percent relative to the base period; the independents suffered a 10.4 percent shortfall in supply. In their allocation of these shortages, the majors supplied the U.S. and Europe rather evenhandedly, each receiving some 12 to 13 percent less than the year before. Japan, on the other hand, received almost the same it imported the previous year. But taking into account Japan's greater rate of growth of energy demand, getting the same during the embargo was tantamount to sharing part of the shortage the U.S. and Europe were experiencing. The independents, suffering a 29 percent loss of Arab crude and products, followed the same policy of equalizing the shortfall between Europe and the U.S., but increased their supply to Japan rather considerably.

Table 5.1

ESTIMATED PRE-CRISIS ARAB OIL EXPORTS, 1973
 Thousand b/d and Percent of Exports

ARAB OIL PRODUCERS	TOTAL	UNITED STATES	WESTERN EUROPE										JAPAN	CANADA	COMMUNIST AREA	OTHER											
			WEST GERMANY		UNITED KINGDOM		FRANCE		ITALY		NETHERLANDS						OTHER										
			Quantity	Percent	Quantity	Percent	Quantity	Percent	Quantity	Percent	Quantity	Percent															
TOTAL ARAB PERCENT	18,600	1,600	8.6	11,300	60.8	1,650	8.9	1,600	8.6	2,100	11.3	1,750	9.4	1,450	7.8	2,750	14.8	2,300	12.4	150	0.8	400	2.1	2,850	15.3		
SAUDI ARABIA PERCENT	8,000	600	7.5	4,360	54.4	500	6.2	550	6.9	600	7.5	700	8.8	750	9.4	1,250	15.6	1,250	15.6	50	0.6	Negl.	Negl.	1,750	21.9		
KUWAIT PERCENT	3,100	150	4.8	1,750	21.9	100	1.3	350	4.4	300	3.8	300	3.8	350	4.4	350	4.4	650	8.4	Negl.	Negl.	Negl.	Negl.	550	7.0		
LIBYA PERCENT	2,200	350	15.9	1,700	21.9	500	22.7	250	11.4	150	6.0	400	19.2	100	4.6	300	13.6	Negl.	Negl.	50	2.3	100	4.5	Negl.	Negl.		
IRAQ PERCENT	1,900	50	2.6	1,300	16.7	100	5.3	100	5.3	400	21.1	350	18.4	Negl.	Negl.	350	18.4	50	2.6	Negl.	Negl.	200	10.5	300	15.8		
ABU DHABI PERCENT	1,150	150	13.1	600	7.5	Negl.	Negl.	200	17.4	300	26.1	Negl.	Negl.	Negl.	Negl.	100	8.7	300	3.8	50	4.3	Negl.	Negl.	50	4.3		
ALGERIA PERCENT	1,100	150	13.6	750	9.4	250	22.7	Negl.	Negl.	250	22.7	Negl.	Negl.	50	4.6	200	18.2	Negl.	Negl.	Negl.	Negl.	Negl.	Negl.	50	4.6	150	13.6
OTHER ARAB PERCENT	1,150	150	13.1	850	10.7	200	17.4	150	13.1	100	8.7	Negl.	Negl.	200	17.4	200	18.2	50	2.6	Negl.	Negl.	50	4.3	50	4.3		

THIS TABLE ALLOCATES IMPORTS ON A DIRECT AND INDIRECT BASIS--I.E. REFINED PRODUCTS FROM EXPORT REFINERIES ARE TRACED TO THE SOURCE OF CRUDE OIL. THE ESTIMATES ARE A YEARLY AVERAGE FOR 1973 AND THEREFORE DIFFER FROM ESTIMATES MADE AT ANY SPECIFIC TIME. FOR EXAMPLE, U.S. DEPENDENCE ON ARAB OIL HAS INCREASED THROUGHOUT THE YEAR AND IN OCTOBER WAS NEARLY 2 MILLION BARRELS PER DAY.

Source: Department of State, 1973.

Table 5.2

5 MAJOR U.S. OIL COMPANIES--SOURCES OF CRUDE OIL AND PRODUCTS
(IN THOUSANDS OF BARRELS PER DAY)

	BASE PERIOD (DECEMBER 1972- MARCH 1973)	EMBARGO (DECEMBER 1973- MARCH 1974)	CHANGE (PERCENT)
CRUDE OIL:			
ARAB OPEC-----	5,630.0	5,096.8	-9.5
NON-ARAB OPEC-----	3,477.5	3,624.8	+4.2
OTHER-----	747.0	516.7	-30.8
TOTAL-----	9,854.5	9,238.3	-6.3
PRODUCTS:			
ARAB OPEC-----	270.0	315.3	+16.8
NON-ARAB OPEC-----	711.0	701.5	-1.3
OTHER-----	1,615.8	1,331.5	-17.6
TOTAL-----	2,596.8	2,348.3	-9.6
CRUDE AND PRODUCTS:			
ARAB OPEC-----	5,900.0	5,412.1	-8.3
NON-ARAB OPEC-----	4,188.5	4,326.3	+3.3
OTHER-----	2,352.8	1,848.4	-21.8
TOTAL-----	12,451.3	11,586.8	-6.9

SOURCE: FEA report to the Church subcommittee, 1975.

Table 5.3

8 INDEPENDENT U.S. OIL COMPANIES--SOURCES OF CRUDE OIL AND PRODUCTS
(IN THOUSANDS OF BARRELS PER DAY)

	BASE PERIOD (DECEMBER 1972- MARCH 1973)	EMBARGO (DECEMBER 1973- MARCH 1974)	CHANGE (PERCENT)
CRUDE OIL:			
ARAB OPEC-----	1,298.8	907.3	-30.1
NON-ARAB OPEC-----	647.3	734.5	+13.5
OTHER-----	329.2	311.7	-5.3
TOTAL-----	2,275.3	1,953.5	-14.1
PRODUCTS:			
ARAB OPEC-----	59.3	51.0	-13.9
NON-ARAB OPEC-----	144.0	137.0	-4.9
OTHER-----	585.5	604.8	+3.3
TOTAL-----	788.8	792.8	+5
CRUDE AND PRODUCTS:			
ARAB OPEC-----	1,358.1	950.3	-29.4
NON-ARAB OPEC-----	791.3	871.5	+10.1
OTHER-----	914.7	916.5	+2
TOTAL-----	3,064.1	2,746.3	-10.4

SOURCE: FEA report to the Church subcommittee, 1975.

Table 5.4

8 INDEPENDENT U.S. OIL COMPANIES--DELIVERIES OF CRUDE OIL AND PRODUCTS
(IN THOUSANDS OF BARRELS PER DAY)

	BASE PERIOD (DECEMBER 1972- MARCH 1973)	EMBARGO (DECEMBER 1973- MARCH 1974)	CHANGE (PERCENT)
CRUDE OIL:			
UNITED STATES-----	657.3	466.5	-29.0
CANADA-----	---	---	---
WESTERN EUROPE-----	930.8	822.0	-11.7
JAPAN-----	100.0	136.5	+36.5
OTHER-----	587.2	528.5	-10.0
TOTAL-----	2,275.3	1,953.5	-14.1
PRODUCTS:			
UNITED STATES-----	627.5	643.5	+2.5
CANADA-----	---	---	---
WESTERN EUROPE-----	83.8	64.3	-23.3
JAPAN-----	18.8	26.0	+38.7
OTHER-----	58.7	59.0	+ .5
TOTAL-----	788.8	792.8	+ .5
CRUDE AND PRODUCTS:			
UNITED STATES-----	1,284.8	1,110.0	-13.6
CANADA-----	---	---	---
WESTERN EUROPE-----	1,014.6	886.3	-12.6
JAPAN-----	118.8	162.5	+36.8
OTHER-----	645.9	587.5	-9.0
TOTAL-----	3,064.1	2,746.3	-10.4

SOURCE: FEA report to the Church subcommittee, 1975.

Table 5.5

5 MAJOR U.S. OIL COMPANIES--DELIVERIES OF CRUDE OIL AND PRODUCTS
(IN THOUSANDS OF BARRELS PER DAY)

	BASE PERIOD (DECEMBER 1972- MARCH 1973)	EMBARGO (DECEMBER 1973- MARCH 1974)	CHANGE (PERCENT)
CRUDE OIL:			
UNITED STATES-----	1,359.0	1,136.8	-16.4
CANADA-----	493.3	466.3	-5.5
WESTERN EUROPE-----	4,074.8	3,718.3	-8.7
JAPAN-----	1,557.8	1,505.5	-3.4
OTHER-----	2,369.6	2,411.6	+1.8
TOTAL-----	9,854.5	9,238.5	-6.3
PRODUCTS:			
UNITED STATES-----	1,248.3	1,158.0	-7.2
CANADA-----	12.8	8.3	-35.3
WESTERN EUROPE-----	784.5	480.0	-38.8
JAPAN-----	125.5	195.5	+55.8
OTHER-----	425.7	506.5	+19.0
TOTAL-----	2,596.8	2,348.3	-9.6
CRUDE AND PRODUCTS:			
UNITED STATES-----	2,607.3	2,294.8	-12.0
CANADA-----	506.1	474.6	-6.3
WESTERN EUROPE-----	4,859.3	4,198.3	-13.6
JAPAN-----	1,683.3	1,701.0	+1.0
OTHER-----	2,795.3	2,918.1	+4.4
TOTAL-----	12,451.3	11,586.8	-6.9

SOURCE: FEA report to the Church subcommittee, 1975.

The range of vulnerabilities should be borne in mind. The most precise measure of oil import vulnerability is the oil share in the total national energy supply. Furthermore, high oil-import dependence obviously does not necessarily imply high exposure to Arab oil pressure. Seen this way, the constellation of vulnerabilities to Arab oil pressure on the eve of the 1973 OAPEC embargo was as follows: The United States--4 percent; the United Kingdom--30 percent; West Germany--38 percent; France--53 percent; Italy--60 percent; the European Community as a whole--42 percent; Japan--34 percent. In other words, it was Europe rather than Japan which was actually more directly exposed to Arab cut-offs. Expectedly, the U.S. was least dependent on Arab imports, but it was also relatively low general dependence on oil as an energy source which contributed to reduce American vulnerability to Arab oil denial to less than one-tenth of that experienced by the European Community.*

The task of equalizing supplies to consumers was not particularly forbidding, because of the contradictory structure of the embargo: the boycotted countries--the Netherlands and the United States--were least dependent on the embargoed oil. Thus, a built-in leveler operated to bring about a rather even share of misery throughout the market. Specifically, five main conclusions can be reached by comparing the U.S. supply position with that of the rest of the world in the aggregate:

- a. The United States lost only a slightly greater proportion of its total oil supply and of its total energy supply than the average for the rest of the world.

* Derived from annual figures given the Council on International Economic Policy, International Economic Report of the President, March 1975.

- b. The other consuming countries of the world did not seem to differ very widely in the degree of their losses.
- c. There were some diversions of crude oil from the normal destinations, but very little was directed into the United States and some was even directed away from the United States.
- d. Leakage of embargoed oil to the United States was all but eliminated by January 1974.
- e. In some cases, but not always, crude oil was supplied to nations, including the United States, at a lower price than could have been obtained elsewhere.*

In September 1973, the United States had 17.6 million barrels of oil available daily (including crude and refined products, domestic production and imports). This daily average increased slightly during October and November, but as the effects of the Arab cutbacks began to be felt, the supply dropped sharply in December, and continued to drop through February, when the bottom was hit--at a level of 16.3 million barrels daily, about 7.4 percent below the September level. This drop was due almost entirely to the drop in imports; U.S. production remained almost level.

The rest of the world, being closer to Arab sources of supply, began to feel the cutback quicker than the United States. Their low point was reached in December, at a level 6.7 percent below their September level. By February, when the U.S. supply of oil was at its lowest mark, the rest of the world had a greater supply than in September. It appears that the United States, on the average throughout the crisis, lost a larger proportion of its oil supply than did the rest of the world. The U.S., during its four worst months, was down an average of 6.1 percent from the September supply level, whereas the rest of the world during that time was down only 3.4 percent.

*See the statement of Robert A. Stobaugh before the Church subcommittee, July 25, 1974 (mimeo.).

Although there has been no appreciable increase in U.S. production of crude, oil supplies, of course, are only part of the world's energy. Assuming no excess productive capacity of other energy supplies, then the U.S. loss of energy was 3.5 percent during the worst month. Correcting for the fact that the U.S. is slightly less dependent on oil for energy than the rest of the world, the United States still seems to have lost a slightly greater share of its total energy supply than did other nations.

The degree of precision attained by the Arabs in targeting the oil weapon can be assessed by comparing the shortfalls incurred in the U.S. with the losses suffered by other categories of targeted nations; "friendly" countries, such as Japan and France, and a "neutral" country such as West Germany.

Table 5.6

ESTIMATED SUPPLIES OF CRUDE OIL AND TOTAL ENERGY (SELECTED COUNTRIES)
(Percentage of January-September 1973 Average)

	CRUDE OIL				ENERGY			
	1973		1974		1973		1974	
	NOV.	DEC.	JAN.	FEB.	NOV.	DEC.	JAN.	FEB.
U.S.	+4.0	-4.2	-4.9	-5.1	+1.9	-2.0	-2.3	-2.4
JAPAN	+2.4	+4.7	-9.0	+2.0	+1.9	+3.4	-7.2	+1.6
W. GERMANY	+3.4	-11.1	-6.4	-13.2	+2.0	-6.5	-3.4	-7.7
U.K.	+6.2	-12.5	NA	NA	+3.2	-6.5	NA	NA
FRANCE	+14.2	-16.5	NA	NA	+10.3	-12.0	NA	NA

SOURCE: Stobaugh's statement to the Church subcommittee,
July 1974.

Using as a point of reference the average supply for January through September 1973, it appears that Japan was slightly better off than the United States, which in turn was somewhat better off than West Germany, the United Kingdom, and France. The more meaningful comparison of projected supply with actual supply shows a comparatively greater loss for Japan, because its oil consumption had been growing more rapidly than that of the other countries. When corrections are made for the lesser American dependence on oil it becomes clear that, at a certain moment, at the height of the embargo, France, a country friendly to the Arabs, suffered an energy shortfall greater than the American by a factor of six! On the average, however, there was little difference between the various countries.

Table 5.7

ARAB LEAKAGE TO THE U.S. DURING THE 1973-74 OIL EMBARGO
('000 BARRELS)

ARAB SUPPLIERS	OCTOBER	PERIOD OF EMBARGO				TOTAL LEAKAGE	MONTHLY AVERAGE AS A PERCENT OF OCTOBER DELIVERIES
		NOVEMBER	DECEMBER	JANUARY	FEBRUARY		
SAUDI ARABIA	23,075	18,017	7,071	257	552	25,897	28.1
LIBYA	5,095	4,819	1,227	-	-	6,046	29.7
ALGERIA	3,690	2,127	1,541	-	-	3,768	25.5
UNITED ARAB EMIRATES	1,920	2,505	562	-	-	3,067	39.9
KUWAIT	1,724	3,067	96	-	-	3,163	45.9
TUNISIA	672	672	46	260	33	1,011	37.6
IRAQ	364	515	-	-	-	515	142.3
QATAR	543	962	-	-	-	962	177.2
TOTAL	37,083	32,684	10,643	517	585	44,429	30.0

SOURCE: The Federal Energy Office, April 1974.

Swapping, transshipments, leakage, and diversions were the compensatory mechanism used by the international oil industry to spread the effects of the oil weapon. These served to diffuse the accuracy of the weapon. The market, however, was much more adept at diverting crude oil than refined products. On the surface, for instance, the United States appears to have lost the exact amount of crude imported from Arab sources. United States crude imports were reduced by some 30 percent between August-September 1973 and January-February 1974. More than 98 percent of the Arab oil which the U.S. had been receiving was lost; imports of Arab oil dropped from 1.2 million barrels daily in August-September to only 19,000 a day during January-February. At the same time, total supplies of non-Arab oil dropped very slightly, about 2 percent. A deeper analysis into the origin of American imports, however, suggests that substantial cuts occurred in U.S. imports from non-Arab sources such as Venezuela, Canada, and Nigeria. These cuts in imports were almost offset by increased imports from other non-Arab sources, primarily from Iran, and to a lesser extent from Indonesia, Ecuador, and several other Western Hemisphere countries. Imports of Iranian crude oil almost doubled, increasing by 201,000 barrels a day. The Canadian reduction was probably intended to make up for the reduced supply of Arab oil which Canada received. On the other hand, Venezuelan oil was diverted away from the United States in order to provide other Latin American countries with more oil. Finally, Nigerian oil was probably diverted to Holland. While U.S.-bound oil was diverted elsewhere, one cannot consider the increased exports to the U.S. from Iran and Indonesia to be diversions from other countries, because their production was increased after the embargo began by an amount greater than the increase which the United States received.

Although the oil shortage was in effect spread throughout the system, there was an unmistakable feeling that a real shortage existed, and the affected countries instituted various measures to cope with it. Much of the shortfall would have occurred anyway due to the effect of quadrupling prices in January. The fact that in the peak boycott month of January shipments of oil from the Middle East were 5 percent higher than in the "free market" month of January 1975, suggests that the reduction in demand because of costs was probably greater than the shortfall of supplies.*

Table 5.8

QUANTITIES OF IMPORT OF CRUDE OIL DURING 1973-4 OIL EMBARGO,
NON-OAPEC SOURCES
(thousand barrels daily)

	DECEMBER 1973				JANUARY 1974			FEBRUARY 1974		
	U.S.	JAPAN	W. GERMANY	U.K.	U.S.	JAPAN	W. GERMANY	U.S.	JAPAN	W. GERMANY
INDONESIA	217	786	--	--	203	720	--	355	782	--
IRAN	317	1,575	397	145	437	1,249	352	422	1,240	254
NIGERIA	474	159	256	191	470	82	261	454	25	216
ANGOLA	62	--	--	--	19	--	--	77	23	--
ECUADOR	56	--	--	--	90	--	--	90	--	--
VENEZUELA	627	7	57	87	559	13	18	421	18	22
TRINIDAD	90	--	--	--	76	--	--	56	--	--
CANADA	725	--	--	--	967	--	--	951	--	--

SOURCE: Stobaugh's statement to the Church subcommittee, July 1974.

* See The Economist, March 8, 1975, p. 16.

Table 5.9

U.S. SHARE OF OIL AVAILABLE TO CONSUMING NATIONS
(10⁶ bbls. and percents)

	1973				1974		
	SEPT.	OCT.	NOV.	DEC.	JAN.	FEB.	MARCH
1. OIL AVAILABLE TO WORLD	58.3	59.2	57.7	54.8	55.4	57.2	58.0
2. OIL AVAILABLE TO U.S.	17.6	17.7	18.3	16.8	16.4	16.3	16.6
3. PERCENT CHANGE IN OIL AVAILABLE TO U.S. (1=SEPT.)	--	+6	+4.0	-4.6	-6.9	-7.4	-5.3
4. OIL AVAILABLE TO REST OF WORLD (INCL. COMM. STATES)	40.7	41.5	39.4	38.0	39.0	40.9	41.4
5. PERCENT CHANGE IN OIL AVAILABLE TO REST OF WORLD (1=SEPT.)	--	+2.0	-3.2	-6.7	-4.2	+5	+1.7
6. U.S. PRODUCTION OF CRUDE	9.1	9.1	9.1	9.1	9.1	9.0	9.0
7. U.S. PRODUCTION OF NATURAL GAS LIQUIDS	1.7	1.7	1.7	1.7	1.7	1.7	1.7
8. U.S. CRUDE IMPORTS	3.8	4.0	4.1	3.0	2.9	2.9	2.9
9. U.S. PRODUCT IMPORTS	2.9	2.8	3.1	3.0	2.7	2.7	2.6

Source: Stobaugh's statement to the Church subcommittee, July 1974.

Table 5.10

CHANGE IN ENERGY SUPPLIES OF OIL AND TOTAL ENERGY DURING
1973-4 OIL EMBARGO--U.S. VERSUS REST OF WORLD

	PERCENTAGE OF SUPPLY IN SEPTEMBER 1973			
	OIL SUPPLY		TOTAL ENERGY SUPPLY	
	U.S.	REST OF WORLD	U.S.	REST OF WORLD
DURING WORST MONTHS	-7.4	-6.7	-3.5	-3.3
AVERAGE DURING WORST 2 MONTHS	-7.3	-5.5	-3.4	-2.7
AVERAGE DURING WORST 3 MONTHS	-6.5	-4.7	-3.1	-2.3
AVERAGE DURING WORST 4 MONTHS	-6.1	-3.4	-2.9	-1.7

SOURCE: Stobaugh's statement to the Church subcommittee, July 1974.

The Dutch were the first to introduce a ban on Sunday driving, which the government estimated would save about 10 percent of weekly gas consumption. Deliveries of fuel oil to customers were reduced by 15 percent. Still, rationing was not necessary in the initial stages since the Netherlands had substantially more than the 65 days of stocks required by the Common Market. The total embargo of the Netherlands affected many other countries since the port of Rotterdam, with its associated refineries and storage facilities, serviced all of Northern Europe. In 1972, for example, 132 million tons of crude and products entered the port, and 48.8 million tons were shipped out again. The Rotterdam-Rhine pipeline moved 19.4 million

tons of crude into West Germany, and an additional 10 million tons were piped from the port to Belgian refineries near Antwerp. A pipeline for refined products moved about 7 million tons into German industrial centers.*

In reality, OAPEC's decision to embargo Holland thus threatened all of Western Europe. Of the crude oil reaching Rotterdam in 1972, 72.3 percent originated in Arab countries--a total of some 94 million tons. After allowing for internationally-bonded storage facilities in the area, total crude shipped to the Netherlands in 1972 was 77.6 million tons, of which 35 million tons, or 45.1 percent, were absorbed by the Dutch market and the remainder exported. The huge surpluses in the refining capacity of Rotterdam served Germany, Belgium and Denmark, and helped to balance the range of products available to Britain, France, and other European countries. OAPEC's dilemma was well symbolized by the Rotterdam boycott. OAPEC could either do its best to embargo Holland, thereby depriving such "friendly" countries as Britain and France of substantial amounts of their energy needs, or it could relax the embargo and allow crude to pass through Rotterdam to other destinations, at the cost of undercutting its impact in the Netherlands. By opting for the second alternative, OAPEC blunted its own weapon.

Nevertheless, Rotterdam's oil exports were partially affected, and numerous countries suffered the consequences. Industrial oil and gasoline deliveries were reduced by 10 percent in Sweden, for example. In Germany, a Sunday driving ban and speed restrictions made up for the 5-6 percent

* For details of the concrete effects of the embargo on specific countries see "How Governments Cope with the Oil Crisis: A BI Rundown on World Restrictions and Plans," Business International, December 7, 1973; and Hill and Vielvoye Energy and Crisis, pp. 76-104.

shortfall in gasoline supplies. In fact, the supply crisis affected German prices more than actual deliveries; by the end of the year the level of undistributed stocks of crude and oil products was only 7.7 percent below the September level (a reduction from 25.8 million tons to 23.8 million tons). Furthermore, West Germany, which lacks a major home-based oil company, fared rather well under the majors' equalization scheme. This relieved the longstanding German concern that, in the event of a supply crisis, the Anglo-British-Dutch firms would give preferential treatment to their home countries.

The German experience contrasts with the French. Traditionally independent, France probably pursued the most fiercely nationalistic policies of any European nation to secure its sources of energy. Combining a preference for establishing national oil companies with assiduous courtship of the Arabs, France expected to see these tactics vindicated at the moment of truth. But, as we have shown above, France suffered the double humiliation of sharing the fate of its fellow Europeans and experiencing the nearly complete nullification of its Middle Eastern policy. Indeed, embargoed Holland ultimately fared better than "friendly" France. The oil companies' policy of equalizing supplies, of course, caused this debacle for the French. At one point, the executives of the French subsidiaries of the majors were officially warned that their refining and marketing licenses would be revoked unless they acceded to governmental demands that supplies not be affected by the equalization policy. The

* For a structural analysis of supply patterns in key countries see, for example, The Economist Intelligence Unit's Oil and Economic Growth (London: 1974).

French were convinced that they were securing their oil supplies by appeasing OAPEC on the political front. Their naiveté seemed to prove Adam Smith's remarks about those who preached it not being such fools as those who believed it. In December, the French government had to cut gasoline consumption and impose speed restrictions and other mandatory conservation measures. Authority for allocations and rationing was instituted. Yet the French seem not to have drawn the obvious conclusions from this experience. True to the Bourbon tradition, they forgot nothing and learned nothing. Pursuing the same old nationalistic line, they were quick to embark on an ambitious policy of bilateralism, negotiating long-term oil agreements with Kuwait and Saudi Arabia in return for French capital investment in new industries and arms.

Like France, Italy had an active national oil company (ENI); it also tried to introduce export restrictions. This had immediate repercussions in Switzerland and Austria, which received large amounts of oil from Italy. The restrictive measures were justified in that Italy's proximity to the sources of supply and extreme degree of dependency made her the first country to be seriously affected by the embargo. Furthermore, Italy was caught unprepared; her stocks were 25 to 30 percent below the levels of the previous year.

The British should have enjoyed the best of two worlds. Since the British government held shares in two major oil companies and adopted a diplomatic posture intended to woo the Arabs, it could reasonably expect to fare better than its EEC partners. Moreover, while France had maintained an explicit and consistent pro-Arab stance since 1957, the British tilt toward OPEC became open with the outbreak of the October war and the

imposition of an arms embargo that had adverse effects only on Israel. Although Britain succeeded to the point of being added to the Arabs' "friendly" list, this triumph was limited, in practical terms, by the equalization policy of the oil companies. Her situation was further compounded by a coal strike which culminated in a declaration of a state of emergency in Mid-November and lasted till March 1974. The oil companies maintained the policy of fair allocation of supplies, with the result that actual shortages in Britain were no more serious than in other European countries, despite official pressure on companies based in Britain to persuade them not to frustrate national policy.

Oil stocks in Western Europe have been drawn down to varying extents. The EEC has estimated that its stocks fell by 56 million barrels between the beginning of 1974 and March that year. Still, the March level thus equalled 72 days' consumption--an astonishingly high level. In Germany, undistributed stocks of crude and products decreased from 180 million barrels at the end of September to 167 million barrels at the end of December. Nonetheless, the latter quantity was 7 million barrels above the same time last year. The United Kingdom, with the coal strike exacerbating its oil shortage, has seen its stocks drop more rapidly, from 162 million barrels on September 29 (or 76 days' supply) to 132 million barrels (or 55 days' supply) on January 19. Again, a rather comfortable inventory.

Japan offered the real test of the embargo. On one hand, Japan was most vulnerable to oil production cutbacks; on the other hand, its diplomacy was as pro-Arab as possible and involvement with Israel was minimal. Nonetheless, the Arabs accused Japan of "odious neutrality" and rewarded her with a middle rating. Japanese concessions in Abu Dhabi and the

Neutral Zone were ordered to make the full 25 percent cutbacks, which prompted Japanese fears that the shortfall in deliveries from the Gulf might be as high as 30 percent in 1974. The Arabs were seemingly testing the effectiveness of selecting the most vulnerable of their clients to put indirect pressure on the United States. But if that was the purpose, as Yamani admitted, then the fictitious listing was to backfire in OAPEC. The Japanese succeeded in foiling the Arab strategy. In December, MITI gloomily forecast a zero-to-negative economic growth for Japan for 1974; the government announced comprehensive conservation measures and stepped up its diplomatic efforts to loosen already weak ties with Israel. OAPEC responded by upgrading Japan to the "friendly" list, thus gaining a friend while simultaneously losing influence.

The United States did not lose more than its proportionate share of the world decline in available supplies. Moreover, the American shortfall was not in its entirety caused by OAPEC's direct ability to deny that oil to American markets. Rather, it was OAPEC's indiscriminate targeting which brought the United States to divert U.S.-bound oil to the more hard-hit European markets. The oil companies' equalization policy, in other words, randomized the impact of the oil weapon while at the same time hurt the United States more than it would have otherwise, had the companies not intervened at all. A laissez-faire policy on the part of the oil industry would have caused a major economic catastrophe in Europe and Japan while leaving the American economy virtually intact in terms of its energy supply. In addition, a portion of the shortfall could not in any sense be attributable to OAPEC but was part of the American "energy crisis" which began a year earlier due to a shortage in refinery capacity.

Table 5.11

U.S. IMPORTS OF CRUDE AND PRODUCTS: 1972-73
('000 b/d)

<u>CRUDE OIL</u>	<u>1st HALF</u> <u>1972</u>	<u>YEAR</u> <u>1972</u>	<u>1st HALF</u> <u>1973</u>	<u>JULY</u>	<u>AUG.</u>	<u>SEPT.</u>
<u>Arab Suppliers</u>						
Saudi Arabia	190	201	323	350	638	625
Libya	105	101	155	82	198	209
Algeria	61	85	144	66	162	158
United Arab Emirates	36	33	87	46	100	36
Kuwait	43	42	48	--	87	44
Tunisia	--	--	22	30	32	10
Egypt	7	10	16	--	37	11
Oman	4	3	12	52	14	--
Iraq	10	6	6	--	11	--
Syria	--	--	3	--	--	--
Qatar	7	4	3	--	5	26
Bahrain	1	1	--	--	--	--
Sub-total	<u>464</u>	<u>489</u>	<u>819</u>	<u>626</u>	<u>1284</u>	<u>1119</u>
<u>Non-Arab Suppliers</u>						
Iran	125	141	160	135	230	228
Nigeria	--	--	370	303	606	440
Other E. Hemisphere	365	452	252	250	348	71
Canada	842	866	1176	1194	909	1168
Venezuela	427	451	503	466	704	555
Other W. Hemisphere	70	52	110	67	181	83
Sub-total	<u>1820</u>	<u>1962</u>	<u>2571</u>	<u>2415</u>	<u>2978</u>	<u>2545</u>
Total Crude	2293	2451	3390	3041	4262	3664
<u>PRODUCTS</u>						
<u>Arab Suppliers</u>						
Saudi Arabia	27	19	24			
Algeria	8	12	30			
Kuwait	7	9	17			
Bahrain	13	13	10			
Libya	1	--	7			
United Arab Emirates	2	--	--			
Sub-total	<u>58</u>	<u>53</u>	<u>88</u>			
<u>Non-Arab Suppliers</u>	2,173	2,083	2,624			
Total Products	2,231	2,136	2,712	2,372	2,632	2,580
Total Crude & Products	4,524	4,587	6,102	5,413	6,894	6,244

SOURCE: The Federal Energy Office, 1974.

All in all, the following conclusions stand out from the data about U.S. oil supplies, consumptions and stocks during the embargo.* First, about 1.5 million barrels per day, or some 0.3 million barrels per day less than the decline that had been anticipated. The difference can be accounted for by some growth in Imports from non-OAPEC countries and by a modest amount of leakage. Second, because of somewhat higher-than-expected imports, cutbacks in consumption of major products were less severe than had been feared. Consumption of gasoline declined 7 percent. Normal growth in the demand for gasoline of 5 to 6 percent could be added to that to give a 12 to 13 percent shortfall from unconstrained demand levels, i.e., from consumption that would have been forthcoming had supplies been plentiful and had prices remained relatively stable. The decline in gasoline consumption, actual and hypothetical, would have been even greater had not warmer winter weather intervened to permit an early shift back in refinery yields from heating oil to gasoline. Despite liberal allocation policies, stocks came out of the embargo experience in a considerably better shape than they were a year before and not much worse off than two years before when summer supplies were relatively plentiful.

Third, the mildness of the weather was again a major factor behind the relatively small drawdown in distillate stocks. Despite growth in the consumption of diesel fuel, total distillate consumption declined

*Morgan Guaranty Trust's Economist's Department wrote a competent quantitative analysis of the effects of the embargo on the U.S. energy situation. See its "The Oil Embargo: An Early Post-Mortem," Staff Paper, April 25, 1974 (mimeo.).

only 5 percent from the previous year levels. Even though the winter was started in almost as bad a shape in terms of stocks as a year earlier, it ended with a fairly sizeable inventory. Fourth, price effects were considerable. Retail gasoline prices have increased 32 percent from mid-1973, and home heating oil prices were up 53 percent. The wholesale price index for all products was up 100 percent. Finally, it was consumption of residual oil which fell the most (13.5 percent) on a year-over-year basis in response to several factors: the weather, the replacement of oil by coal in Eastern utilities, conservation in electricity usage by both household and industrial consumers. This product area was perhaps the most sensitive to the Arab cutbacks for two reasons; the dependence of industrial production on energy is largely through electricity and a relatively large percentage of residual was imported. But this was absorbed, too, by conservation. Thus, conservation for whatever reason--price, patriotism, or necessity--carried the day, apparently.

The Administration, as noted, did nothing to allocate supplies internationally but it moved rather vigorously to allocate supplies domestically. Reported the FEA:

"Government policy, in attempting to minimize the impact of the shortages, was designed to accommodate industrial needs and to promote conservation in the private consumption of energy.... Allocation authority was granted by the Emergency Petroleum Allocation Act [signed November 27, 1973].... These regulations covered all petroleum products and directed their allocation from refinery to end-user, except for gasoline which was allocated down to the wholesale level. Retail sales of gasoline were not subject to the allocation regulations, but a proposed gasoline rationing plan was published on January 16, 1974."*

*The Federal Energy Administration, "The Economic Impact of the Oil Embargo on the American Economy," August 8, 1974 (mimeo.), p. 5. The report begins with the well-taken, though inaccurate, caveat that "the economic impact of the OPEC oil embargo, as contrasted with the impacts of energy shortages and higher energy prices... is subtle and difficult to separate." So the FEA didn't try.

Allocation priorities were given to food, defense, emergency services and fuel production, and 1972 was designated as the base year for allocation. The FEA summarized,

"In retrospect, whatever the actual impact of the allocation regulations, it is clear that the short duration of the embargo, the relatively small magnitude of the shortfall,** ...contributed to the absence of any major strains on the administration of the regulations."

But the domestic shortfall was very poorly managed by the newly created FEO. In the first place, it probably took seriously the State Department's projections of an embargo lasting till the Arabs are satisfied in their political demands. Consequently, instead of drawing down inventories they were built up and the shortages were transmitted directly to the economy in an even more acute form. Secondly, the arbitrary interference of the FEO in the market allocation did much to create serious bottlenecks, most conspicuous of all were the gas lines caused by an FEO order to refineries to supply less gasoline and more heating oil.***

Still, the heightened American oil crisis of late 1973 and early 1974, in conclusion, proved to be manageable. It was caused by domestic and international strains of the energy system in addition to those created by the OAPEC sanctions. The aggregate effects were not negligible. The real output of the economy fell in the first quarter of 1974 by 10 to 20 billion dollars and the unemployment effects of the crisis were estimated

* i.e., relative to State Department estimates (FEA, "Economic Impact," p. 5).

** i.e., relative to FEO estimates (FEA, "Economic Impact," p. 5).

*** For a serious critique of the FEO's role during the embargo, see Richard B. Mancke's "Performance of the Federal Energy Office" (Washington, D.C.: American Enterprise Institute, 1975).

at 0.5 percent of the civilian labor force.* However, both these parameters of economic activity were to deteriorate even further when the embargo was lifted, suggesting the economic damage has more to do with OPEC's price squeeze, still in effect, than with OPEC's supply squeeze, which lapsed without severely affecting the U.S. at all.

The pre-embargo supply or import figures, however, are very misleading bases for estimating the real impact of the embargo. Prices were hiked twice during the last months of 1973, and it is quite fallacious to compare supply/demand patterns relating to two different price levels. A more logical base for estimating the real shortfall could be the supply/demand numbers for 1975, at least these represent the same price bracket as that of January and February 1974, the embargo's peak months as far as the U.S. was concerned. The London Economist did precisely that, and came to the following conclusion about it, called "the boycott that wasn't":

"The Economist...adopted the simple expedient of checking the insurance coverage at Lloyd's of oil shipments from the Gulf, and found that the boycott was not being enforced as fully as both sides' propaganda alleged....In the peak boycott month of January 1974, shipments of oil from the Middle East were 5 percent higher than in the free market of January 1975. All through the early months, after the price holst, all through the period when the world was supposed to be being strangled by the boycott, the Arabs were shipping out more oil than customers were ever likely to buy at the new price...an army of thousands in the West and the Middle East are now sensibly looking for trading and price arrangements that may prevent the next war from creating an oil-price nonsense again. An oil-price nonsense it is."**

Synchronization and Control Constraints

The strength of any means of inter-state influence can ultimately be measured only by comparing objective results. That the 1956 and 1967

*FEA, "Economic Impact," pp. 9-14.

** "The North Sea Bubble," The Economist, March 8, 1975, pp. 16-17.

politically-inspired oil crises failed to attain their primary political goals is beyond dispute. Opinion about the 1973 oil embargo, however, varies. Near as one can tell, the Brookings Institution's evaluation is probably correct in summing the question up by noting that:

"...it is too early for final judgments on the success of the Arab use of the oil weapon in 1973-74. They did achieve some change in the publicly proclaimed policies of Japan and several European countries toward the Arab-Israeli dispute. The Arabs also may believe that their embargo and production restrictions spurred the United States to work harder for a Middle Eastern settlement, although it can equally well be argued that U.S. diplomacy was driven more by a desire to defuse a dangerous threat to world peace than by fear of an oil shortage."^{*}

Indeed, it is no coincidence that the oil weapon as a political phenomenon has been found to be only a mildly effective tool of diplomacy at best. The origin of the weapon's relative ineffectiveness lies within the fact--stressed throughout this study--that there is no such thing as a purely political Arab oil weapon. Rather, it is an added rhetorical dimension to an activity which is intrinsically economic and is subjected to policies which are primarily profit-oriented. If OAPEC were genuinely intent on maximizing the short-run political benefits derivable from its latent oil power, as defined under the explicit objectives of the embargo, its strategy should have focused on production restrictions coupled with severe price controls--all indexed to the political issue at stake. Keeping prices low would have simultaneously kept consumers' demand for OAPEC

^{*} Joseph A. Yager and Eleanor B. Steinberg, Energy and U.S. Foreign Policy (Cambridge, Mass.: Ballinger Publishing Co., 1974), p. 315.

^{**} For a similar conclusion, see Klaus Knorr's "Toward A U.S. Energy Policy," Agenda (New York: National Strategy Information Center, inc., 1975), pp. 6-13.

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oil, secured their long-term dependence, and demonstrated that political objectives transcend the temptation to exploit the shortage for economic benefits.

Obviously this did not happen. Lifting of the 1973 embargo coincided with the drastic December price rise and soon almost all Arab production and exportation returned to normal. Concern for the Arab cause on the part of OPEC's leaders lasted only as long as the contrived shortages had their economic rationale as well. The moment political gains had to be traded off against economic ones, some Arabs unhesitatingly opted for the latter. That is, the major constraint on the oil weapon has been the Arabs' own unwillingness to have to pay for it. But to say that amounts to confirming what has already been asserted: that the oil weapon is nothing more than a deceptive political formulation of a basically economic condition. As long as it will be economically profitable, production will be restricted whether under the banner of the Arab cause, as it was in 1973-74, or as a straightforward cartel oil policy, as done before and after the 1973-74 events. But if production restrictions, being the essence of the oil weapon, were to somehow lose their economic sense, then the experience of 1957, 1967 and 1973-74 all suggest that the weapon would rapidly be withdrawn or remain unused in the first place. A repetition of supply manipulations of the kind that make up this instrument of diplomacy ultimately depends on the re-occurrence of the economic conditions which call for supply restrictions. That OPEC's main problem would be precisely the creation of such conditions will be argued in Chapter VI. It suffices to point out at this juncture that OPEC's tactics of supply curtailment and denial derive from the cartelization of the market. Thus, just as economic situations could lead to further

actualizations of the oil weapon, so will they greatly circumscribe it once deployed.

The three actual deployments of the Arab oil weapon indicate that this very instrument is also constrained by "mechanical" limitations on its effectiveness. Two main types of limitations present themselves: problems of synchronization and control difficulties. The former applies to time/space synchronization--the timing of the application of the weapon and its integration into the political context which it is expected to affect. The latter includes the problem of targetability of the oil weapon and the degree of control which can be exercised over its impact. The following analysis discusses these limitations as they can be observed in all three oil crises but with particular emphasis on the last oil embargo.

Popular political evaluations exhibit a pendulum effect of sorts; from one extreme conclusion they jump to the other. Just as it was common to dismiss the potential of the oil weapon in the aftermath of its disastrous 1967 use, so it is now common to regard it with awe in light of its accomplishment during the 1973 oil embargo. It should be noted, however, that success through the collaboration of the victims does not necessarily imply possession of effective influence.*

* Daniel Ellsberg's study on "The Art and Practice of Blackmail" (mimeo., 1958) helps to illuminate this tendency to ascribe success to the oil weapon by failing to distinguish between cause and effect. In his study Ellsberg points out that no correlation exists between the level of threat used during a bank holdup and the teller's compliance with the robber's demands. Ellsberg surmised that fountain pens and haircombs, fake weapons favored by bank robbers, are as effective weapons as pistols and submachine guns, since empirically all had had roughly the same degree of success. Obviously, success in bank holdups, as Ellsberg indeed concluded, depends most on the teller's apathy in the face of a threat aimed really at the bank and not at himself. The paradoxical hypothesis about the equality of weapons is therefore not proven by these experiences. Similarly erroneous is the finding that pro-

In essence, economic instrumentalities have limited coercive capabilities. Unlike military measures, economic processes are initiated and carried out in the expectation of mutual advantage. Such interactions are essentially voluntary and based upon the mutual responsibility and reciprocity which characterize relationships of constructive interdependence. Thus, trade can be transformed from a mutually beneficial exchange into a direct contest of power and influence only under abnormal circumstances.* But when such a transformation threatens to occur, those concerned simply compare economic gains with political risks and take the appropriate measures. In abstract, just as the party which might gain from politicizing trade will be tempted to exploit market conditions, the potential victim should extract himself from the economic ambush. Trade benefits are seldom so superior to national interests that the economic ties would be invulnerable to rising political costs. For this reason it is clear that economic warfare is a contradictory affair; its potential effectiveness is limited by the context in which it occurs. Economic pressures can attain political results only when commercial exchanges cannot be discontinued at a moment's notice or when the associated political costs are low enough to warrant the continuation of the strained economic relationships. In other words, the

Arab policies by some European nations prove the potency of the oil weapon. In reality, the oil weapon was no more technically successful in 1973 than it was in 1967 and 1956. This has been obscured by Europe's and Japan's attempt to snatch defeat--to use Adelman's phrase--from the jaws of victory.

*The ability to interfere with world trade, either for price gouging or for political influence, depends on five fundamental conditions: First, monopolistic control over a significant portion of the market; second, low export dependence as reflected in an ability to forego export earnings and being relatively immune to economic retaliation; third, inelastic price elasticity of demand; fourth, low substitutability for the commodity which is being denied; fifth, in the absence of a clear-cut monopoly, a strong political and economic cohesion among the oilpolitists.

success of economic pressure is inversely proportional to its actual effectiveness. Furthermore, economic coercion is a short run matter at best. The effectiveness of actual economic denial vanishes over time; the victim is not likely to fall into the same trap twice.

This is indeed the paradox of economic weapons: their effectiveness depends on their non-use. While this implies an enhanced effectiveness on the putative level (i.e., in the form of a threat), maintaining pressure through putative power is quite difficult, since at that phase the element of credibility is introduced. And credibility can only be assured by a willingness to put threats into effect. Once this is done, however, the economic weapon tends to backfire on those who apply it.

The limited actual utility of economic weapons thus reduces their putative effects as well. Moreover, a decline in the credibility of a putative instrument can also be caused by any delay in its activation once one's bluff is called. But delay happens to be the best strategy for the prolongation of the putative, and relatively cheaper, phase, since actualization will probably prove self-defeating. In short, taking such constraints into consideration, only under extraordinary circumstances can economic warfare by itself actually coerce another nation.

The long history of economic warfare testifies to its low effectiveness. The internal contradictions of using economic weapons are aggravated by serious practical difficulties in their implementation. Targeting, controlling, timing, and monitoring economic weapons pose almost insurmountable problems. After all, trade is a societal activity which cannot be endowed with precision and speed when transformed into a weapon. A crude and slow mechanism at best, economic warfare is likely to produce no more than

marginal results. Past applications of economic pressures--sanctions, boycotts, blockades, embargoes, even strategic bombing--point clearly to this bleak conclusion.* Only in combination with concrete and direct military measures had economic coercion been effective.

This is not to say that economic warfare is useless. It can achieve results so long as it is managed within its highly constrained limits. Despite its paradoxical character, tactics and strategies of economic warfare have a logic of their own. Everything else being equal, the effectiveness of a commodity weapon depends upon whether three elementary conditions are met. First, the user should be able to absorb the consequences of disrupting a presumably mutually advantageous interaction. Second, some control is needed over the full economic process by which the commodity weapon is to hit the targeted economy, i.e., lack of ability to manipulate such phases as distribution could completely negate the weapon. Third, for the weapon to be successful, the targeted trading partner should be locked into a position from which he cannot avoid being hit. Evidently, the potential for economic influence is directly related to the extent to which the targeted nation is unable to escape from the economic ambush into which it has marched. The key to victory for both antagonists is their respective degree of control over the market and the patterns of trade taking place there.

To summarize, the coercive use of an essentially voluntary and cooperative activity offers little prospect of strategic success. In practical

* See Klaus Knorr's Power and Wealth (New York: Basic Books, Inc. 1973), pp. 128-192. Knorr's conclusion is simple. "Notwithstanding the large-scale practice of economic warfare by economic measures in World Wars I and II, its utility in the future is uncertain but, in all likelihood, slim if not nil." (p. 137.)

terms, susceptibility to economic pressure occurs only where the victim is highly dependent on a non-substitutable commodity over which the attacker holds monopolistic control. Even if these stringent conditions are present, success is by no means assured. In the final analysis, compellence is the most formidable of all modes of influence; the best way to ensure results is to pursue only modest political objectives.

By and large, the "oil weapon" is no different from other economic weapons. It is admittedly a vital resource, and its global availability does not allow the degree of commercial maneuverability present in non-raw materials trade. Since the trade in raw materials allows little market flexibility, they are high on lists of strategic commodities to be denied by offensive economic action or protected by defensive action.*

The oil weapon is not a separate mechanism designed solely for punitive action to back up political demands; its many limitations stem from this fact. Its use requires simultaneous juggling between political gain and pecuniary profit. The 1973 embargo occurred when these interests

*The example of OPEC had its economic spill-overs as well. Many raw material-producing countries, rallied by Algeria's platform for a New Economic Order, have shown increasing interest in improving their terms of trade through a cartelization of their markets. The seven major bauxite exporting countries, for instance, sought in March 1974 to emulate OPEC's experience and form a producers' organization. The already existing four-nation Council of Copper Exporting Countries (CIPEC) flexed its muscles and tried to cut back exports (no political pretext was deemed necessary) 10 percent. Iron ore exporters, mostly less-developed countries, were also discussing plans to create a formal collective organization. The extent to which OPEC is the wave of the future or just an extraordinary exception is debatable. Paradoxically, that almost without exception, all efforts at imitating OPEC failed in 1974 is partly explainable by OPEC's very success. That is, high oil prices have brought about such a recessionary convulsion in the West that demand for other raw materials fell sharply, with prices following suit. Juxtaposing measures of U.S. import dependence against world market conditions, it turns out that vulnerabilities equivalent to that of oil could develop only in two metals. Chromium (only 9 percent domestically produced) is almost

converged, but the convergence did not extend to other aspects of the embargo, such as its duration. Nevertheless, the deployment of the Arab oil weapon in 1973-74 points to the existence of grey areas in relations among nations which permit such tactics to be used; the limitations of such actions were put on view as they were in the previous crises too.

* * *

The timing of the oil weapon poses the first important synchronization problem. Although the potential threat of oil supply disruptions in the second half of the decade had been obvious, few observers expected an embargo in the fall of 1973. American dependence on OAPEC oil at the time was well below the critical threshold, and an Arab embargo seemed premature.

The Arabs were wise not to apply the oil weapon earlier, since only after 1970 did American importation of Arab oil grow to an appreciable level. In fact, given the sudden increase in American competition for and consumption of Eastern Hemisphere oil, it is plausible that had the Arabs withheld the use of the oil weapon for a few more years, American

non-substitutable and is concentrated in South Africa and the U.S.S.R., suggesting the possibility for politically related supply interruption and price gouging. Platinum (6 percent domestically produced), with its limited substitutability does not exhibit a significant disruptive potential (see the Council on International Economic Policy's International Economic Report of the President, March 1975, p. 27). Oil is currently an exception as a raw material ideally suited for economic and political manipulations. As such, it is comparable to past instruments of economic warfare.

vulnerability would have been far greater.* As it was, only about 10 percent of America's total energy consumption would have been threatened had the Arabs totally halted Middle East exports to the U.S., as they might some day be able to do through improved control of distribution.

Thus, in a technical sense, it can be argued that the Arabs should have waited another year or so until the targetability of the oil weapon would have been capable of forcing significantly greater concessions from the American government. From an economic standpoint, then, it is doubtful whether 1973 was the optimum time to unleash the oil weapon. Furthermore, to the extent that economic weapons are best suited to short-term use, OPEC planners must have realized that the one-shot character of the entire affair might mean sacrificing future opportunities of even greater political promise.

The activation of the oil weapon therefore suggests that this decision was not predetermined by pure tactical expediency. OPEC did not seek to optimize the use of the oil weapon per se. Instead, the economic considerations surrounding Arab oil, particularly the pressures to cut back on production, which culminated in 1973, created the conditions needed to couple economic steps with political demands. The unsheathing of the weapon looks untimely only when seen within the narrow context of the Arab-Israeli dispute. If integrated into the economic pretext, of production

* Early in 1973, the Secretary of the Interior requested an oil industry study on possible supply disruptions. In response, the National Petroleum Council established a Committee on Emergency Preparedness and in July 1973 issued an interim report titled Emergency Preparedness for Interruption of Petroleum Imports Into the United States. That timely report hypothesized two possible interruption dates, one January 1, 1974 and the other January 1, 1978. Its projections were that in 1974 the country would be importing about 42 percent of its oil needs, and by 1978 imports were projected to be 59 percent of requirement.

programming, participation negotiations, and price bargaining, the timing of the "October Revolution" seems eminently reasonable.

Since in general, economic weapons are slow to impact on the tactical level, still another timing problem presented itself. The oil weapon, too, has a built-in time lag, due to transport time, the existence of emergency stocks, or optional re-opening of shut-in capacity in certain consuming countries. In 1973, it took between two and eight weeks for shortages to be felt by consuming nations, depending on distances and stock management. More rigorous stock withdrawals could have prolonged the time lag by months. This lag between the moment of "firing" and impact had two drawbacks from the Arab standpoint. First, it required sustained cooperation among the instigators of the oil action during the time lag; lack of cooperation would have caused an immediate failure of the action.

This latter obstacle to the successful deployment of the oil weapon has to do with the inability of any single oil producing country to manage a boycott on its own--an alliance of producers is needed, i.e., a politico-economic synchronization. OAPEC, a political alliance within the cartel, provides sufficient control over a large enough share of production to make a difference, but the alliance has never been very cohesive. As noted earlier, OAPEC was established to prevent the radical Arab--or for that matter, the "confrontation" states from determining Arab oil policies. Only later, when it economically suited "conservative" Kuwait and Saudi Arabia, did OAPEC develop its own militant policies--though not by eliminating internal divisions. During the 1973 embargo, the OAPEC members initially demonstrated a relatively high degree of coordination and cooperation. But for various reasons, all predominantly economic in nature,

this remarkable feat began to fall apart after two months passed.* Even during the initial period Iraq and Libya did not carry out OAPEC decisions. Bahrain, Abu Dhabi, and Oman were excused from the obligation to curtail their output, so the burden of the embargo fell on Saudi Arabia and Kuwait. Indeed, at least two-thirds of the shortfall were sustained by these two countries alone. Kuwait had long been a "conservationist" oil producer, and Saudi Arabia was contemplating such a course, anyway. In other words, Saudi Arabia's emergence as production and price leader within the cartel enabled it to effectively cut back even without its partners' support. The cooperation and coordination needed for a successful Arab oil strategy were not really achieved between 1967 and 1973. Acrimony and divergence of interests remained, but the share of the market controlled by Kuwait and Saudi Arabia changed. The absence of a cohesive Arab oil front suggests that by November OAPEC must have neared the limit of its restrictive capability.

A second, and more critical time factor was the need to synchronize the weapon's impact with the political events it was intended to influence. The Arab oil weapon has traditionally been held in abeyance for the eventuality of an outbreak of hostilities. But Middle East confrontations, like most modern crises, were brief. The Arabs probably realized that the oil weapon could not be deployed optimally--imposed at the moment when

*Dankwart A. Rustow, in a concise analysis of the dependability of Middle East oil, identifies two key determinants of that issue. First, the strength of the producers' cartel, as such; and second, the degree of political unity among the Arab producers (see his contribution to "Oil Imports and the National Interest," Petroleum Industry Research Foundation, Inc., New York, March 1971, pp. 36-42). SIPRI's Oil and Security arrived at the conclusion that such unity in 1973 disintegrated within three months, i.e., as soon as prices were successfully increased (p. 29).

war broke out to reach its full impact at crucial turning points of the crisis. The Arabs, of course, were aware that Mid-East wars would probably last for less than three weeks, and that no oil shortfall could be achieved in such a short time. They were therefore confronted with a difficult choice. One possible gambit was to start an oil squeeze before the outbreak of hostilities. The price would be high: no military pretext would be available and the element of surprise in the military offensive might be lost. The other alternative was to wait for the war to begin and claim that this was the provocation. The effect of that course, however, is to significantly remove the oil weapon from its alleged political context, thus crippling its potential political impact. The OAPEC members chose the latter route in 1973 simply because, unlike the "confrontation" states, the Arab-Israeli issue was not uppermost in their planning; the OPEC negotiations of September and October were overriding in this respect. As for the next time around, OAPEC seems to have shifted its tactical planning. Abdul Amir Kubbah, a high-ranking Iraqi oil official, gave the following assessment:

"Now, what are the chances that the Arabs will unsheath the oil weapon again? It is hazardous to venture a guess; but the way Israel is talking, it is hard to imagine that it will one day voluntarily give up the invaded territory; and the way the U.S. is acting, it is equally hard to imagine that it will one day cease defending Israel's conquest. A world holocaust appears inevitable in the crazy world we are living in. Needless to say, the coming war will be more ferocious than anything that humanity has hitherto suffered, and oil will add to its ferocity and widen its scope. With one difference. The use of the oil weapon will precede the coming war instead of lagging behind it."* [Emphasis added.]

* Abdul Amir Q. Kubbah, OPEC--Past and Present (Vienna, Austria: Petro-Economic Research Centre, 1974), p. 100-101.

Taken, as it is, from an official OPEC document, this statement is hardly reassuring. The important point, however, is that, reflecting an added degree of self-confidence, the Arab oil official reveals that a future use of the oil weapon will probably occur prior to the outbreak of a war. The only way to do so without causing counteraction to the unprovoked oil action and attention to the impending military attack is to reverse the timing order. This would tend to reverse pretexts and deceptive tactics, i.e., if in 1973 the oil action was economically motivated but disguised as politically inspired, then a near-future repetition of the exercise would see a politically motivated oil action hidden behind an economic pretext. Theoretically, the production cutbacks which all OPEC members would have to undergo if the cartel is to eliminate potential surpluses from the market (see the next chapter) could offer such an opportunity. A similar convergence of the economically useful with the politically desirable is likely only to increase the probability of an oil boycott.

Another way to synchronize the economic and the military phases of another Arab-Israeli round of hostilities would be to prolong the period of fighting to fit the duration of an oil boycott. This, in turn, suggests that a static war of attrition would suit the Arabs' purposes better than a fast war of movement and maneuver. These, in short, are some of the lessons for the Arabs from the 1973 experience. As far as timing is concerned, that experience has shown serious difficulties in maintaining an embargo in a post-crisis environment. The difficulty of synchronizing an oil boycott with the political environment is likely to remain an inhibiting factor in the Arab oil strategy.

Perhaps the most serious weakness of the oil weapon is its limited targetability. A weapon without a proper guidance mechanism must be considered somewhat defective. At the height of the embargo, the Petroleum Press Service editorialized,

The successful use of weapons of war rests on the ability to distinguish friend and foe and to ensure that strategic gains are reaped by the user. The oil weapon, by its very nature, cannot do this. In practice, the severe production cuts are spreading indiscriminate damage far and wide, thus threatening to stir up general ill will that will do great harm to the Arab cause. **

This drawback of the oil weapons was known to OAPEC planners. Dr. Nadim Pachaci, a former Secretary General of OPEC, argued against any attempt to target the oil weapon at all. In a speech to the Financial Times Conference on "World Energy Supplies" in London in September 1973, he suggested that OAPEC members simply follow the economic logic of output restriction ("oil in the ground is more valuable as an investment than bonds and securities") and call that the oil weapon. His argument about the pitfalls of any selective embargo, which at the time were a part of the putative phase, ran as follows:

"My plan for the use of oil as a political instrument is simple. We need not deny oil to any country in the world. We do not need to impose an oil embargo or a boycott against any country. An embargo against one or more countries is neither practical nor effective. Our experience in 1967 against the U.S. and Britain did not work. There was pooling of oil resources. While oil was flowing to the rest of the world from Arab producing countries, the requirements of the U.S. and Britain were satisfied from other sources such as Iran, Nigeria, Indonesia, and Venezuela. In the present sellers' market for crude oil, reinforced by the emergence of the U.S. as a large-scale importer of Arab oil, there is no need for Arabs to threaten to stop the flow of oil altogether, thereby cutting off their nose to spite their face. All they would have to do to make

* "A Dangerous weapon," The Petroleum Economist, November, 1973.

their weight felt throughout the world would be to refrain from expanding their production. This would be quite sufficient to cause a world-wide supply crisis in a fairly short period of time."^{*}

Instead of adopting this Iraqi strategy, OAPEC tried to test the oil weapon for its targetability. Considering the transformation that the world's oil market had undergone, there was no compelling reason why 1973 should have necessarily been an exact repetition of the 1967 fiasco. With the advantage of hindsight, however, it can safely be concluded that Pachaci's analysis did not underestimate the efficacy of the oil weapon. Despite the turbulent market and the significant improvement in the producing countries' leverage over the concessionary countries, the oil companies were still able to defuse the targetability of the oil weapon by distributing available supplies evenhandedly within the market. An effective selective embargo, then, was no more feasible in 1973 than it was in 1967.

This crucial deficiency of the oil weapon stemmed from the diverse levels of dependency on Arab oil of different countries. This resulted in

*In addition to the excellence of the discussions of that conference, it is extremely interesting to analyze the positions of the various participants as presented less than a month before the eruption of the Middle Eastern war. Thus, while Nadim Pachaci might have been lukewarm towards the use of an overt political oil weapon, he did not hesitate to predict drastic price rises. Noting that average U.S. prices of crude was between 3.75 and 4.0 dollars per barrel well head, he predicted a sharp increase in both domestic and imported oil prices within a short time. Pachaci read the market forces prior to the Mid-East crisis quite correctly, and as former Secretary General of OPEC, could tell an OPEC oil offensive when he saw one. His record on the reliability of OPEC oil, on the other hand, is more dubious, as the following ambiguous statement illustrates:

"With regard to security of supply, I believe, paradoxically perhaps, that Arab oil, considering the current political and economic challenges of the West, might be regarded as the more secure source of imported energy."

The speeches of that conference were published and distributed by The Financial Times in 1974 under the appropriate title, "The Unavoidable Challenge."

a complicated mix of potential economic impact across the board, which yielded uneven political leverage. If all foes depended on Arab oil and all friends were independent (or at least disposed to support the Arabs and insulated from economic turmoil in the disfavored countries), then targeting would have posed no such difficulties. However, such conditions were hardly likely. The very structure of interdependence on whose vulnerabilities OPEC capitalized also tended to insure the system against such disruptions. Economic interdependence in numerous markets besides energy spreads the recessionary effects of supply denial from one country to economic contractions within her partners. The vulnerability of economic interdependence, in other words, is also the source of its resilience. This tends to restrict coercive practices which rely on direct targetability. But it also encourages a perverse sort of indirect approach whereby the instrument of influence is indiscriminately applied; directly vulnerable countries, which are of some importance to the nation whose behavior is the real objective, are simply held hostage.

Even given some precision in targeting the initial impact of the oil weapon, it is nearly impossible to isolate the economic effects in any single targeted country. The resulting collateral damage might be termed "economic fallout" when non-targeted countries are hurt and a "boomerang" effect when the repercussions extend to the country applying the weapon in the first place. Economic interdependence in numerous non-energy markets spreads the recession of one country to her economic partners. Nations lacking such economic links through intermediate countries must be few and insignificant, indeed; thus the Arabs could hardly induce sneezing in Europe or the United States without causing pneumonia in many

other parts of the world. These fallout effects might be seen as a useful way to indirectly threaten countries which are relatively independent of Arab oil but tied economically closely to others which do depend on Arab exports. For instance, the American economy feels adverse effects from recession in Europe, through American multinational corporate interests and reduced demand for exports. Given the low but growing level of American consumption of Arab oil, it was fortunate from the Arab viewpoint that they could hurt the U.S. indirectly by damaging other major countries. Chain reactions of this kind may have done as much to prompt the flurry of American diplomacy in the Middle East as did the peace-seeking goals of Dr. Kissinger.

Many observers failed to notice that OAPEC turned the handicap of untargetability into an advantage. In this respect OAPEC exploited two systems of interdependencies: that between OAPEC and the consuming nations where the trade in oil is the binding element; and that among the advanced industrialized democracies where relations are much more complex. Westerners found it difficult to grasp this transgression of traditional norms of conduct. The Petroleum Press Service noted,

"It is ironical that those whom the weapon is designed to hurt are least vulnerable to it. The U.S.A., which is completely boycotted by the Arabs, depends upon them for no more than 10 percent of its total oil supplies. Holland, which is also on the embargo list because of its allegedly sympathetic attitude towards the Israelis, normally imports from non-Arab sources more than enough oil to cover its internal requirements....By contrast, the European nations which are on the Arab 'friendly' list import from 70 to 80 percent of their oil from Arab sources, while for the Japanese the proportion is over 40 percent. These and some under-developed countries such as India will be the main sufferers from the curtailment of supplies."*

*"A Dangerous Weapon," The Petroleum Press Service, December 1973.

There is, in fact, no irony at all at this inverse relationship between dependence on Arab oil and independence in foreign affairs. Indeed, countries not vulnerable to Arab oil pressure did not feel compelled to accommodate the Arabs' political whims; this is precisely the reason for their being designated by the Arabs as their target. Irony can be found, however, in the sentiment shared by nations really dependent on Arab oil that they will be spared harm only if they adapt their foreign policies to their economic plight. But pro-Arab sympathies matter little once such nations are selected to be hostages against the United States. The entire affair was uneasily reminiscent of another Arab tactical innovation--international terrorism.

The ultimate irony of the 1973 episode was that by embracing their captors' views, the Europeans and Japanese actually shielded the U.S. from the consequences of the embargo. If Europe and Japan had responded to American appeals earlier that year for greater consumer cooperation and had behaved during the crisis in a manner more compatible with their allies' status, then the Arabs, in turn, would have been more justified in putting pressure on Europe and Japan, and the U.S. more obligated to come to their rescue, possibly by sharing both available supplies and their pro-Arab attitudes. But Europe and Japan behaved differently; they disassociated themselves from the United States and thus enabled the U.S. to ignore the oil weapon altogether. To the extent that the criteria introduced by Saudi Arabia had this effect, this largely symbolic action backfired on the Arabs who had had to satisfy themselves with the limited diplomatic assistance Europe and Japan could offer at the expense of releasing their hostages, and thus alleviating the pressure on the U.S. without obtaining any significant concession.

The indirect approach is thus no less problematic than its alternatives. Assuming that OPEC members would not risk destruction of their best oil markets for the sake of a political objective, then the maximum level of economic pressure they can bring to bear is actually set at the maximal tolerance point of the weakest of the intermediary economies. The weakness of the intermediary economy corresponds to a high degree of import-dependence; foreign policy would be similarly affected. This discrepancy between the needed and the feasible amount of pressure can result in total failure of the policy. In other words, a really effective Arab oil strategy is not possible under these conditions.

Certain limitations displayed by the Arab oil weapon were less inherent than due to the contemporary political and economic environment. This opens the possibility of better or worse performance of the weapon in the future, depending on the behavior of relevant exogenous factors. The foremost example is the role of the major oil companies in distributing the impact of the Arab embargo internationally by switching supplies between Arab and other producers. The supply of oil available to all consumers resulted in the greatest damage being borne by those nations most dependent upon imports, e.g., Japan, rather than those most antagonistic to the Arab cause, e.g., the United States.

This randomizing of the impact of the oil weapon by the companies may have inadvertently aided Arab political efforts as much as it frustrated the precise targeting of the oil weapon. While the majors deflected much of the impact of the embargo from the United States, it may have been in the best interest of the Arabs to avoid confronting the United States more directly or exclusively. It has been noted that the U.S. was far

less vulnerable than other consumers and that, to whatever degree the U.S. could have been hurt by being deprived of Arab oil, backing the U.S. into a corner would have encouraged American propensities to retaliate more harshly. Thus the Arabs were fortunate in being able to pressure the United States by disrupting the Western bloc in general. The United States became increasingly isolated in its strong support for Israel, the Atlantic Alliance was left even more tattered than previously, and the prospects for a politically or economically united Europe were set back substantially as each nation sought its separate interest in pursuing bilateral guarantees of continued supply from individual producers.* The Western bloc was most vulnerable in Europe, and whether by active design (e.g., the embargo of Holland, including Rotterdam), or serendipity, this is where (along with Japan) the oil weapon's impact was greatest.

The untargetability of the oil weapon finds its primary manifestation in the indiscriminate denial of supplies, but an inevitable negative effect only naturally parallels the supply problem--that of price. In effect, it has been argued that high oil prices have been determined less by political considerations than by the economic aim of maximal market exploitation. Price manipulation, however, could be useful politically in improving Arab relations with the rest of the Third World. While prices charged to foes can perhaps not be increased much more, friends could certainly be granted reductions. We suggested earlier that such a policy could well encourage further erosion of support for Israel in the Third World. The

*Peter Stingelin, in his "Europe and the Oil Crisis" (Current History, Vol. 68, No. 403, March 1975) concluded that insofar as the EEC was concerned, "The petroleum crisis of 1973-1974 dramatically increased the danger of actual disintegration." p. 97. See also Walter Laqueur's "The Idea of Europe Runs Out of Gas," The Atlantic Community Quarterly, Vol. 12, No. 1, Spring, 1974.

fact that this tiered system has so far been resisted by the Arabs suggests greed. Thus, an additional shortcoming of the high price aspect of the oil weapon is that it, too, fails to discriminate between friend and foe: in the most recent embargo, all consumers had to pay the same high price. So far the Arabs have resisted instituting a tiered price system which would offer even limited quantities of "cheap" oil to either political supporters and/or needy countries. Aid has so far been limited, for instance, to Kuwaiti support for the Egyptian military for Palestinian movements, and token sums to the Fourth World. Iran has established a large development fund, but by offering loans rather than grants, it looks more like foreign investment than real aid. Here the Arab dilemma must have been the most acute; after all, the country most capable of paying higher oil prices, the United States, was also their principal political target, whereas the non-aligned Third World could least afford the price hikes. By refusing so far to institute a tiered system, the Arabs have been content to bleed all oil importers without regard to their politics.

An additional qualification regarding the potential usefulness of the oil weapon is in order. If import-dependence patterns seemed to have constrained Arab oil strategy, so have the patterns of export-dependence. Production cuts were clearly tempered by domestic cash requirements. This, as observed in Chapter II, was the most prominent reason for the collapse of the 1957 and 1967 oil crises. It reappeared in 1973. For example, out of concern for its domestic development program, Iraq pressed for higher prices but refused to cut back production. Although among the Middle East oil producers only Iran and Iraq have managed to absorb all of their oil revenues, several other OPEC countries set floors on production

cuts to safeguard their revenue inflows. Given the growing cash surpluses described earlier, such countries as Saudi Arabia, Kuwait, and the Persian Gulf sheikdoms could cut operations to the minimum level essential to keep equipment working while pondering the problem of investing their accumulated reserves. However, these countries are aware of the risk that, should the market at any point weaken the present upper hand now enjoyed by exporters, they could suffer serious financial reverses. For example, since Iran has never fully recouped losses caused by hasty cuts made two decades ago, her current development plans call for full use of oil reserves, i.e., steady production below the maximum potential output. In general, however, as exporting countries develop more diversified economics which are increasingly capable of absorbing revenues, they are less likely to interrupt the flow of oil suddenly.

Another weakness of the oil weapon is that its effectiveness declines with use. Once deprived of Arab oil, consumers have a strong incentive to limit future dependence. Thus, the oil weapon is most potent in the fairly short term. In the very short term, e.g., a week, pipeline supplies and inventories can cope with immediate demand. In the longer run, a year for example, austerity programs followed by conversion to alternative energy sources can substantially reduce petroleum dependence, but only at a substantial cost. The willingness of consumers to bear these costs beyond the short run is hard to judge in advance. However, the restriction of production as an oil weapon, if employed over a long time, could well inspire economic reprisals. Its effectiveness would naturally depend on producer vulnerabilities. Nonetheless, it seems clear that the oil weapon is self-defeating in the long run. But a weapon which is

effective only in the short run can nevertheless be formidable. Thus, the fairly short term threat of a shortage-induced recession in Europe was sufficient to cause several of the major industrial powers of the world to knuckle under to oil exporters' demands.

Whether the potential economic impact and resultant political effectiveness of the oil weapon will diminish over time depends on two major factors: The first is the extent to which alternative energy supplies are made available to provide at least some capacity for short-term independence. The second factor is the future course of economic development within the Arab oil exporting states; economic diversification would mean greater Arab dependence on developed nations, thus giving consumers the potential for imposing sanctions on the oil exporters by depriving them of Western goods and services.

If the current price of crude oil is sustained or climbs higher, then energy independence schemes in the U.S. and Europe should succeed in reducing the share of Arab oil in their energy consumption patterns. However, if oil prices fall back (as suggested in Chapter VIII) or only remain stable, Arab oil might again be attractive enough to entrench it in American consumption. If the trend toward increased U.S. dependence on Arab oil, which has been growing since 1970, continues despite "Project Independence," then the potential for further political blackmail of America will have been delivered into the hands of the Arab producers.

All in all, the prospects for future use of the oil weapon are mixed. Although some trends will tend to strengthen the weapon, most factors are working against it over time. Some firm conclusions seem reasonable. Now that its relative usefulness has presumably been demonstrated, the temptation

again to use the oil weapon will be strong, regardless of whether its effectiveness has actually declined. Secondly, now that the precedent of restricting oil flows has been established (e.g., Saudi Arabia, Kuwait), it is implausible that the OPEC countries will ever consider relinquishing their control over production even in the face of managerial difficulties of the sort experienced by Iran in the early 1950s. Finally, the recent price hikes increased OPEC revenues so much that even higher levels will be sought, if only experimentally, to find out whether even higher inflows might be attained.

This last point deserves closer consideration. It was argued earlier that further price increases would prove self-defeating, since they would tend to expand the available amount of non-OPEC oil and other energy. However, up to the current price level, the price elasticity of demand had been extremely low; demand has not fallen very markedly, despite the price increases. But the view that further increases would be self-defeating is equivalent to asserting that the price elasticity of demand should be, or must soon be, quite high. This seeming paradox may be caused by a contrast between the short- and long-run elasticities. In this case, the passage of time should erode growth of demand for oil and promote switches to alternative energy sources, especially if oil prices increase further. Have we actually reached or are we even approaching a price level where high demand elasticity occurs? The production costs of non-Arab oil seem to be as high as ever. While the U.S. should try to convince the Arabs that we have already reached a point of high demand elasticity, policymakers should do what they can to establish the realities of this assertion. If alternate sources are not actually available at comparable

prices, then the U.S. is practically inviting further crises and more price coups, at least in the short run, by the Arabs and the rest of OPEC.

It has been demonstrated that the oil weapon is difficult to target with much precision. Although control of the full range of economic effects of the oil weapon is impossible, Arab ability over at least its initial impact should obviously be enhanced by the trend for greater Arab participation in both the production and distribution of petroleum. The political leverage conferred by nationalization is quite limited; nevertheless, it surely increases one's control over production and, to some extent, marketing. Nationalization is a worldwide trend in many extractive industries. Unless the U.S. reverses recent policy by moving to restore the traditional role of the majors in Middle East production, then the exploration of oil resources will probably come increasingly under the direction of the erstwhile host countries. It has been noted that the Arabs have expressed an interest in refining and controlling the distribution of oil. Refining certainly belongs in reasonable Arab plans for domestic economic development and diversification, which in turn serves U.S. interests. In any case, the Arabs are unlikely to achieve anything in refining like the market power they command in production of crude for a considerable time to come. At best, the Arabs would only supplement the already tremendous, though insufficient, refining capacity which is now spread throughout the world. Regarding control of distribution channels, neither the American nor the Arab interest is completely clear. A trend for producers to purchase their own tankers and to transport their crude on their own national lines is underway. This could prove risky if the current high prices reduce the demand of imports from Arab countries. Nevertheless, the movement

toward oligopolistic Arab control over both production and distribution of crude oil should increase their ability to direct the initial impact of the oil weapon and improve the targetability of the oil weapon correspondingly. As a result, the Arabs should be more visibly responsible for particular national shortages than was the case during the recent embargo. In 1973 and 1974 they were able to blame shortages in "most favored countries" on the maneuvers of the international oil companies and still use these shortages as a lever for political pressure. In short, increased control over production and distribution increases exporters' vulnerability to world opinion. It remains to be seen how far the Arabs can go in blackmailing their customers without triggering severe retaliation, especially as their responsibility for crises becomes more glaring.

Finally, a natural danger in the use of any economic weapon is that of escalation into military conflict. This is particularly likely if the country employing the economic weapon would be clearly disadvantaged in a military confrontation. Certainly the United States and other industrialized oil importers command military forces far superior to those of the Arabs.* The consumer nations thus have an incentive to shift the arena of confrontation from the economic to the military realm. Whether this kind of escalation occurs would seem to depend upon the net costs and benefits of alternative kinds of responses to the nation concerned. The record of American military responses (Vietnam, the Dominican Republic,

*Even before the imposition of the embargo the possibility of military action was mentioned (e.g., Jim Hoagland, "Arab Fear of Invasion Stirs Anger Toward U.S.," The Washington Post, September 26, 1973).

Lebanon) does not suggest that they were triggered by a particularly high level of economic or political costs, if a serious threat of Soviet intervention is not perceived. Admittedly, these confrontations were in defense of established regimes rather than straightforward invasions. Nevertheless, the inference may be justified that the United States is not unwilling to utilize the military to defend its political and economic interests. The military option in case of a too effective oil boycott is thus always open. It is inconceivable that OAPEC would gain anything, even from a faulty intervention. The ceiling on Arab oil pressure, in other words, is exactly the level which would trigger intervention. The viability of the oil weapon, then, depends on its ineffectiveness. Were it to work, it would first have wrecked the innocent Japanese economy in passing, and then provoked an American reaction once it seriously damaged the American economy. The real determinant, therefore, of the effective limitation on the oil weapon is with the American propensity to tolerate it. Apparently, caught by surprise in 1973, and in the midst of a leadership crisis, the U.S. was unwilling to exercise that prerogative. It is a stated and plausibly credible American policy in the aftermath of the 1973-74 oil embargo, that the U.S. will intervene if economic strangulation of the West takes place. Such a threat, credible as it may be, puts an automatic upper limit to future deployments of the oil weapon. The IEA oil-sharing agreement could cope with smaller shortfalls (see Chapter VII). The net effect of these two defensive measures has been

to negate the more menacing aspects of the oil weapon.* All depends now on the attitude and policies of the consuming countries. The continuation of their policies could even add to the disruptive force inherent in the oil weapon. A reversal of policies with a view to restoring balance and security to the system could easily result in reducing the Arab oil weapon to no more than an international nuisance.

*OPEC planners, of course, disagree. One of them assessed the prospects for the oil weapon as follows:

"It is almost certain that the next time oil is used as an instrument of political pressure, it will be more effective than before. In the first place, Arab countries are gradually taking over control from operating companies through revised participation deals and nationalizations. Secondly, the United States is becoming progressively more dependent on Arab oil. Thirdly, the experience gained during the recent events will prove valuable in plugging loopholes. Fourthly, there is a possibility that Arab producing countries may decide to exploit the present tanker glut to increase downstream investments in oil, by acquiring the highest percentage possible of tankers to make it difficult for the oil companies to mitigate the effects for any future embargoes by diverting supplies."

(Abdul Amir Kubbah, OPEC--Past and Present, p. 101.) Whether that is a statement of faith or merely an exercise in boosting the weapon's credibility cannot be determined with certainty.

Chapter VI

THE OUTLOOK FOR WORLD ENERGY INTERDEPENDENCE

The account given in the previous chapters seems to substantiate Adelman's thesis that monopoly means control of supply, hence ability to stop it; that high prices and insecure supply are two sides of the same coin. Indeed, so long as monopoly was not countered by an equally effective monopsony the balance of power favored the oil producers and was seized upon by them to extract monopolistic rent, be it of economic or political nature or, as it happened, both. It follows, therefore, that in order to evaluate the future reliability of oil supplies, one actually has to assess the more likely configuration of forces on the world energy market (taking care to clarify the underlying premises as to the general problem of resource depletion) and the ensuing patterns of export and import dependencies.

Projections of trends, after all, are often extensions of past processes as they are perceived by the forecaster. Thus, the "neo-Malthusians'" predictions invariably clash with the "Machiavellians'."^{*} The former believe that the present situation is the result of natural consumption of finite resources by growing demand that has been accelerated and distorted by political events. The latter view the energy situation

*The Ford Foundation's Energy Policy Project, probably due to the influence of its director, David Freeman, has a clear "Malthusian" bias and can be singled out as a good representative of that particular orientation. See, for instance, the Project's final report, A Time to Choose (Cambridge, Mass.: Ballinger Publishing Company, 1974). The "Machiavellian" school has many variants. A revisionist type is Michael Tanzer's The Energy Crisis: World Struggle for Power and Wealth (New York: Monthly Review Press, 1974).

as the outcome of policies of self-interested entities, primarily international oil companies and producing nations. For the former, the energy dilemma is a game against nature; for the latter it is a game of strategic interaction.

Yet, whatever the views on the origins of the current situation--burgeoning demand for energy, consumer waste, depleting energy resources, government incompetence or the cartel's greed--the supposition that the days of cheap energy are over has gained currency not only among Malthusians. Many authorities from both schools of thought expect OPEC to survive indefinitely and the price of oil consequently to remain high, though not necessarily at today's levels. But the corollary to that proposition is that supplies will also remain indefinitely susceptible to interruption. The question, then, is how likely indeed is the cartel to continue exerting its dual control over prices and security of supplies?

Obviously, the answer to that depends on the prevailing economic and political forces at work. In Chapter VI, an emphasis is placed on two essential economic relationships: between future supply and demand on the one hand, and between the various interest groups within the cartel on the other. Such perspectives, it will be argued, would at least demonstrate that the seemingly axiomatic assertion that the era of cheap energy is over, like the myth of the cartel prowess, are both exaggerated. Some knowledge about future market conditions would, in addition, tell a great deal--directly and indirectly--about the prospective security question.

In the direct sense a perpetuation of the cartel would ipso facto imply insecure supplies; but the future of the market conditions would also indicate the likely long-run equilibrium price levels, which in turn could suggest the degrees of dependence and self-sufficiency, as well as the projective surplus accumulations within OPEC, hence OPEC's relative power position--all indirect security attributes. In other words, if the key to the future reliability of supplies lies in the particular form of interdependence which is likely to persist, then the main parameters in that structure are those of supply, demand, competition, and ultimately, prices. While Chapter VI describes the range of business-as-usual projections, Chapter VII would argue that deliberate policies to ameliorate the situation could make a substantial difference.

Supply, Demand, OPEC and Prices

One of the more common axioms of the Malthusian position is that supply and demand relationships are less relevant than the ultimate finality of the supply function. The assertion that the time of cheap energy is gone is derived from the parallel claim that an age of scarcity has begun. Malthusians would therefore insist that the currently high prices of oil eventually reflect the realities of the situation as the world pays dearly for nearing the limits of its scarce resources. The view taken here differs. Not only is there no immediate danger of exhausting our energy resources but in fact, if the world reacts to the current energy panic as it has to other seemingly finite raw materials

crises, the result is likely to be a veritable flood of oil and an accompanying drop in price.*

In essence, any attempt to extrapolate the future from current conditions would be both an exercise in futility and a complete non-sequitur. Crises, after all, are defined by their being transitory periods of abnormalcy, i.e., the wrong basis for long-term predictions. But more importantly, the situation itself is characterized by processes which are inherently self-defeating in their dynamics rather than self-fulfilling. Such negative feedback processes simply defy extrapolatory practices. That is to say, there seems to be a vicious circle in which an expectation of long-term high prices might bring about the reverse, low prices, as demand is dampened and new sources of energy substitution, thus actually ensuring OPEC's control and high prices. This, of course, is the essence of the familiar "boom-bust" phenomenon. A steadily growing price function over time, as has been suggested in numerous studies since 1971, is simply unprecedented and is not likely to occur first in the energy field.

A close study of alternative supply and demand projections points toward the following general conclusions: 1) if maintained, high oil prices will stimulate new sources of energy production and dampen world demand to such a degree that a large surplus in the form of excess productive capacity will remain on world markets well into the 1980's; 2) if prices are not lowered, output reduction will have to be made

*Two Hudson Institute reports tackled the question of long-range energy prospects. Jeffrey Marsh's "When Will Oil Peak Out?" (HI-1845/3-DP, August 9, 1973), and William Brown's "Long-Term Energy Prospects" (HI-2184-D, December 1974). The London Economist comes closest to sharing this Hudson position. See, for example, "The North Sea Bubble," in the March 8, 1975 issue of the magazine.

below 1975 export levels by several of the major petroleum-exporting countries in order to clear markets; 3) in effect, today's high prices are likely to sharply erode the potential long-term market for major oil-exporting countries as substitution caused by the development of alternative sources takes place; 4) as this inconsistency between current price levels and production plans becomes apparent and more acute, either downward adjustment in price will occur or the cartel's relative unity will disintegrate and price-leadership patterns will dominate.

One of the reasons for the misconception about the inevitability of high oil prices stems from the notion that the quadrupling of oil prices within a year or so would have no effect whatsoever in consumption and production. As prestigious a body as the World Bank (and Shell Oil, for that matter)^{*} assumed no price effects over any period of time. Nevertheless, the year that elapsed since the imposition of high prices strongly suggests the existence of at least moderate price elasticities of demand,^{**} and it seems safe to assume that such will continue and have a rather substantial impact.

^{*} Shell Oil publications appearing subsequent to the price increases show the same demand projections as the company's projections a year before these prices were increased. See "The Series of Shell Oil Papers Dealing with Topics of National Importance," Shell Oil Company, 1974.

^{**} The beginning of these structural changes in energy demand wrought by high oil prices are already noticeable. Under the combined pressure of a global economic slowdown and recessionary forces on top of the direct price-effects, oil consumption fell in all oil-importing countries. Even in the absence of stiff conservation measures, American oil consumption fell 3.2 percent in 1974 relative to the previous year. The changes in oil consumption in 1974 over 1973 in other major oil importing countries were as follows: Canada, 6.1 percent compared to 6.3 percent average annual change between 1960 and 1973; Britain, 4.2 percent and 7.1 percent respectively; France, 6.3 percent and 12.7 percent respectively; West Germany, 10.4 percent and 12.7 percent respectively; Italy, 2.4 percent and 13.0 percent respectively; Japan, 7.5 percent and 17.9 percent respectively. (Council on International Economic Policy's International Economic Report of the President, March 1975.)

The points made above in abstract also emerge from the various supply/demand projections in the literature, regardless of the precise measure of their price-effects, so long as they are taken into account and adequately calculated. The following three energy projections, each attacking the problem from a different angle, all suggest the same results.

A. The MIT Energy Laboratory Policy Study Group, for one, approached the problem directly.* The average growth rate in world petroleum demand from 1962-1972 was 75 percent per year. An extrapolation of this pace of growth into the 1970's yields world oil demand increasing from 55.7 million barrels daily in 1973 to 92.5 million barrels per day in 1980. But this neglects the effect of the four-fold price increase. A conservative assumption of the price elasticity of demand (-0.15) would reduce 1980 demand by about 19 percent, to 74.9 million barrels per day.**

The supply schedule is derived by assuming a supply elasticity of 0.35 for all non-OPEC producers and by calculating OPEC's production figures. OPEC is divided into two familiar subgroups: Those countries which can be expected to increase output as rapidly as possible--denoted "expansionist" in Table 6.1--because of their high absorptive capacity and relative high export-dependence. The assumed price elasticity for

*MIT Energy Laboratory Policy Study Group, Energy Self-Sufficiency--An Economic Evaluation (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1974), pp. 59-65.

** The elasticity assumption can be considered conservative because: 1) studies of petroleum demand indicate long-run elasticities in the range of -0.2 to -0.4; 2) this is a business-as-usual scenario, assuming market forces alone. Obviously, governmental conservation measures reduce future demand even further.

this group is 0.24. The other group, the "conservative," the least export-dependent due to their low absorptive capacity, have almost no expansion of production at all.*

Table 6.1

AN ESTIMATE OF THE WORLD'S OIL PRODUCTIVE CAPACITY
(MMB/D)

	1973	1980
NON-OPEC	24.9	42.7
United States	9.2	8.7
North Sea	.0	6.4
Other Non-OPEC	15.7	27.6
OPEC "EXPANSIONIST"	12.2	17.9
Algeria	1.0	1.1
Indonesia	1.3	2.0
Iraq	2.0	4.0
Iran	5.9	8.0
Nigeria	2.0	2.8
OPEC "CONSERVATIVE"	18.6	24.9
Venezuela	3.4	3.4
Kuwait	3.1	3.3
Libya	2.2	2.2
Other Persian Gulf	2.2	2.8
Saudi Arabia	7.7	13.2
WORLD TOTAL	55.7	85.5

SOURCE: MIT, Energy Self-Sufficiency.

Totalling these rough estimates, world productive capacity in 1980 is forecast to be 85.5 million barrels daily, which is 10.6 million barrels daily of oversupply--an excess of 16 percent. This excess is approximately 27 percent of potential OPEC production. Taking the "conservative" group (which, by no coincidence, includes OPEC's leaders)

* Throughout this projection the price of oil is assumed to be close to \$7.00 per barrel f.o.b. (in 1973 dollars).

as comprised of residual suppliers, the following situation could arise:

"The predicted supplies of 92.7 million barrels per day from non-OPEC countries and 17.9 million from "expansionist" OPEC countries leave a market of only 14.3 million barrels per day to be supplied by the "conservative" OPEC group--a quantity which is actually less than their 1973 sales of 18.6 million barrels per day. In fact, under assumptions, the "conservative" group could just about meet demands for its production if all but Saudi Arabia held production at 1973 levels, and Saudi Arabia ceased production altogether."^{*}

A second cut into the same set of parameters arrives at a similar conclusion by following somewhat different assumptions.^{**} On the demand side the following assumptions were made: 1) the price of oil (in constant 1973 U.S. dollars) f.o.b. in the Persian Gulf will average \$7 per barrel in the period 1975-1985; 2) total energy consumption in both 1980 and 1985 will be reduced below the 1973 projections by 5 percent in Western Europe, 15 percent in the developing countries, and 10 percent in all other areas; 3) the entire reduction in energy consumption is subtracted from the consumption of oil; 4) there is further reduction in oil consumption by shifting from oil to coal and gas in the United States and to coal in Western Europe. The resulting demand picture is given in Table 6.2.

In order to derive the supply function, the following assumptions are made: 1) no change in nuclear power will occur; 2) oil production in developing countries which are exporters will increase so that instead

^{*} MIT, Energy Self-Sufficiency, p. 64.

^{**} The Tripartite Meeting on Energy, "Cooperative Approaches to World Energy Problems," (Brussels, 25-29 March 1974).

Table 6.2
DEMAND FOR ENERGY--OECD--1980-1985
(MMB/D)

	Energy Requirements		Oil Requirements	
	1980	1985	1980	1985
United States	44.9	54.7	15.3	17.2
Western Europe	33.4	41.9	21.4	24.8
Japan	10.7	14.4	7.4	9.4
Other Industrial	9.4	12.7	3.0	3.8
Developing Countries	14.4	22.6	7.3	10.1
TOTAL	112.8	146.3	54.4	65.3

SOURCE: The Tripartite Meeting, "Cooperative Approaches to World Energy Problems."

of the 35 percent self-sufficiency previously assumed they will reach 50 percent; 3) in Western Europe the development of oil and gas resources of the North Sea will be accelerated to take place of 1 million barrels daily of imported oil in 1985, and the decline in coal production will be slowed down so that 1.2 million barrels daily less imported oil will be required by 1985; 4) in the United States about one-half of the goals of Project Independence will be reached by 1980 and two-thirds by 1985. This means an increase in oil production (including shale oil) of 1.2 million barrels per day in 1980 and 2.5 million barrels per day in 1985. In addition, another 2 million barrels daily of consumption is shifted from oil to gas and coal in both 1980 and 1985. The resulting domestic supply situation within OECD and consequent oil import requirements are given in Table 6.3; 5) the oil exporting countries, classified this time to three self-explanatory types of groups, would attain the production figures given in Table 6.4; 6) a special allowance of 5 percent in 1980

Table 6.3

SUPPLY OUTLOOK FROM MAJOR NET IMPORTERS--1980, 1985
(MMB/D)

	Domestic Supply		Oil Imports Requirements	
	1980	1985	1980	1985
United States	13.3	14.2	2	3
Western Europe	4.4	6.8	17	18
Japan	.4	.4	7	9
Other Industrial	3.0	3.8	-	-
Developing Countries	3.3	5.1	4	5
TOTAL	24.4	30.3	30	35

SOURCE: The Tripartite Meeting, "Cooperative Approaches to World Energy Problems."

Table 6.4

SUPPLY OUTLOOK FROM MAJOR NET EXPORTERS--1980, 1985
(MMB/D)

PRODUCTION MAXIMIZERS	1980	1985	CONSERVERS		
			1980	1985	
Venezuela	3	3	Kuwait	3	3
Indonesia	2.5	3	Libya	2	2
Algeria	1.5	2	subtotal	<u>5</u>	<u>5</u>
Nigeria	3	4	RESIDUAL SUPPLIERS	1980	1985
Iraq	3	5		Saudi Arabia	10
Iran	9	9	United Arab Emirates	3	4
Other	3	4	Qatar and Oman	1	1
Price Effect	1.5	3	subtotal	<u>14</u>	<u>17</u>
subtotal	<u>26.5</u>	<u>33</u>	GRAND TOTAL	45.5	55

SOURCE: The Tripartite Meeting, "Cooperative Approaches To World Energy Problems."

and 10 percent in 1985 is made in the production maximizers' total production to account for the increase in output attributable to higher prices.

The potential gap between supply and demand is obvious. Obviously, it is not a gap of scarcity but one of over-supply. For the supply and demand estimates quoted here give in combination a substantial and increasing potential surplus of some 15.5 million barrels per day in 1980 and 20 million barrels daily in 1985.

Finally, a third type of approach to the projection of energy demand can be derived from the incorporation of alternative average rates of growth of energy demand over the years.* The standard pre-October projections, obviously reflecting relatively low energy prices, are given in Table 6.5.

Table 6.5

NON-COMMUNIST WORLD ENERGY OUTLOOK--1973, 1980, 1985
PRE-OCTOBER 1973 PROJECTIONS--HIGH ENERGY DEMAND GROWTH RATES
 (MMB/D oil equivalent)

Country	1973	1980	1985	(Percent) 1973-1985 Average Growth Of Energy Demand
United States	37	50	61	4.2
Western Europe	24	35	44	5.1
Japan	7	12	16	7.5
Other Industrial	7	10	14	6.3
Developing Countries	10	17	27	8.8
TOTAL	85	125	162	5.5

SOURCE: FEA, "A Discussion of the World Energy Market."

* Federal Energy Administration, "A Discussion of the World Energy Market in 1980 and 1985," April 1974.

Under the "price elasticity" method a certain such elasticity was assumed to estimate the switching caused by the change in relative energy prices and the longer-term impact on demand. The alternative method applied here is the substitution of the elasticity assumption as a price-effect by a figure representing the overall reduction in energy demand (which would result from the price increase) at some point. Accordingly, two such lower levels of world energy requirements consistent with an overall 4.6 percent energy growth rate (low case) are illustrated in Tables 6.6 and 6.7. Both assume continuation of the current high price levels through 1985.

The supply estimates, on the other hand, are derived judgmentally-- a procedure not unlike that followed in the previous supply forecasting methods. Thus, three estimates of energy supply for 1980 and 1985 have been made for the non-Communist countries of the world with the exception of current major petroleum exporters. As a baseline for reference one could use pre-October estimates. The "medium" case includes an estimate of the supply reaction to changes in overall energy prices, taking into account technological and time constraints. The figures, incidentally, are not incompatible with the FEA's Project Independence and the OECD's Energy Study figures.* The "high" case increases the best estimate of

* These voluminous studies represent as of this writing the most up-to-date and advanced estimates of world supply and demand. The first, slightly more optimistic as to the price-effects, is the Organization for Economic Cooperation and Development's Energy Prospects to 1985, 2 volumes (Paris, 1974). The second, more preoccupied with constraints on production, is the Federal Energy Administration's Project Independence, November 1974.

Neither of these studies is taken seriously by policymakers. Both could be accused of being "some fancy footwork with computers," as former Secretary of the Interior Rogers Morton characterized the American report. (The Petroleum Economist, December 1974.)

Table 6.6

NON-COMMUNIST WORLD ENERGY OUTLOOK--1973, 1980, 1985
MEDIUM GROWTH RATES
(MMB/D oil equivalents)

Country	1973	1980	1985	(Percent) 1973-1985 Average growth Of Energy Demand
United States	37	45	55	3.3
Western Europe	24	33	42	4.6
Japan	7	11	14	6.6
Other Industrial	7	9	13	5.4
Developing countries	10	14	23	7.6
TOTAL	85	113	146	4.6

SOURCE: FEA, "A Discussion of the World Energy Market."

Table 6.7

NON-COMMUNIST WORLD ENERGY OUTLOOK--1973, 1980, 1985
LOW GROWTH RATES
(MMB/D oil equivalents)

Country	1973	1980	1985	(Percent) 1973-1985 Average Growth Of Energy Demand
United States	37	42	49	2.3
Western Europe	24	30	40	4.1
Japan	7	9	13	5.5
Other Industrial	7	8	11	4.4
Developing countries	10	13	19	6.6
TOTAL	85	102	132	3.7

SOURCE: FEA, "A Discussion of the World Energy Market."

reasonable but ambitious estimates for North Sea, Outer Continental Shelf and Alaska production levels. Supply estimates for non-OPEC, then, are summarized in Table 6.8:

Table 6.8

PROJECTION OF FUTURE NON-OPEC ENERGY SUPPLY--1980, 1985
(MMB/D equivalent)

	1980			1985		
	Pre-Oct.	Medium	High	Pre-Oct.	Medium	High
United States	40	43	47	48	52	59
West Europe	16	17	18	19	22	24
Other	24	25	26	39	40	41
TOTAL	80	86	90	106	115	123

Totals may not add due to independent rounding.

SOURCE: FEA, "A Discussion of the World Energy Market."

Having projected likely energy supply from sources outside OPEC, an overall projection of the world oil market requires estimates for the complementary OPEC area. Based on actual 1973 production and pre-October production plans for the major oil-exporting nations (i.e., plans which do not include estimates of the impact of the subsequent price increases) projections given in Table 6.9 have been used:

Table 6.9

POTENTIAL OIL EXPORTS--OPEC COUNTRIES, 1973, 1980, 1985
(MMB/D)

	Actual 1973	1980	1985
Venezuela	3	3	3
Indonesia	1	2.5	3
Algeria	1	1.5	2
Nigeria	2	3	4
Iraq	2	3	5
Iran	6	9	9
Kuwait	3	3	3
Libya	2	2	2
Saudi Arabia	7	12	16
United Arab Emirates	1	3	4
Qatar and Oman	1	1	1
Other	1	3	4
TOTAL	30	46	56

SOURCE: FEA, "A Discussion of the World Energy Market."

The range of probable oil imports demanded under the alternative supply and demand assumptions is shown in Table 6.10.

Table 6.10

ALTERNATIVE PROJECTIONS OF
NON-COMMUNIST WORLD REQUIREMENTS FOR OIL FROM MAJOR
PETROLEUM EXPORTERS, 1973, 1980, 1985, (MMB/D)

	1973 Production	Low (3.8%)		Medium (4.6%)		High (5.5%)	
		1980	1985	1980	1985	1980	1985
Pre-Oct. Case	31	22	26	33	40	45	56
Medium Case	31	16	17	27	31	39	47
High Case	31	12	9	23	23	35	30

SOURCE: FEA, "A Discussion of the World Energy Market."

The figures given above, when contrasted with potential OPEC output estimates illustrate the range of the potential world surplus for 1980 and

1985, as given below in Table 6.11. The range is wide indeed. The most optimistic assumptions yield the absurdly high figure of 47 million barrels daily of excess capacity in OPEC. But the point highlighted by even the more reasonable assumption is clear: a large and growing surplus of productive capacity will characterize the oil market.

Table 6.11

ALTERNATIVE PROJECTIONS OF POTENTIAL WORLD OIL SURPLUS, 1980, 1985
(MMB/D)

	Energy Demand Growth Case					
	Low (3.8%)		Medium (4.6%)		High (5.5%)	
	1980	1985	1980	1985	1980	1985
Pre-Oct. Supply Case	24	30	13	16	1	0
Medium Best. Est.						
Supply Case	30	39	19	25	7	9
High Supply Case	34	47	23	33	11	17

SOURCE: FEA, "A Discussion of the World Energy Market."

The inference one can draw from these tables is that the current price is unlikely to hold and would continue softening. Prices could remain level if, and only if, demand for energy continues to grow at a rate which would imply negligible price elasticities; or if the residual producers (essentially Persian Gulf exporters) are willing to cut back their production well below the actual 1972 rates. In short, the burden of sustaining current prices is on the cartel. That burden boils down to OPEC's need to prevent the growing world oil surplus from undermining its price structure. Having returned almost full circle to its 1968 problems, OPEC still has to tackle that elusive and yet crucial policy-issue of voluntary pro-rated production restrictions on its members to prevent prices from collapsing altogether. The question of long-term price for crude oil

hinges on the following two variables: First, OPEC's ability unilaterally to determine price in the face of present and projected market forces. Second, OPEC's consequent long-run pricing policy.

To the extent that a process of bargaining over prices between Importers and exporters is underway, then its present- and near-term form would be that of a competition in restrictive measures centering around the current surplus of oil supply. On the production side, a concerted effort to allocate cutbacks among the OPEC members is and would remain the cartel's principal task as it seeks to prevent the surplus from eroding prices. Only by designing fair production programming quotas could the OPEC countries eliminate this surplus and negate the downward pressure on prices. On the consumption side, almost all OECD nations are actively trying to maintain the surplus by engaging in consumption programming aimed, to be sure, at alleviating the monetary ramifications of expensive imports, but also for the purpose of matching OPEC production cutbacks with import reduction which would have the net effect of firming up the surplus.

The competition between producers and consumers is by no means an uneven one. The purpose of any cartel is to maximize the wealth of its members by reducing effective supplies sufficiently to raise or maintain high prices. For the oil-exporting nations' cartel a restrictive policy is natural, economically compelling, and presumably manageable. This is not so for consumers. Demand restraint, though noble as a virtue, somewhat contradicts the needs of economic growth; it connotes an act of self-denial and therefore depends on more than a modicum of societal consensus and political efficiency. Thus, on the face of it, the consumers are severely handicapped in their competition with OPEC about the continuing existence of the surplus.

Which of those competing trends would actually prevail is difficult to tell. Although difficulties exist on both sides, the producers would probably have the upper hand unless there is a change in the policies of conservation as they are handled by Western governments. The difficulty on the producers' side is that no single exporting country alone could eliminate the surplus. If one examines the figures of the projected surplus between now and 1980, it is clear that it would require a joint effort by at least three of the major oil-producing countries, each cutting more than 10 to 15, perhaps even 20 percent of their future production to cancel the surplus which exists today and is forecast for the future. This is not easy to do, particularly since the producing countries do not have the same interest in price levels, the same capability to handle production cutbacks, nor the same capital needs. However, it is also obvious that the consumption restrictions now administered in the West, through appeals for voluntary demand curtailment, would hardly suffice to maintain the existing surplus. Unless there is a substantial legislative and regulatory effort to reduce demand and consumption in the West, the force of the potential surplus alone would not be enough to bring prices down.

Nevertheless, there are numerous reasons to believe that OPEC too would have its share of problems. Their severity might eventually be such as to foil the cartel's effort significantly to reduce the surplus. OPEC's main difficulty would be the same that has plagued it since its beginning: pro-rationing. Underlying the strain in the operation of the cartel is the fact that while the wealth of all members is increased by reducing production and raising prices, the wealth of any individual

member is increased by raising production. It is in the management of this tradeoff between the collective good and the individual good that cartels traditionally break down, a fate actually encountered by OPEC throughout the first decade of its existence. The source of the notorious instability of cartels is not greed but envy, since the crucial question in the future would not be OPEC's general ability to wipe out the surplus from the market but its ability to allocate equitable and/or effective cutbacks among its individual members so as to sustain the agreed-upon price structure.

By the end of the first quarter of 1975,^{*} the world surplus of oil, defined as the difference between OPEC's production levels and its installed capacity, reached approximately 12 million barrels daily. That is, almost a third of OPEC productive capacity was shut-in. Even at such levels, the Organization was unable to reach a joint policy of production curtailment. Rather, with each country managing its policies vis-a-vis the companies operating in its soil to its best economic advantage, all the major oil-exporting countries without exception have cut production. In Saudi Arabia, ARAMCO was producing in March 1975 5.6 million barrels daily or almost 2 million barrels per day less than the government will permit, the allowable being 8.5 million barrels per day, with Saudi installed capacity estimated at 10.5 million barrels daily. Kuwait's March 1975 production averaged 2.3 million barrels daily, 1.5 million barrels per day below its estimated installed capacity. Iran's output averaged 5.6 million barrels a day or 900 thousand barrels per day under its installed capacity. Iraq produced in March 1975 2.1 million barrels a day or a little more than 500 thousand

^{*} The figures provided here are taken from The Petroleum Intelligence Weekly, April 21, 1975.

barrels per day below its installed capacity. The United Arab Emirates averaged 1.5 million barrels daily in March 1975 as against an installed capacity of 2.2 million barrels daily. Venezuela was contemplating reducing production from the 2.6 million barrels daily it produced in March to 2.4 million barrels per day, having an installed capacity of 3.3 million barrels per day. Nigeria, which has an installed capacity of 2.5 million barrels per day, kept reducing production to the low level it reached in March, 1.8 million barrels per day. Although it is arguable that even in the absence of a coordinated OPEC production programming formula, the effect of the trend delineated here, i.e., of individual countries voluntarily restricting output, could actually achieve the goal of negating the rising surplus, there are fundamental reasons to believe that this would not be the case.

Between 1971 and 1973 most of the discussants of the world petroleum market appeared to share a consensus on the more salient aspects of the system. They believed a shift in the balance-of-power between the oil-exporting and oil-importing countries had occurred and that the OPEC cartel had become an all-powerful fixture on the energy scene.* Yet, a year after the cartel succeeded in threatening the world's supply system and then subjected it to a four-fold price increase, there was a growing body of discussion about the cartel's true effectiveness. A show of strength, as 1973 presumably had been, should have had the

* See, for example, J.E. Hartshorn's "Oil Diplomacy" *The New Approach*, *The World Today*, July 1973.

opposite effect--that of solidifying OPEC's position; instead it is now openly questioned.*

Upon reaching seemingly paradoxical conclusions, elementary logic dictates that the premises should be re-examined. Indeed, the tightening of supply in late 1973, as argued in Chapter V, was not as skillfully managed as alleged. If it were not for the panicky hoarding among consumers, the shortfall in supply could have been easily weathered. Second, neither on the issue of embargo-compliance among OPEC members nor on the issue of production programming among OPEC members has there been sufficient cooperation which would attest to the cohesion of the oil alliance. The mismanagement of the embargo and the failure to arrive at any accepted production formula for the cartel members actually demonstrate the deep divisions between the various interest groups within the cartel. In that sense, the years 1973 and 1974 have been a show of weaknesses along with strengths. It is to the examination of the two that this discussion now turns.

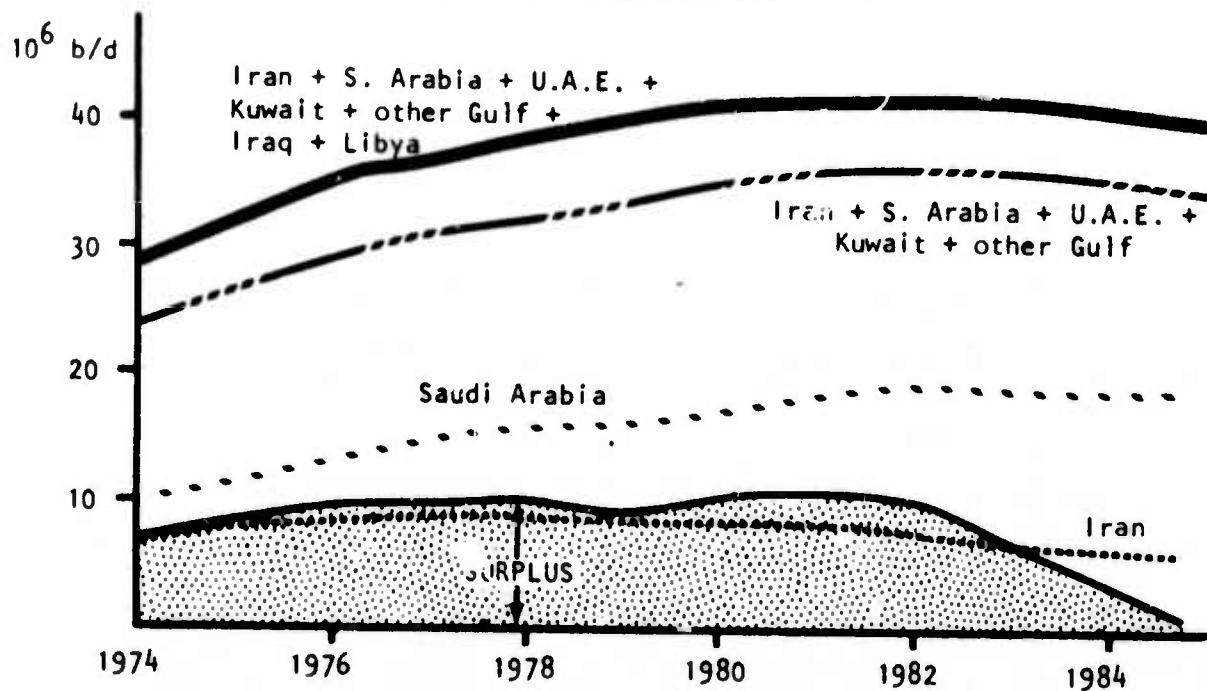
The ultimate test of a cartel is in its ability to control production. The difference between a monopoly and an oligopoly lies precisely in the fact that the latter has to surmount the obstacle of its being comprised of a number of entities each with interests of its own. For OPEC the production programming objective actually translates itself into a classical alliance behavior problem; that is, finding an accepted method of

*The Brookings Institution's report puts it squarely. See the section titled, "Can An Exporters' Cartel Work?" in Energy and U.S. Foreign Policy by Joseph A. Yager and Eleanor B. Steinberg (Cambridge, Mass.: Ballinger Publishing Company, 1974), pp. 259-266. Later, the Wall Street Journal analyzed OPEC's actual strength; see Ray Vicker's "OPEC Test an Uneasy Unity," February 27, 1975.

allocating cost burdens among members. The allocation rule for the pro-
 rationing of production is and will remain the cartel's main stumbling
 block for the foreseeable future. It is useful to begin by taking a
 long-term view of that problem.

One thing is clear from the discussion in the previous section: the
 magnitude of the potential surpluses is such that no single oil producing
 country could absorb the surplus unilaterally.

Diagram 6.1

OPECONOMICS: SHARING CUTBACKS

SOURCE: BP, "OPECONOMICS," Policy Planning Staff, April 1974.

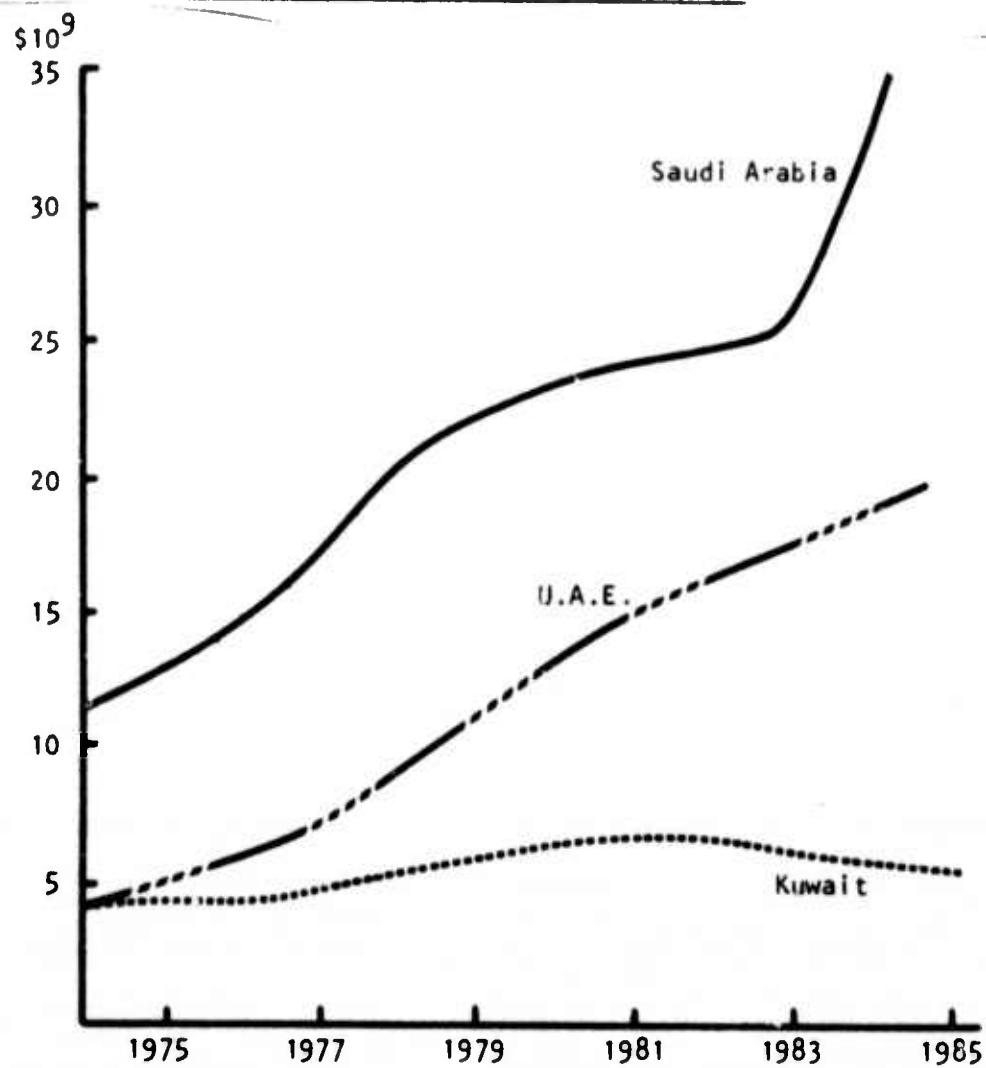
A hypothetical depiction of the surplus shows (Diagram 6.1) that 1) Iran could not absorb the cut on her own even were she so inclined; 2) for Saudi Arabia to do so would involve perhaps politically unrealistic production levels in the early years. OPEC, in other words, enters a period of severe testing of its solidarity and its ability to cooperate.

It is necessary, therefore, to analyze each of the OPEC partners with reference to its particular future export-dependence pattern. For the oil producing countries, the key to dependence is the relationship between the flow of revenues and internal absorption. This, in turn, implies a direct functional relationship to price levels and could be measured by estimating the projective external surplus (capital) or deficit for each country. The existence of external surpluses is not merely an indicator of price-dependence; it is also, as argued previously, the measure of the capability to engage in one or another type of economic warfare. Assuming, for purposes of illustration, a long-term average price of \$8.50 per barrel, the accumulation of surpluses or deficits as shown in Diagrams 6.2 and 6.3, divides the Middle East oil producers into the above two groups.

First, the "spenders," those countries with high absorptive capacity, an expansionist oil production policy and therefore high degree of export-dependence. That group resembles the categorization of "production maximizer" shown in Table 6.4. Second, the "savers," those countries with low absorptive capacity, conservationist oil production policy and low degree of export-dependence. This group, of course, correlates with the "conservers" and "residual suppliers" on Table 6.4. Only the latter group can, in principle, tolerate substantial cutbacks without suffering the adverse economic results. In fact, for the "savers," a restrictive production policy would simultaneously advance their own national priorities as well as those of the cartel.

The Diagrams indicate that for the long term, different Mid-East OPEC countries face totally different prospects. Saudi Arabia, the United Arab Emirates, and Kuwait find themselves in the position of typical "savers,"

Diagram 6.2

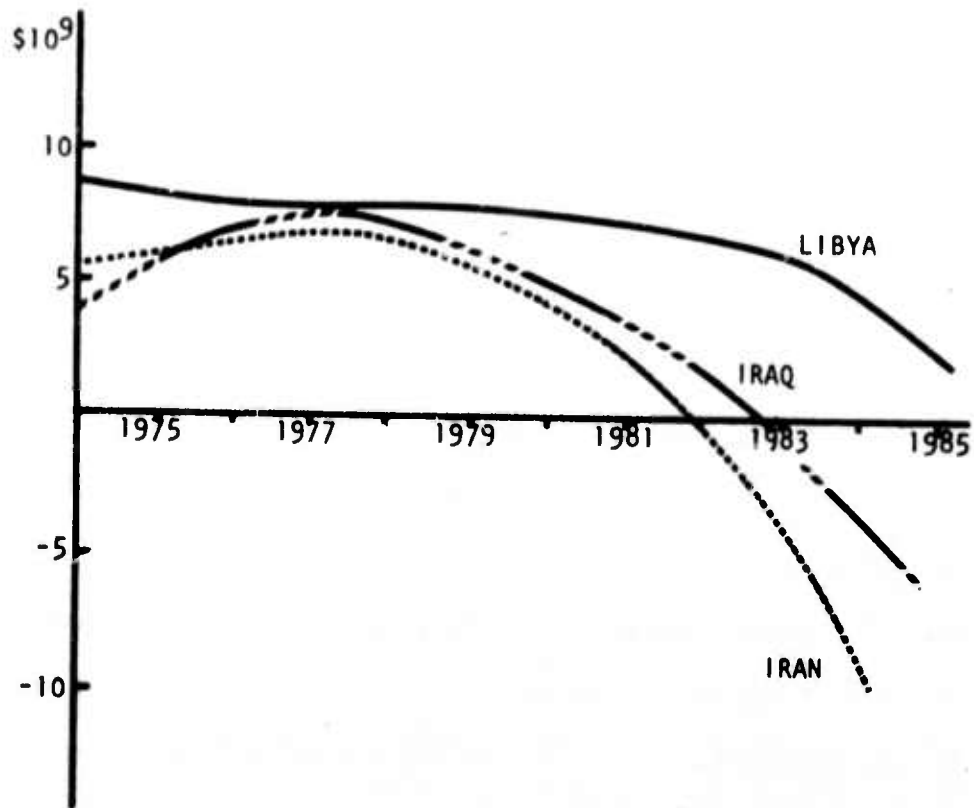
CONSERVERS' ANNUAL SURPLUS/DEFICITS

Lack of oil revenues is not a constraint on the economic growth of members of this group.

SOURCE: BP, "OPECONOMICS."

Diagram 6.3

SPENDERS' ANNUAL SURPLUS/DEFICITS



Lack of oil revenues is not a constraint on the economic growth of members of this group.

SOURCE: BP, "OPECONOMICS."

i.e., their requirements for economic growth would not be threatened by prices around \$8.50 within the 1975-85 decade. On the other hand, Iran, Iraq, and Libya (this last country could be considered a border case), unable to increase production much beyond 1980, find themselves typical "spenders," i.e., countries whose growth cannot be met without going into external deficit towards the end of the period studied or shortly thereafter.

One logical rule for allocating the cutbacks, therefore would be that which could have the revenue utilizers and marginal utilizers (the "spenders") all maximize revenues, while the surplus countries (the "savers") share an equal percentage of productive capacity. Such a formula appears fair since it advances need as a distributional criterion. The only alternative equitable formula would be a straightforward equal sharing of the surplus capacity by all OPEC nations. At high price levels the problem of allocating output cutbacks becomes acute. Indeed, if all producer nations are to share the burden equally, it implies that each would have to cut its 1985 production plan by 46 percent, for at \$9 per barrel the potential surplus could rise to 24.8 million barrels daily-- or 46 percent excess capacity. If, on the other hand, the surplus revenue-generators (the "savers") were to shoulder the burden themselves, then each would have to share a 51 percent surplus capacity.* Considering the first formula impractical, then Saudi Arabia, Abu Dhabi and Kuwait are cast in the pivotal role of balancing wheel with respect to Middle East, and hence world supplies. The prospects such a role could entail are illustrated in Table 6.12.

* See the discussion on allocation rules in FEA's Project Independence, November 1974, pp. 358-359.

Table 6.12

EXPORT RESTRICTIONS NEEDED TO MAINTAIN A TIGHT WORLD OIL MARKET
AND HIGH PRICES, 1976, 1980, AND 1985 (IN MILLION BARRELS PER DAY)

	1973 (Estimated)	PROJECTED EXPORTS		
		1976	1980	1985
SOURCES OF SUPPLY:				
Canada	.2	.5 (1.5)	1.0 (1.0)	1.5 (1.5)
Countries that are unlikely to restrict output initially:	6.2	8.0 (8.0)	8.5 (9.5)	9.5 (12.5)
Algeria	1.0	1.5 (1.5)	1.5 (1.5)	1.5 (2.0)
Indonesia	1.2	1.5 (1.5)	1.5 (1.5)	2.0 (2.5)
Nigeria	2.0	2.5 (2.5)	2.5 (3.0)	3.0 (4.0)
Other	2.0	2.5 (2.5)	3.0 (3.0)	3.0 (4.0)
Countries already restricting output:	8.4	7.0 (8.5)	6.5 (9.0)	5.0 (9.0)
Kuwait	3.1	2.5 (3.0)	2.0 (3.0)	1.5 (3.0)
Libya	2.0	2.0 (2.5)	2.0 (3.0)	1.5 (3.0)
Venezuela	3.3	2.5 (3.0)	2.5 (3.0)	2.0 (3.0)
Potential residual suppliers:	18.0	18.5 (26.5)	17.0 (34.5)	14.5 (42.5)
Iran	5.6	6.0 (7.5)	5.5 (9.0)	5.0 (9.0)
Iraq	2.0	3.0 (3.5)	3.0 (5.0)	4.0 (6.0)
Saudi Arabia	7.8	7.0 (11.0)	6.0 (15.0)	5.5 (20.0)
United Arab Emirates Qatar, Oman, and Other Middle East	1.4	1.5 (3.0)	1.5 (4.0)	1.5 (6.0)
	1.2	1.0 (1.5)	1.0 (1.5)	1.0 (1.5)
Total Exports	32.8	34.0 (43.5)	33.0 (54.0)	30.0 (65.5)
Import Requirements	31.5	34.0	33.0	32.0

NOTES: Numbers in parentheses show potential exports. Import requirements correspond to prices of \$6.25 a barrel for Saudi Arabian oil, f.o.b. the Persian Gulf, and normal market differentials for oil from other sources. (All prices in 1973 dollars.)

SOURCE: Yager and Steinberg, Energy and U.S. Foreign Policy.

It is questionable how long the Saudis would be willing to accept this role as they watched their own income decline--in a relative sense--while other producing nations--some of which are political rivals, such as Iran and Iraq--increased their revenues. If other oil-producing countries expand production, as currently projected, Saudi Arabia, Kuwait and Abu Dhabi would have to restrain production levels to prevent over-supply and tumbling prices. They could be limited in production to under 4 million barrels daily, starting in 1978, which would be less than

one-third of the peak production reached in September 1973. Annual oil revenues (at present prices) would then be under \$12 billion--not quite half the level of 1975.

In these circumstances, Saudi Arabia, Kuwait and Abu Dhabi would be faced with three essential choices: 1) to try to buttress their revenues with still higher prices; 2) to try to convince the other producers of the need for a joint program of restricting production; or 3) to get into competition among producing countries for shares of the limited market. However, in response to these propositions: 1) higher oil prices would cause further reduction of imports; 2) a program of mutual cut-backs by all producers is doubtful as Iran and Iraq have been unwilling to cooperate with programs in the past and have given no indications of changing their positions except for brief periods; and 3) if the revenues of Saudi Arabia, Kuwait and Abu Dhabi fall significantly below their expectations, they would have an economic incentive to expand production, to the disadvantage of other producers, and prices would probably fall.

The initial results of this analysis suggest that up to around 1977 but no later than 1980 the major producing countries could possibly afford collective or parallel action by governments to restrict production so as to balance supply and demand at around \$8.50 per barrel, while still satisfying their economic requirements and generating substantial external surpluses. In the 1980's, however, the revenue utilizers (the "spenders") could only maintain their economic growth further if there were then a further substantial increase in the real value of oil. Iran and some of the other revenue utilizers lack the capacity to cut production

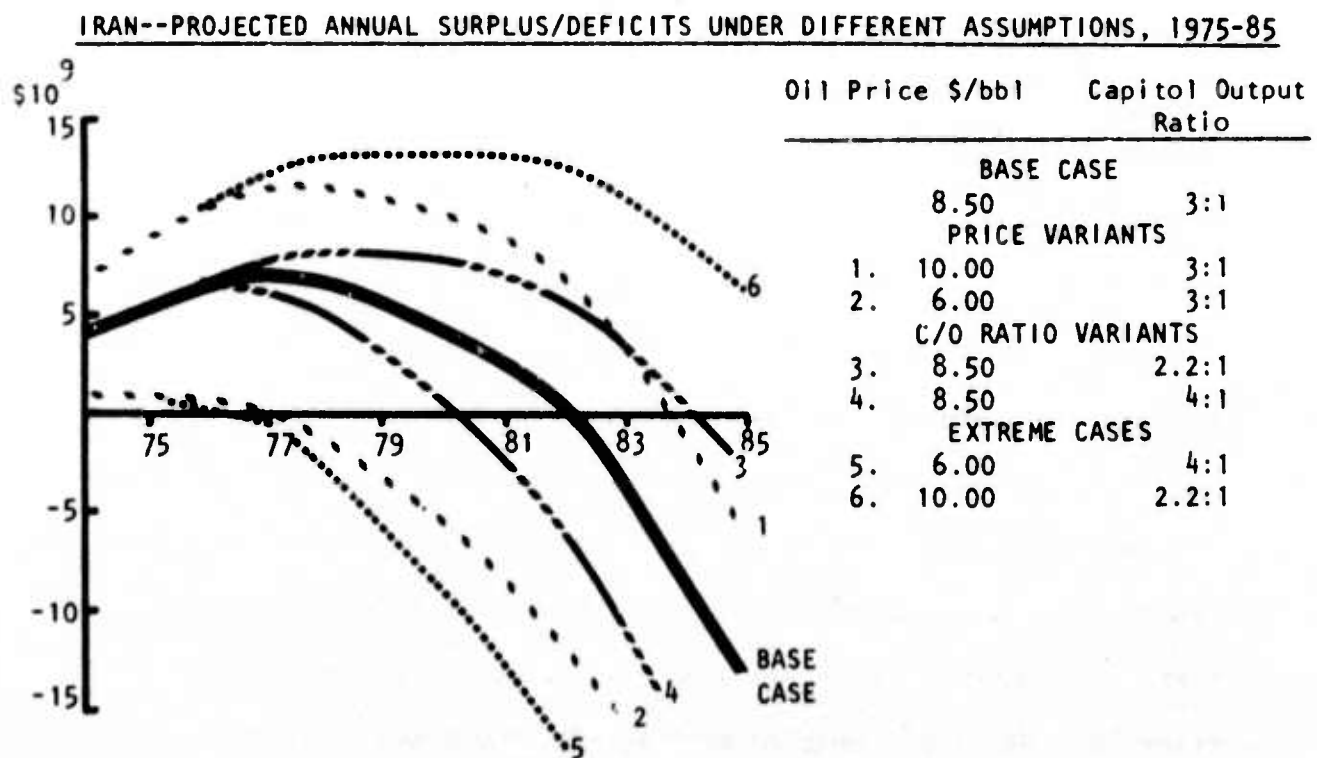
in order to impose this increase in the face of potential substitution and conservation. Some of the surplus countries, such as Saudi Arabia, with capacity to increase production throughout the 1980's and lower requirements, may take a different view and incline towards a long-term maximization of revenue against eventual substitute prices and through the protection of market shares which in turn means price shaving or its equivalent. Anticipation of this long-term situation by a country like Iran might lead to earlier pressure within the cartel to maintain, if not outrightly increase, prices in the short term in order to defer the prospect of slowing down its economic growth.

Selecting Iran as the typical "spender" and Saudi Arabia as the typical "saver," the conflict of interest between these two countries is evident; the basic difference lies in their long-term views and considerations. Iran would probably need price increases over time in order to sustain its rather grandiose political and economic ambitions. In the absence of a price increase between now and the 1980's, Iran could face severe capital deficiencies. For Iran the need for a higher price is a direct function of time. Exactly the reverse could be said for Saudi Arabia. Under no circumstances would Saudi Arabia encounter such capital deficiencies, regardless of the market structure, the price of oil, and the state of world energy supplies. Furthermore, for Saudi Arabia, due to its large oil reserves, the consideration of market share is clearly predominant: the higher the price--the long-run price--the less the potential market share for Saudi oil. Basically, then, the effect of this consideration is to lower prices in the long run, at least as a hedge against substitution. This contradiction between Iran and Saudi Arabia should be

reflected immediately in the pricing policies of OPEC; it has already done so and will possibly even assume political dimensions in a matter of two to three years in the form of either an uneasy compromise or an open rift. This is only one indication of the fragility of OPEC, a fragility which could come under pressure from both an external source, such as the surplus, and from internal tensions within the cartel.

Iran's dilemma is strikingly demonstrated in Diagram 6.4, subjecting the above conclusions to variations in the price of oil and to varying assumptions regarding the output resulting from non-oil domestic investment. A 3-1 capital/output ratio may be too low for resource-based industries carrying a natural resource premium, but too high for manufacturing complexes because of the lack of management and technical skills to operate such a sustained investment program.

Diagram 6.4



SOURCE: BP, "OPEC ECONOMICS."

The above diagram shows the effect of different prices and capital/output ratios on the calculations for Iran. The price level is naturally critical. At \$6 per barrel, Iran would face an external deficit within two years, whatever the capital/output ratio. At \$10 per barrel, Iran's surpluses would run into the mid-1980s. In the later period, it becomes as important to Iran to achieve a normal three-to-one capital/output ratio rather than the more likely four-to-one, as to obtain another \$1.50 on the oil price. In the medium term, however, Iran cannot risk prices much below current levels.

Saudi Arabia's position is quite different; her foreign capital surpluses would grow, at varying rates to be sure, but grow nonetheless. Furthermore, Saudi Arabia's sensitivity to price levels is comparatively low, and she too faces a basic dilemma. If Saudi Arabia continues to cooperate with Iran and her OPEC partners in restricting output in order to keep prices high, the only benefit lies in the possibility of extending the period of revenue flow before depleting her oil reserves. The drawbacks, however, are many. First, if the United States does not secure a "floor," or minimum price, it is quite possible that Saudi Arabia would benefit from breaking the cartel by increasing output. Second, the advantage of extending the utilization of proven oil reserves beyond thirty or forty years is questionable. The uncertainties involved include the possibility of very low prices at the end of this period due to a technological breakthrough in energy. On the other hand, new reserves could also be found that will have the effect of extending the utility period into the future. Third, given its limited absorptive capacity for new investments, Saudi Arabia could find itself accumulating large funds which will be invested abroad, with declining utility and productivity.

At the same time, breaking the cartel by deliberately refraining from production restrictions could entail a number of advantages for Saudi Arabia and its fellow savers. First, it would protect their market against substitution and competition. Second, it would constrain Iran into the necessity for investing nearly all of its revenues at home, thereby making the "savers" dominant in the foreign capital market. The advantages of monopolizing much of the financial market, as will be discussed later, could be greater than those of controlling the oil market. Third, reducing Iran's revenues, which as noted are much more sensitive to price movements, will hamper its rate of economic and political growth. In other words, reducing the price of oil would win the consumers' gratitude while reducing the potential threat to Saudi Arabia, Kuwait, and the U.A.E. from all too ambitious and powerful neighbor.

Thus, the conflict of interest between the spenders and the savers is sharpest in the confrontation between Saudi Arabia and Iran. Each of these countries, in effect, faces a painful choice. Assuming a rational pricing policy, the objective of any producing country is to set prices so as to maximize profits. The maximization of profits in reality implies maximizing the present value of the net oil revenues derived from oil reserves, or more simply--maximizing the present value of the oil reserves. There are numerous indications that maximizing profits by way of maximizing liquidity could be of no advantage to countries such as Saudi Arabia. For that country, increased liquidity is not necessarily an advantage because it merely exacerbates the major problem of finding a safe storehouse for Saudi investments. In this vein, the sub-optimal policy that oil in the ground is the best investment of all does acquire a certain degree of validity.

Nevertheless, taking into account Saudi Arabia's long-term considerations, its optimal pricing policy would be to bring oil prices down in the short term, to hedge against substitution, and prudently to manage external investments, then to conserve resources and gradually raise prices at a pace which allows the economies of the consumer nations to absorb them while adjusting for substitution and maximizing the present value of the remaining oil reserves. Iran's pricing policy, on the other hand, has thus far been to push prices to the limit the market would bear, then as the oil surplus grew, to resign itself to gradually falling prices as they reach the level of marginal substitution and trying to keep them there. In other words, the clash between Iran and Saudi Arabia is a short-run rivalry. For the long term, whether as a necessity (for Iran) or as a choice (on the part of Saudi Arabia), prices will stabilize around the marginal cost of substitution or the price floor agreed upon among consumers.

It is, therefore, not inconceivable that parallel to the spenders' effort to keep prices slightly above the costs of substitution or the price floor, the savers would cooperate in exercising either explicitly or implicitly their latent potential to become price leaders in the oil market (or, for that matter, within the OPEC organization), which would lead to price reductions below the price floor or slightly below the cost of substitutes for OPEC oil.

So much for the divergence of interests among the OPEC members. The differences are not strong enough to bring about its literal disintegration, but they have been and will probably remain sufficient to prevent the organization from being truly effective as a cartel capable of

restricting supply and investments as one body. Ultimately, OPEC is constrained by exogenous factors. First, the real-world cost of substitution; second, the price floor that consumers would agree to establish--if and when they do so. None of these crucial elements can be controlled by the producing countries. True, the symmetry of interdependence has been disrupted, but that is not to say that consumers have lost all influence over the market or that OPEC has assumed total control of it.

The long-term cost of substitution depends upon the energy resource considered as a base for it: Persian Gulf crude costs as little as \$0.15 to \$0.20 to produce; alternative sources are considerably more expensive. North Sea oil would cost \$1.50 to \$2.00 to produce; low and medium cost American oil (North Slope) would average between \$1.75 and \$5.00 respectively. High grade oil shales should cost between \$4.00 and \$7.50; Canadian tar sands \$3.50 to \$4.00; and syncrude from coal, around \$7.00.* It is no coincidence therefore, if the wish to protect indigenous energy investments is the reason behind the establishment of a price floor by the IEA, then a price of \$7.00 in 1974 dollars would protect both American and European high-cost conventional energy. Furthermore, as Table 6.13 indicates, the U.S. cannot expect to become independent by virtue of market forces alone even if prices remain as high as \$9 per barrel. However, most of the decline in the net imports levels is achieved at a price of \$6 to \$7.

Thus, if the U.S. introduces a minimum price policy at \$6 or \$7, it would face only a small degree of dependence on imports in 1980. Its total energy balance could be as follows:

* Organization for Economic Co-operation and Development, Energy Prospects to 1985, Vol. 1, p. 96.

Table 6.13

U.S. 1980 IMPORT REQUIREMENTS AT VARIOUS PRICE LEVELS

Price per barrel	Annual net demand for imports in billion barrels	
\$ 4.00	5	- 6
6.00	2	- 3
7.00	1.3	- 2.8
9.00	0.5	- 2.0
12.00	0.2	- 1.7

Demand for energy	15.8	billion barrels
Supply of non-oil energy	9.2	" "
Supply of oil	4.7	" "
Total supply	13.9	" "
Net Import	1.9	" "

SOURCE: Arad and Ben-Shahar, "The Petromoney Question."

This net import amounts to 12 percent of total energy demand and 29 percent of total oil demand, more about which later. By reducing U.S. demand for imports in case world prices fall below \$6, this minimum price policy will have no effect on the OPEC cartel which at any rate will tend to retain prices at a level higher than \$6 per barrel. It may, however, have the effect of decreasing the "savers" incentive to reduce prices since, precisely under conditions of low prices, the policy of minimum prices becomes operational, consequently leading to a smaller increase in the annual revenues of these countries.

It is quite likely therefore, that crude oil prices will find their long-term equilibrium around \$7 per barrel within two to three years. This, incidentally, is not much above the price oil was expected to reach in the same time frame if the 1971 escalators agreed upon in Tripoli and Teheran were adhered to. The only effect of these agreements, in retrospect, has been to encourage OPEC, under Iran's leadership, to hike prices in the short-term, considering that they would stabilize at the cost of substitution in

the long term, anyway. Yet, the key to the matter, as indicated by Lord Keynes, often is in the short-term, and OPEC applied that lesson all too well. It should be borne in mind however that the short-run can indeed be short.

Energy Interdependence and the Vulnerability of Supply

The previous section surveyed the market outlook; the one which follows will assess the ramifications of that outlook for the patterns of export and import dependence critical to the future security of supply. Indeed, three essential factors will determine the state of affairs on the interface of energy and security: the balance between supply and demand, OPEC's strength and ability to maintain the price by "shutting in" productive capacity, and the resulting patterns of import-dependence and export-dependence as they interrelate. All these parameters are currently in a state of flux but are likely to reach an equilibrium within two to three years. Relatively safe projections can be made for such a short-term horizon. Capacity figures given in Table 6.14 are based on increases already programmed for 1975, 1976, and 1977.

The major part of expansion in production is projected to occur in Saudi Arabia, Iraq, Indonesia and Nigeria. Saudi Arabia, a saver by orientation, has little economic motivation to increase production but would probably do so to retain its influence over the oil market. Such an increase, on the other hand, implies that it might have to shut in as much as 8 million barrels daily, or 70 percent of its capacity, if demand for OPEC oil falls. Iran, in contrast, would probably be unwilling to shut in more than 1.5 million barrels daily, or 23 percent of the country's capacity. Although the differential ability of the various OPEC states

Table 6.14
MAXIMUM OPEC SHUT-IN CAPACITY*
 (MMB/D)

	1974		PERCENT SHUT-IN	SCHEDULED CAPACITY	1977		% SHUT-IN
	PRODUCTION	CAPACITY			EST. MIN. PRODUCT.	MAX. OPEC SHUT-IN	
ALGERIA	.9	1.1	18	1.1	.9	.2	18
ECUADOR	.1	.2	50	.3	.3	--	--
INDONESIA	1.4	1.5	7	3.4	3.1	.3	9
IRAN	6.1	6.5	6	6.5	5.0	1.5	23
IRAQ	1.9	2.5	24	4.0	3.0	1.0	25
KUWAIT	2.5	3.8	34	3.8	1.2	2.6	68
LIBYA	1.7	3.0	43	3.3	1.3	2.0	60
NIGERIA	2.3	2.4	4	3.4	3.0	.4	12
QATAR	.5	.7	28	.7	.4	.3	43
S. ARABIA	8.5	9.7	12	11.5	3.5	8.0	70
U.A.E.	1.7	2.3	26	2.5	1.0	1.5	60
VENEZUELA	<u>3.0</u>	<u>3.5</u>	<u>17</u>	<u>3.5</u>	<u>2.0</u>	<u>1.5</u>	<u>43</u>
TOTAL	30.5	37.2	18%	44.0	24.7	19.3	42%

* Oil capacity withheld from production.

SOURCE: Arnold E. Safer and Anne Parker Mills, "Outlook for World Oil: Prices and Petrodollars," Irving Trust Company, March 20, 1975, (Mineo).

to restrict production will remain a source of instability within the cartel, it is likely that in the short-term certain quid pro quo's would be found by spenders to compensate the savers for their uneven shut-in burden instead of confronting the issue of equitable restrictions. The resulting balance, illustrated in Table 6.15, could well be one of a surplus market with increasing shut-in capacity up to 1977 and a price decline thereafter. Demand for OPEC oil will stay level as non-OPEC oil comes onstream.

Table 6.15

PROJECTED MAXIMUM OIL DEMAND CONSISTENT WITH 1977 PRICE DECLINE
(MMB/D)

	'74	'75	'76	'77	'78	'79	'80
OPEC CAPACITY*	37.3	38.8	41.8	44.0	44.0	44.0	44.0
MAXIMUM OPEC SHUT-IN	<u>17.0</u>	<u>17.5</u>	<u>18.5</u>	<u>19.3</u>	<u>19.3</u>	<u>19.3</u>	<u>19.3</u>
DIFFERENCE:							
MINIMUM OPEC PRODUCTION	20.3	21.3	23.3	24.7	24.7	24.7	24.7
NON-OPEC PRODUCTION:							
U.S.	10.5	10.0	10.5	11.3	12.0	12.2	12.8
OTHER NON-OPEC	5.5	6.5	8.0	10.5	11.2	12.0	13.1
CHINESE EXPORTS	--	.2	.6	1.0	1.3	1.7	2.0
TOTAL	<u>16.0</u>	<u>16.7</u>	<u>19.1</u>	<u>22.8</u>	<u>24.5</u>	<u>25.9</u>	<u>27.9</u>
MINIMUM WORLD PRODUCTION (SUM OF MINIMUM OPEC & NON-OPEC)	36.3	38.0	42.4	47.5	49.2	50.6	52.6
OIL DEMAND**	46.5	45.3	46.5	47.5	49.2	50.6	52.6
% CHANGE FROM PRIOR YR.	-1.7	-1.8	+2.7	+2.2	+3.6	+2.9	+4.0
MARGINAL OPEC PRODUCTION***	10.2	7.3	4.0	0	0	0	0
TOTAL OPEC PRODUCTION****	30.5	28.6	27.3	24.7	24.7	24.7	24.7

* ASSUMES NO NEW CAPACITY AFTER 1977, SO THAT OIL CAPACITY WITHHELD FROM PRODUCTION IS CONSTANT BEYOND 1976.

** MAXIMUM LEVEL OF OIL CONSUMPTION CONSISTENT WITH 1977 PRICE DECLINE.

*** ADDITIONAL OIL NEEDED FROM OPEC SOURCES TO MEET DEMAND, ARBITRARILY ASSUMED AS ZERO FROM 1977.

**** SUM OF MINIMUM OPEC PRODUCTION PLUS MARGINAL OPEC PRODUCTION.

SOURCE: Safer and Mills, "Outlook for World Oil."

Realizing that as the cartel was weakening, surpluses rather than scarcities would characterize the near-term oil market, Cassandras of all types have found another formidable threat in the immediate future. It was not OPEC's oil control this time but its potential financial clout. Hardly had the debate over the petrodollar peril begun when the pendulum swung again in the other direction. As Richard Cooper observed,

"Few world happenings in living memory have stirred up such a storm as has the recent petrodollar invasion of the West. But just how much of a threat to Western institutions is this tidal wave of Arab money?

"Despite all the scare headlines, the prospects are perhaps more reassuring than they are frightening. Indeed, there seems an excellent chance that this second great Arab irruption into Western history will, in the end, leave both the West and Middle East more sound and secure than even before."^{*}

The panic in the face of what seemed at the time an awesome economic clout on the part of OPEC found its way into World Bank estimates. That institution projected the cumulative surplus of the oil-producing countries, and the debts of the rest of the world, at \$650 billion by 1980 and \$1.2 trillion by 1985. More sober in its forecasts was the OECD. Basing its projections on lower oil-price and import estimates for the period, in conjunction with a rather higher Arab propensity to spend earnings for imports and long-term direct investments abroad, the OECD estimated that the OPEC yearly surplus, some \$80 billion in 1974, may decline to \$10 billion to \$15 billion in 1980, a far more manageable figure. Richard Cooper, having made similar projections, predicts that the OPEC surplus will be declining, possibly reaching zero by 1982.^{**}

^{*} See his "Will Araby Bankrupt the World?" The Saturday Review, January 25, 1975.

^{**} For a comparison among these estimates see Robert Kleiman's analysis in The New York Times, (pp. 57, 62), of September 27, 1974.

Indeed, according to a study by the Morgan Guaranty Trust Company of New York (see Table 6.16), the annual current account imbalance between the oil importing countries and the OPEC oil producers may well have reached a high point in 1974 and can be expected to decline significantly after 1976 to a point where the OPEC countries collectively will register a negative trade balance by 1979.* The basis of this forecast is the development of two main trends in the wake of the oil price increases of 1973. First, oil consumption in the industrialized countries has stabilized and in some cases even declined, and this, combined with predicted increases in non-OPEC oil production, means that it is likely that for the rest of the decade, demand for OPEC oil by the rest of the world will be little changed (as illustrated in Table 6.15).

Table 6.16

THE PROJECTED BUILDUP OF OPEC FUNDS, 1974-1980^a
(in billions of dollars)

	1974	1975	1976	1977	1978	1979	1980
EXPORTS OF GOODS AND SERVICES	112	117	127	135	139	148	158
OIL REVENUES	105 ^b	110	119	125	128	135	143
NON-OIL EXPORTS	7	7	8	10	11	13	15
IMPORTS OF GOODS AND SERVICES	50	65	83	108	138	177	227
TRADE BALANCE	62	52	44	27	1	-29	-69
INVESTMENT INCOME	3	8	13	16	19	19	16
CURRENT ACCOUNT	65	60	57	43	20	-10	-53
GRANT AID	2	3	3	3	3	3	3
SURPLUS TO BE INVESTED	63	57	54	40	17	-13	-56
EXTERNAL FINANCIAL ASSETS ^c	80	137	191	231	248	235	179

^aUNDERLYING ASSUMPTIONS: LITTLE CHANGE IN WORLD DEMAND FOR OPEC OIL

- AN ANNUAL INCREASE IN OPEC PER BARREL "TAKE" OF 5%
- AN AVERAGE INCREASE IN OPEC NON-OIL EXPORTS OF 15% P.A.
- AN AVERAGE ANNUAL INCREASE OF 20% IN THE VOLUME OF OPEC IMPORTS
- INCREASES IN THE PRICES OF OPEC IMPORTS OF 12% IN 1975 AND 7% ANNUALLY THEREAFTER
- A FINANCIAL RETURN ON OPEC EXTERNAL INVESTMENTS OF 8% P.A.

^bVALUE OF OIL EXPORTED. EXCEEDED ACTUAL REVENUE RECEIPTS BY AN ESTIMATED \$10 BILLION.

^cCUMULATIVE AMOUNT OUTSTANDING AT YEAR-END.

* Morgan Guaranty Trust, World Financial Markets, January 21, 1975.

Secondly, the OPEC countries, both the spenders, or high-absorbers, and the less heavily populated areas, have been increasing their purchases of goods and services from the rest of the world at a much more rapid pace than many had thought possible. The Morgan Guaranty study estimates that OPEC aggregate imports may have increased by as much as 75 percent, or some \$20 billion, in 1974 alone. As a result of these developments it is concluded that OPEC's holdings of external financial assets may peak in 1978 at around \$250 billion, declining thereafter.

Following the same procedure--though with slightly different assumptions--the Irving Trust Company derived two sets of projections of OPEC capital surpluses. The first, Case B in Table 6.17, assumes prices to decline from 1977 on, and the second, Case A, taking the more conventional view, does not assume oil prices to break up. Nonetheless, even a high price scenario would lead to a maximum cumulative value of OPEC financial claims on the rest of the world between \$250 and \$300 billion by the end of the decade, then peaking off and declining; a fortiori, a medium-price scenario, in which the slowing in OPEC's accumulation of claims will be more dramatic, with a peak of about \$200 billion in 1977, coinciding with the price drop.

Indeed, it appears that, far from being an overwhelming threat, the petrodollar issue is a manageable financial problem which should concern mainly the banking industry and whose severity will diminish by the end of the decade. But such an optimistic conclusion is correct only when seen from the standpoint of the capability of the world monetary system to handle such financial volumes.

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Table 6.17
PROJECTED OPEC CURRENT ACCOUNT & FINANCIAL SURPLUS

VOLUME OIL EXPORTS	PRICES a)	VALUE OIL EXPORTS	NON-OIL EXPORTS b)	TOTAL MERCH. EXP.	TOTAL MERCH. IMP. c)	NET MERCH. EXPORTS	NET SERVICES EX. INTEREST d)	INTEREST INCOME e)	BAL. CURR. ACCT. - FIN. SUR+	CUMULATIVE FIN. SURPLUS	
											BILLIONS OF DOLLARS
1973	12	2.80	32	10	42	20	22	-13	1	10	20
74	11.5	9.40	108	12	120	37	83	-20	2	65	85
75	10.8	11.00	119	14	133	56	77	-20	7	64	149
76	10	12.00	120	17	137	76	61	-22	12	51	200
77	9	12.87	116	21	137	95	42	-24	16	34	234
78	9	13.74	124	25	149	118	31	-26	19	24	258
79	9	14.70	132	30	162	148	14	-28	21	7	265
80	9	15.72	141	36	177	185	-8	-30	21	-17	248
CASE A - PRICES RISE AS IN ASSUMPTION											
1973	12	2.80	32	10	42	20	22	-13	1	10	20
74	11.5	9.40	108	12	120	37	83	-20	2	65	85
75	10.8	11.00	119	14	133	56	77	-20	7	64	149
76	10	12.00	120	17	137	76	61	-22	12	51	200
77	9	10.00	90	21	111	95	16	-24	16	8	208
78	9	9.00	81	25	106	118	-12	-26	17	-21	187
79	9	8.00	72	30	102	148	-46	-28	15	-59	128
80	9	7.00	63	36	99	185	-86	-30	10	-106	22
CASE B - PRICES BEGIN TO BREAK IN 1977											

a) PRICES RISE 20% IN 1975 AVERAGE OVER 1974 - (10% PRICE INCREASE AND 10% CATCH-UP EFFECT).

b) PRICES RISE 10% IN 1976, AND AT 7% P.A. THEREAFTER, MATCHING INFLATION

c) RISE AT 20% P.A.

d) RISE AT 7%

e) 8% OF CUM. FIN. SURPLUS AT PREVIOUS YEAR-END.

SOURCE: Safer and Mills, "Outlook for World Oil."

Returning to the question of oil supply security, there are no grounds for optimism at all. That prices will gradually decline and stabilize at around \$7, or that the recycling of petrodollars would be manageable should be of no consolation to the West. In the first place, a massive transfer of wealth will take place before the stabilization occurs and will probably continue afterwards. Secondly, a \$7 per barrel price level will not by itself resolve the asymmetric character of the interdependence between consumers and producers. Market forces generated by a \$7 per barrel price will not significantly diminish currently high Western import-dependence, nor will they increase the producers' relatively low export-dependence. Thirdly, it is under precisely such future conditions that OPEC will optimize its economic warfare capability against a much weakened Western world. It has already been emphasized that, like every other type of warfare, oil warfare is a mutual exercise in damage creation and damage absorption. The sort of "ammunition" necessary to engage in protracted confrontation of oil denial is measurable by the amount of savings or foreign exchange reserves that a coalition of oil-exporting nations could sacrifice in order to carry out a boycott without suffering the direct repercussions at home. Furthermore, beyond a certain point, the acquisition of large financial reserves yields diminishing returns, thus putting pressure to conserve exhaustible oil resources rather than expand production. This pressure could add to OPEC's intention to contemplate denials, just as the possession of substantial reserves would add to its capabilities. Even optimistic calculations of declining oil prices and disappearing OPEC financial surpluses cannot hide the fact that at precisely that point OPEC members will still be experiencing sizeable current

surpluses. Thus, it would not be surprising that even when a high 50 percent absorptive capacity on the part of the savers is assumed, these countries will be accumulating yearly surplus funds on the order of magnitude shown in Table 6.18.

For the same politico-economic reasons that made OAPEC and its key members, Saudi Arabia, Kuwait and the United Arab Emirates, a separate entity within OPEC before 1973, that group will remain distinct five years later. That is, OAPEC has been and probably will remain in possession of substantial financial assets to enable it to continue manipulating its combined oil and financial power, even after the cartel as a group loses its collective surplus. In fact, the sooner its other OPEC partners lose their own external assets, the better will OAPEC's position be in the capital market. Furthermore, as shown in Diagram 6.5, it is at the lower OPEC revenue levels (Cases A3 and A4) that the OAPEC leaders will acquire significantly larger shares of the total surplus, the most likely being approximately 70 percent by 1980.

Table 6.18

ESTIMATED SURPLUS OIL FUNDS: SELECTED YEARS
(U.S. \$ million)

	<u>1975</u>	<u>1977</u>	<u>1978</u>	<u>1980</u>
SAUDI ARABIA	11,425	12,595	13,225	14,580
LIBYA	5,025	5,540	5,817	6,412
KUWAIT	4,350	4,795	5,035	5,552
ABU DHABI	3,275	3,610	3,790	4,180
QATAR	825	910	955	1,052
TOTAL	25,000	27,500	28,800	31,800

ASSUMPTIONS:

A) OIL REVENUES WILL REACH THE LEVEL PROPOSED BY THE JANUARY 1974 WORLD BANK PAPER AS A "MEDIUM" ESTIMATE FOR 1975, AND WILL INCREASE THEREAFTER BY, SAY, FIVE PER CENT PER YEAR TO OFFSET--NO DOUBT ONLY INADEQUATELY--THE EXPECTED CONTINUATION OF INFLATIONARY CONDITIONS.

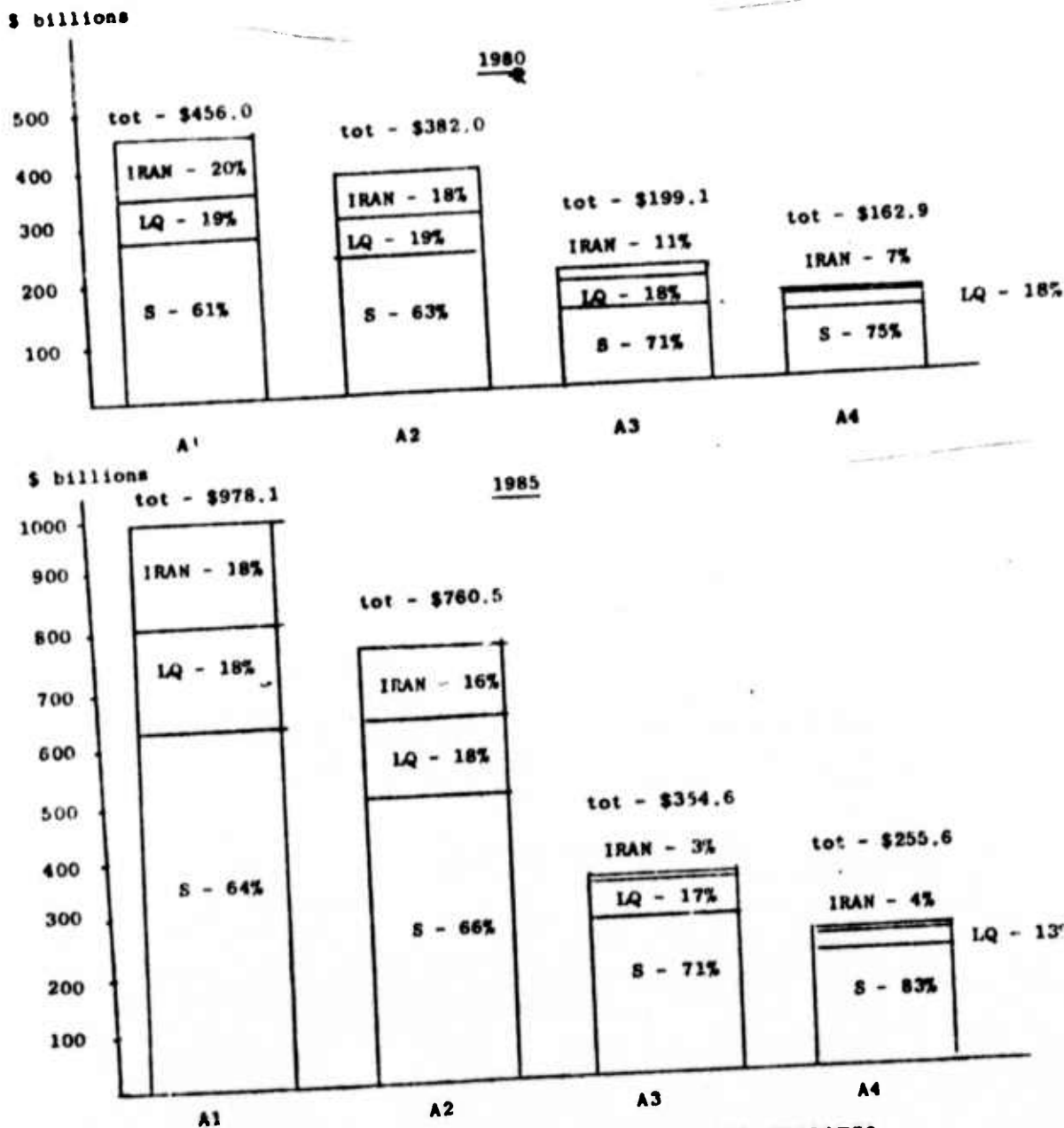
B) 50 PER CENT OF THE REVENUES WILL BE ABSORBED BY CONSUMPTION, INVESTMENT AND ASSISTANCE EXPENDITURES IN THE FIVE ARAB COUNTRIES EXPECTED TO ACCUMULATE A SIGNIFICANT VOLUME OF SURPLUS FUNDS.

C) OTHER ARAB OIL-PRODUCING COUNTRIES WILL BE ABLE TO ABSORB THE WHOLE OF THEIR REVENUES.

SOURCE: SPECIAL SURVEY BY MR. ABDLATIF Y. AL-HAMAD
QUOTED IN MIDDLE EAST MONEY, DECEMBER 14, 1974.

Diagram 6.5

PROJECTED FOREIGN CAPITAL ACCUMULATION FOR MID-EAST OIL EXPORTING COUNTRIES--1980, 1985



READER: S = SAUDI ARABIA, KUWAITI, AND UNITED ARAB EMIRATES
 LQ = LIBYA AND IRAQ

ASSUMPTIONS:

- A1 = ANNUAL REVENUES FOR MID-EAST \$100 BIL. (VERY CONSERVATIVE ELASTICITIES)
- A2 = " " " " " 60-70 BIL. (CONSERVATIVE ELASTICITIES)
- A3 = " " " " " 40-50 BIL. (REASONABLE ELASTICITIES)
- A4 = " " " " " 20-30 BIL. (VERY OPTIMISTIC ELASTICITIES)

SOURCE: U. ARAD AND H. BEN-SHAHAR, THE PETROMONEY QUESTION, HI-2088-P, 1974.

Numerous studies have also reached the conclusion that precisely because of their residual-supplier position, Saudi Arabia and the sheikdoms will actually be maximizing their revenues if prices were to decline to \$7 per barrel.* That is to say, if the scenario of price stabilization at that level ever materializes, OAPEC's leaders would both maximize their oil revenues and optimize their financial position. It seems, Cooper's assurances notwithstanding, that insofar as the security of supplies is concerned, the fact that the petrodollar problem is not as menacing as it was made to appear in early 1974, is somewhat irrelevant. With large surpluses at the sheiks' disposal lasting practically indefinitely, the security problems created by OAPEC would only be exacerbated as it retains and enhances the overall economic power of OAPEC.

* * *

If the likely future drift of events implies an improvement in the ability and motivation on the part of OAPEC members to again indulge in oil warfare, Western vulnerability to it will certainly be increased. The crucial vulnerability variable, of course, is the degree of projected import-dependence. OECD estimates on that account are among the most optimistic, but only for the medium- and long-term. Table 6.19 shows that even for the more plausible \$6 oil case (f.o.b. the Persian Gulf, 1972 dollars), the United States will import oil and gas for only 15.)

* See, for instance, Houthakker's model (developed with Data Resources, Inc.) described in Edward J. Mitchell, Dialogue on World Oil (Washington, D.C.: American Enterprise Institute, 1974). For detailed analysis of these countries' economic prospects, see Keith McLachlan and Narsi Ghorban, Oil Productions, Revenues and Economic Development (The Economist Intelligence Unit, 1974).

percent of her total primary energy demand (in contrast to 18 percent in 1973), and that this share would decline further to 10.0 percent by 1985). A higher price would have even more drastic effects for the country. From 5.5 percent import-dependence in 1980, so predicts the OECD, the U.S. could actually export by 1985 some 4.3 percent, relative to her primary energy.

Table 6.19

ENERGY PRODUCTION, IMPORTS AND CONSUMPTION IN 1972,
AND PROJECTIONS FOR 1980 AND 1985 - U.S.A.

MTOE (10 ¹³ KCAL)	ACTUAL 1972(4) DATA	1980			1985		
		PROJECTION	S6 CASE	S9 CASE	PROJECTION	S6 CASE	S9 CASE
COAL							
INDIGENOUS	365.4	470.0	537.0	537.0	622.4	660.0	660.0
IMPORTS	-38.8	-44.6	-46.8	-64.9	-55.5	-76.1	-91.3
CONSUMPTION	313.2	425.4	490.2	472.1	566.9	583.8	568.6
OIL							
INDIGENOUS	560.3	580.3	650.0	719.0	575.4	750.0	938.0
IMPORTS	254.6	541.5	331.2	140.8	731.0	254.6	-67.5
CONSUMPTION	824.8	1,122.8	981.2	859.8	1,306.4	1,004.6	870.5
NATURAL GAS							
INDIGENOUS	571.6	496.4	541.0	613.0	462.6	583.0	623.0
IMPORTS	24.8	138.3	58.4	42.2	211.0	87.1	51.0
CONSUMPTION	587.4	634.7	599.4	655.2	673.6	670.2	674.0
NUCLEAR (1)	14.1	139.7	139.7	139.7	294.7	356.1	356.1
HYDRO & GEOTHERMAL (2)	29.7	35.1	36.8	36.8	39.4	52.3	53.2
GROSS ELECTRICITY PRODUCTION(3)	169.8	267.7	263.0	260.1	369.5	363.1	360.5
TOTAL PRIMARY ENERGY (TPE)	1,769.2	2,357.8	2,247.4	2,163.6	2,881.0	2,667.0	2,522.4
INDIGENOUS SUPPLY (PERCENT OF TPE)	1,541.1 (87.1)	1,722.1 (73.0)	1,504.5 (84.7)	2,045.5 (94.5)	1,994.5 (69.2)	2,114.4 (90.0)	2,630.3 (104.3)
IMPORTS (PERCENT OF TPE)	240.6 (13.6)	625.6 (27.0)	342.9 (15.3)	118.1 (5.5)	886.5 (30.8)	265.6 (10.0)	-107.9 (-4.3)

SOURCE: OECD, ENERGY PROSPECTS TO 1985.

Europe and Japan would, however, face a totally different fate. At \$6 per barrel, Europe and Japan will be dependent for 50.7 percent and 85.4 percent respectively by 1980, with little difference by 1985--49.8 percent and 81.4 percent respectively.

Table 6.20
ENERGY PRODUCTION, IMPORTS AND CONSUMPTION IN 1972,
AND PROJECTIONS FOR 1980 AND 1985 - OECD EUROPE

MTOE (10 ¹³ KCAL)	ACTUAL 1972(4) DATA	1980			1985		
		BASE PROJECTION	\$6 CASE	\$9 CASE	BASE PROJECTION	\$6 CASE	\$9 CASE
COAL							
INDIGENOUS	230.1	190.2	225.0	230.0	183.2	241.0	246.0
IMPORTS	31.4	34.4	55.5	59.5	31.8	52.3	52.5
CONSUMPTION	256.9	224.6	280.5	289.5	215.0	283.3	298.5
OIL							
INDIGENOUS	19.8	192.7	220.0	236.0	251.7	285.0	300.0
IMPORTS	718.4	948.5	679.8	544.8	1,189.8	835.6	666.9
CONSUMPTION	730.7	1,141.2	899.8	780.8	1,441.5	1,120.6	966.9
NATURAL GAS							
INDIGENOUS	112.6	171.8	228.0	255.0	249.1	288.0	315.0
IMPORTS	5.5	49.4	62.0	74.0	54.5	97.0	120.0
CONSUMPTION	117.5	221.2	290.0	329.0	303.6	385.0	435.0
NUCLEAR(1)							
	16.5	99.1	118.8	118.8	235.8	273.3	273.3
HYDRO & GEOTHERMAL(2)							
	35.9	43.4	43.4	43.4	49.0	49.0	49.0
GROSS ELECTRICITY PRODUCTION(3)							
	111.0	194.7	202.5	204.4	272.5	285.1	286.7
TOTAL PRIMARY ENERGY (TPE)							
	1,157.5	1,729.5	1,632.4	1,561.5	2,244.9	2,121.1	2,022.7
INDIGENOUS SUPPLY (% OF TPE)							
	414.9 (35.8)	697.2 (40.3)	835.2 (51.2)	883.2 (56.6)	968.8 (43.2)	1,136.3 (53.6)	1,183.3 (58.5)
IMPORTS (% OF TPE)							
	755.3 (65.3)	1,032.3 (59.7)	797.3 (48.8)	678.3 (43.4)	1,276.1 (56.8)	984.8 (46.4)	839.4 (41.5)

(1) PRIMARY ENERGY EQUIVALENT (1 TWh = 0.2436 Mtoe)

(2) PRIMARY ENERGY EQUIVALENT (1 TWh = 0.1064 Mtoe)

(3) CALORIFIC CONTENT OF ELECTRICITY PRODUCED (1 TWh = 0.086 Mtoe)

(4) STOCK CHANGES EXCLUDED: THEY REPRESENT THE DIFFERENCE BETWEEN INDIGENOUS + IMPORTS AND CONSUMPTION

SOURCE: OECD, ENERGY PROSPECTS TO 1985.

Table 6.21

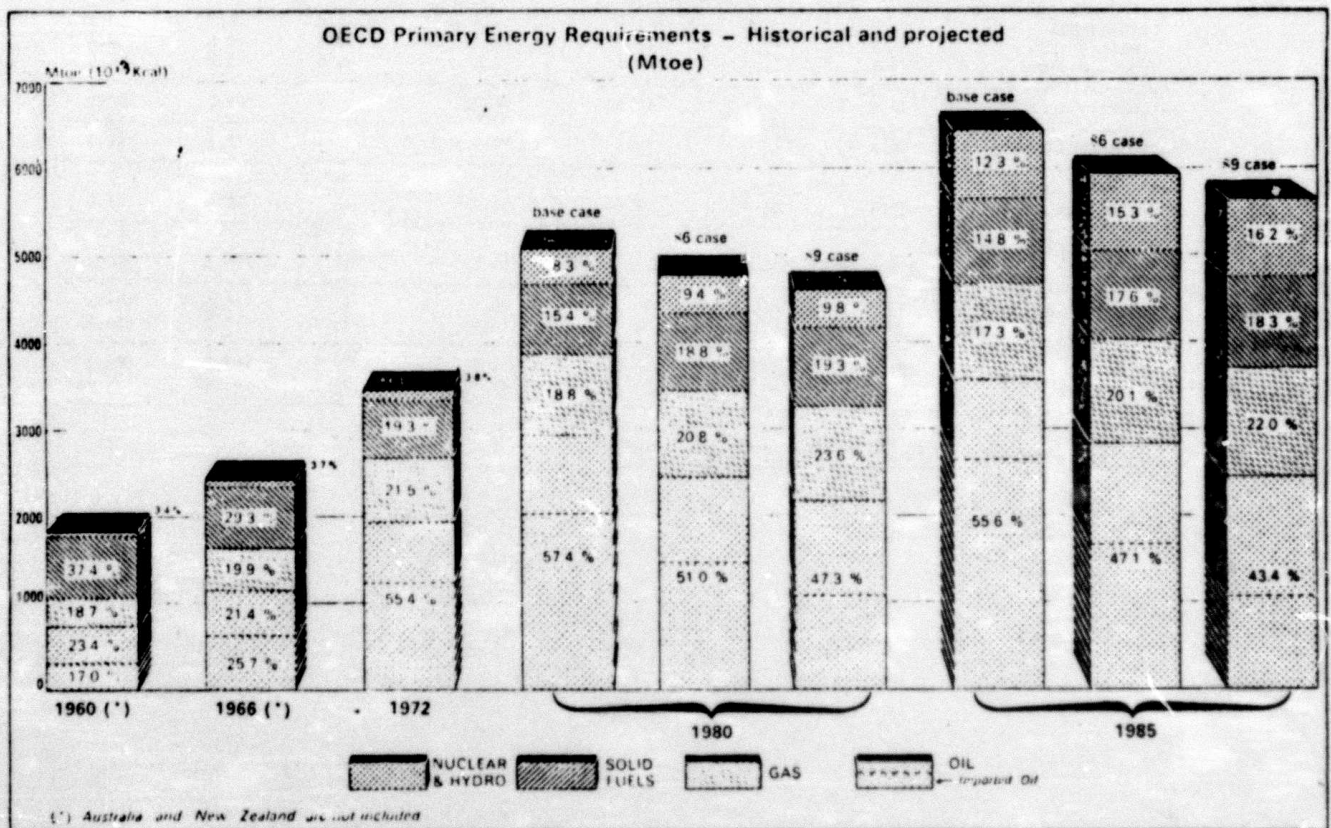
ENERGY PRODUCTION, IMPORTS AND CONSUMPTION IN 1972,
AND PROJECTIONS FOR 1980 AND 1985 - JAPAN

MTOE (10 ¹³ KCAL)	ACTUAL 1972(4) DATA	1980			1985		
		BASE PROJECTION	\$6 CASE	\$9 CASE	BASE PROJECTION	\$6 CASE	\$9 CASE
COAL							
INDIGENOUS	18.8	14.0	15.8	15.8	14.0	15.8	15.8
IMPORTS	38.9	53.9	53.6	54.7	63.0	73.4	77.0
CONSUMPTION	57.2	67.9	69.4	70.5	77.0	89.2	92.8
OIL							
INDIGENOUS	0.7	2.0	2.0	3.0	2.0	6.0	8.0
IMPORTS	247.5	476.2	407.6	382.4	620.3	505.1	447.7
CONSUMPTION	245.4	478.2	409.6	385.4	622.3	511.1	455.7
NATURAL GAS							
INDIGENOUS	2.7	1.8	1.8	3.0	1.8	6.0	7.2
IMPORTS	1.3	23.9	31.3	31.0	39.8	39.0	39.6
CONSUMPTION	4.0	25.7	33.1	34.0	41.6	45.0	46.8
NUCLEAR(1)	2.3	54.2	54.2	54.2	101.7	101.7	101.7
HYDRO & GEOTHERMAL(2)	9.4	10.4	10.4	10.4	11.5	11.5	11.5
GROSS ELECTRICITY PRODUCTION(3)	37.9	63.4	58.6	57.1	83.1	78.3	77.0
TOTAL PRIMARY ENERGY (TPE)	318.3	636.4	576.7	554.5	854.1	758.5	708.5
INDIGENOUS SUPPLY (% OF TPE)	33.9 (10.7)	82.4 (12.9)	84.2 (14.6)	86.4 (15.6)	131.0 (15.3)	141.0 (18.6)	144.2 (20.4)
IMPORTS (% OF TPE)	287.7 (90.4)	554.0 (87.1)	492.5 (85.4)	468.1 (84.4)	723.1 (84.7)	617.5 (81.4)	564.3 (79.6)

SOURCE: OECD, ENERGY PROSPECTS TO 1985.

Even higher long-term oil prices (\$9 per barrel) will not significantly reduce Europe's or Japan's projective high degree of import-dependence. Europe will maintain a 45 percent rate of dependence from 1980 to 1985; Japan, 84 to 80 percent. As a whole, the total OECD bloc would reduce its oil import dependence from 51 to 47 percent, as illustrated in Diagram 6.6, between 1980 and 1985. In other words, an overhang of substantial dependence will exist for more than a decade to come.

Diagram 6.6



SOURCE: OECD, ENERGY PROSPECTS TO 1985.

Summarizing the degree of oil import-dependence (measured as a percentage of oil requirements), Table 6.22 shows a rather remarkable American sensitivity to market forces, compared to Europe's and Japan's more limited response. Whereas the share of oil imports in the country's oil demand will decline slightly even under the medium price scenario from the current 36.7 to 33.8 percent in 1980 and 25.3 percent by 1985; under a high price scenario this share would fall to 16.4 percent in 1980, with oil exports running for as little as 7.8 percent by 1985. Neither Europe nor Japan are expected to see but marginal improvements in their import dependence either as a function of price or of time.

Table 6.22

PROJECTED OIL IMPORT-DEPENDENCE - 1980, 1985
(as a percentage of oil requirements)

	1980			1985					
	\$3 OECD	\$6 OECD	\$9 OECD	\$3 OECD	FEA	\$6 OECD	FEA	\$9 OECD	FEA
U.S.	48.3	33.8	16.4	56.0	71.8	25.3	51.9	-7.8	17.3
CANADA	18.0	1.9	-9.3	36.3	41.9	21.9	30.8	-16.5	0
EUROPE	83.1	75.6	69.8	82.5	82.7	74.6	74.2	69.0	68.0
JAPAN	99.6	99.5	99.2	99.7	100.0	98.8	99.0	98.2	97.7

SOURCE: OECD, ENERGY PROSPECTS TO 1985 AND FEA, PROJECT INDEPENDENCE.

The FEA, as shown above, takes a more sanguine view of American long-term dependence than the OECD, while concurring with it about European and Japanese bleaker prospects. Only under the high price scenario does the FEA expect the U.S. to improve its import-dependence over time. At \$6 per barrel, warns the FEA, the U.S. would see an increasing degree of

import-dependence, reaching approximately 52 percent of its oil requirements in 1985. Thus, while agreeing about continued Japanese and European relatively high import dependence, albeit at slightly lower levels, the FEA and OECD differ substantially on future American vulnerability. Yet, the U.S. is the country most likely to be targeted in future supply denials.

The uncertainty about future American vulnerability can perhaps be partially dispelled by including other estimates and dividing them into two groups: those estimates which assume strong autarkic stimuli, either as a consequence of national policies or as direct price effects, and those estimates which assume low autarkic stimuli.* For the former group, a mean of 19.8 percent oil import-dependence for 1980 has been calculated or a median of 27.8 percent. The latter group's mean is 46.0 percent and median 45.6 percent. In 1985, under strong autarkic stimuli, a mean of 10.2 percent of oil-import dependence is projected, or a median of 11.8 percent. For weaker autarkic stimuli, the mean is 45.5 percent and the median 52.4 percent.

The implication of these projections in light of the discussion on the outlook for the energy market, is that laissez-faire Federal policies which rely on market forces alone would actually result in maximizing both the producers' offensive capability vis-a-vis the United States and

* Included in the first group are the following estimates: Dupree-West, NPC-II, Ford Foundation historical growth with high fossil fuels and all three technical fix scenarios, National Academy of Engineering, MIT econometric and judgmental models (at \$11 oil), OECD \$9 oil, and the FEA's \$9 scenario. The second group includes the following: NPC-III and IV, Ford Foundation historical growth high nuclear, OECD \$3 and \$6 oil, and the FEA's \$3 and \$6 oil. For a comparative presentation of these estimates see the Appendix to the FEA's Project Independence report.

American vulnerability to such pressure. In the absence of strong autarkic stimulants, the nation is likely to continue its drift into greater import-dependence. Assuming American tacit collusion with OPEC for the long-term maintenance of high oil prices to be politically undesirable, the only alternative for the U.S. if it is to protect its oil supply from the much-strengthened OPEC is the development of more judicious policies to break the system's vicious circle. This could be done either by acting to negate the producers' greatly reduced export-dependence or by moving vigorously to reverse the country's slow but steady drift into a progressively growing state of import dependence.

In sum, prevailing market forces tend to increase American supply vulnerability, as they have been for the last five years. The likely medium-term price of oil, like the accumulation of financial surpluses, could constitute an improvement over the recent past in terms of price structure; but in every other respect, it would imply an aggravation of the state of the system. The West would still pay an artificially high price for energy and incur a huge wealth drain, import-dependence would not be reduced nor export-dependence increased, and the destabilizing character of the imbalance between producers and consumers, as reflected in the market, and their dependence patterns, will continue to threaten its very stability.

Chapter VII

STRATEGIES OF INTERDEPENDENCE

The current global energy crisis is but a manifestation of the precariousness of the structure of global interdependence. The liberal promise that trade will foster peace, integration, and cooperation has proven both naive and illusory. The system prevailed only so long as it was internally balanced, or, from an historical vantage point, just so long as the United States remained in a position to enforce its liberal norms upon the entire system. Hegemonial interdependence of that kind, to be sure, is stable and orderly. But that has been more the result of the hegemonial structure of the system and in spite of the character of interdependence than vice versa. The energy system entered a crisis period when the United States' hegemonial position weakened, and with it, its inclination to practice such a role any longer. From this perspective, the American debacle in Vietnam and the emergence of the OPEC challenge are two sides of the same coin.

Ever since the watershed events of 1971, the oil challenge has been unfolding with increasing momentum and acquiring more menacing dimensions at each turn. At first, it was a mere commercial and institutional battle with oil companies and private consumers as the victims. It then grew into a diplomatic force with Arab-Israeli stability, Western solidarity, and the international legal order as its victims.* Its present phase has

* For a discussion of the normative aspects of the OPEC oil embargo see "The Arab Oil Weapon--A Threat to International Peace" by Jordan J. Paust and Albert P. Blaustein, American Journal of International Law, Vol. 68, No. 3, July 1974.

an additional aspect, an economic one, to the detriment of Fourth World development and Western prosperity. The next likely phase, unless these trends are checked, will see the exacerbation of world monetary problems culminating in a military-strategic challenge as shifts in the balance of power in the volatile Middle East take place, arms races build up possibly to the verge of nuclear proliferation, and the attempts to impose a revolutionary new economic order are made.

The possibility that the challenge could develop along these lines does not stem solely from the fact that certain Arab nations are acquiring new power and wealth; transfers of power are but natural political processes. It is instead the norms and motivations which the Arabs and the other oil producers exhibit in the use of their power which could make the oil challenge into a disruptive force of unprecedented proportions. Furthermore, to a large degree the challenge has grown to its present stage because the Western world has opted for collaboration rather than attempting to resist it. In short, roughly since the Teheran and Tripoli agreements, the general posture of the West has been that of appeasement. Logically speaking, sometime in 1973 or 1974, Western leaders should have considered a different approach when they observed that adaptation was working badly. But the temptations of appeasement and passivity have apparently proved irresistible.

Generally, a status quo nation or group of nations, which faces a challenge to its position or interests, is forced into choosing one of two conceivable responses: either it decides to modify its past postures and reassess its position to accommodate the challenger; or it can face up to the challenge and attempt to resist it. No objective criterion or

historical experience can conclusively tell which type of response is preferable. All else being equal, both appeasement and resistance combine possibilities for non-violent change with risks of failure. Appeasement is essentially a process of adaptation to changing circumstances by accepting a relative decline vis-a-vis the challenging power. The prospect of peaceful change inherent in this response is attractive. But these prospects should be weighed against two fundamental weaknesses associated with appeasement. First, this course by definition means an erosion of one's power or the payment of a price with respect to one's interests. Second, the mere indication of a predisposition towards appeasement could fuel an escalation of challenges and demands rather than abating them. Though the outcome ultimately depends on the specific context in which the policy is applied, it is a remedy which appears to be incrementally cheaper in the short run, but quite possibly catastrophic in the longer run.

A response of resistance implies an effort to prevent any automatic loss or decline in power, but it simultaneously connotes a higher likelihood for direct confrontation. A conservative stance, resistance tends to prevent changing circumstances from reflecting themselves in reality, hence it impedes normal processes of change in relative power positions among nations. The sole advantage of resistance as a posture is its adherence to stability as defined under the status quo. As such, then, resistance can pay a price in the near-term for the sake of the long-term order and stability. Still, each posture falls short of providing a generally valid means for solving the dilemma thrust upon any nation facing a challenge.

High oil prices and insecurity of supplies have been the two complementary resultants of the rise of OPEC. The tradeoff between the two, however, is not always complementary. That is, if prices were driven much above the costs of substitution, in the medium-run perhaps the insecurity of supplies would be mitigated. But, the cartel members, as argued in the previous chapter, are not likely to allow high prices to deter them from future markets; they will price oil with the view that it be demanded and imported, and in so doing will also perpetuate their potential threat of denial as expressed in OPEC's oil weapon. The energy system, in other words, is caught in a vicious circle of self-reinforcing processes which tend to maintain it as an asymmetric distribution of power. The nature of these forces is predominantly economic, rooted in the interplay between supply and demand, and in the monopolization of supply in the hands of the OPEC cartel. A lesson of the energy crisis is that transnational interdependencies brought about by the globalization of trade begin to deteriorate and to be abused at the moment the nations involved lose their ability to counterbalance their own external dependencies. The stability of interdependence hinges upon a systemic state of symmetry of vulnerabilities and sensitivities. But, unlike nature, in which symmetry is often the law, international politics abhor eternal symmetries. The struggle for power and influence dictates national drives for supremacy and primacy. It would be, therefore, quite imprudent for nations to rely on transnational structures which depend on continuous symmetry for their solidity. The strategic balance is just such a case in point. Although it could be that there is no alternative to such a structure, the costs of such reliance, it should be borne in mind, are rather substantial.

Still, a rationalization of world interdependence is currently fashionable among--of all people--energy analysts. Rather than perceiving that the recent emergency is nothing but a glaring testimony to the inherent instabilities of interdependence and its associated vulnerabilities, they are now calling for the strengthening of that system. It is indeed one of the subtler ironies of the current crisis that of all times, it is now that energy planners have discovered the concept of interdependence. Malthusians of all sorts are particularly fond of this seemingly new construct. To them, in this era of scarcity and deprivation and a general state of "system overload," there is not much choice but to accept the new systemic structure and practice its implied strategies.

It is hard to find a discussion of energy policies today which does not include pseudo-axiomatic references to this being an age of interdependence, with the corollary thesis that it is imperative that confrontation (i.e., resistance postures) be avoided and cooperation (i.e., appeasement postures) be sought, at almost any cost. Typical of this genre is the Final Report by the Energy Policy Project of the Ford Foundation. Titling its recommended course of action as "Project interdependence," it argues for intensified cooperation between oil exporters and importers. Under the assumption that the "suddenness of the world oil market's turnabout has obscured...the real points of shared interest between oil exporters and importers," it urges "a less confrontational and more conciliatory approach [which] would be mutually beneficial."^{*}

^{*} A Time to Choose, Final report by the Energy Policy Project of the Ford Foundation (Cambridge, Mass.: Ballinger Publishing Co., 1974), p.173. This is perhaps the point to mention the Institute for Contemporary Studies' critique of the Ford Foundation report, aptly titled, No Time to Confuse!

That importers and exporters have common interests is hardly a novelty. Broadly defined, almost any two groups share at least certain common interests. Even for the most violent conflicts in history it could be shown that there existed certain common interests, for example in the establishment of war-fighting rules between the combatants. The question is whether on the central issues, in this case the price and security of energy supplies, the parties hold similar interests. Obviously, as all evidence suggests, that is hardly the case here. Buyers of oil have almost exactly opposite aims from sellers, and these differences cannot be reconciled by repeated evocations of the elusive spirit of global interdependence. There is an intrinsic functional difference between producers and consumers which is not only irreconcilable, but it becomes even more acute once trade is politicized, as the oil market has been.

How ludicrous this shallow rhetoric of cooperation at any cost sounds ("peace in our time"?) can be learned from the following summary of a panel discussion on "What Sort of New Relationships Need to be Established Between the Producer and Consumer Countries?" as reported by Jack Harts-horn:

"In effect, this session presented an example in miniature of the kind of exchange of views between the industrialized oil importing countries and OPEC that is widely being advocated at a governmental level. Mr. Abderrahmane Khene, Secretary General of OPEC, answered the views of Mr. Walter Levy, the American oil and energy consultant, M. Henry Simonet of the European Commission, and Mr. Katsuya Miyata, President of Mitsubishi Aluminium, Tokyo. The spokesmen were able to agree upon the desirability of cooperation and a dialogue. But their analyses did not show much common ground in basic standpoints.... Not all OECD countries take this problem quite as starkly as the Americans, or are as confident that oil prices can be brought down. Mr. Simonet...did not take as

'hard' a line as Mr. Levy; nor did Mr. Miyata. But all three were concerned to avoid any 'confrontation' between the industrial importers and the OPEC countries."^{*} [Emphasis added.]

In fact, what began as an almost trivial contest over oil prices in 1969 evolved into a major terms-of-trade revolution in 1971, escalated into a security challenge in 1973, and by now encompasses an across-the-board challenge to the entire fabric of the current economic and political structure of the non-communist world. The revolutionary notion of the "new economic order," spearheaded by OPEC,^{**} runs counter to every principle of interdependence as understood either by traditional liberals or neo-Malthusians. Daniel Moynihan describes the extent of this contrast:

"Much of [the] internationalist rhetoric is based on things real enough. There is a world ecology; there is a world economy, and some measures important to individual countries can only be obtained through international accord. Thus the concept of interdependence has become perhaps the main element of the new consciousness of a world society. This is a valid basis on which to posit the existence of a society; it is almost a precondition of a society's coming into being.

Yet societies rarely stop at the acknowledgement of the need for cooperation which is implied by the term interdependence. The image of a society as a family is a common one, and with reason, for in both cases the idea of cooperation is frequently supplemented or even supplanted by the idea of obligation. What does one member owe another? This is something new in international pronouncements. If one were to characterize the discomfiture and distress with which Americans responded to the events of the 29th General Assembly of the United Nations in 1974, some measure would have to be attributed to the discovery that a vast majority of the nations of the world feel there are claims which can be made on the wealth of individual nations that are both considerable and threatening--in any event threatening to countries such as the United States...^{***}

^{*}Summary of proceedings of 1st World Symposium on Energy and Raw Materials, Paris, June 1974.

^{**}See the platform for this challenge, as advertised by OPEC in The New York Times, April 1, 1975.

^{***}"The United States in Opposition," Commentary, March 1975.

It is quite obvious that, like the structure it describes, the concept of interdependence has been politicized to euphemistically mean anything its users desire. Thus, according to Yamani's impeccable logic, "cooperation" is what oil exporting countries practice when they band together; "confrontation" is what oil importing countries would be doing if they were to do the same. A similar agility with the concept was exhibited by President Ford's speechwriter, who did not hesitate to rename the country's policies of self-sufficiency Project Interdependence.

It was on September 23, 1974, that President Ford opened the ninth World Energy Conference in Detroit by delineating the American energy plan. He referred to the "pulverizing impact" of energy price increases on food, inflation, and the monetary system and reaffirmed the U.S.A.'s intention to achieve energy independence. He chastised OPEC for imposing "exorbitant prices which distort the world economy, risk worldwide depression and threaten the breakdown of international order." He saw three ways out of the crisis: a) each nation must resolve not to misuse its resources; b) each nation must use its resources fully; and c) each nation must join with others in cooperative efforts to reduce energy vulnerability. President Ford then emphasized that sovereign nations "cannot allow their policies to be dictated, or their fate decided by artificial rigging and distortion of the world commodity market." Then he warned that "the attempt by any country to use one commodity for political purposes will inevitably tempt other countries to use their commodities for their own purposes," adding that "nations have gone to war over natural advantage."^{*} The title President Ford gave to this American

^{*} The Energy Users Report, Number 59, September 20, 1974, and Energy Policy, Vol. 2, No. 4, December 1974, pp. 330-339.

position was Project Interdependence. In sum, when consumers or producers talk of their acceptance of Interdependence and their need for cooperation, they not only reflect disagreement over fundamental interests, but they also are incapable of agreeing on what they claim to agree about.

* * *

It seems, then, that different nations mean different things when referring to the desired ingredients of the new energy system and the strategies that could bring it about. The important elements to consider are the new patterns of dependence and cooperation which are sought to replace or augment those of the system now under pressure. Indeed, two contending approaches to the question of future world cooperation in the area of energy are discernible. Both combine an acknowledgement that the old system of multilateralism has been largely discarded with the recognition that certain remedial actions should be taken. Neither approach is reactionary in the sense of trying to completely reverse the course of events that led to the current disequilibrium--e.g., a campaign to restore pre-crisis oil prices. Since the old system was built on those price levels, no current strategy can be considered one of restoring the old system. On the other hand, both approaches seek to compensate for the disintegration of multilateral interdependence by concentrating on intensifying interdependence along certain desired lines. The approaches differ, however, with respect to how to strengthen interdependence. In reality, the two approaches represent two diametrically opposed schools of thought regarding the issues of maintenance and

management of interdependence. If each were to be implemented in its pure form, totally different situations would be created.

The first school of thought, shared by many American energy planners, views the horizontal axis of cooperation among consumers themselves as most likely to restore stability. Thus cooperation among consumers would be paralleled by cooperation among producers, which is already institutionalized through OPEC. The solution recommended by proponents of this approach, therefore, is to collapse and channel producer-consumer interdependence into a single pattern, thus restricting its scope. At the same time, however, increased interdependence would occur among consumers as they formed a united bargaining coalition vis-à-vis the producers. The pattern that is likely to emerge, then, would be increased vertical competition with decreased vertical cooperation. Conversely, the horizontal axis would manifest decreased competitiveness and increased cooperation.

The second school of thought, typified by French and Japanese energy policymakers, seeks to reverse the order of priorities delineated above. The advocates of this school also wish to reduce the excessive strains of interdependence, but for them the desired axis of cooperation is vertical; i.e., between individual consumers and individual producers. Clearly, the effect of such a course of action would be to reduce multilateralism not into two confronting camps, as the United States would prefer, but into several islands of bilateral arrangements on a country-to-country basis.*

*The following draws on my "Is the Atlantic Alliance Soluble in Oil?" in Joseph S. Szylowicz and Bard E. O'Neill (eds.), The Energy Crisis and U.S. Foreign Policy (New York: Praeger Publishers, 1975), pp. 139-158.

Proponents of the vertical approach evidently reject horizontal cooperation because they distrust such interdependent relationships and prefer clear national policy courses. Secondly, a potentially disruptive element is more apparent in the horizontal than in the vertical approach. But abstract formulations do not do justice to either approach. The respective concrete content of each will be elaborated on further in this chapter. For the longer term, it is worth bearing in mind these differences of emphasis, as they may signal an attitude toward cooperation in general, and thus give a clue as to the future of interdependencies.

Lincoln Bloomfield, in what is perhaps the most systematic analysis of global interdependencies as they relate to energy issues, came to the following four insights, all compatible with arguments and evidence presented in this study^{*}: 1) that problems are created, not by the fact of interconnectedness, but by the dependency experienced; 2) that the principle of "critical mass" operates--too little mutual dependence inhibits understanding, too much overloads the relationship unless political integration follows; 3) that interdependence is not automatic but optional--at a cost; and 4) that policy is determined by whether asymmetry is felt, which suggests compensating for the deficit psychologically as well as tangibly, to reduce interdependency frictions.

Where unbalanced, asymmetric interdependence is experienced or perceived, argues Professor Bloomfield, five options present themselves: First, to reduce the risks inherent in dependencies; second, to seek to become less dependent; third, to increase mutual dependency; fourth, to achieve autarky or self-sufficiency; fifth, to manipulate asymmetrical

^{*} Hayward R. Alker, Jr., Lincoln Bloomfield, and Nazli Choucri, Analyzing Global Interdependence (Cambridge, Mass.: Center for International Studies, MIT, November 1974).

interdependence as a political lever. In particular, Bloomfield's strategy of interdependence, aimed at remedying "net deficits" in relationships, include: a) "decoupling" those linkages with potential for excessive pressure; b) fostering the mutuality of links with potential for desirable pressure; c) applying psychological insights where incremental security and economic policy adjustments are inadequate; d) handling collectively functions formerly managed nationally.

Conceptually, this is a fair breakdown of alternative tactics of interdependence. In the international energy field, however, mixes of these tactics--some of which overlap substantially when practiced--present themselves. Four types of international policy packages are discernible. The first two essentially seek to improve the manageability of energy interdependencies. First, under a vertical orientation, policies of bilateralism, the cultivation of dependencies, and the creation of linkage strategies and their manipulation are the central ingredients. Second, under a horizontal orientation and policies of multilateralism, strict functional coordination is pursued. These two policy types are analyzed in this chapter, the other two in the next. The latter two policies pertain to strategies which are aimed at avoiding interdependence and retreating into less complex international structures, both politically and functionally. They are different in that one is unilateral and the other multilateral, but both are aimed at achieving greater independence, in contrast to interdependence. The third policy type, then, is coterminous with autarkic drives, while the fourth implies a more gradual form of disengagement from excessive interdependence, but neither on a unilateral basis nor for the purpose of becoming totally self-sufficient.

Vertical Cooperation and Bilateralism^{*}

Clearly, the position of those who prefer vertical interdependence over horizontal cooperation stems from their differing assumptions. The fundamental premise underlying this approach is its disillusionment with transnational cooperation. The nationalistic-mercantilistic outlook typical of this approach is even more pronounced, since it identifies notions of multilateral interdependence and free trade with American hegemony or attempts to preserve this hegemony. This is why the United States favors horizontal cooperation, while such traditionally nationalistic countries as France and Japan favor vertical interdependence. In all fairness, however, vertical interdependence reflects more than mere anti-Americanism. Despite their generic common bond of being net energy importers, OECD members are far from sharing similar positions and interests on energy. In fact, there are quite a few substantive differences among OECD countries, aside from differences in orientation.

First, while both the United States and Japan are geographically remote from the Middle East and North Africa, Europe is virtually adjacent to these regions which contain the richest oil fields in the world. This proximity is a geo-economic and political parameter which cannot be ignored. Second, even the most pessimistic import-dependence projections for the United States do not place it in the same category of extreme import dependence to which certain European countries and particularly Japan belong. Third, in absolute terms, Europe is by far the largest client of North African and Middle Eastern oil: again, even higher

^{*}The direction of these cooperative vectors, naturally enough, parallels the petroleum industry's view of the structure of the world oil system.

American dependence would still require less than half the quantities Europe will need from the Middle East. Fourth, as noted above, the system that brought about a crisis is identified with the United States. In effect, many Europeans and Japanese realize that American need for Middle Eastern oil has done much to drive up prices, not without tacit American agreement.* Fifth, the fact that five of the seven major oil companies are American is also viewed as a distinct inequality. Europeans and Japanese assume that these companies are American instruments at worst, or geocentric entities at best, but certainly not protective of each consuming nation's interests. Furthermore, countries such as France and Italy, which have national companies of their own, have even a degree of competitiveness with the United States and Britain, and their multinational oil companies. Sixth, and perhaps most important in terms of the options available to them, not all oil importers share the option of being able to avoid either form of interdependence by falling back onto an autarkical policy of self-sufficiency. This is a crucial point, because countries with a high autarkical potential are also producers of energy despite their net deficit, while countries which have little autarkical potential probably produce no oil on a domestic scale. Consequently, the interests

*The events described in Chapter II, indicating American complicity in the 1970-71 price hikes, are considered in this study as political blunders on the part of misinformed appeasers. Europeans, for some very good reasons of their own, see things differently. Peter Odell, for instance, believes that international oil developments in the last few years were caused by "OPEC/oil company collusion...with the positive encouragement of the United States." The U.S., he argues, "deliberately initiated a foreign policy which aimed at getting oil-producing nations' revenues moving strongly up by talking incessantly to the producers about their low-oil prices and by showing them the favourable impact of much higher prices." See the third edition of his Oil and World Power (London: Penguin Books, 1974). European analysts cannot be faulted if they would rather accept conspiracy theories, as argued by Odell, than stupidity theories, as argued in this study.

of large-scale producers, such as the United States, can hardly be similar to those of Japan, say, when it comes to such crucial parameters as the price of energy and the establishment of a price floor. As Table 7.1 illustrates, North America enjoys a far more advantageous position than Europe or Japan:

Table 7.1
AUTARKIC POTENTIAL FOR SELECTED OECD COUNTRIES

	"Oil-saving capacity" ^a	Degree of self-sufficiency ^b in:	
		Oil (Percent)	Total energy
Japan	0.6	0	11
Italy	0.7	6	15
Belgium	0.8	1	18
France	0.8	5	22
United Kingdom	0.9	2	53
Germany	1.0	7	51
Netherlands	1.1	7	64
Canada	1.1	98	110
United States	1.4	74	89

- a) It should be stressed that this is a very rough relative indicator of how countries rank in this particular respect, but it can in no way be interpreted as an absolute measure.
- b) Indigenous supply as a percentage of total primary energy requirements. Figures apply to 1971, and have changed somewhat since then.

SOURCE: OECD, Economic Outlook, No. 14, December, 1973.

A policy of North American self-sufficiency is clearly feasible; it does not escape Europe and Japan that, if mercantilism is the name of the game, autarky is its supreme manifestation. This advantage enjoyed by the United States and Canada (and Britain, Norway, and the Netherlands to a lesser

degree) can be helpful in the context of either vertical interdependence (with the United States being in a better position to strike its own bilateral deals if it so chooses), or horizontal interdependence (with the United States bargaining from a superior stance within the consumers' group).

Finally, not all importing countries share the same position or policies in general world affairs; the United States least of all. Linkage strategies are part and parcel of international behavior in an age of interdependence. It is not enough for mutuality of interests to be present in only one or a few functional areas, since cross-functional linkages are likely to disrupt any cooperative arrangement along strictly functional lines. Thus, the fact that the United States is a world power with global responsibilities and commitments is irreconcilable with the regional orientation of Europe and Japan. Energy is not a prime determinant of foreign policy in American thinking, while freedom of action in foreign affairs is considered of paramount importance. On the other hand, Japan and Europe can place energy, and the safeguarding of its supply, higher on their order of priorities, thus subjugating foreign policy to energy policies. Such differing priorities with OECD illustrate the incompatibility among some of its members on energy issues.

The implications for a country like France are simple: vertical interdependence seeks to strengthen importer-exporter ties, despite accusations that its aim is to "beggar thy neighbor." This end is achieved by the following procedures: First, outflanking the oil multinationals and establishing direct government-to-government contact with a bilateral pattern consequently emerging. Second, an agreement for a guaranteed

supply of oil (or gas) at certain prices for a predetermined period is attained. Third, a higher than usual price for such "safe" supply is negotiated, but the payment is often made in other than pecuniary forms. Arms, credit, or technological assistance are substituted for money. This barter aspect of vertical interdependence is not necessarily indicative of the foreign exchange difficulties that could otherwise arise,^{*} as they are typical of the spill-over of interdependence from the energy area into others. This is done deliberately to offset the increased import dependence of the consumer. Fourth, the pinnacle of vertical interdependence is the recycling of money into the importing country as a form of investment. Ideally, the proponents of vertical interdependence would like to see heavy exports of goods and services into the oil producing countries, paralleled by heavy investments by producers in the economies of the importing countries. Presumably, this intensification of producer-consumer interdependence would restore stability to the market as each side finds a suitable partner and each develops a stake in the prosperity of the other, thus reducing the incentive for such a punitive exercise or arm-twisting tactic as that of brandishing the oil weapon.

Thus, during 1974, as the list below indicates, vertical bilateralism was earnestly tried with bilateral arrangements between oil consuming and oil producing states--those made by France being the most publicized.

^{*}The drive to export more into the OPEC bloc could not close the rapidly widening gap between exports and imports caused by the 1973 oil price increases, at least not in the next few years. From a favorable balance ranging between \$0.1 billion and \$0.3 billion in the 1967-1972 years, the balance became negative in 1973 reaching \$1.0 billion, then jumping to a \$8.8 billion deficit in 1974. While exports to OPEC almost doubled (from \$3.6 billion to \$6.7 billion) between 1973-1974, imports from OPEC more than quadrupled (from \$4.6 billion to \$15.5 billion). (See the Council on International Economic Policy's International Economic Report of the President, March 1975.)

RECENT ECONOMIC AND TECHNICAL AGREEMENTS BETWEEN
OIL-PRODUCING AND OIL-CONSUMING COUNTRIES

- France--Iran Agreement signed for vast long-term cooperation in energy development and industrialization. The deal may include an order for five nuclear power stations from France. Value: \$4.5-\$5 billion. 9 February 1974.
- France-Libya Agreement signed providing for the exchange of Libyan oil for French nuclear power plants, refineries, harbours, tele-communications and other joint investments--including the joint financing of projects in France, Libya and third countries. Estimated value: \$5 billion. 19 February 1974.
- France--Saudi Arabia First deal comprising the delivery by Saudi Arabia of about 27 million tons of crude oil in exchange for such equipment, goods and services as are designed to assist Saudi Arabia's programme of industrialization. Value: not known. Beginning January 1974.
- An even larger deal involving as much as 800 million tons of crude oil over 20 years is under discussion. Value: not known. End January 1974.
- Federal Republic of Germany--Iran Decision in principle between the two governments providing for FR Germany to build an oil refinery and petrochemical complex in Iran, which will be the world's largest. Part of the project is expected to be financed through the sale of natural gas by Iran to FR Germany, possibly transported in pipelines via the Soviet Union. Long-term oil supplies, in return for the West German contribution, have also been discussed. Value: \$2.2 billion. End January 1974.
- Italy--Libya Agreement concluded under which Libya will supply Italy with 30 million tons of oil a year--to be compared with 23 million tons for 1973. Italy's contribution will be goods and services for the industrialization of Libya. Value: not known. 25 February 1974.
- Italy--Saudi Arabia Saudi Arabia has agreed in principle to supply Italy with an additional 20-30 million tons of oil in the next three years under an economic, technical and industrial agreement between the two countries. Value: not known. Beginning February 1974.

- Japan--Iran Proposal made by Japan to Iran involving loans and credits to be earmarked for the construction of a refinery, a petrochemical plant and a cement plant. Value: \$1 billion. 10 January 1974. Later reports indicate, however, that Iran cancelled the deal on 4 March 1974.
- Japan--Iraq Agreement signed under which Japan will receive 160 million tons of crude oil and oil products over 10 years in return for undertaking petrochemical refining and other industrial projects. Value: \$1 billion. 17 January 1974.
- Sweden--Libya Agreement reached for a 10-year cooperative programme under which Libya will deliver 2 million tons of crude oil a year to Sweden in exchange for steel, timber, paper and cement. In addition Sweden will build tankers and merchant carriers for Libya. The two countries will also investigate the possibility of Libya helping to finance the construction of an oil refinery in Sweden. Value: not known. 6 March 1974.
- United Kingdom
--Iran Agreement providing for Iran to exchange about 5 million tons of crude oil for British deliveries of textile fibres, steel, paper, petrochemicals and other industrial goods. Value: \$240 million. 25 January 1974.
- United States
--Iran Tentative agreement between the Iranian government and five U.S. refining companies for the joint construction and operation in Iran of what could be one of the largest refineries in the world (with an output of 500,000 b/d). Value: \$500-\$750 million. 8 November 1973.
- United States
--Saudi Arabia Agreement in principle reached between the two governments on more active U.S. support in the industrialization of Saudi Arabia and in the supply of its requirements for defensive purposes. Value: not known. 5 April 1974.
- Agreement, signed on 9 June 1974, provides for the establishment of two joint commissions, one on economic cooperation and the other on Saudi Arabia's military requirements. Four working groups have been created: industrialization; manpower and education; technology research and development; and agriculture. These are to prepare recommendations for the Economic Commission. The two governments agree to consider setting up an economic council for the private sector, to foster further cooperation.

These agreements are intended to secure a certain assured supply of oil over time, paying for it either with goods or by investments within the producing countries. These deals have been severely criticized as breaking the post-war international "free trade system" as well as for challenging the common policy sought among the oil-consumers by the United States government.* But they actually are less of a novelty than many assume. Europe has always had policies of direct cooperation and bilateral relations with raw materials producing states, especially in former colonies. Furthermore, the economic impact in Europe of these deals seems limited. All depends on the price of oil at which the deals are made and on the quantities of oil involved. As of now, the price seems rather high, or is still subject to discussion, while the quantities have usually been left unspecified. Finally the direct impact on Europe's exports is small.

France as the first and most active of the states negotiating bilaterally with the OPEC countries, has reached agreements with Iran, Libya and Saudi Arabia. Italy has signed an agreement with Libya, and Britain and Germany with Iran. Japan has been negotiating with Iraq, Iran, and also has exploration and investments in Indonesia and Nigeria.

The bilateral deals are of two kinds. Some are short-term barter deals, where agreement on price and the quantities of oil to be exchanged was fairly easy. In the British-Iranian agreement, 5 to 6 million tons of oil were exchanged for cement, steel, and aluminium at an oil price

* Even the usually more tolerant oil industry journal, The Petroleum Economist, criticized France and others for their government-to-government deals. See "The Perils of Bilateralism," March 1974. The industry's motive was clear enough--bilateralism contradicted the majors' multinationalism and could have dispensed with their services.

of \$7.50/barrel. In the Franco-Saudi-Arabia deal, France is to get 30 million tons of oil delivered over three years against petrochemical equipment.

The other kind of agreement is long-term, usually for 10 to 20 years. These remain fairly vague with respect to oil quantities and prices and there is little mention of specific commercial arrangements. They usually involve ambitious investments in the oil producing countries, but the direct impact on both oil producers and consumers is difficult to measure. The Franco-Libyan arrangement was a general agreement of duration or the amount or price of the oil involved. A ten-year agreement between France and Iran involved \$4-5 billion of investment in Iran, to include five nuclear power stations, a joint gas liquefaction plant, and a petrochemical complex. It did not, however, provide for the supply of specific quantities of oil to France. French oil companies will have access to new exploration fields in Iran.

France's bilateral politics notwithstanding, it is ironically the United States which so far has advanced the most effective techniques of unilateral verticalism. Geography and history make special supply arrangements within the Western Hemisphere particularly reasonable for the U.S. but the Saudi-American deal suggests that in championing bilateralism as well as multilateralism, the United States was not hesitant to enter competitive relationships with its OECD partners as it selected suppliers even in the Eastern Hemisphere. It is, however, not in the regional ambition nor in its tendency for overshooting that the United States surpasses Europe and Japan, but in the sophistication with which it moved to try to play the game of vertical interdependence.

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It was not lost on America's leaders that linkages, being normal off-shoots of politicized interdependencies, endow the U.S. with ideal comparative advantages. For years the U.S. has had to practice considerable self-restraint in not moving aggressively by establishing linkage strategies across the board. But OPEC's oil weapon, currently tying the economics of oil to Middle Eastern politics, provides the U.S. with a perfect pretext to strike its own linkages. The idea of manipulating related issues is only natural in instances of lopsided interdependencies. Instead of making inter-functional Herculean efforts to redress the symmetry of interdependence, it is always easier to link, cultivate, and manipulate other types of dependencies which by their opposite direction of asymmetry would compensate for the rest. And if aggrandizement and the gain of even more influence is contemplated by linkage strategists, then asymmetries need not only be balanced, but even reversed to the disadvantage of one's partners.

Three such issue areas readily come to mind: money, food, and arms. First, it dawned on many energy and money planners that, as far as a store of value for OPEC investments was concerned, the West and the United States virtually hold it hostage. Recycling the petrodollars, protecting their value against inflation, managing the oil producers' direct and portfolio investments, all the functions which can be performed only with Western assistance, are exposing OPEC's savings to potential manipulations of one kind or another. Second, closely related to their advanced industrialized economies was the fact that modern agricultural production was virtually monopolized by a handful of developed countries--the U.S., Canada, and Australia and the countries of Western Europe. At the same time,

OPEC, like the rest of the developing world, is acutely food-deficient. Hence, another ideal asymmetric interdependence waiting to be politicized and exploited. Thirdly, the sale of arms appears to players of interdependence as the most promising leverage of all. On the one hand, it is a clear monopoly in the hands of a few major oil-importing countries; on the other, a fantastic opportunity for price-rigging to soak up, in "recycled" form, money now accruing to the oil-producing countries.

The United States took an early lead on all three issue-areas. Secretary Simon tried, in vain, to arrange for a massive long-term purchase of specially issued U.S. government bonds by surplus oil-producing countries.* Had the deal gone through, it would have placed billions of dollars of non-negotiable bonds in the U.S. Treasury--the ultimate insurance against gross manipulations of energy interdependence. That deal, in addition to its hostage attraction, would have also led to the recycling of European and Japanese monies into the American economy through OPEC's good services. But even without a formal agreement, petrodollars soon found their way into the Western financial system. In fact, they never actually left it. Thus, as indicated by Table 7.2, between the end of 1973 and November 1974, Middle East and North African holdings of U.S. Government obligations grew by \$2167.5 million, roughly a seven-fold increase.

* Newspaper accounts speculated that the deal was to be on the order of magnitude of \$10 to \$20 billion for 20 to 30 years. Much about the money and arms deals can be learned from Cong., House, "The Persian Gulf, 1974: Money, Politics, Arms and Power," Hearings before the Subcommittee on the Near East and South Asia, 93rd Cong., 2d Session, 1975.

Table 7.2

MIDDLE EAST AND NORTH AFRICAN OIL PRODUCING COUNTRIES HOLDINGS
OF U.S. GOVERNMENT OBLIGATIONS, DEC. 1973-NOV. 1974
(MILLIONS OF DOLLARS)

	DEC. 31, 1973	APR. 30, 1974	SEPT. 30, 1974	OCT. 30, 1974	NOV. 30, 1974	CHANGE DEC. 31, 1973 TO NOV. 30, 1974
MIDDLE EAST*	81.2	130.4	136.7	1,415.9	2,048.2	1,967.0
NORTH AFRICA**	231.0	233.3	584.0	587.5	431.5	200.5

* BAHRAIN, IRAN, IRAQ, KUWAIT, OMAN, QATAR, SAUDI ARABIA, SYRIA, AND UNITED ARAB EMIRATES.

** ALGERIA, EGYPT, AND LIBYA.

SOURCE: HOUSE OF REPRESENTATIVES SUBCOMMITTEE ON THE NEAR EAST AND SOUTH ASIA, "THE PERSIAN GULF, 1974: MONEY, POLITICS, ARMS, AND POWER," 1975.

Looking at the broader picture of the external spread of Middle East financial surpluses, as shown in Table 7.3, it is clear that even without official inducement, financial hostages of second-order manipulability are building up in the West OPEC's total reserves, as shown in Table 7.4, reached \$46.9 billion by January 1975.

Table 7.3

DISPOSITION OF OPEC SURPLUS - 1974

HELD IN EUROPEAN CURRENCIES AND INVESTMENTS . . .	\$20 BILLION
INVESTED IN U.S.	\$12 "
LOANS TO OTHER GOVERNMENTS	\$10 "
INVESTED IN UNITED KINGDOM	\$8 "
INVESTED IN WORLD BANK, OTHER INTERNATIONAL FINANCIAL AGENCIES	\$8 "
OTHER INVESTMENTS	\$3 "

SOURCE: BANK OF BRUSSELS, CITED IN THE U.S. NEWS & WORLD REPORT, DECEMBER 16, 1974.

Table 7.4
TOTAL RESERVES OF OPEC COUNTRIES, 1973-1975
 (Million U.S. Dollars)

	END 1973	1974										1975 JAN.	
		MARCH	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.				
<u>Middle East</u>													
Iran	1,237	2,124	5,439	6,081	6,303	6,309	6,211	7,077	8,383	8,513			
Iraq	1,553	2,232	3,005	3,030	3,141	2,981	3,035	3,226*	3,273	3,277			
Kuwait	501	656	959	940	938	1,037	1,157	1,437	1,397	1,654			
Saudi Arabia	3,876	4,864	7,087	8,342	9,313	11,549	10,651	12,732	14,285	14,285			
Total	7,167	9,876	16,490	18,393	19,695	21,876	21,054	24,281	27,338	27,725			
<u>North Africa</u>													
Algeria	1,134	1,401	1,865	1,893	1,973	1,987	1,928	1,858	1,689	1,497			
Libya	2,127	2,478	2,996	3,354	3,696	3,682	3,872	3,781	3,616	3,523			
Total	3,261	3,879	4,861	5,247	5,669	5,669	5,755	5,639	5,305	5,020			
<u>Other OPEC</u>													
Ecuador	241	328	444	398	354	343	335	353	350	336			
Venezuela	2,420	2,809	4,609	4,353	4,718	4,928	4,830	5,574	6,529	6,191			
Indonesia	807	932	1,386	1,827	1,683	1,589	2,026	1,734	1,492	1,624			
Nigeria	592	1,118	2,147	3,059	3,464	4,019	4,582	4,816	5,629	5,981			
Total	4,060	5,187	8,586	9,637	10,219	10,879	11,773	12,477	14,000	14,132			
Grand Total	14,488	18,942	29,937	33,277	35,583	38,424	38,582	42,397	46,643	46,877			

* December figure.

SOURCE: IMF, International Financial Statistics, March 1975.

Similar spectacular progress was made in tightening food interdependence around OPEC, making the cartel's members substantially more import-dependent on food than before. In 1974, exports of U.S. farm products to OPEC countries reached \$1.56 billion, more than double the \$721 million recorded in 1973 and five times the 1969 level (see Table 7.5). OPEC agricultural imports from all sources also increased dramatically, as indicated in Table 7.6, from about \$3.3 billion in 1973 to about \$4.8 billion in 1974 (without adjustment for inflation), a 45 percent increase. The U.S. share rose from 22 to about 32 percent.* Table 7.7 illustrates the trend reversal since 1971 and OPEC's growing food-dependence on the United States.

* John B. Parker's "U.S. Agricultural Exports to OPEC Doubled in 1974" in U.S. Department of Agriculture, Foreign Agricultural Trade of the United States, March 1975, pp. 61-78. Parker's figures are all in current dollar terms.

Table 7.5

U.S. AGRICULTURAL EXPORTS TO OPEC COUNTRIES,
ANNUAL 1968-74

COUNTRY	1968	1969	1970	1971	1972	1973	1974
	-- MILLION DOLLARS --						
IRAN	12.9	12.6	30.5	59.6	76.0	108.9	543.2
IRAQ	1.3	1.8	1.7	6.3	1.6	32.4	114.8
KUWAIT	7.1	3.6	4.0	4.9	4.6	8.7	21.3
SAUDI ARABIA	25.8	26.4	27.6	23.7	32.8	65.5	110.0
GULF SHEIKDOMS	2.0	1.6	1.6	1.4	2.0	5.8	11.4
LIBYA	3.5	4.4	5.7	5.2	3.9	6.4	26.0
ALGERIA	22.7	27.0	18.7	17.7	40.0	71.2	170.5
NIGERIA	15.6	18.9	29.6	31.4	22.6	40.9	82.3
INDONESIA	93.4	95.7	132.7	98.5	134.0	188.8	101.2
VENEZUELA	90.7	90.9	98.1	108.5	137.1	159.7	323.3
ECUADOR	12.5	11.1	13.5	18.5	21.0	30.7	56.7
TOTAL OPEC	287.5	294.0	363.7	375.7	475.6	719.0	1,551.7

SOURCE: BUREAU OF THE CENSUS, U.S. DEPARTMENT OF COMMERCE, CITED IN PARKER, "U.S. AGRICULTURAL EXPORTS TO OPEC."

Table 7.6

ESTIMATED TOTAL AGRICULTURAL IMPORTS BY OPEC COUNTRIES,
BY VALUE, ANNUAL 1968-74

COUNTRY	1968	1969	1970	1971	1972	1973	1974
-- MILLION DOLLARS --							
IRAN	131.6	98.2	133.3	246.1	309.8	444.5	800.0
IRAQ	85.9	89.1	98.4	218.9	157.4	251.1	570.0
KUWAIT	103.0	99.2	109.7	120.1	147.5	171.8	245.0
SAUDI ARABIA	147.6	185.4	186.2	225.0	254.8	379.4	570.0
GULF SHEIKDOMS	70.0	20.0	84.0	97.0	117.0	158.0	210.0
LIBYA	88.8	99.9	125.6	160.5	171.8	321.6	375.0
ALGERIA	168.9	191.3	162.1	297.8	340.0	375.0	479.0
NIGERIA	118.7	88.4	90.3	124.3	171.3	213.5	275.9
INDONESIA	255.0	240.0	273.0	301.0	460.0	707.0	680.0
VENEZUELA	173.8	173.3	171.8	179.6	277.4	295.5	540.0
ECUADOR	21.4	20.0	19.9	26.1	28.9	36.9	95.0
TOTAL OPEC	1,364.7	1,364.8	1,454.3	1,996.4	2,435.9	3,347.3	4,839.9

SOURCE: PARKER, "U.S. AGRICULTURAL EXPORTS TO OPEC."

Table 7.7

ESTIMATED U.S. SHARE OF AGRICULTURAL IMPORTS BY OPEC COUNTRIES

COUNTRY	1968	1969	1970	'971	1972	1973	1974
	-- PERCENT --						
IRAN	9.8	12.8	22.9	24.2	24.5	24.4	66.9
IRAQ	1.5	2.0	1.7	2.9	1.0	12.9	20.1
KUWAIT	6.9	3.6	3.6	4.1	3.1	4.9	8.7
SAUDI ARABIA	17.5	14.2	14.8	10.5	12.9	17.3	19.3
GULF SHEIKHOMS*	2.9	2.0	1.7	1.4	1.7	3.7	6.8
LIBYA	3.9	4.4	4.5	3.2	2.3	2.0	8.0
ALGERIA	13.4	16.0	11.5	5.9	11.8	19.0	35.6
NIGERIA	13.1	21.4	32.8	25.3	13.2	19.2	31.1
INDONESIA	36.6	39.9	48.6	32.7	33.0	27.0	14.9
VENEZUELA	52.2	52.5	57.1	60.4	49.4	54.0	59.9
ECUADOR	58.4	55.5	67.8	70.9	72.7	83.2	59.7
TOTAL OPEC	21.1	21.5	25.0	18.8	19.0	21.5	32.1

* INCLUDES UNITED ARAB EMIRATES, BAHRAIN, AND QATAR.

SOURCE: PARKER, "U.S. AGRICULTURAL EXPORTS TO OPEC."

The outlook for OPEC's food dependence seems promising indeed. U.S. farm exports to OPEC countries are expected to increase by about \$500 to \$675 million in 1975. This estimate includes the following expected gains: Iran, up \$300 million to \$835 million (or 56 percent); Iraq--up \$70 million to \$185 million (up 61 percent); OPEC-Arabian Peninsula--up \$80 million to \$222 million (up 56 percent); Algeria--up \$80 million to \$250 million (up 47 percent). Thus, Mid-East OPEC members, the first to rock the interdependence boat, is now becoming increasingly dependent on food imports, at least until local agricultural development projects show results in the late 1970's.

It is in the transfer of arms, however, that even more impressive gains were scored in the game of interpenetration.

"Nowhere is the boom in arms sales more apparent than in the Persian Gulf. There is very little on the outer reaches of military technology that is not coming into this area....With oil profits exceeding \$56 billion last year, the nations of the Gulf have plunged into what may well become the most expensive and competitive arms race in history."^{*}

Iran has spent \$7.6 billion in the U.S. alone acquiring an impressive arsenal whose most outstanding quality is the high cost of its particular weapon systems. (Eighty F-14s would soon be added to Iran's air fleet of 60 F-5s, 200 F-4s, with 200 more on order, and 1000 helicopters. Iran's army has 3000 armored vehicles, including 800 Chieftan tanks; the navy includes 40 destroyers, frigates and hovercrafts, and 6 fast Spruance-class destroyers on order.) To what extent the arms race is indigenously

^{*}"The Arms Dealers: Guns for All," Time Magazine cover story, March 3, 1975. For detailed information about Western arms transfers to OPEC, see SIPRI's World Armaments and Disarmament--1974 as well as IISS' Military Balance, 1974-1975 and Strategic Survey 1973, published in London in 1974.

caused or externally induced, is somewhat blurred. Time Magazine continues,

"Saudi Arabia...has likewise turned to the U.S. for arms and found some sympathetic ears. The Pentagon has advised the Saudis that they should substantially expand their armed forces over the next decade by adding a mechanized brigade, at least one tank battalion, an air force wing, attack helicopters and coastal-defense vessels. 'I do not know of anything non-nuclear we would not provide the Saudis,' says a U.S. military official in Jeddah. 'We want to sell, and they want to buy.'"^{*}

Seldom has the true face of international interdependence been better phrased. With American arms dealers competing with French, British, and Swedish, it is indeed to the credit of American salesmanship that Iran, its prize client, is by far the world's major arms importer and Saudi Arabia, with a \$756 million, 60 F-5s deal, probably now occupies the third place as an American customer.

Indeed, between 1973 and 1974 all oil-exporting countries increased their military purchases. As shown on Table 7.8 quoting Department of Defense figures, exports authorized to the Persian Gulf area increased more than ten-fold in the span of one year alone, from \$68 million in 1973 to \$748 million in 1974. Such a fantastic increase, one would assume, should have gone a long way toward offsetting Western import-dependence and increasing the producers' export dependence. But this, as can be seen in Table 7.9, has not been the case. While Iran has indeed sustained an increase in the percentage of the GNP it had to allocate to defense expenditures, from 9.3 percent in 1973 to 13.3 percent in 1974, Saudi Arabia had a sharp decline in hers, from 21.8 percent in 1973 to only 5.7 percent the next year. Thus, although in absolute terms Saudi Arabia's dependence on defense imports from the U.S. quadrupled in the post-embargo year in

Table 7.8
MILITARY ASSISTANCE TO THE PERSIAN GULF AREA
(IN CURRENT U.S. DOLLARS)

	EXPORTS OF SIGNIFICANT DEFENSE ARTICLES ON THE U.S. MUNITIONS LIST (FISCAL YEAR)			EXPORTS, UNDER LICENSE, OF U.S. MUNITIONS LIST ARTICLES (FISCAL YEAR)			EXPORTS AUTHORIZED, FISCAL YEAR
	1968 (2D HALF)	1969	1970	1971	1972	1973	
BAHRAIN, COMMERCIAL					2,843	2,746	68,275
IRAN:							
COMMERCIAL		11,875,000	4,474,000	33,198,000	36,974,625	19,466,095	96,136,426
FMS	25,749,000	44,246,000	66,046,000	103,155,000	870,141	32,729,897	589,201,836
MAP	8,612,000	28,097,000	7,839,000	346,000			
TOTAL	34,361,000	84,218,000	73,359,000	136,699,000	37,844,766	52,195,992	685,338,262
IRAQ: COMMERCIAL							1,186,400
KUWAIT: COMMERCIAL					111	5,296	311,952
OMAN: *COMMERCIAL					174,256	64,985	560,571
QATAR: COMMERCIAL					54	5,180	58,746
SAUDI ARABIA:							
COMMERCIAL	6,295,000	16,389,000	1,670,000	3,536,000	6,409,873	5,649,560	19,470,603
FMS	12,581,000	1,454,000	1,670,000	4,318,000	250,023	10,604,083	39,191,453
TOTAL	18,876,000	17,843,000	1,670,000	7,854,000	6,659,896	16,253,643	58,661,516
UNITED ARAB EMIRATES:							
COMMERCIAL					451,754	67,366	1,861,896
PERSIAN GULF AREA TOTAL	53,237,000	102,061,000	80,029,000	144,553,000	45,133,680	68,595,208	748,047,618

* DENOTES COUNTRIES WITHOUT FMS OR MAP.
 SOURCE: HOUSE OF REPRESENTATIVES' SUBCOMMITTEE ON THE NEAR EAST AND SOUTH ASIA, "THE PERSIAN GULF, 1974."

relative terms, its defense import-dependence dropped to one-fourth from what it had been in the year of the embargo. It is doubtful, therefore, whether in the case of the oil-exporting countries large arms transfers can be justified in terms of political leverage or as an effective strategy of interdependence.

Table 7.9
DEFENSE EXPENDITURES IN MIDDLE EAST OIL COUNTRIES, 1973-1974

	DEFENSE EXPENDITURE (\$ BILLION)		PER CAPITA		PERCENT OF GNP	
	1974	1973	1974	1973	1974	1973
ALGERIA	0.404	0.376	25	24	3.3	4.5
BAHRAIN	0.006	n.a.	35	n.a.	2.2	n.a.
IRAQ	0.803	0.467	76	45	7.0	9.4
IRAN	5.328	2.097	165	67	13.3	9.3
KUWAIT	0.162	n.a.	154	n.a.	1.5	n.a.
LIBYA	0.402	0.145	178	67	3.5	2.8
OMAN	0.169	n.a.	228	n.a.	15.4	n.a.
QATAR	0.023	n.a.	130	n.a.	1.1	n.a.
SAUDI ARABIA	1.808	1.478	228	175	5.7	21.8
U.A.E.	0.140	n.a.	821	n.a.	2.8	n.a.

SOURCE: IISS, THE MILITARY BALANCE, 1974-1975, AND THE MIDDLE EAST ECONOMIC SURVEY, FEBRUARY 1975.

The United States, unilaterally and in competition with other industrialized oil-importing countries, has thus thrown a three-pronged offensive of potential linkages in order to capture the OPEC nations and hook them into a multi-functional web of interdependencies. The assumption behind such a campaign is that in so doing the U.S. will be making the oil-producing countries more and more dependent on American arms, agricultural products, and financial markets with the net effect of counter-

balancing U.S. dependence on OPEC oil. Whether this assumption is correct and how likely it is to work is a different story altogether.

It seems that only in the general sense of ameliorating trade and political ties could these initiatives be possibly construed as useful. As tools of influence, the potential linkage strategies are not likely to be cost/effective in enhancing the future security of American energy supplies. In the first place, these economic transactions are just as constrained by the counterproductive nature of politicized trade and economic warfare as the oil weapon has proven to be (see discussion in Chapter 5). In effect, they appear to be even more limited. It is unlikely, for example, that the U.S. will be willing to inflict extensive collateral damage in using a food weapon as OPEC has during the 1973-74 embargo.* Secondly, the scope and structure of the expected transactions will not lead to as high a degree of inelasticity, monopolization, and unsubstitutability as oil has been for the short run. The oil producers will not experience high import-dependence when measured by their capability to forfeit these imports. Furthermore, with the money accruing to them, the oil producers will be in a position to retrieve embargoed

*The food weapon has been seriously considered in various forums. See, for example, "Data and Analysis Concerning the Possibility of a U.S. Food Embargo as a Response to the Present Arab Oil Boycott," prepared for the Foreign Affairs Committee by the Foreign Affairs Division, Congressional Research Service, Library of Congress, filed as House Report 93-674, 1973. A more enthusiastic elaboration on this option is William Schneider's "Can We Avert Economic Warfare in Raw Materials? - U.S. Agriculture as a Blue Chip," Agenda, published by National Strategy Information Center, Inc., 1974.

supplies in alternative world markets.* In short, the ability to manipulate the policies of the recipient countries would be no more effective than previous instances of economic sanctions and warfare. Consequently, all three linkage strategies offer little by way of politically instrumental utility. Their costs, on the other hand, are far from negligible. It is feared that even a hint of an inclination to threaten OPEC's deposits in the West with confiscation would backfire and undermine the recycling effort. Hence, a threat of a last resort option without the possibility of waiving it as a deterrent.

Least satisfying of all is the supply of arms. Not only would that action come at the expense of the direct military option and diminish its credibility, but it could prove to be counterproductive in the more immediate sense of destabilizing an area where regional instability has been the most frequent cause of past supply disruptions. J.B. Kelly, a noted Arabist, summarized well the overall benefits of vertical cooperation of the sort practiced:

"...the policy of the major Western powers at the present time is solely directed towards endeavoring to soak up as much as possible of the excessive oil revenues now accruing to the Gulf states by inducing them to establish elaborate industrial complexes in their countries, by selling them inordinately large quantities of arms, and by dangling before them the allurements of financial investment in the West. None of these measures

* The large OPEC price jump caused a tripling in the delivered cost of imported crude oil. In 1974, the oil importing countries had to pay \$75 billion more for the oil they bought. The short-term futility of the attempt to finance such deficits through higher exports to OPEC in the hope of offsetting the widened imbalance between importers and exporters can be learned from the fact that in spite of the rush to bilateralism, barter deals and export drives, less than 10 percent of the 1974 deficit was financed by higher exports to OPEC. The remainder was financed through borrowing on international capital markets, from international institutions, or from the oil-exporting countries.

will banish the incubus of economic disaster looming over the Western world and Japan. Even if both shores of the Gulf were to be lined with petro-chemical plants, dry docks and cement factories, and the armies of Arabia and Persia were to be arrayed as Caesar's legions, huge surplus funds would still exist and Western Europe and Japan would still be trapped in a financial quicksand.

Present Western policy, in short, seems destined to compound the dangers it is intended to avert, and nowhere is this more evident than in the indiscriminate arming of the major and minor Gulf states. When it is recalled that until the second World War a tight control was exercised over the shipment of even small arms into the Gulf (major weapons being automatically excluded), the present spectacle afforded by the arming of Saudi Arabia, Iran, and the petty sheikhdoms is both ludicrous and shameful. The limp justification offered by Western governments for the sale of large quantities of advanced weapons to the Gulf states, viz. that if they refuse to do so, other powers stand ready to meet the demand, not only is undeserving of an answer but it also is unworthy of those governments and the peoples they represent. To arm Saudi Arabia and Iran on the scale now in force or in prospect is to invite disorder in the Gulf. The two are natural rivals, whatever the current mutual interest of their respective regimes in preserving monarchical rule. Both are expansionist by inclination and tradition, and the present Shah exhibits to the full the ambitions and pretensions characteristic of so many Iranian rulers in the past. If these two states are tempted in the near future to embark upon military adventures, they will destroy the present uneasy equilibrium in the Gulf and place their own regimes in jeopardy."²

* * *

Horizontal Cooperation and Multilateralism

It is hardly surprising that, among all protagonists in the world oil game, the United States should be most consistent in its advocacy of free trade and multilateralism. Such a policy is not only in line with the liberal outlook which has dominated American foreign policy planning since World War II, but also reflects the reality that multi-

* "Saudi Arabia and the Gulf States," mimeo., July 1974.

lateralism has represented American hegemony and influence. After all, the five major American companies were dominant in the old multilateral system and the norms governing world trade benefited the United States. So long as such an open system implied American-British control of the system through their companies, no additional international organization was necessary. The creation of OPEC, however, turned everything upside down, with power shifting from the companies to OPEC, hence outside the conventional OECD framework. Inevitably, then, the American position developed into a formula for what was to amount to the position that the only reply to OPEC's notion of producers' collective bargaining can be a consumers' organization which will bargain collectively on behalf of its members. The rationale is simple enough: if the system was destabilized by unilateral cooperation among exporters, stability could be restored by the creation of a countervailing power in which the importers would emulate the producers' example.

The foremost option is to attempt to break the exporters' cartel. This option looks attractive and feasible to economists who favor free trade and realize that cartel dynamics are essentially unstable. Before the 1973 crisis this option encountered resistance from several interested parties. The oil industry feared the implication that it will have to withdraw from the production stage of oil and lose its cherished vertical integration. Government officials disliked the tension implicit in such a policy, even though it was only economic. Advocates of horizontal cooperation, on the other hand, believed that their line would result in similar negation of OPEC's power without necessitating tactics which smack of trust-busting. But to critics of a concerted policy by

consumers, even horizontal cooperation appears to be a prescription for confrontation with OPEC. OPEC members and some oil executives see things this way. To them, OPEC's existence is neither ephemeral nor illegitimate but should be accepted. Still, horizontal interdependence transcends the mere formation of a counter-OPEC organization. The moderate approach along these lines emphasizes a multitude of actions that need be taken by consumers in unison. An example of such a platform is Walter Levy's proposal for "An Atlantic-Japanese Energy Policy." Ten broad categories are developed, according to Levy's concept.*

1. Develop a program for optimum diversification of supplies, based on a study and review of energy demand and supply, including tanker, pipeline, and refining availabilities.
2. Develop new energy sources, especially atomic energy and energy from unconventional sources, through a joint research program.
3. Create national and multinational incentive, investment, and guarantee programs for the development of new energy sources.
4. Establish broad terms of reference and parameters acceptable to oil-importing countries for oil supplies from producing countries, which cover purchases, service contracts, concessions, and so on.
5. Set up a contingency system for stockpiling, rationing, and equitable sharing of imports between all members to be put into effect in case of an overall or specific country emergency.
6. Set up a joint and coordinated research program that looks into all methods of conservation of energy, including research on battery-powered cars, nuclear-fueled shipping, savings in motor car transportation, and so on.
7. Review and coordinate programs of economic development and technical assistance for producing countries.

* Walter Levy, "An Atlantic-Japanese Energy Policy, Foreign Policy, No. 11, Summer, 1973, pp. 184-185.

8. Review prices, costs, and the balance-of-payments effects of oil imports of member countries and of developing countries, and set up a program for support and adjustment if necessary.
9. Review the government revenues of major oil-producing countries and their impact on world trade, world capital flows, and short-term money markets, and set up a program of financial cooperation if necessary.
10. Review the dependency of Middle East producing countries on the exports from the free world's oil-importing countries of industrial and agricultural goods, and military equipment, and technical know-how, shipping and services. Assess in light of this the mutual interdependence and the means that might be available to cope with an oil or financial emergency.*

Although Levy's program is couched in highly general and moderate terms, it represents an ambitious platform of horizontal interdependence. Its ambitiousness lies in the assumption that the traits shared by importers are sufficient to bring them together into comprehensive planning of the sort Levy envisions. This program also suggests, of course, the establishment of a central organization with authority vis-à-vis importers not unlike that which CPEC has vis-à-vis exporters. This International Energy Council, however, would still be predominantly a consumers' organization, for the policy of horizontal interdependence Levy recommends is aimed at preventing two kinds of situations. First,

* After the price explosion, W. Levy articulated an even more urgent appeal for vertical cooperation. In the July 1974 issue of Foreign Affairs, in an article entitled "World Oil Co-operation or International Chaos," he contended that the financial burden forced upon the rest of the world by OPEC cannot be solved without government-imposed programs of energy austerity and wide-ranging international cooperation among the oil-importing countries. Interestingly, although Levy's rationale for vertical cooperation shifted from preoccupation with the security of energy supply to its finance, his prognosis has remained the same. (See also "Austerity Plus Co-operation," The Petroleum Economist, August 1974.)

a disequillibrated system with weakened companies and OPEC hegemony over oil and money markets; and second (and more alarming to Levy), a system in which OPEC plays the divide et impera tactic by picking off one importing country after another. In other words, Levy's argument for consumers' cooperation rests on his rejection of the antithetical approach--that of vertical interdependence. Expectedly, Levy's proposal was rejected as soon as it was presented by a strange coalition of appeasers which included Japanese and French administrators, top Exxon executives and, of course--OPEC officials.

The "October Revolution" changed many minds; so when in December 1973, Secretary Kissinger proposed that the industrialized nations of the world establish an energy action group multilaterally to develop an action program, none of the thirteen major oil-importing countries failed to show up in Washington three months later--though not without paying due lip service beforehand to the ultimate need "for a consultative relationship between producers and consumers." The invitation was originally extended to six West European countries (France, West Germany, Italy, the Netherlands, Norway and Britain) as well as to Canada and Japan; later the group was enlarged to include all nine members of the EEC, and the Secretary General of the OECD was also invited to the February meeting. The atmosphere of the Washington Conference was far from harmonious. The U.S. advanced a platform not dissimilar to Levy's old Atlantic-Japanese idea. France, not hesitating to take another free ride on the new collective good of oil security, led the opposition by arguing against the institutionalization of the consumers' group. The main points agreed by the twelve nations, notwithstanding France's

reservations, provided for the following:^{*} First, the establishment of a high-level group to deal with all facets of the world energy situation and to coordinate the work of existing institutions such as the OECD, the World Bank and the IMF; two, cooperation in restraining demand, allocating oil supplies in emergencies, diversifying energy supplies and accelerating energy R&D; third, cooperation in dealing with monetary and economic problems; and fourth, the development of a cooperative multilateral relationship with the producing countries and other consumers.

With a hint of the familiar political sagacity of shutting the barn door after the horse had escaped, the Energy Coordinating Group's most immediate task came to be that of planning for cooperation during emergencies. In the past, cooperation during oil crises did not work smoothly, particularly because it is precisely under such conditions that both centrifugal and centripetal forces are strengthened, usually the former. During the 1956 Suez crisis, it will be recalled, the European members of the OEEC established an emergency system under its oil committee which effectively allocated the reduced supply of oil. The United States did not belong to the OEEC but provided essential support with the oil-lift calling on reserve shut-in capacity to help meet European needs. In 1967, the OECD Oil Committee requested the oil companies to adjust these tanker movements to avoid shortages. This action was taken with considerable reluctance on the part of some European governments which already began developing the fear that any joint action might offend the Arabs.

^{*}The position of individual countries during the Conference, as well as the official texts of the final communique can be found in SIPRI's Oil and Security (New York: Humanities Press, 1974), pp. 30-37 and Appendix 7.

The Arab embargo was defeated, therefore, not because of judicious Western crisis management but because of Arab mismanagement which led to a short-lived and ineffective boycott with no need to invoke the emergency allocation system.* The strains in Western cooperation came into the open during the 1973-74 embargo. The OECD European members proved unable to agree on activating the existing emergency allocation system. Joint consumers' management thus deteriorated, primarily because of improvements in OAPEC's capability to apply an embargo, which failed technically but effectively sowed dissension within the European Community. In what probably was the final act of its traditional role, the multinational oil industry undertook to perform the distributional function where sovereign governments and allies failed.

In designing the emergency oil-sharing plan, the United States emerged again as the pillar of the new consumers' group at the cost of shouldering the main burden, as it had in other international organizations and alliances in which it sought to play a dominant role. In a reversal of a policy which hindered such cooperative agreement till then, the U.S. agreed to share its domestically-produced oil with the nations of the ECG in the event of future emergencies,** and with this exercise of American leadership, the door was opened for comprehensive cooperation among major oil consumers on oil and energy supplies.

The urgent security need for an oil-sharing formula led to the establishment in October 1974 of a new autonomous International organization,

* Joseph A. Yager and Eleanor B. Steinberg (eds.), Energy and U.S. Foreign Policy (Cambridge, Mass.: Ballinger Publishing Company, 1974), pp. 404-407.

** Energy Digest, Vol. IV, No. 13, August 16, 1974, pp. 3-6.

the International Energy Agency (IEA) with a weighted-majority voting system reflecting American influence and allocation of burdens. This new agency is directed by a ministerial level governing board; below, there is a management committee of senior representatives; then four standing groups and a secretariat with an executive director appointed by the governing board. The agency is set up within the framework of the 24-nation OECD in Paris.* Of the four standing groups, one is to handle the plan's emergency oil supply functions; the second is to develop the ongoing information system and framework for oil company consultations; a third is for long-term energy cooperation among the participants; and the fourth for relations with producer and other consumer states.

The quid-pro-quo for American willingness to share its indigenous supply was expressed in the voting system. The combined weight for the twelve prospective participants totals 136. This includes three "general" votes for each, and 100 "oil" votes split in proportion to each state's oil consumption, of which the U.S. has 50 and Japan 15, the next largest. Accordingly, the U.S. has 38.9 percent of the voting weight; the eight EEC participants aggregate 38.2 percent; Japan 13.2; Canada 6.6; and Norway just under 3 percent. Where the plan calls for binding decisions by "majority" it requires votes of six countries with 60 percent of the total combined voting weight. A "special majority" decision requires nine countries with 60 percent to decide on certain of

* For a detailed description of the IEA and the full text of the Consumer Nations' Oil Pact see the Petroleum Intelligence Weekly's special supplement, October 14, 1974.

the emergency measures, and for certain others it requires votes of ten countries, regardless of voting weight.

The IEA mission, to be sure, is purely defensive. Unlike OPEC it is not intended to alter the economic environment, least of all to deliver an ideological onslaught against the developing countries. The heart of the program is a passive readiness on the part of members of OECD to support the oil security of the group as a whole. Taking into consideration the fact that these countries are economically, politically and strategically highly interdependent, the linking of oil security was but a natural effort to close ranks in the face of a severe security challenge. Insofar as the thrust of the IEA program is to negate OPEC's oil weapon and political leverage, it should not come as a surprise that Arab planners saw the oil-sharing agreement with alarm and called the formation of the IEA a war-like action.

The basic components of the IEA contingency plan are: (a) build-up of emergency reserve stocks; (b) demand restraint in event of an outside oil supply shortage; and (c) simultaneous sharing of available supplies which all participants draw down emergency stocks at about the same rate. As regards the first component, each country will initially maintain emergency stocks for at least 60 days' consumption with no new imports based on the level of consumption in the previous calendar year. A decision will be taken by July 1, 1975 to determine a date for increasing these emergency reserves to 90 days. Secondly, demand restraint and allocation will be automatically triggered should supplies to any one country or to the group as a whole (i.e., for both contingencies of a general or a selective embargo) fall by 7 percent or more below a "base

period" comprising the most recent four quarters with a delay of one further quarter necessary to collect information.* In such an event, each participating country will reduce its total domestic consumption of all finished products by a similar percentage. The objective is that whenever demand restraint is called for--and each country is required to have contingency plans ready at all times--all available supplies will be simultaneously shared while the participants draw on their emergency stocks at about the same rate. Thirdly, with a 12 percent shortfall in total group supplies, each country will curb demand by 10 percent, while if supplies are cut by 50 percent or more, further emergency measures will be taken by special majority decisions.

The oil sharing agreement has a few drawbacks quite apart from its less than certain political implementability under real circumstances; the most dubious is that it uncomplicates OPEC's targeting problems. That is, OPEC is no longer faced with the moral and political task of having to surgically hit the declared target in case of a selective boycott. As far as a boycott plan would go, a selective embargo would be announced and remain declaratory only, but in reality "the embargo would have to be applied against all industrial countries, friends as well as foes."** While it is the purpose of the IEA to "collateralize" the

* The selection of 7 percent as the trigger is indicative of the perception that the 1973-74 Arab embargo was tolerable. As observed in Chapter VI, during that crisis, shortfalls in Europe and the U.S. averaged 7 percent. Similarly, in planning for relative energy independence, as will be discussed in the next chapter, the level designated as a target of minimum security is the degree of import-dependence experienced in 1973.

** For a discussion of the oil weapon's effectiveness in light of the formation of IEA oil-sharing agreement see John Lichtblau's analysis, cited in full in the Petroleum Intelligence Weekly under the title "Arab Oil Weapon More Dangerous Now," October 21, 1974, pp. 8-10.

shortfall, OAPEC planners could justifiably argue that any collateral damage will have been created solely by the embargoed nations' IEA partners--at their own risk. Secondly, the United States--the more likely target for a future embargo--has actually increased its vulnerability by exposing its energy economy through the sharing agreement. Whereas, in the absence of such an agreement, it is not inconceivable that little or no damage could have befallen the U.S. in case of an embargo, the IEA agreement makes such damage certain. Consequently, with less American insulation from the OAPEC oil weapon, the probability of further manipulating of it has been increased but its effectiveness--decreased. Thirdly, and most importantly, as a defensive measure the IEA emergency sharing agreement could cope with minor to medium provocations only. Conservation and stock management, even when managed under ideal conditions of altruism and discipline could not alleviate large shortfalls. The sharing agreement will not be able to handle a supply crisis of a greater order of magnitude than that of 1973-74. OAPEC, on the other hand, has the capability to inflict significant greater shortfalls. Consequently, within weeks from the announcement of the oil-sharing agreement, the U.S. was again the first to move to close the vulnerability loophole. In a series of well-orchestrated public declarations, the American President, Secretaries of State, Defense, and Treasury and Congressional leaders--declared, almost as a matter of fact, that a "strangulation" of the Western economies would be casus belli as far as the United States is

concerned.* What the oil-sharing agreement could not do, so went the message, American troops will. While this declaratory policy was subject to much misunderstanding in the United States, it was perceived correctly--though not without anger--where it was intended in the Arab world.** It still remains to be seen whether either defensive mechanisms the IEA sharing program and/or the American military warning are credible enough to deter another embargo, and failing that--to successfully negate its impact.

The possession of a few defensive measures which include the use of force as a last resort is not the most reassuring form of protection. Evidently, the security of energy supplies would best be maintained by the long-term elimination of vulnerabilities, either by squarely confronting the OPEC cartel or by escaping from the dependence over it. It is

* The most noteworthy of these warnings was given by Secretary Kissinger in an interview with Business Week, January 13, 1975. The "strangulation" comment should not be confused with the Intervention debate that took place simultaneously. The former was a careful statement designed to deter massive embargoes, i.e., those extending beyond the IEA capability to handle them. The latter is a thought-provoking debate about the role of force in settling the general politico-economic situation surrounding the oil challenge. For support of that idea see, for example, Robert W. Tucker's "Oil: The Issue of American Intervention" in the January Issue and his contributions to the March and April, 1975 issues of Commentary; Edward Luttwak's (writing under the appropriate pseudonym of MILES IGNATUS) "Seizing Arab Oil" in Harper's, March 1975; and Irving Kristol's, "Where Have All the Gunboats Gone?", written as an editorial during the 1973-74 embargo, The Wall Street Journal, December 13, 1973. A consideration of the force options is outside the scope and context of this study, suggesting perhaps that the context selected, even when on the systemic level, might be just too narrow to be useful.

** Devoting a great deal of space to the "strangulation" warning and reactions to it, the Middle East Economic Survey, the leading Arab oil journal, concluded that it referred to contingencies equal or worse than the 1973-74 embargo, precisely what American leaders probably meant. (See the issues from January 10, 17 and 24, 1975.)

doubtful whether the IEA could muster the degree of political cohesion needed for a confrontation with OPEC in the short-term. In effect, there is not even an active multilateral strategy, to speak of, for breaking the cartel. The only strategies in existence are passive and unilateral: either to take no action at all so as to let the cartel tumble under its own weight; to encourage price-shaving and competition among its members by secretly auctioning off import tickets;^{*} to decouple the multinational oil firms from OPEC so as to force the oil producers into securing markets for their own products,^{**} and so forth. None of these is seriously contemplated by the IEA. It is an agency designed to minimize the consequences of the symptoms of the oil challenge, not to come to grips with its cause.

Multilateralism in energy has thus been probably carried to its practical limits. The International Energy Agency, in all fairness, is a remarkable achievement. So are the technical accomplishments of this body, plans for energy oil sharing, conservation, a financial safety net and energy investment protection through domestic minimum price policy. All these probably exhaust the cooperative potential among energy consumers. The major consuming nations not only lack a strategy for confronting the source of their troubles, but in scheduling a producer-consumer conference for middle 1975, the IEA--instead of searching to

^{*}This is M.A. Adelman's favorite cartel-busting technique. See M.A. Adelman and Goren Fells' "Changing Monopolies and European Oil Supplies," Energy Policy, Vol. 2, No. 4, December 1974, p. 290.

^{**}This, of course, is the Church Subcommittee's specific recommendation regarding the operation of the multinational oil industry.

arrest the OPEC challenge--would actually be legitimizing the cartel's "October Revolution."^{*}

Fortunately, for the consumer, even in the face of Western appeasement and yearning for another Teheran-like agreement, the producers too are operating close to the limits of their cooperative potential. Convening for the first-ever OPEC summit conference in Algiers, subsequent to the formation of the IEA, the producers were expected to consider four fundamental issues: (a) programming of production; (b) pricing of oil in terms of a basket of currencies; (c) a total embargo on oil exports if one member country is attacked by a major industrial power; and (d) the establishment of an OPEC fund for support of member states facing financial difficulties because of cutbacks in oilings. None of these objectives was achieved. Displaying a range of widely varying positions, the OPEC members were unable to reach agreement on these fundamental issues and settled instead for a reconfirmation of the general principles of cooperation and consolidation.^{**} The theme, of course, in both international groupings, is interdependence, but the underlying realities are that despite the appearance of new types of world problems and new crystallizations on the world scene, national tendencies still dominate

^{*}"Member countries of the IEA want their preparations to look peaceful, not like a glaring-up for confrontation. Thus they aren't issuing any quick reproaches about the extra billions of dollars OPEC's latest price decisions will tack onto the consumer countries' oil bills. The conciliatory attitude of the consumers' energy agency toward the producers' bloc will make its dealings with non-member France easier..." The Petroleum Intelligence Weekly, December 30, 1974.

^{**}For the producers' point of view consult MEMO-Middle East Money, Vol. 2, No. 11, March 15, 1975.

nations' responses and the potential scope for cooperative arrangement, laudatory as it may be, is severely circumscribed to the most elementary security issues.

The most wide-ranging formulation of a cooperative strategy for the major oil-importing countries has been advanced by the Trilateral Commission. That Commission has been established under the notion that the advanced industrialized nations of the free world form a natural group which should cooperate in solving the problems of the future. Appropriately enough, its energy report, entitled "Energy: The Imperative for A Trilateral Approach,"^{*} stressed vertical cooperation among the governments of North America, West Europe, and Japan. The salient ingredients for such a strategy were delineated: the establishment of an energy agency associated with the OECD to coordinate a strategy for emergencies (a stockpiling program, emergency plans, special conservation measures, and an allocation scheme); coordination of the intensification of efforts to use energy more efficiently; a diversification of sources of supply in areas of the world "where the political hazards may be lower than in the Middle East"; most importantly--the development of indigenous energy resources within the OECD emphasizing joint coal development to reduce dependence on high-cost oil. Looking beyond the immediate energy problems, the Commission task force predicted that the world must be prepared to make a transition to an economy based primarily on coal and its derivatives and nuclear power in 30 to 40 years. Even for the interim, the

^{*}The report was drafted by John Campbell, a senior fellow with the Council on Foreign Relations, Guy De Carmoy from France and Shinichi Konda from Japan.

report asserts that the U.S. has the natural resources, the technological capacity and presumably the political will to become virtually self-sufficient in energy by 1985 and to remain so. Western Europe's dependence, contends the Commission, may be reduced in the next decade through the development of North Sea oil and gas and the pursuit of strict and consistent energy-use policies, but it is "doubtful that dependence on external supplies will be brought below 45 percent for the European nations belonging to OECD by 1985." Japan, it is finally noted, will remain the most vulnerable of all industrial nations with about 75 percent of its requirements being imported.

The Trilateral Commission's position is in the best tradition of American liberal multilateralism. It does not rule out bilateral contracts or regional approaches so long as they do not tie up supplies, bid up prices, or reduce the potential bargaining power of all consumers. It calls for close consultation on broad policies in the Middle East but cautions against oil and gas deals with the Soviet Union. In short, it is a strategy of joint OECD cooperation in the near term for the purpose of OECD relative energy independence in the long-term. Indeed, as will be observed in the next chapter, it could well be that autarkic movements more than the cooperative means to attain them, will characterize the world energy system in the future.

Chapter VIII

STRATEGIES OF INDEPENDENCE

The Autarkic Option

Between 1970 and 1973 U.S. imports of crude oil and products literally doubled, with the share of insecure sources growing even faster. That trend, as shown in Diagram 8.1, was expected to last for the rest of the century. The occurrence of a worldwide oil crisis in 1973, as observed in Chapters III and IV, was to a considerable degree caused by this sudden American entry into an already disequilibrating oil market. Whether the American entry precipitated the price and supply crises or merely exacerbated them is of lesser concern at this point. Nevertheless, what seems abundantly clear is that a resolution of the energy crisis depends to a large degree on a voluntary American reversal of the trend that characterized its import curves in the four years prior to the crisis.

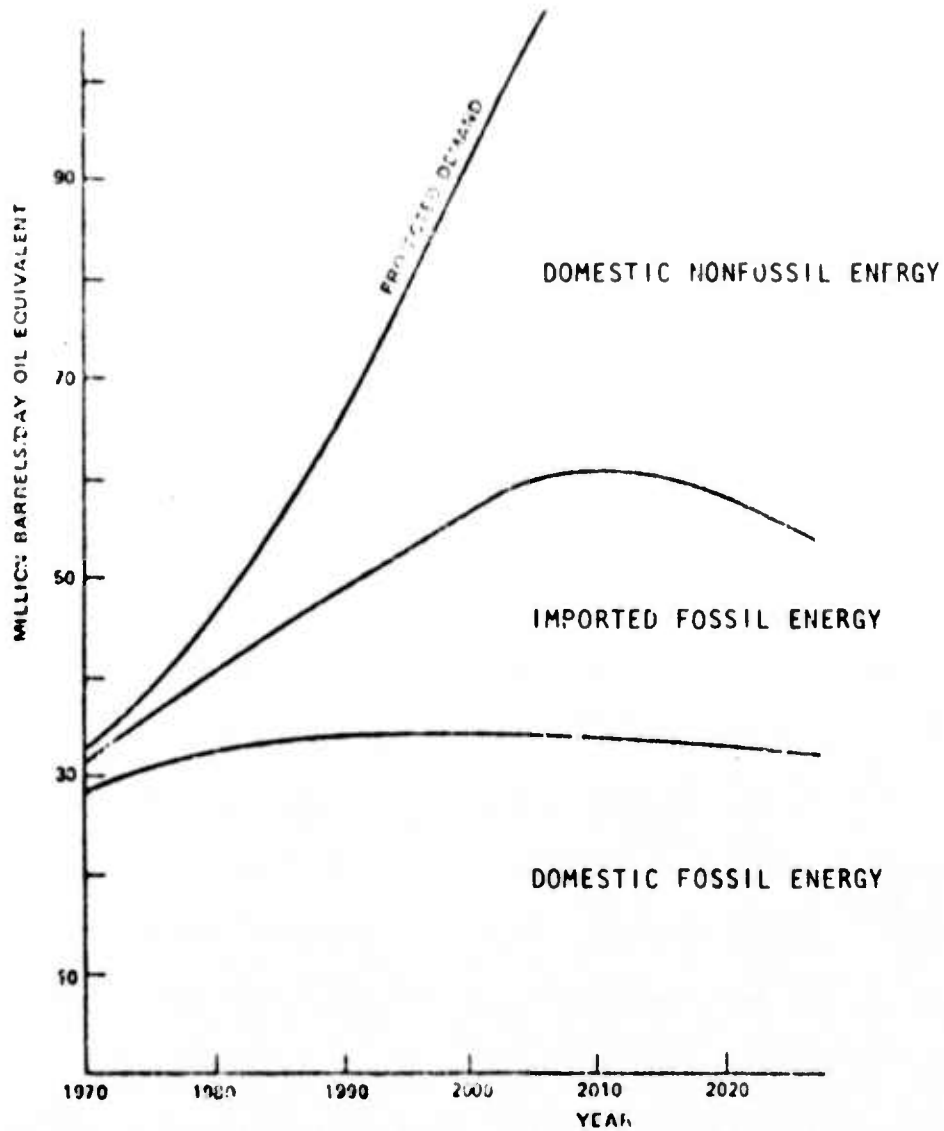
It is in the nature of crises that they mercilessly bring to the fore and expose all the strains which have affected the system, revealing conditions which, when left unchecked, brought about a critical state of affairs. The American response to the oil crisis was quick. President Nixon, in an Energy Message on November 7, 1973, declared,

"Let us set as our national goal, in the spirit of Apollo and with the determination of the Manhattan Project, that by the end of this decade, we will have developed the potential to meet our own energy needs without depending on any foreign energy sources.

"Let us pledge that by 1980 under Project Independence we shall be able to meet America's energy needs from America's own energy sources."

Appeals for energy self-sufficiency, to be sure, were made before. But the brutal reality of an Arab embargo underscored the extent to which the U.S. and its allies were vulnerable to oil denial, and this brought

Diagram 3.1

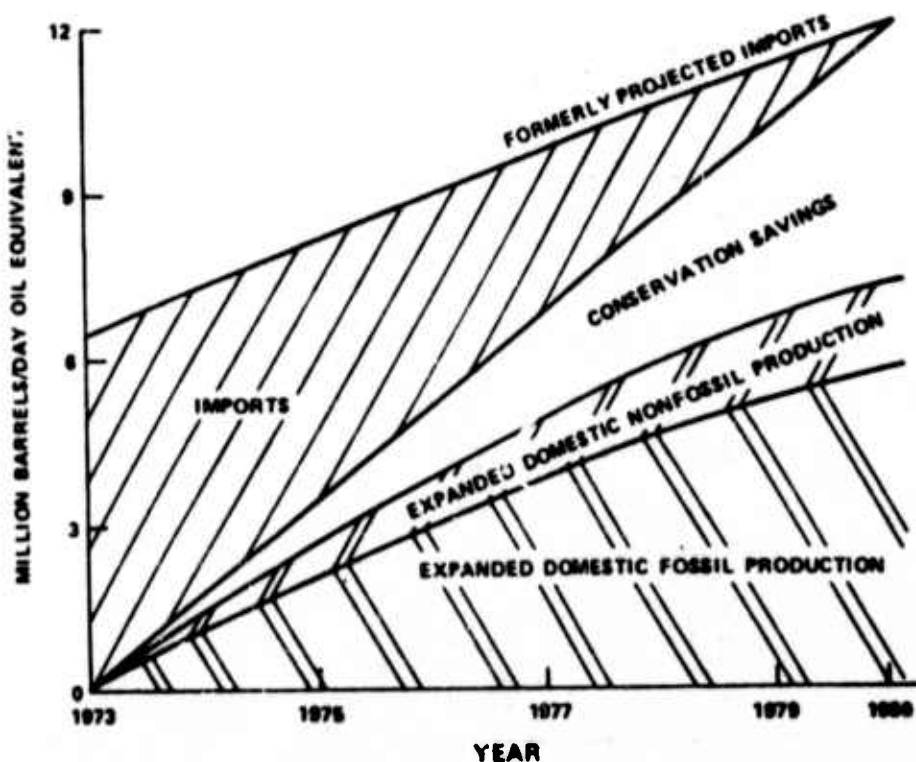
ENERGY FUTURE WITHOUT SELF-SUFFICIENCY

Source: "UNDERSTANDING THE 'NATIONAL ENERGY DILEMMA'," JCAE, 1973, REPRODUCED IN DR. DIXY LEE RAY'S REPORT TO THE PRESIDENT, "THE NATION'S ENERGY FUTURE," 1 DECEMBER, 1973, P. 45.

about wide public support for such a move. The realization that the U.S. was becoming progressively vulnerable to new forms of external pressure caused the Nixon Administration to promulgate total self-sufficiency by 1980 as a national objective. Preliminary reports were hastily submitted which, as illustrated in Diagram 8.2, demonstrated great sense of purpose, urgency and confidence and the implementability of that laudable objective.

Diagram 8.2

SELF SUFFICIENCY BY 1980 THROUGH CONSERVATION AND EXPANDED PRODUCTION



IMPORT REPLACEMENT (Million Barrels/Day Oil Equivalent)	YEAR	
	1973	1980
Formerly Projected Imports	6.5	12.0
Conservation Savings*		4.7
Expanded Domestic Nonfossil Production		1.5
Expanded Domestic Fossil Production		5.8

*Includes both conservation techniques and energy real price increases.

SOURCE: The Nation's Energy Future, U.S. Atomic Energy Commission, WASH-1281, 1 December 1973, p. 46.

But the galvanizing effect of the embargo soon subsided as the boycott was lifted. Left behind was a lesser economic danger than feared, and a host of scapegoats who diverted the nation's attention from the heart of the problem and the tasks ahead.

Some three months later when the delegates of thirteen major consuming nations convened for the Washington Energy Conference, the FEO's background paper gave the ambitious targets shown in Table 8.1 for its Project Independence program:

Table 8.1

Annual Targets For Production and Consumption 1973-1985
All Figures in Millions of Barrels per Day of Oil Equivalent

	1973	1974	1975	1976	1977	1978	1979	1980	1985
Oil	10.9	11.1	11.3	11.6	12.0	12.5	13.0	14.0	15.3
Shale	-	-	-	-	-	.1	.3	.5	1.5
Nat. Gas	11.2	11.2	11.3	11.5	11.8	12.0	12.8	13.2	15.0
Coal	6.9	7.4	7.9	8.4	9.0	9.6	10.3	11.0	12.1
Hydro	1.4	1.4	1.4	1.4	1.4	1.5	1.5	1.5	1.6
Nuclear	.1	.2	.4	.4	.6	.8	.9	1.3	2.6
Geothermal	-	-	-	-	-	.1	.3	.6	1.0
Total Supply	30.5	31.3	32.3	33.3	34.8	36.6	39.1	42.1	49.6
Demand @ 2%	36.6	37.3	38.0	38.8	39.6	40.4	41.2	42.1	46.5
Net Imports Needed	6.1	6.0	5.7	5.5	4.8	3.8	2.1	0	- 3.1

Source: FEA, "Background Paper on Project Independence," February 1974.

It took the Administration a year to produce a blueprint for its ambitious goal,^{*} and when that document appeared it became clear that nothing was left of the sense of urgency exhibited during the embargo. The Ford Administration seemed content to let "market forces" accomplish a feat comparable to that of putting a man on the moon. The diminution of public and official enthusiasm for self-sufficiency, in all fairness, had to do with the fact that it took time for the implications of such an ambitious program to sink in.

By 1975, the National Petroleum Council, National Academy of Engineering, Ford Foundation, Resources for the Future, and MIT reports on U.S. energy dependence indicated that either energy independence was undesirable, too costly, or would require a much longer time than eight to ten years to achieve. Even the Federal Energy Administration's reports indicate that relative self-sufficiency might arrive only in 1990. Such conservative views seemed more popular after the OAPEC embargo was ended. The reasonable availability of expensive oil and gasoline generated complacency.

Even before the 1973 Arab embargo was imposed, the United States was facing serious energy problems because of falling domestic production and insufficient refining facilities. But the effect of the embargo was to highlight the imperative for national security to reverse a drift into increasingly more dangerous dependence on Eastern Hemisphere and Arab sources. President Nixon's reflexive reaction to the embargo was understandable. Indeed, if the international oil crisis was caused inter alia by a growing American dependence on foreign sources in competition with other consuming

^{*} Project Independence Report, the Federal Energy Administration, November, 1974.

nations, then a reversal of that trend could well reduce excessive import-dependence and restore a modicum of balance to the system. Instead of searching for complicated means to increase the exporters' dependence, a reduction of importers' dependence would have the same effect. In other words, one obvious strategy to cope with a functional system that failed is to disengage from it altogether.

To world federalists and liberal economists alike, the idea of national self-sufficiency could be anathema; yet it is beyond question that the international trade in oil has only exacerbated related issues with disruptive spillovers rather than pacific effects. The return to self-sufficiency in energy would not be a loss of an opportunity to further integrate the world into a cooperating community, but rather a prudent avoidance of part of that community which appears less hospitable to liberal principles of trade. In fact, in a famous debate about the merits of general autarky, John Maynard Keynes argued rather persuasively that national self-sufficiency and not the expansion of trade would actually be the road to peace.* No revisionist economist himself, Keynes was sufficiently realistic to understand that only on the surface does energy independence (like other types of self-sufficiency) appear to deny most of the economic benefits which usually accrue from free trade and international exchanges. Yet self-sufficiency often occurs, either naturally or by choice. In most cases of deliberate autarky, the main objective is to avoid dangerous vulnerabilities or exposures in obtaining strategic materials. Self-sufficiency is attempted when the assumed benefits in terms of national security or other values outweigh the economic costs.

* John Maynard Keynes, "National Self-Sufficiency," Yale Review, summer 1933.

It has been observed that self-sufficiency is somewhat costlier than free trade; but, once such externalities as the costs of military protection are internalized, free trade no longer seems necessarily superior. In fact, in the case of energy, an economic case can be made in support of autarky. Basically, although U.S. domestic energy supplies are likely to be costlier than imported energy, the interrelated disadvantages connected with foreign imports--such as balance-of-payments outflows and ensuing strains on the international monetary system--could provide a strong economic justification for self-reliance. The net effect may well be that, at some point, the nation may save more if it pays a premium to develop domestic sources than it would by purchasing oil, even in the cheapest import markets.

Under an interdependent posture, access to reliable and adequate sources of energy is becoming the sine qua non of security for highly industrialized nations. To the degree that the United States does not have control over the sources of its energy, it is susceptible to those who exercise such control. To the extent that the U.S. needs or wants to depend on foreign sources, it must be prepared to pay the resulting political and economic costs. Furthermore, dependence on imported oil implies severe defense problems for the United States. To rely on an increasingly fragile worldwide distribution system without protecting that system might expose the country to innumerable pressures and risks. On the other hand, the safeguarding of supplies is a considerable military and political undertaking, where half-measures are unlikely to suffice.

In the Persian Gulf in particular, vulnerabilities of supply are compounded by geostrategic tensions and political instability. Yet the Gulf is so paramount that, even if the U.S. by itself were to be self-sufficient in energy, U.S. security commitments to Western Europe and Japan, and America's rivalry with the Soviet Union, would necessitate continuing attention to American interests and capabilities in the Gulf area.* A U.S. policy of oil dependence would make American involvement even more imperative. If the U.S. does not wish to assume such an active role, it must develop domestic energy resources to reduce import dependence to minimal levels, and encourage its allies to do likewise. Indeed, with the benefits of energy independence well understood, all that remains is to assess costs so as to establish its net desirability and then to evaluate its feasibility within specified time frames.

The main objection to Project Independence has been that it is economically inefficient. A Brookings Institution paper by Hendrik Houthakker estimates the cost of total energy self-sufficiency for the U.S. over the next 20 years at \$985 billion, compared with a cost of \$663 billion in continuing to rely on foreign oil. Spending half the annual difference of \$16 billion over a 20-year period would, it is estimated, cover the cost of buying and storing a four-year supply at \$6 a barrel.** Houthakker's highly abstract study failed to internalize the softer economic and political costs associated with a policy of energy dependence. Free trade, it will be recalled, has historically usually been conducted under the close protection of strong mercantilist powers. Uninterrupted trade prospered under the

* For more details about the political, military, and economic considerations involved see the House Hearings on "Proposed Expansion of U.S. Military Facilities in the Indian Ocean," the Subcommittee on the Near East and South Asia, 1974.

** For an analysis of the debate on Project Independence, see The Petroleum Economist, April 1974.

Roman Empire and the Romans, just as 19th century commerce enjoyed the global reach of the Royal Navy. The first two post-war decades had had the world energy system similarly shielded by an effective Pax Americana. The crisis of energy interdependence, however, has much to do with the collapse of that hegemony. Has Houthakker included in his figures the costs needed to maintain--or, in fact, revive--such a hegemonial position for the next two decades? For instance, even the direct cumulative economic costs of safeguarding future oil supplies and sea-lanes under a policy of free trade suggests that the cost gap could narrow substantially.

Nonetheless, an essential part of evaluating Project Independence is the comparison of its economic costs to those of import dependency. In particular, large balance of payments deficits arising from import costs must be considered in terms of their domestic effects and their damage to America's economic and political interests abroad. These costs can have a major impact if devaluation of the dollar is required, leading to higher import costs and greater inflation, and ultimately to stop-and-go economic policies at home. The costs of importing oil must then be compared to the resource investment required for developing domestic energy sources, and to the creation of potentially inflationary demand for scarce materials, equipment or skilled manpower in energy-supplying industries. Domestic investment costs may nevertheless seem much more palatable when compared to the full effects of importing energy supplies. Such evaluation, however, lies outside the scope of this study.

Still, the more fundamental aspects of the practicality of improving the nation's energy self-sufficiency could be addressed. There are at least three inter-related issues of feasibility: resource base constraints,

time constraints, and capital costs constraints. Accordingly, it could be useful to discuss in more specific detail the plans, some of the problems and costs, and the possible timetable for achieving self-sufficiency.*

The U.S. energy resource base includes vast reserves of coal, oil shale and uranium. In addition, recent higher prices for oil and gas will make their continued development and production economically attractive for at least three more decades if not much longer. Table 8.2 attempts to summarize much of the current U.S. resource data. Note the very large coal and oil shale resources as compared with petroleum. Between now and the mid-1980s, U.S. energy development and most of the thrust toward energy independence will rest on the continuing utilization of well-known technologies for the discovery and exploitation of energy resources. The major problems of growth in energy supply, as dictated by need, and of energy conservation, as dictated by regulation and price impacts, will be those associated with large-scale construction programs. Thus, engineering, planning, and managerial problems will dominate the early time period. For the new technologies to emerge with any degree of

* In addition to the FEA's Project Independence report, there are at least four other studies of energy self-sufficiency for the U.S., each attacking the problem from a different angle. For the economic perspective see Energy Self-Sufficiency written by the MIT Energy Laboratory Policy Study Group and published by the American Enterprise Institute, Washington, 1974. A resources perspective is provided by Carl J. Anderson, et al., "An Assessment of U.S. Energy Options for Project Independence," Lawrence Livermore Laboratory, University of California, Livermore, UCRL-51638, September 1, 1974. The National Academy of Engineering's U.S. Energy Prospects (Washington, D.C., 1974) analyzes the issues from an engineering viewpoint. Finally, Richard S. Greeley, et al., from the MITRE Corporation give a brief overview in their "Energy Self-Sufficiency--How Much and How Soon?," M74-90, September 1974. As of this writing, there is no study of the international politics of energy autarky.

Table 8.2
U.S. ENERGY RESOURCE BASE

	KNOWN OR PROVED RECOVERABLE RESERVES			ESTIMATED TOTAL ULTIMATELY RECOVERABLE RESERVES		
	Standard Units of Measurement	Oil Equivalents (Billion barrels)	Percent According to BTU Content	Standard Units of Measurement	Oil Equivalents (Billion barrels)	Percent According to BTU Content
Coal (Billion Tons)	390.0	1675.0	88%	1605	6420	74%
Petroleum (Billion bbl)	38.1	38.1	2	430	430	5
Natural Gas (Trillion C.F)	278.8	57	3	2380	430	5
Shale Oil (Billion bbl)	80.0	80	5	1000	1000	13
Uranium Oxide (Thousand tons) (at \$10 or less per pound)	300.0	38	2	2400	170	2
Total United States		1898.0	100		8450	100

* If breeder reactors are developed the energy content of proved U₃O₈ reserves will be increased by a factor of 50.

Source: Bituminous Coal Facts 1972, National Coal Association

success by 1985 or 1990, i.e. by being more environmentally tolerable and also reduce U.S. dependence on increasingly scarce resources, it will be necessary for the country to accept increasingly larger R&D budgets for energy.

R&D in energy conservation, which is aimed at improving the efficiency of energy utilization in residential and commercial building (illumination and heat/cooling applications), and in industrial equipment and processes, might significantly slow the rate of growth of energy consumption by the late 1970s. Improved technologies for secondary and tertiary oil production are likely to raise the average oil recovery fraction from 32 percent to over 40 percent by the mid-1980s. Moreover, better techniques for oil and gas resource assessment will be developed and these should improve exploratory drilling for oil and gas, thereby expanding the recoverable oil and gas resource base. Technological improvements in mining are likely to insure that safe longwall techniques become widespread by the late 1970s, leading to large coal productivity increases. Development of combined cycle coal-burning power plants is likely to pay off by the late 1970s. Low BTU gasification of coal for boiler applications might be commercially viable by the late 1970s, easing the burden on exploration and production of natural gas. Development of flue gas desulfurization technology seems to be progressing so that by the late 1970s utilities may be able to burn high-sulfur coal directly with back-end environmental controls.* Hopefully. Reactor safety research during the next 3-5 years should resolve

* See, for example, Hudson Institute's Report to the Office of Coal Research, "Policy Analysis for Coal Development at a Wartime Urgency Level to Meet the Goals of 'Project Independence'," HI-1931/2-RR, 4 February 1974.

many of the seemingly acute problems associated with emergency core cooling and other safety systems. Table 8.3 shows the currently planned program of energy research and development for the next five years. This program, which averages some \$2 billion per year, may increase to twice this amount in the next 3-5 years.

The lion's share of the projected 5-year, \$11 billion energy R&D program is devoted to nuclear fission and fusion. The latter cannot contribute significantly to U.S. energy supply until well after the year 2000. Moreover, the bulk of fission R&D is devoted to development of the fast breeder reactor. Commercial breeders cannot come onstream until well after 1990. Only light-water reactors, to the extent that they reliably deliver electricity, can contribute to the U.S. energy supply during the next two decades.* The \$700 million planned for energy conservation R&D is well spent, since conservation is the area which will have the initial and largest impact on balancing U.S. energy supply and demand. The \$400 million planned for oil, gas, and shale R&D during 1975-79 is probably too little, compared with the large sums planned for fission and fusion for which the benefits are two or three decades off. More money could be spent on resource assessment, so that the U.S. can learn the true size of Naval Petroleum Reserve #4 in Alaska (alleged to hold 30-50 billion barrels of recoverable crude), and of Outer Continental Shelf resources which were still poorly known in 1975. R&D on secondary and tertiary oil

*The evaluation given below is discussed in greater detail in my "Toward U.S. Energy Independence: An International Perspective," HI-1994-BN/2/2, May 1974, and in "Energy Dependence/Independence--The U.S. Possibilities" by R. Snetz, B. Smernoff, and U. Arad, HI-2026-BN/2/2, July 1974.

Table 8.3

U.S. FEDERAL ENERGY RESEARCH AND DEVELOPMENT PROGRAM, 1974-1980
(Millions of dollars; fiscal years)

Program Area	Program Level (Obligations)		Estimated Total 1975-79
	1974	1975	
1. Conservation	65.0	115.7	700
2. Oil, gas, and shale	19.1	41.8	400
3. Coal	164.4	426.7	2900
4. Environmental control	65.5	178.5	800
5. Nuclear fission	530.5	724.7	4000
6. Nuclear fusion	101.1	168.6	1600
7. Other			
a. Solar	13.8	50.0	
b. Geothermal	10.9	44.7	
Total direct energy R&D	999.1	1810.5	11300

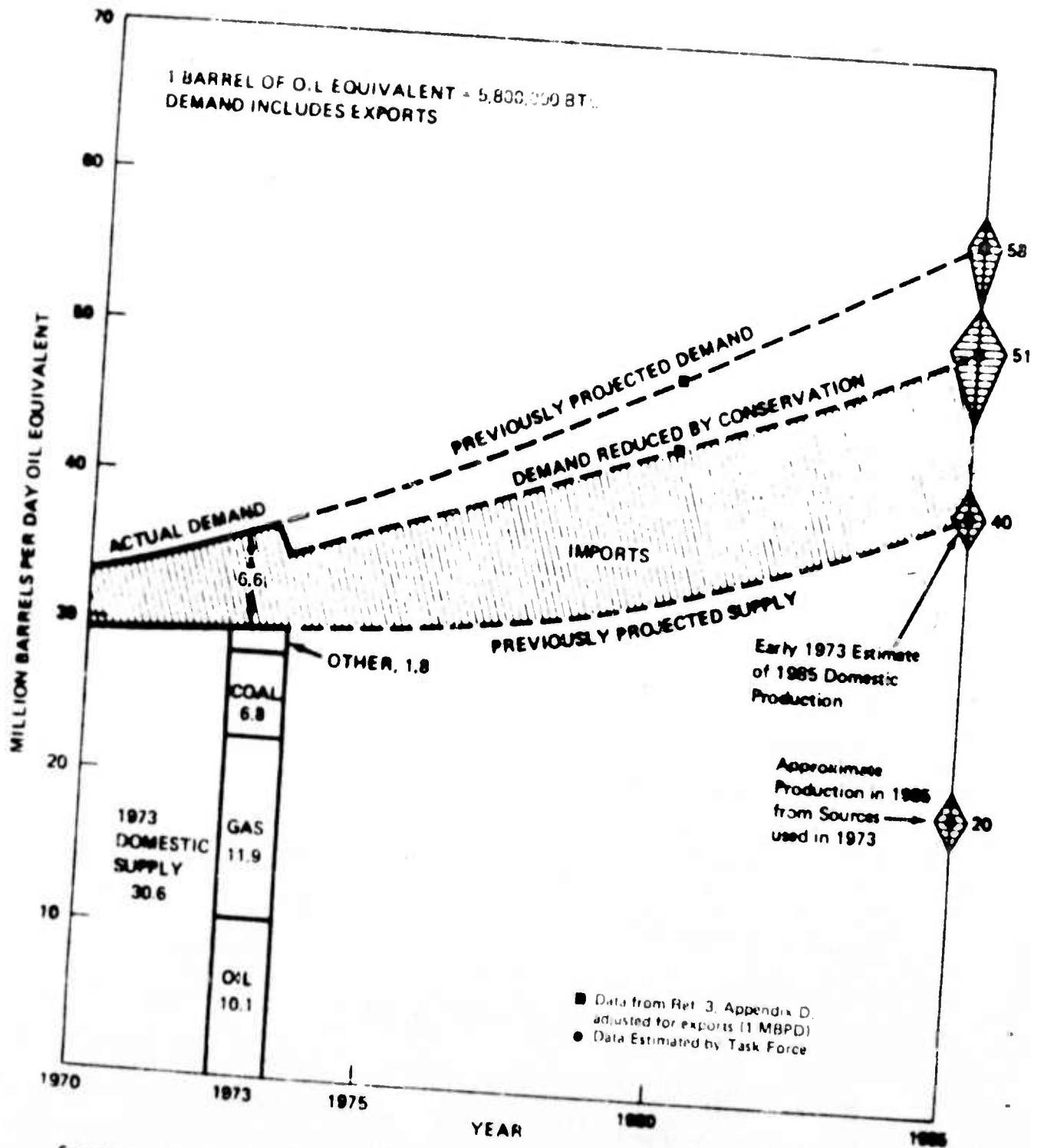
SOURCE: Executive Office of the President

production techniques can also add more funds, primarily for subsidizing corporate recovery projects. The \$2900 for coal R&D seems sized correctly, except that distribution in the coal R&D area might be improved. High BTU coal gasification and coal liquefaction are getting the most money, yet probably are furthest off in terms of showing a return for R&D investment. Certainly, low BTU gasification for boiler applications and direct combustion using combined cycles warrant much more attention than high BTU gasification and liquefaction. Moreover, since stack gas desulfurization technology has not yet been demonstrated as commercially reliable, R&D on this is important, and could accelerate the commercial availability of direct high-sulfur coal burning. Last, but not least, if the U.S. expects to obtain major contributions to its energy supplies from solar and geothermal sources by 1985, these areas should be funded at much higher levels than currently planned in the next ten years.

Diagram 8.3 shows the NAE task force estimates for U.S. energy supply and demand through 1980. A major conservation program, mounted in 1975, is assumed to achieve savings of at least 8.0 MBPD by 1985 as shown in Table 8.4. This conservation program will be the single most important contributor to U.S. energy independence. Table 8.5 estimates the cost of imports. It assumes a successful conservation program. Further, if Project Independence is successful, the above import costs might be cut in half (assuming the continuation of high prices). Table 8.6 shows one possible energy mix for the United States in 1985. For convenient comparison, the 1973 energy supply is included below. These data are used to construct Diagram 8.4 which shows the possibility of eliminating imports by 1985. To achieve a position of energy independence by 1985, at least the following will be required:

Diagram 8.3

PROJECTED U.S. ENERGY SUPPLY AND DEMAND, 1973-1985



Source: National Academy of Engineering, U.S. Energy Prospects.

- A successful fuel conservation program which reduces demand by 7 to 8 MBPD by 1985.
- A successful nuclear power program. This is a major industrial task
- Increased production of oil and gas in the lower 48 states, Alaska, and the offshore areas
- A major synthetic fuel industry, providing 4 to 5 MBPD of oil and gas from coal and oil shale. These numbers are larger than those estimated by the NAE. They have been increased to provide some contingency capability.
- A dramatic increase in coal production--at least double that of 1973.

Table 8.7 estimates capital requirements for the period 1974-1985.

A total of 700 billion dollars is needed.

Table 8.4

ESTIMATED 1985 U.S. ENERGY DEMAND REDUCTION

Category	MBPD
<u>By Conservation</u>	
Industrial conservation measures	1.5
Transportation	
Lower speeds, car pooling	1.0
Airplane load factors	0.3
Space heating efficiency	1.0
<u>By Use of Energy-saving Equipment</u>	
Smaller, more efficient cars	2.0
Other transportation savings	1.1
Better building insulation standards	1.1
Residential and commercial equipment	0.4
Industrial process efficiency	1.0
Total conservation potentials	<u>9.4</u>
Less 15 percent for partial overlap	8.0

To achieve the indicated demand reductions, the physical requirements would be the following:

- Convert the automobile population from its present 30:70 ratio of small to large cars to at least an average of 50:50 by 1985. This will require the production of 75 million lightweight automobiles in the next 10 years.
- Expand mass transportation facilities in large cities.
- Ensure that construction of 20 million required housing units have substantially improved insulation.
- Make industrial processes 10 percent less energy-intensive, on the average.
- Do without energy through economy measures and more efficient energy space heating like heat pumps.

Beyond this is the reduced dependence on oil through greater use of coal and nuclear fuel sources. In 10 years the pressure on petroleum fuel can be reduced substantially, provided barriers to direct use of coal and nuclear fuel for electricity are removed.

Table 8.5AVERAGE IMPORT COSTS, 1975-1985

Imports in the period 1975 through 1985 increases from 7 MBPD to 11 MBPD, or an average of approximately 8 MBPD

If costs are \$4, \$7, or \$11 per barrel, then imports for this ten year period are (billions of dollars):

\$4	\$7	\$11
\$117	\$204	\$320

Table 8.6

POTENTIAL 1985 U.S. ENERGY PRODUCTION (MBPD)

Resource	Energy Form	Production	Totals
Coal:	Coal solids	10.0	11.7
	Pipeline quality SNG	0.8	
	Methanol	0.3	
	Synthetic crude	0.3	
	Medium-Btu	0.3	
Nuclear:	Uranium-Plutonium	8.3	8.3
Renewable:	Hydroelectric	1.5	1.7
	Geothermal and all other	0.2	
Oil:	Crude oil--accelerated production and leasing	1.9	12.5
	Crude oil--additional known fields	0.2	
	Crude oil--accelerated tertiary recovery	0.8	
	Crude oil--decline in 1973 fields	(6.0)	
	Crude oil--production from new fields	5.5	
	Crude oil--1973 production	11.8	
	Shale:	Synthetic crude	
Gas:	Natural gas--accelerated production and leasing	2.5	14.5
	Natural gas--low-permeability sands	0.6	
	Natural gas--decline in 1973 fields	(7.0)	
	Natural gas--production new fields	6.5	
	Natural gas--1973 production	11.9	
	TOTAL		

Source: National Academy of Engineering, U.S. Energy Prospects.

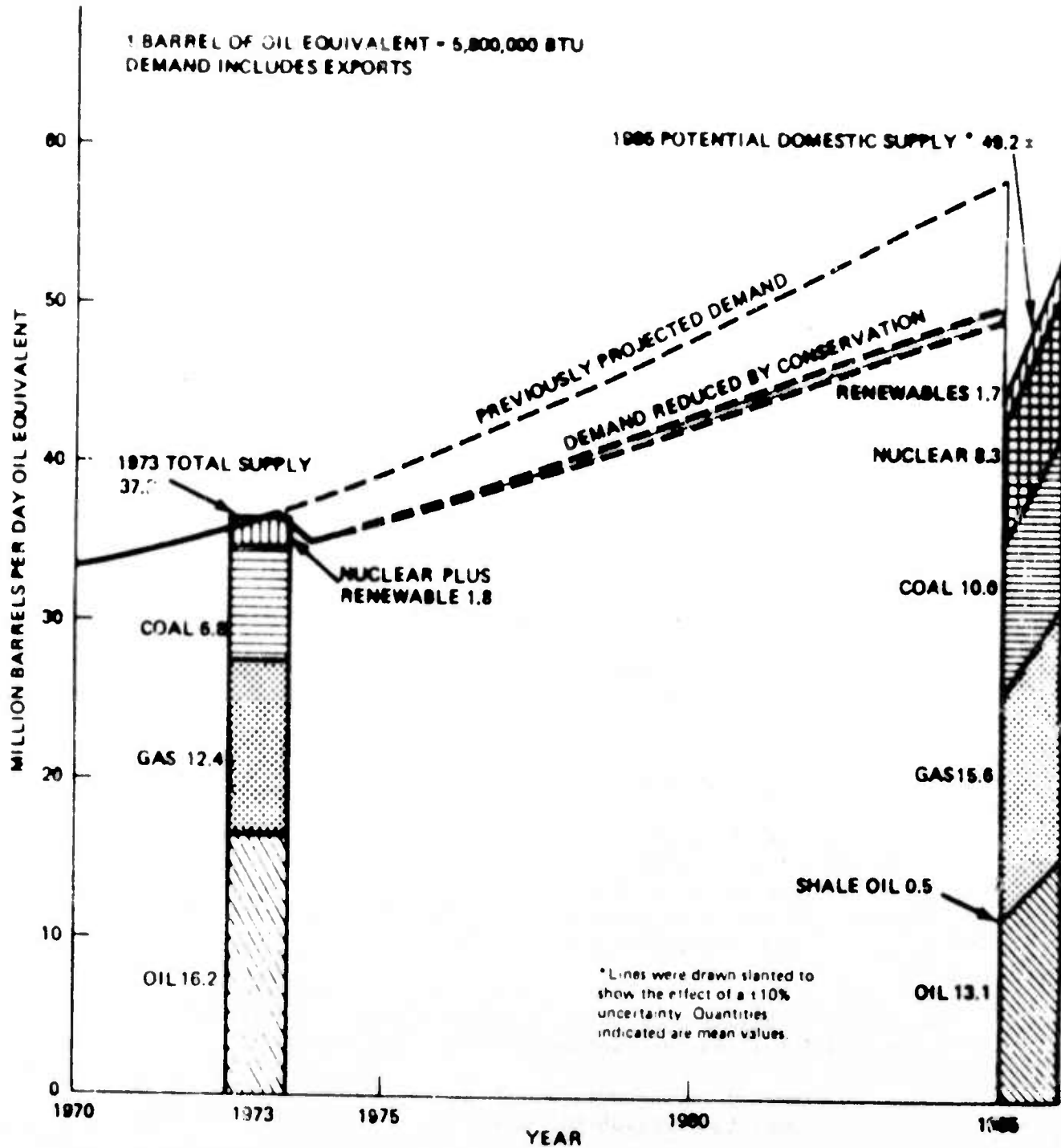
1973 DOMESTIC ENERGY SUPPLY

Source	MBPD
Crude oil and natural gas liquids	10.1
Natural gas	11.9
Coal and lignite	6.8
Hydroelectric	1.4
Nuclear	0.4
Total	30.6

Source: National Academy of Engineering, U.S. Energy Prospects.

Diagram 8.4

POSSIBLE U.S. ENERGY SUPPLY AND DEMAND, 1975-1985



Source: National Academy of Engineering, U.S. Energy Prospects.

Table 8.7

"GUESSTIMATED" U.S. PRODUCTION FACILITY CAPITAL REQUIREMENTS
(1974-1985 Incremental Production)
 (Billion \$)

OIL AND GAS	160-200
URANIUM	11-14
COAL	
SOLID	18-24
SYNTHETICS	16-22
SHALE OIL	3-5
POWER SUPPLY	
NUCLEAR GENERATION	90-110
FOSSIL + RENEWABLE GENERATION	60- 70
TRANSMISSION + DISTRIBUTION	135-165
TOTAL (ROUNDED)	490-610

Source: National Academy of Engineering, U.S. Energy Prospects.

The above capital requirements represent the amount of investment (in 1973-1974 dollars) necessary to provide facilities and do not include money required for working capital, dividend, debt service, or other financial needs. Government R&D programs and production facilities (e.g., uranium enrichment) are also not included.

The \$500 to \$600 billion for in-place facilities will require about another \$100 billion for infrastructure support. \$700 billion would average \$60 billion per year until 1985. For comparison:

Current investments in the energy industry are about \$30 billion per year

1970 industrial plant and equipment investment for all purposes was about \$100 billion

* * *

In his January 1975 State of the Union message, President Ford finally gave his Administration's plan for relative self-sufficiency. As shown on Table 8.8, the Ford program calls for an import-dependence ratio of some 20 percent by 1985. So, absolute autarky was postponed even with a longer time-horizon than that President Nixon had initially selected. This is a far cry from the original intention of eliminating the security risks associated with energy dependence through complete autarky.

Table 8.8

EFFECTS OF U.S. MID-TERM PROGRAM ON ENERGY DEPENDENCE
(1985)

DEMAND WITH NO NEW ACTIONS	23.9 MMB/D
IMPORTS WITH NO NEW ACTIONS	12.7 MMB/D
LESS SAVINGS ACHIEVED BY FOLLOWING ACTIONS:	1985 IMPACT ON IMPORTS (MMB/D)
OCS LEASING	1.5
NPR-4 DEVELOPMENT	2.0
COAL CONVERSION	0.4
SYNTHETIC FUEL COMMERCIALIZATION	0.3
AUTO EFFICIENCY STANDARDS	1.0
CONTINUATION OF TAXES	2.1
APPLIANCE EFFICIENCY GOALS	0.1
INSULATION TAX CREDIT	0.3
THERMAL STANDARDS	0.3
TOTAL IMPORT SAVINGS BY ACTIONS	8.0
REMAINING IMPORTS	4.7
LESS:	
EMERGENCY STORAGE	3.0
STANDBY AUTHORITIES	1.7
NET IMPORT VULNERABILITY	0

Source: The Energy Users Report, Supplement No. 47, January 23, 1975.

One interesting problem area relates to the economic impact of the implementation of Project Independence. In particular, will expenditure of the \$700 billion needed to finance new domestic energy capacity in the coming decade contribute to what appears to be chronic inflation? Or will this heavy financing requirement act to brake inflation by slowing the rise of energy prices as new supplies are developed and create forces in OPEC which apply downward pressure on the world price of petroleum? Moreover, will widespread energy conservation measures designed to slow energy growth adversely affect economic growth which, to date, has been tightly correlated with the growth of energy consumption? Or might reduced energy growth become an indirect policy tool for combating inflation by slowing economic expansion?

Although the near-term economic situation is quite uncertain, and the domestic political scene remains unsettled, the mid-term economic consequences of the implementation of Project Independence might be favorable. While the short-term economic impact of the energy conservation and supply-enhancement programs planned for Project Independence may be inflationary, basic economic policy for coping with general price inflation must be formulated and implemented before inflation can be controlled in any event. In other words, the national policy of energy independence may exacerbate existing price inflation, but it cannot be deemed responsible for the bulk of inflation. It appears the short-term price of incremental inflation due to efforts to free the U.S. from its growing dependence on imported oil might be justified by the potential success of attaining mid-term U.S. energy self-sufficiency.

As noted, the NPC, NAE, Ford Foundation and MIT reports on U.S. energy independence indicated that either energy independence is undesirable, too costly, or would require a much longer time than 8-10 years to achieve. The preliminary reports from the FEA's Project Independence Task Forces indicate that relative energy independence might arrive in 1990. These conservative views were much more popular after the OAPEC embargo ended and Americans began again to enjoy reasonable supplies of expensive oil and gasoline. However, the problems that the oil embargo brought out into the open will not go away. These problems included, among others, a reduction in U.S. oil and gas production, increasing delays in the construction and reliable operation of nuclear and fossil fuel electric power, the possibility of future serious financial and political crises in the U.S. and elsewhere caused by high prices of imported oil and gas.

U.S. policies in the future (next 3 to 5 years) are likely to be influenced by fluctuations in world oil and gas prices and vice versa. Downward trends should tend to promote policies with the effect of delaying the achievement of relative independence in energy, and the emergence of a viable U.S. synthetic fuels industry will tend to influence policies (price and production) in exporting nations.

It is arguable that the U.S. can achieve relative energy independence by 1982-85. The U.S. has the resources, technology, and financial and managerial capability to do the job in this time period. To do so would require taking some very strong and politically hazardous positions. To back away from Project Independence would risk national security. In any event, world pressures on resources in general and the maintenance of high oil prices will impel the U.S. to drift towards energy independence. A

"business-as-usual" policy could lead to energy independence in the mid-1990s. Still, one more OPEC embargo (which might well occur) would push the U.S. into the earlier 1985 energy independence posture. The emerging U.S. energy bureaucracy--the FEA, ERDA, and DENR--will be forced to consider such eventualities and to plan to handle them. The FEA now and the others when and if they are organized, should exert continuing pressures for U.S. energy independence.

So, for the next 20 years or so, the U.S. will be forced to depend on currently known resources and technology in order to achieve energy independence. Oil, gas, oil shale, nuclear power, and the increasing use of coal as fuel and as a base for liquid and gaseous fuels will dominate the energy industries. The technologies required to exploit these sources are all at least ten to twenty years old. By the 1990s, it is certain much of the U.S. energy requirements can be generated using solar, geothermal and advanced nuclear technologies, if the government supports a vigorous and well-funded research and development program.

* * *

Historically, the European energy economy experienced a radical swing to oil as the primary energy source during the 1960s. As shown in Table 8.9, only one third of the 12 mbd-oil equivalents consumed in Europe in 1960 were imported. Thirteen years later, however, European energy consumption doubled to 24 million barrels daily of oil equivalent in 1973, almost two-thirds of which was imported. In little more than a decade, Europe became addicted to cheap oil imports--mostly from Middle East oil states--and the sharp rise of oil compensated for the decline of coal as the primary source of energy on the Continent.

Table 8.9
PROJECTED EUROPEAN ENERGY SUPPLY--1985
(In Percent)

	1960	1973	Pre-1973 Estimate	1985	
				Probable	Optimistic
Total Energy	100% (12)*	100% (24)*	100% (44)*	100% (42)*	100% (40)*
Oil--Total	33	63	63	43	36
Indigenous	3	2	7	26	27
Imported	30	61	56	17	9
Gas--Total	2	9	14	30	34
Indigenous	2	8	11	26	27
Imported	-	1	3	4	7
Coal--Total	61	26	11	16	15
Indigenous	57	23	8	12	11
Imported	4	3	3	4	4
Primary Electricity	4	3	12	9	15
Total Indigenous	67	36	36	74	81
Total Imported	33	64	64	26	19
Energy Dependence	1/3	2/3	2/3	1/4	1/5

*Total energy demand, MBD oil equivalents.

Source: 1960 data from OII: The Present Situation and Future Prospects, Organization for Economic Cooperation and Development, Paris, 1973; other data from Peter Odell, The Availability of Indigenous Energy in Western Europe 1973-98 with Special Reference to Oil and Natural Gas, prepared for the 1st World Symposium, Energy and Raw Materials, Paris, June 1974.

Before the Arab oil embargo of 1973-74, conventional European energy planning suggested little anxiety concerning the high level of energy dependence implied by massive and rising petroleum imports. The discovery and development of North Sea oil and gas after 1970 occurred at a fortunate time, however, since the uncertain reliability and high price of imported

oil prompted serious reconsideration of the former policy of European oil importation.*

A number of analyses are being completed addressing the possibility of relative energy independence in Europe during the next ten or twenty years. One of the first comprehensive studies of the potential availability of indigenous energy supplies in Western Europe, carried out by Peter Odell of Erasmus University, Rotterdam, indicated European energy dependency might be reduced to 20-25 percent by the mid-1980s from its current level of about 65 percent.** Using data related to discovered oil and gas resources in the North Sea, Odell arrives at the figures shown in Table 8.9 for the projected surprise-free European energy supply in 1985.

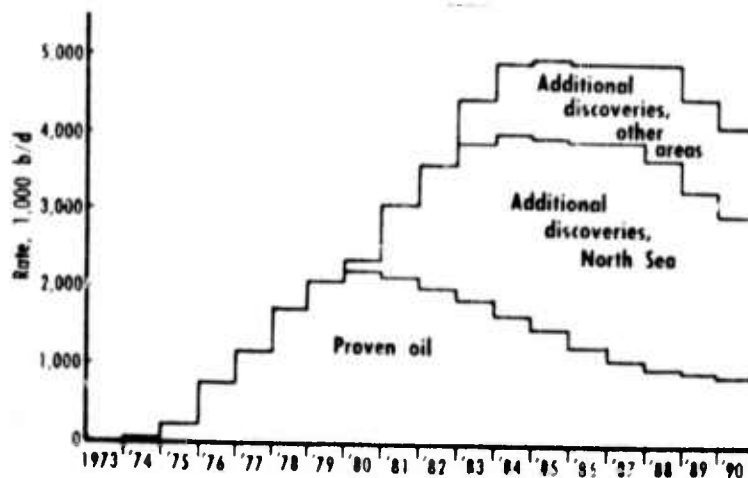
New oil and gas discoveries continue to be reported frequently from the North Sea, and the outlook for North Sea energy resources surprise even those people who were optimistic early in the game. A comprehensive report on North Sea oil production and profitability by Wood, Mackenzie and Company, concludes that total production could be as high as 4 million barrels daily from the United Kingdom offshore alone.*** This would imply that the UK might be a net exporter of crude oil by 1980.

* In the past few years, a portion of the growth of European oil imports has come from the Soviet Union. By the mid-1980s, perhaps as much as 20-25 percent of imported European oil may come from Soviet pipelines.

** Peter Odell, The Availability of Indigenous Energy in Western Europe 1973-98 with Special Reference to Oil and Natural Gas, prepared for the 1st World Symposium, Energy and Raw Materials, Paris, June 1974.

*** The Petroleum Economist, July 1974, p. 252.

Diagram 8.5
POSSIBLE FUTURE OIL OFF TAKES--U.K.



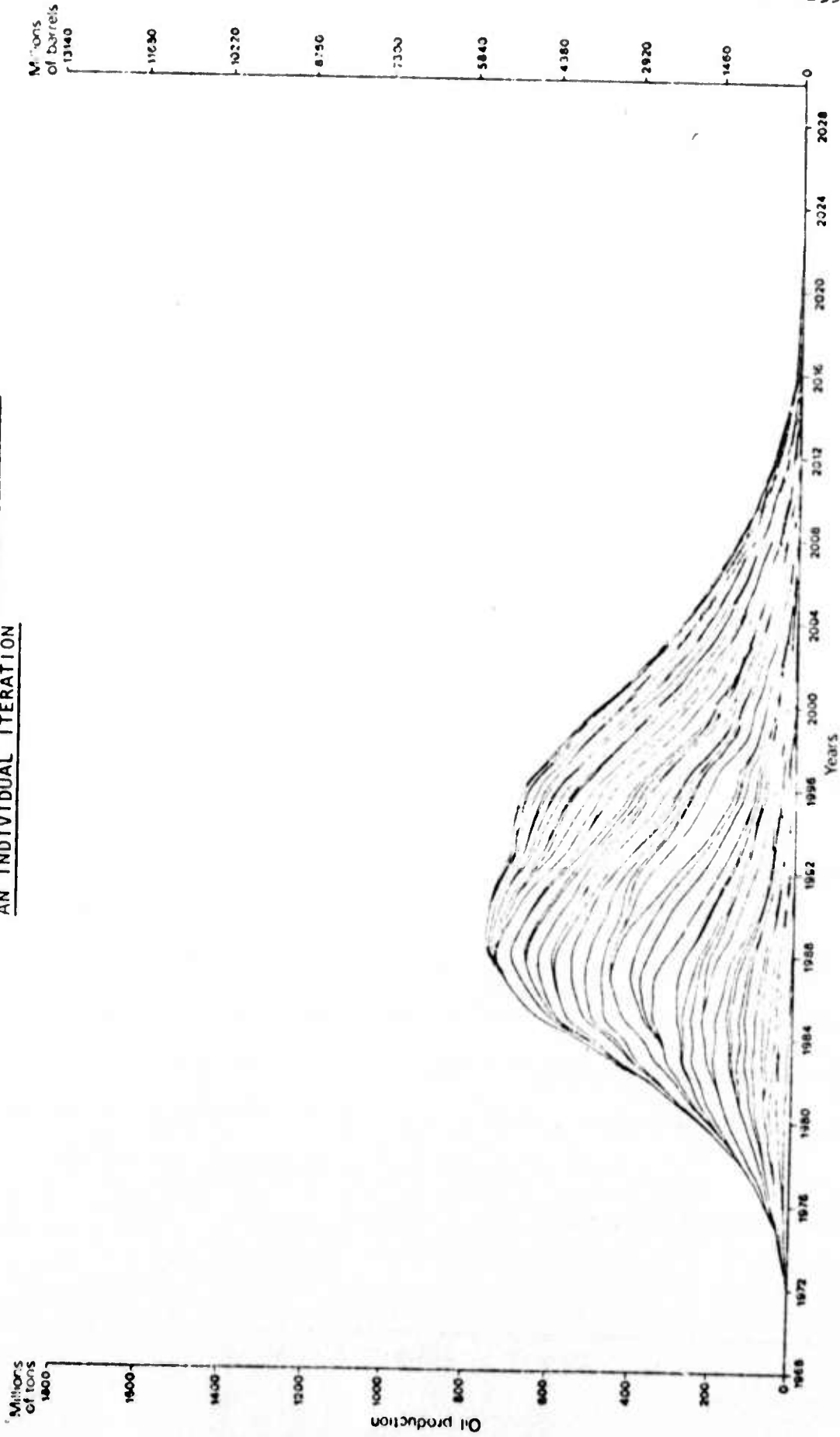
SOURCE: Oil and Gas Journal, June 3, 1974, p. 103.

Other estimates, such as that of Mr. Nils Gulnes, senior vice-president of Den Norske Creditbank and former Deputy Director General of the Industry Ministry in Oslo, expect that oil output in the Norwegian sector of the North Sea will rise to about 2 million barrels per day by 1980.* Adding the Wood, Mackenzie and Company figure of 3.5 million barrels per day UK output for 1980 suggests a total for the North Sea of 5.5 million barrels per day, which compares favorably with an optimistic estimate of 6 million barrels per day by 1982 worked out by Professor Odell (see Diagram 8.6).

*The Petroleum Economist, January 1974, p. 15.

Diagram 8.6

SIMULATED MODEL OF NORTH SEA BASIN OIL PRODUCTION 1972-2028:
AN INDIVIDUAL ITERATION



Source: Peter Odell, The Availability of Indigenous Energy in Western Europe 1973-98 with Special Reference to Oil and Natural Gas, prepared for the 1st World Symposium, Energy and Raw Materials, Paris, June 1974.

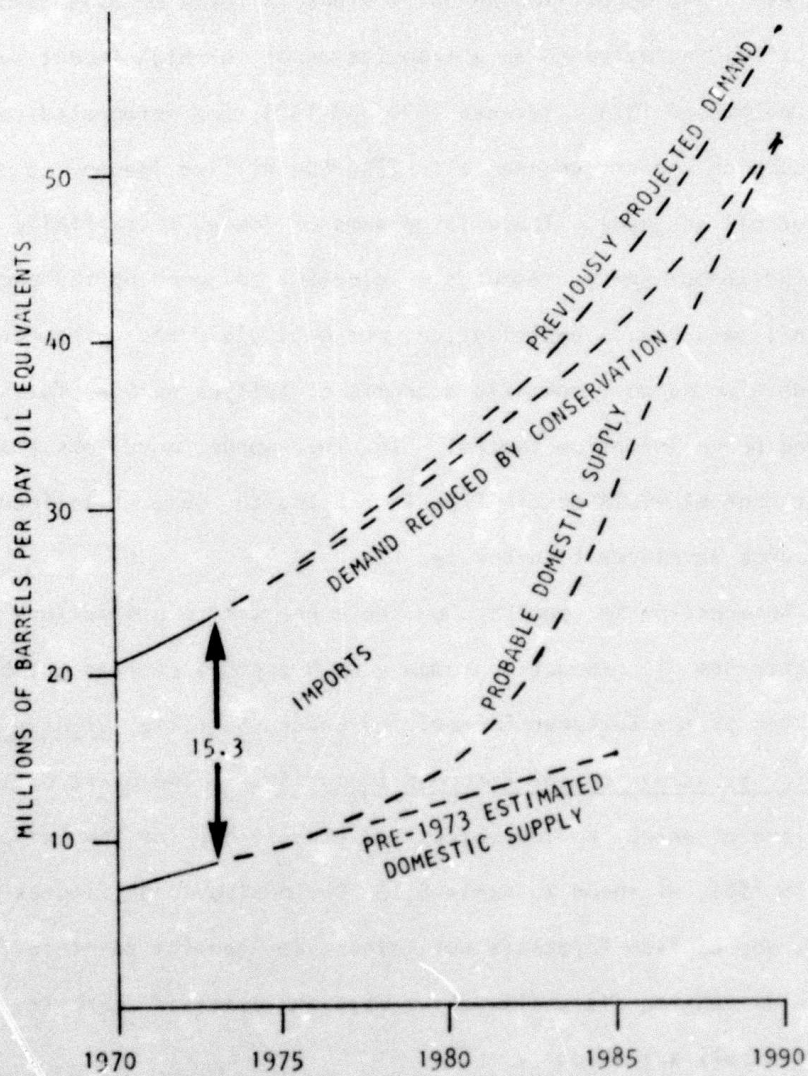
The probable reduction of European energy import dependence induced by orderly development of North Sea resources is graphically represented in Diagrams 8.7 and 8.8. By the mid-1980s, North Sea energy resource development may yield \$40-65 billion annual savings in terms of balance-of-payments outflow, relative to an extrapolation of the high-import supply mix estimated before 1973. Between 1974 and 1985, the integrated cost of continued high import dependence is \$300-500 billion (depending on the price of oil assumed). These large sums of money, if partially invested in indigenous energy resource development to speed up the pace of North Sea oil (and coal^{*}) exploitation, not only yield energy production capacity but also support domestic economic objectives such as full employment and price inflation control. In other words, more jobs and better cost control would result from increasing the pace of indigenous energy resource development in Europe.

It is interesting to consider how these heartening projections of mid-term North Sea oil production compare with a study carried out by the Commission of the European Communities under the title, Towards a New Energy Policy Strategy for the European Community.^{**} The heart of this study consists of energy policy objectives established for the European Community in 1985, as shown in Table 8.10. Obviously, these figures should not be regarded as firm forecasts but rather are general pointers to stimulate wide-ranging discussion about ways and means of improving the longer-term supply situation.

* Western European coal reserves are approximately 10 percent as large as U.S. coal reserves. Odell seems unduly pessimistic concerning European coal production during the next decade, particularly since the high price of oil has made coal more competitive.

** COM (74) 550 final, Brussels, 29 May 1974. Also see The Petroleum Economist, May 1974, for a summary of the European Commission report.

Diagram 8.7

PROJECTED EUROPEAN ENERGY SUPPLY AND DEMAND--1970-90

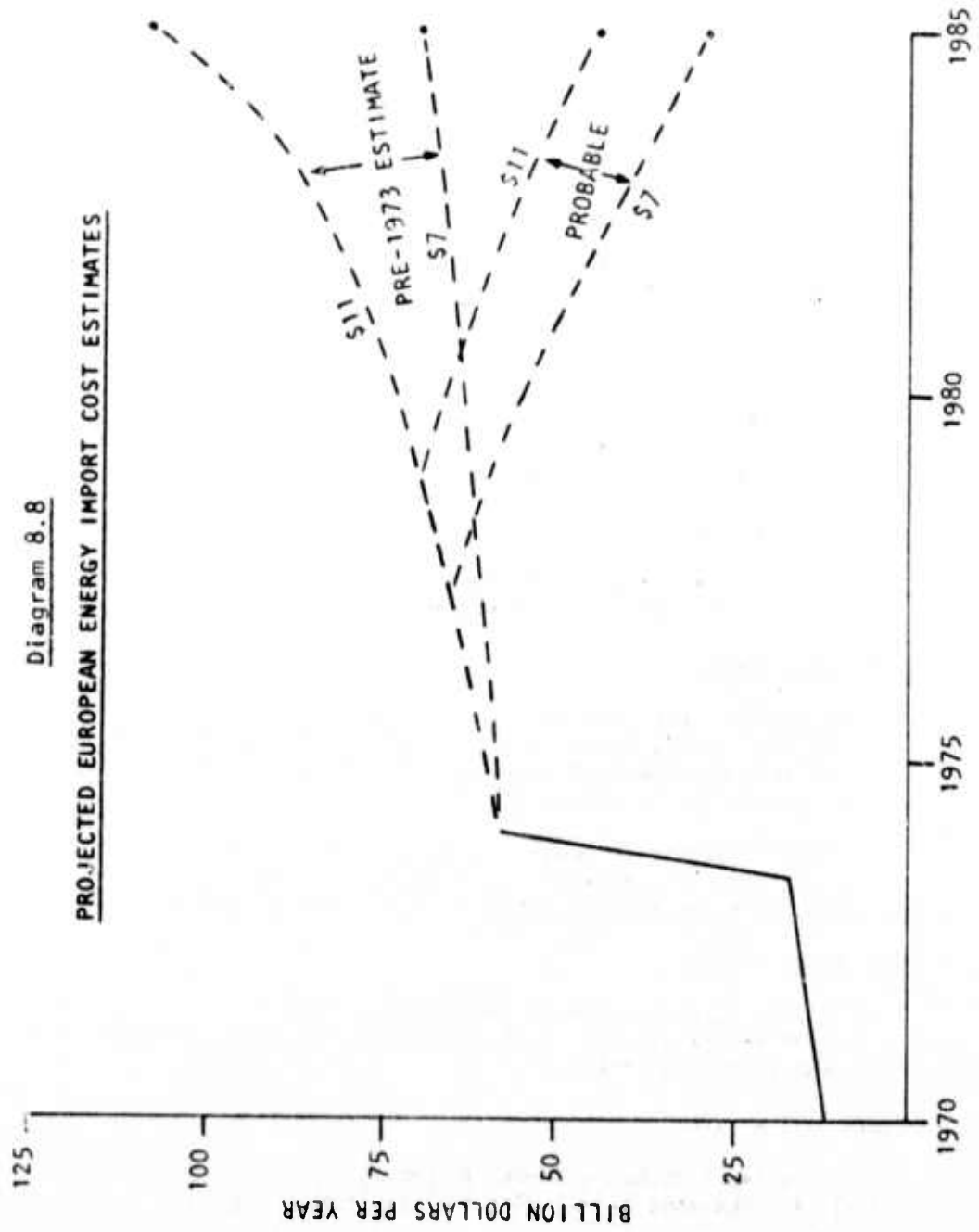


Table 8 10

A Summary of the objectives of an Energy Supply Policy
for the Community in 1985

i Energy demand

- 1) To reduce estimated consumption in 1985 by 10% in relation to the amount initially estimated for 1985 by the more efficient use of energy.
- 2) in step with the development of nuclear energy, to increase the consumption of electricity, which should in 1985 represent 35% of energy consumption (25% in 1972).

ii Energy Supply

- 1) To limit to 40% (63% in 1973) in 1985 the degree of Community dependence for energy on outside sources.

2) Oil

To limit to 40% (60% in 1973) the share of oil in the overall energy supply.

To limit to 75% (98% in 1973) the degree of dependence on outside sources for oil supplies.

This implies production of 180 mtoe in the Community.

To shift the emphasis of demand as a result, in particular by reducing consumption of heavy fuel oil in power stations.

3) Solid fuels

To maintain the absolute level of current production (for coal 180 mtoe or 255 mtoe) increase imports (35 mtoe in 1985), to maintain the share of solid fuel in the overall energy supply at more than 15% (about 23% in 1973).

To shift demand in power stations as often as possible towards coal, and, at the least, wherever nuclear energy cannot be used (i.e. replacing oil products and natural gas).

4) Natural gas

To make extensive use of this source of energy, the share of which in the overall supply should increase from about 2% in 1973 to 25% in 1985.

This will entail:

- (i) at least doubling Community production (115 mtoe in 1973);
- (ii) for the most part, using imports from a diversity of origins.

In respect of demand, the use of natural gas in thermal power stations-and perhaps in certain industries-should be discouraged.

5) Nuclear Energy

To ensure coverage of 50% of electricity needs in 1985 by nuclear energy. This implies an installed capacity of at least 200 GWe for electricity production (+ 20GWe for other uses).

Source: COM (74) 550 final, Brussels, 29 May 1974.

In conclusion, Western Europe as a collective entity could probably achieve some degree of relative energy independence almost as rapidly as the United States, based on indigenous oil and gas resources (and moderate expansion of nuclear electric power generation capacity). Taking a slightly more pessimistic view, Europe might attain relative energy self-sufficiency perhaps no later than five years or so after the U.S., other things being roughly equal. Coming on top of America's Project Independence, this cut in Europe's oil imports could be of fundamental significance for the world petroleum market and its security. If U.S. oil imports dry up in the 1980s, if Japan demonstrates some restraint, and if the European Community is successful in carrying out the new energy policy proposals, OECD oil imports in 1985 need not be much higher than in 1970, let alone 1973. In that case, OPEC countries would be in a position to conserve their crude oil reserves without causing intolerable economic and political difficulties for major importing countries.

* * *

While the possibility of U.S. energy self-sufficiency by the mid-1980's has been generally recognized, and the preliminary case for mid-term European energy independence has been sketched, no one has yet been sufficiently ambitious to discuss the chances for Japanese energy self-reliance. The reasons are quite apparent: Japan has experienced rapid economic growth during the past two decades, and most of this growth has been fueled by imported petroleum and metallurgical coal. Moreover, Japan has no readily available indigenous energy resources comparable to Europe's North Sea oil and gas or America's coal and uranium. Conventional attitudes toward the possibility of Japanese energy independence are usually

based on the long-term development of nuclear fusion technology and solar energy, so that the timing of Japanese energy self-sufficiency--if it is feasible at all--is usually placed well after the year 2000.

From the outside looking in, one would expect most thoughtful Japanese observers to view the early transition from acute energy dependency toward relative self-sufficiency as being so important that great sacrifices would be justified to promote technological developments and industrial capital expenditures which expedite this transition. On the other hand, the numerous competing claims on Japanese capital and human resources and the countervailing pressures which support the status quo of petroleum and coal imports, together with the widespread perception on the part of the Japanese that an early transition toward energy self-sufficiency is unlikely, suggest that formulation of a Japanese policy of energy independence--let alone timely implementation of such a hypothetical policy--is not highly likely.

According to the most recent statistics, oil accounted for three-quarters (74.9%) of Japanese primary energy supply in fiscal 1972 (ending March 31, 1973) of which 99.7% was imported. The rest of Japan's energy supply was provided by coal (16.6%, of which two-thirds is imported), hydroelectric power (6.3%), natural gas (0.8%), nuclear energy (0.7%), and other sources (0.8%).* The high rate of economic growth sustained since the mid-1950's has caused the volume of energy demanded in Japan to outstrip the supply capability of domestic resources, producing the present extremely high rate of petroleum and coal import dependence. During the decade 1965-1975, as the Japanese economy expanded at an annual rate of over 10%, energy demand increased at the high rate of 12% per

* Data about Japan's energy situation was privately provided by the Tokyo Institute for Energy Economics.

year. It would not be an exaggeration to say that the Japanese economic miracle would not have occurred if inexpensive foreign oil and coal had been available.

The seemingly inevitable petroleum dependence problem, as represented in Tables 8.10 and 8.11, has prompted the central theme of Japanese Government energy policy: to secure and maintain the economic availability of oil supplies. One of the most important implications of this policy is that, politically, Japan will do little or nothing to offend her suppliers of oil (see Table 8.12). Japanese diplomacy in the Middle East, particularly since the Yom Kippur War, reflected this political imperative of accommodation to the wishes of key Persian Gulf states. Since Japan cannot use military force to guarantee her supply of imported petroleum, economic leverage must be applied in "carrot and stick" fashion to achieve Japan's primary energy policy objective. Consequently, oil diplomacy and petro-politics are likely to dominate the Japanese energy scene for at least another 15-20 years.

Table 8.10

JAPAN'S PRIMARY ENERGY SUPPLY, 1955-1971

	<u>1955</u>	<u>1960</u>	<u>1965</u>	<u>1971*</u>
Hydro	21.2	15.3	11.3	6.7
Nuclear	-	-	0.0	0.6
Coal	49.2	41.5	27.3	17.5
Domestic	44.8	34.4	19.1	6.3
Imported	4.4	7.1	8.2	11.2
Lignite	1.0	0.6	0.1	0.0
Petroleum	20.2	37.7	58.4	73.5
Domestic	0.6	0.6	0.4	0.2
Imported	19.6	37.1	58.0	73.3
Natural Gas	0.4	1.0	1.2	0.9
LNG	-	-	-	0.4
Charcoal	2.6	1.1	0.2	0.0
Firewood	5.4	2.8	1.5	0.4
Total	100.00	100.0	100.0	100.0
Domestic	76.0	55.8	33.8	15.1
Imported	24.0	44.2	66.2	84.9

Source: James C. Abegglen, Materials and Energy: Japan's Problems and Policies, prepared for the Chicago Council on Foreign Relations, January 1974, Boston Consulting Group.

Table 8.11

JAPAN'S PRIMARY ENERGY SUPPLY FORECAST, 1965-1985

		1935	1970	1975	1980	1985	Supply shares of primary energy (%)				
		(actual)					1966	1970	1975	1980	1985
Electricity	(10 ⁹ kWh)	77	85	157	314	530	11.3	6.7	8.3	11.5	14.7
Hydro.	(10 ⁹ kWh)	77	80	95	104	136	11.3	6.3	6.0	3.8	3.8
Nuclear	(10 ⁹ kWh)	-	5	62	210	394	-	0.4	3.3	7.7	10.9
Coal	(10 ⁶ kWh)	73	92	83	97	110	27.3	20.7	13.3	10.9	9.3
Domestic	(10 ⁶ tons)	55	41	20	20	20	19.1	8.1	2.9	2.0	1.5
Import	(10 ⁶ tons)	18	51	63	77	90	8.2	12.6	10.4	8.9	7.8
Petroleum	(crude oil equivalent, 10 ⁹ litres)	102	234	379	524	671	58.4	70.8	76.3	73.7	71.3
(For generating)		(14)	(44)	(66)	(69)	(57)	(7.5)	(13.2)	(13.3)	(9.7)	(8.1)
Natural gas	(10 ⁹ m ³)	2	2	2	2	2	1.2	0.9	0.4	0.3	0.2
L N G	(10 ⁶ tons)	-	1	6	18	30	-	0.4	1.7	3.6	4.5
Total	(10 ¹² kcal)	166	310	467	688	825	100.0	100.0	100.0	100.0	100.0

Source: Masao Sakisaka, "World Energy Problems and Japan's International Role," Energy Policy, September 1973, p. 100.

Table 8.12

JAPANESE PETROLEUM IMPORTS BY COUNTRY OF ORIGIN, 1972 AND 1973

	<u>Fiscal</u> <u>1972</u>	<u>First Half</u> <u>Fiscal 1973</u>
Iran	37.4	32.9
Saudi Arabia	16.7	18.3
Indonesia	13.8	15.3
Abu Dhabi	5.9	9.5
Kuwait	9.0	7.6
Neutral Zone	8.3	5.5
Brunel	2.5	3.1
Oman	2.9	2.2
Nigeria	1.7	1.9

Others, including Iraq, Dubai, USSR, PRC, Venezuela, and Libya, are each less than 1 percent for each period.

SOURCE: INDUSTRIAL BANK OF JAPAN.

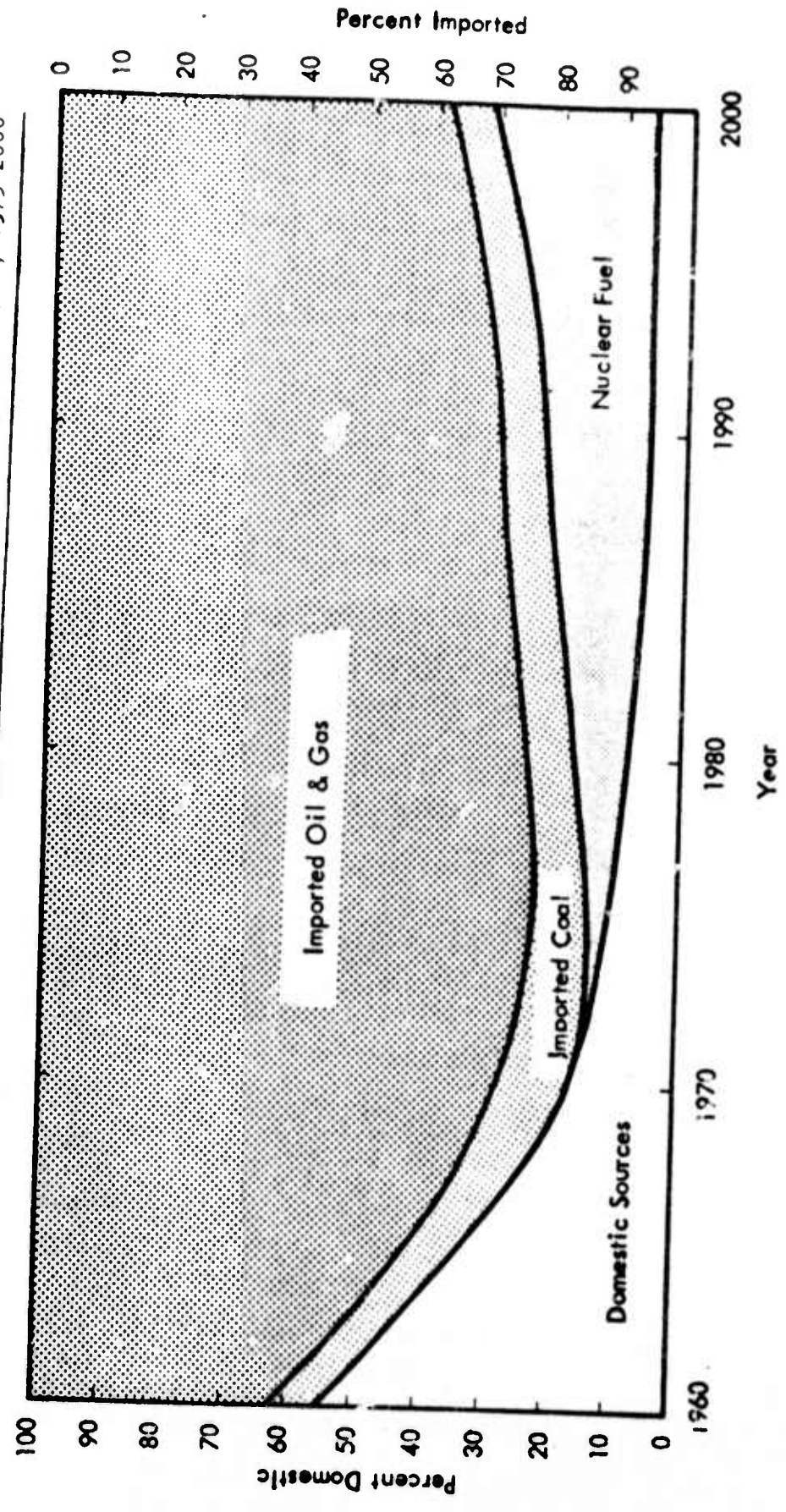
The logic is compelling that Japan must depend on someone for the foreseeable future, whether it be for energy fuels, food, or national security. Japanese fencing terminology is helpful in describing the nature of Japan's dependence on imported oil (and other commodities). The posture called happo-yabure implies "defenseless on all sides."

Japan's dependence on imports of raw materials, energy and food is so complete that policies attempting self-sufficiency in any of the key items appear unrealistic. Diversifying sources of supply, economizing on the use of raw materials and energy, stepping up efforts for increased production from indigenous resources, and building up emergency stocks of energy and food-- all these are feasible and should be pursued with seriousness. But the basic character of the heavy dependence for key items on overseas resources will not change.* (Emphasis added)

While some may find this attitude overly fatalistic, many analysts would agree that Japan is locked into an energy policy of making the best of happo-yabure and hoping that the long run holds something better. Hence, most projections of future Japanese energy supply resemble that given in Diagram 8.9.

* Saburo Okita, "Natural Resource Dependence and Japanese Foreign Policy," Foreign Affairs, Vol. 52, No. 4, July 1974, p. 723. Whether or not Okita's use of the term happo-yabure is shared by most Japanese is not known.

Diagram 8.9
Projected Distribution of Domestic and Imported Energy Sources for Japan, 1975-2000



Source: K. Dence, R. Ryan, and J. Schneider, Energy Demand and Resources of Japan, prepared by Science Applications, Inc. for the Advanced Research Projects Agency, RADC-TR-74-39, August 1973, in two volumes.

Insofar as the Japanese energy system is not rigid, it responds to various economic, technological, and political forces in ways which, if not always predictable, at least can be discussed and analyzed. While the core of Japanese energy policy can be described as happo-yabure, its periphery is filled with significant movements toward energy independence. In effect, Japan is gradually attempting to redress its "Indefensible" energy position by, for example, making large deals for liquefied natural gas (LNG) from Brunei, Indonesia, and Alaska, trying to establish a joint uranium enrichment venture in Australia, trying to accelerate the Japanese nuclear energy program now faced with growing public opposition similar to that in the U.S., and establishing the "Sunshine Project"--a long-term energy research and development program set up by the Ministry of International Trade and Industry (MITI) to promote technologies for utilizing solar energy, geothermal energy, synthetic natural gas, and hydrogen.

The official target for installed nuclear electric power generating capacity by 1985 in Japan has increased to 70-75 gigawatts (thousand megawatts) from 30 GWe in 1967 and 60 GWe in 1970. But, public opposition to nuclear power plants is growing quite strong, as exemplified by the history of Japan's first nuclear-powered ship, the Mutsu. After fishermen refused for two years to permit Mutsu reactor criticality in port, she began operation hundreds of miles offshore only to experience radiation leakage.* The adverse implications of the Mutsu fiasco for Japan's

*"Nuclear Vessel Drifts Off Japan," The New York Times, September 23, 1974.

accelerating nuclear energy program, particularly since the Government has won approval for only two nuclear plants out of nineteen that were planned during the last in 1973-FY, are fairly clear. Many Japanese would agree with the opinion of the editor of Technocrat, a monthly review of Japanese technology and industry, that it is dangerous to assume that nuclear (fission) energy will be available as petroleum supplies become more difficult to procure.

The recently established Sunshine Project appears to be a moderately well-considered attempt to provide Japan with a medium scale energy R&D program without committing large-scale technical and capital resources to pursue technologies which are likely to be developed in the U.S. and Europe.¹¹ The two most surprising aspects of the Sunshine Project are its scale--the initial budget for fiscal 1974 is 2,270,000,000 yen, or about \$8 million--which seems extremely small considering the current American energy R&D funding level of almost \$2 billion, and the noticeable absence of controlled nuclear fusion research.

As exemplary of the type of objectives associated with the Sunshine Project, the target for development of geothermal energy in Japan by the year 2000 is about 50 gigawatts, representing 15% of Japan's projected electric power demand and 6% of Japan's projected total energy demand in

* Japan's Sunshine Project, Ministry of International Trade and Industry, BI-3(74-9), March 1974. Also see Jin Shimada, "Japan's Sunshine Project": The Quest for New Forms of Clean Energy," Technocrat, February 1974, and Tsuneo Momota, "The Sunshine Project Development Program of New Clean Energy Technology in Japan," in Technology Assessment--Will It Help Resolve the Energy-Environment Conflict?, U.S.-Japan Joint Symposium held at The MITRE Corporation, McLean, Va., Feb. 5-6, 1974 (co-sponsored by MITRE and Japan Industrial Planning Association, report published March 1974).

2000. Indeed, Japan is volcanic and a traditional geothermal country with vast geothermal potential, perhaps as high as 140 gigawatts--as estimated by the Japan Natural Resources Committee in 1973.* The more than 17,000 hot springs in Japan have long been significant as recreational and medicinal centers; the clash of large-scale exploration and development of Japanese geothermal resources with existing utilization of hot springs partly explains the comparatively slow development of geothermal energy in Japan as in Europe. Recently, Japan became the main supplier for geothermal power plant equipment throughout the world. It certainly appears that the geothermal portion of the Sunshine Project is likely to be successful and that the role of geothermal energy in Japan will be a major one.

The name of the Sunshine Project, of course, indicates the emphasis placed on the future utilization of solar energy in Japan. The projected contributions of solar energy and the other energy resources subsumed by the Sunshine Project are given in Diagram 8.6, where it can be learned that solar energy will probably not make a major contribution to Japanese energy supply until the end of this century, with the exception of solar heating and cooling of buildings.

*Joseph Barnea, "Keynote Address," MITRE Symposium volume, March 1974.

Diagram 8.10

PROJECTED CONTRIBUTIONS OF THE SUNSHINE PROJECT, 1980-2000

Necessity for the Development of Energy Production Technologies		Projected contribution of the Sunshine Project			Remark
		1980	1990	2000	
Limitations on the supply of resource	Depletion of oil, etc.	Geothermal energy	Solar heat air conditioning SNG	Solar heat power generation Hydrogen	
Stabilized supply of energy	Emergence of economic nationalism (Oil production curtailment by OPEC countries, etc.)	Geothermal energy	Solar heat air conditioning SNG	Solar heat power generation, etc. Hydrogen	Diversification of sources of energies and distribution of sources of supply
Environment problem	Particulates, SO _x , NO _x	Geothermal energy	Solar heat air conditioning SNG	Solar heat power generation, etc. Hydrogen	
	Problems of thermal pollution and the greenhouse effect by CO ₂	Geothermal energy	Solar hydrogen		

Source: MITI, "The Sunshine Project," 1974.

MITI's long-range plan for solar energy R&D is shown in Diagram 8.11

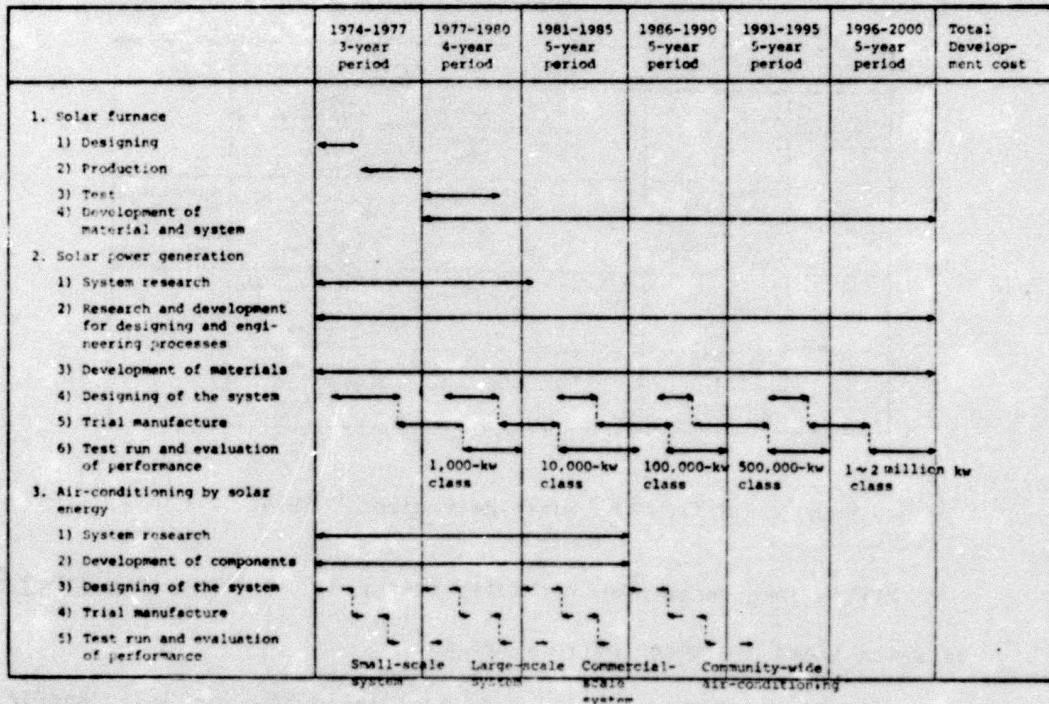
in which there are three primary tasks:

- 1) solar furnace, possibly for production of electricity and/or hydrogen;
- 2) solar power generation, including thermal, thermionic, and photovoltaic techniques to produce electric power;
- 3) solar heating and cooling systems for residential and commercial buildings.

If the solar energy R&D portion of the Japanese Sunshine Project evolves into a large-scale program having good management, engineering talent, and adequate financial support, MITI's time schedule for reaching development objectives might be met. Consequently, Japan has an opportunity to become one of the first countries in the world to utilize solar energy on more than a small-scale basis.

Diagram 8.11

JAPAN'S LONG-RANGE PLAN FOR SOLAR ENERGY R&D, 1974-2000



Source: MITI, "The Sunshine Project," 1974.

It is fairly clear that if there is a way for Japan to get off the oil hook, it should find it and work intensively toward energy independence. The only credible path toward Japanese energy self-sufficiency is large-scale energy R&D oriented toward renewable and/or semi-infinite sources such as solar, geothermal, and nuclear fusion. Japan's Sunshine Project, it is hoped, will become a bold attempt to develop and use commercially various types of geothermal and solar energy applications. As of this date, funding levels for different programs within the Sunshine Project have not yet been established; unless large amounts of financial

and engineering resources are dedicated toward timely achievement of energy development objectives, there is little chance for Japanese energy independence on a meaningful time-scale. Similar remarks can be made concerning Japanese plans for fusion R&D.

If the United States can afford to spend \$2 billion annually on energy R&D--much of which is allocated to nuclear fission, an energy source of dubious utility for long-term energy supply in both the U.S. and Japan--Japan, with its much larger and more vulnerable dependence on imported oil, might afford on the order of \$1 billion per year for energy R&D to get itself off the oil hook as soon as possible. Consideration of the current Japanese industrial base and related technological thrust suggests that development of geothermal energy, laser fusion research, and ocean energy development are areas of great potential. If Japan invests sufficiently and wisely in goal-directed energy R&D, Japanese energy independence will gradually become a reality during the next ten to fifteen years. Should this occur, the policy of energy happo-yabure might become a bad memory from Japan's post-war past, and the nature and tone of Japan's relationships with other countries might be considerably altered.

Independence From insecurity

The primary security issue of any international energy policy is to determine whether or not to import.* The central criterion, of course, is reflected in the level of import-dependence a nation can or wishes to achieve. One tradeoff is between the economic benefits accruing from free trade and the political benefits that self-sufficiency provides. As is often the case with such tradeoffs, an optimal point of dependency will probably be selected--that which is most favorable on balance. The residue of imports thus left leads to a secondary security criterion--that of diversification. The tradeoff here is between maximizing the number of trading partners so as to be least vulnerable to any particular individual country and minimizing this number so as to depend on the few most reliable of the potential exporters. Again, an optimum policy would probably choose a mixed oil-import dependence configuration which would reconcile flexibility with reliability.

Early in 1973, when it was apparent that growing American reliance on OAPEC oil was complicating the United States position in a diplomatic crisis, Hudson Institute recommended that the country disengage itself from this

*The Office of Emergency Preparedness Report on Crude Oil and Gas Price Increases of November 1970 summarized the criteria for national security as: First, the need to guarantee supplies sufficient to meet the need of U.S. military forces and defense industries; second, the need for sufficient supply of crude oil and its derivations to meet essential civilian demands, and sustain economic growth; third, the need to foster exploration and development so as to ensure against a depletion of reserves to an extent which would jeopardize the capability of the petroleum industry to meet future demands without undue reliance on foreign sources of questionable reliability.

insecure source.* It was argued at the time that in light of the then expected restrictions in production within the OAPEC group the United States could satisfy all its import needs (using the NPC-III estimates) while at the same time it could render itself immune to putative and/or actual Arab oil pressure. Table 8.13 gives the projections then offered. Expecting an Arab oil freeze by the end of 1973, it was demonstrated that nothing more than a shift from the Arab Middle East to non-Arab sources, say Iran, would have accomplished the objective of U.S. invulnerability to the Arab oil weapon.

Table 8.13

1980 OECD OIL MOVEMENTS--ASSUMING CURRENT ENERGY TRENDS
AND ARAB FREEZE AT 1973 LEVELS*

<u>FROM</u>	<u>TO:</u>	<u>U.S.</u>	<u>W. EUROPE</u>	<u>JAPAN</u>	<u>TOTAL</u>
SAUDI ARABIA	-	-	"	8.1	8.1
KUWAIT (+NEUTRAL ZONE)	-	-	3.5	-	3.5
UNITED ARAB EMS.	-	-	2.0	.3	2.3
OTHER GULF STATES	-	-	1.8	-	1.8
LIBYA (+EGYPT)	-	-	2.2	-	2.2
IRAQ	-	-	1.9	-	1.9
ALGERIA	-	-	1.2	-	1.2
IRAN	4.1	-	6.4	-	10.5
INDONESIA	-	-	-	2.6	2.6
NIGERIA	3.5	-	-	-	3.5
VENEZUELA	3.0	-	-	-	3.0
TOTAL		10.6	19.0	11.0	40.6

* In 10⁶ b/d.

SOURCE: Arad and Smernoff, "Technical Progress Report for ISA Energy Study," 1973.

*See "Technical Progress Report for ISA Energy Study," by Uzi B. Arad and Barry J. Smernoff, HI-1877-D, September 17, 1973. That report, written before the embargo, took the position that,

"The international ramifications of the energy situation are quite complex. Exacerbating this complexity is the fact that even with a relatively rich arsenal of foreign policy leverages, no clear-cut single initiative is likely to stabilize the currently deteriorating

There are at least two interrelated reasons for a preferential oil-import policy for non-OAPEC oil. In the first place, historically OAPEC oil has been demonstrably the least secure and most prone to political manipulations. The more basic reason, however, is in the fact that the OAPEC group is comprised of "conservationist" and "residual" suppliers who, by virtue of their relatively low export dependence, are much better equipped than their OPEC partners to engage in supply manipulations detrimental to American security. The rationale for a preferential oil-import policy is anchored in the particular interdependent relationships which have recently characterized the world oil market. A laissez-faire import policy would have exactly the opposite effect, since OAPEC sources have traditionally been the American majors' principal field of operation. Governmental direction, then, is clearly in order if the country is to be extracted from an uncontrolled state of insecure dependence.

The notion that the goal of secure oil supplies and balanced interdependence is best served by establishing import dependencies with nations having high export dependencies can also be derived from a political perspective in light of the experience of their repeated denial by nations possessing low export-dependence. George F. Kennan, writing during the 1973 embargo, expected that upon the lifting of the embargo against the

international energy system. Rather, only by the adoption of a multidimensional policy package, stressing the economic, diplomatic as well as military options available to the United States, can we expect to cope successfully with the issues of energy and security.

"In the final report, a case will be made that even a modest effort along these lines could suffice to minimize the risks and vulnerabilities involved in our projected dependence on foreign energy sources. Specifically, the course of action which we consider to be both desirable and feasible is that which emphasizes the following guidelines: first, a commitment to relative energy independence. Second, if and while importing from foreign suppliers, adherence to the criterion by which Western Hemisphere imports are preferred over Eastern Hemisphere imports, within the latter category--non-Arab imports are to be preferred over Arab imports." (p. 7.)

United States, the country 'would not gratefully accept the renewed shipments.'^{*} Noting that the Administration was inexplicably predisposed to accept a return to OAPEC oil (rather than reshuffle suppliers and emerge from the embargo crisis not only victorious but with a more secure supply base), he added,

"I would have thought that if events of recent weeks have taught us anything at all, it would have been the danger of allowing ourselves to remain unduly dependent upon foreign suppliers for raw materials vital to the continued prosperity of our society, especially when it is a case of suppliers who are obviously not inclined to acknowledge the responsibility they assume when they permit great industrial nations to become dependent upon them in this manner, and who feel they have no reason to respect our interests."

Kennan's conclusion was that,

"we can be grateful that we were kicked into such a beginning...but if faced with offers to resume the sort of shipments of which we are now being so usefully (for us) deprived, let us thank [the Arabs] very much and tell them frankly that we have ways of assuring the continued functioning of our national economy that are less costly in terms of our international position, of the independence of our national policy, and of our own self-respect."^{**}

Adelman's economic reasoning leads to a conclusion no different from Kennan's political intuition. On the question of future import policies, Adelman writes:

"This country should immediately take steps to separate itself completely from Arab oil sources. Once we are beyond the reach of oil cutoffs, they can no longer pressure us. Then there would be no profit for the Arabs in tormenting Europe and Asia--and risking retaliation--as an indirect means of pressuring the U.S. Our overseas imports before the cutback were about 6 million barrels per day, and future imports for a time will be larger, but they will come nowhere near the consensus of 10-12 million barrels per day

^{*}"Thank you, no!" Op-ed article in The New York Times, December 2, 1973.

^{**}The New York Times, December 2, 1973.

held a short time ago, because of the present U.S. drive for greater self-sufficiency. Production of the four largest non-Arab oil exporters will grow substantially beyond their current 13 million barrels per day....Professor Richard Gardner of the Columbia University Law School embarrassed our government by pointing out that Saudi Arabia has violated its 1933 treaty with us providing for mutual most-favored-nation treatment. We need only tell the Saudis their embargo on shipments to us is henceforth permanent, their status having been canceled by their own act."^{*}

The RAND Corporation also came to advise a policy similar to that recommended by Hudson Institute.^{**} Specifically, both Hudson and RAND proposed that the U.S. adopt a discriminatory oil import policy which would emphasize the element of dependability and security of supplies. Thus, they have recommended that Western Hemisphere oil be preferred to Eastern Hemisphere oil, and that non-Arab oil be preferred to Arab oil.

In the November 2, 1974 issue of Middle East Money (MEMO), a Lebanese publication, the following item appeared:

U.S. RELYING ON LESS ARAB OIL

"The United States is lessening its dependence on Arab oil imports in favour of non-Arab sources. Figures just released in Washington show that Canada remains the primary source of imported oil, but that Nigeria and Iran have replaced Saudi Arabia and Venezuela as the second and third largest suppliers. The U.S. imports about six million barrels of oil per day.

"In the first eight months of this year, Canada supplied 24.7 per cent of American imports, down from its 35.8 per cent share in 1972. The Canadian Energy Minister declared last week that Canadian crude exports to the U.S. would keep declining until they stop completely in the early 1980s.

"Nigeria, with 17.5 per cent of the U.S. import market, holds second place. Iran is third with 15.5 per cent, and Venezuela falls from second to fourth with 11.2 per cent. Total Arab sales make up 16.3 per cent of American imports, with Saudi Arabia responsible for 8.3 per cent and Algeria for 5.3%."

^{*}M.A. Adelman, "Foreign Oil: A Political-Economic Problem," Technology Review, March/April 1974, p. 47.

^{**}Horst Mendershausen, "Enlisting Reliable Sources of Supply: Persian Gulf and Elsewhere," RAND Corporation, WN-8582-ARPA, January 1974.

On first reading it seemed that the Administration was at long last applying the criterion Hudson has been suggesting. MEMO's interpretation, however, is misleading because the months covered include the January-March embargo period. Post embargo data, which compare a six-month period prior to the embargo with a six-month period subsequent to its lifting (allowing for the time-lag analyzed in Chapter 5) reveals interesting new trends in American import patterns. First and foremost, the share of Arab crude in U.S. oil imports has indeed dropped from 31.5 percent in 1973 to 26.8 percent in 1974. That alone would have sufficed to indicate a meaningful change of policy and a growing awareness to security concerns. Figures in Table 8.14 suggest a certain consistency in the shifts of import trends. Thus, not only was dependence on OAPEC reduced by as much as 5 percent, direct vulnerability to OAPEC's low absorbers, the countries most likely to disrupt supplies in the future, fell even more sharply by approximately 7 percent. This is a rather significant improvement considering the sorry fact that total imports continued their climb and that traditionally reliable Western Hemisphere suppliers, such as Canada and Venezuela, had lowered their exports to the U.S. by more than 7 percent. Undeniably, had more Canadian and Venezuelan crude been available, the share coming from the Arab Middle-East would have been proportionately smaller. Nevertheless, the diversification effort into hitherto-neglected Eastern Hemisphere sources such as Nigeria, Iran, and Indonesia is surely appropriate taking into consideration their being highly export-dependent and therefore more suitable partners than the low export-dependent sheikdoms of the Persian Gulf.

Table B.14
 U.S. IMPORTS OF FOREIGN CRUDE OIL - MAY-OCTOBER (INCL.) 1974, 1973
 (thousands of barrels)

	MAY	JUNE	JULY	AUGUST	SEPT.	OCT.	MAY-OCTOBER (INCL.)	
							BARRELS	PERCENT
1974								
Algeria	7,175	10,531	10,110	5,410	7,412	8,645	49,283	6.8
Egypt	1,044	-	539	-	554	-	2,137	0.3
Iraq	-	-	-	-	-	-	-	-
Kuwait	28	130	106	1,024	-	-	1,288	0.2
Libya	120	-	-	-	492	-	612	0.1
Oman	-	-	-	-	236	-	236	-
Qatar	-	358	1,099	296	686	2,002	4,441	0.6
Saudi Arabia	17,270	19,507	17,041	18,096	15,539	22,494	109,947	15.1
Tunisia	1,329	1,286	517	481	250	294	4,157	0.6
United Arab Emirates	2,640	4,763	3,772	6,174	3,369	1,803	22,521	3.1
Arab Subtotal							194,622	26.8
Angola	1,568	1,856	1,874	1,554	1,254	1,567	9,673	1.3
Bolivia	297	270	347	300	298	-	1,512	0.2
Canada	28,515	20,918	22,042	30,084	22,669	22,652	146,880	20.2
Colombia	-	-	-	-	-	-	-	-
Congo	-	-	-	-	-	-	-	-
Ecuador	2,023	2,272	487	507	686	1,415	7,390	1.0
Gabon	744	665	307	1,341	1,543	2,504	7,104	1.0
Indonesia	8,666	7,464	10,402	6,385	9,375	7,183	49,475	6.8
Iran	17,890	16,287	17,547	14,914	12,895	11,810	91,293	12.6
Israel	-	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	216	216	-
Mexico	-	-	-	-	-	-	-	-
Nigeria	22,237	21,553	26,710	27,279	22,289	21,819	141,887	19.5
Norway	-	332	-	-	-	-	332	-
Trinidad	2,307	2,156	2,449	3,107	1,897	1,693	13,609	1.9
Venezuela	7,286	7,409	11,486	11,634	12,513	11,999	62,227	8.6
TOTAL	121,139	117,747	126,835	121,634	113,907	118,096	726,320	99.9
1973								
Algeria	5,078	4,595	4,599	3,508	3,715	3,690	25,185	4.2
Egypt	612	731	653	953	-	782	3,731	0.6
Iraq	307	-	-	343	515	364	1,529	0.3
Kuwait	1,550	1,332	482	1,702	1,334	1,724	8,124	1.4
Libya	4,598	2,060	3,599	4,928	4,603	5,095	24,883	4.1
Oman	-	-	-	-	-	-	-	-
Qatar	-	185	-	366	1,222	543	2,316	0.4
Saudi Arabia	11,359	13,030	19,958	20,142	17,967	23,075	105,531	17.6
Tunisia	677	1,302	205	504	244	672	3,604	0.6
United Arab Emirates	1,791	2,393	3,169	1,973	2,652	1,920	13,898	2.3
Arab Subtotal							188,801	31.5
Angola	994	1,021	1,851	2,491	621	2,901	9,879	1.6
Bolivia	-	-	-	-	196	400	596	0.1
Canada	3,080	28,858	29,736	23,132	29,951	29,786	144,443	24.0
Colombia	-	-	-	-	-	-	-	-
Congo	-	-	-	-	-	-	-	-
Ecuador	544	1,329	1,188	1,934	986	1,523	7,504	1.2
Gabon	-	-	-	-	-	-	-	-
Indonesia	7,119	7,436	7,930	5,181	7,470	4,798	39,934	6.6
Iran	7,895	7,733	7,108	7,941	6,165	7,544	44,386	7.4
Israel	209	-	-	-	-	-	-	-
Malaysia	-	-	-	-	-	-	-	-
Mexico	-	-	-	-	237	5	242	-
Nigeria	12,869	12,302	14,926	14,608	12,278	15,976	82,959	13.8
Norway	-	-	-	-	-	-	-	-
Trinidad	1,960	1,916	967	2,046	1,810	1,991	10,690	1.8
Venezuela	10,912	10,390	12,159	13,164	12,151	13,113	71,889	12.0
TOTAL	99,654	96,613	108,530	111,368	104,117	115,905	601,323	100.0

SOURCE: U.S. Bureau of Mines figures.

The Church report also made the observation that OPEC members can be divided into three groups, taking into account population, GNP, saving and investment factors: ^{*} Group I (Saudi Arabia, Kuwait, Libya, Qatar, United Arab Emirates); Group II (Iran, Algeria, Iraq, Ecuador, Venezuela); and Group III (Indonesia, Nigeria). The report accordingly recommended that U.S. import sources be prioritized in the following geographical order: 1). domestic; 2). non-OPEC (excluding Communist nations); 3). OPEC countries belonging to Group III; 4). other OPEC nations. In the same vein, in a recent report prepared for the Department of Defense, RAND's Horst Mendershausen and Richard Nehring offered the same formula for future import diversification:

"The objective of a precautionary import policy would be to increase the share of U.S. oil imports from non-Arab sources during the remaining years of this decade. That objective would oblige the government to articulate a preference for the development of oil imports from Western Hemisphere and non-Arab Eastern Hemisphere sources within the frame of a policy that seeks to keep total oil imports in bounds....The precautionary import policy would therefore aim at further source diversification, not at great import increases from any source."^{*}

A precautionary import policy, in itself, could be either a separate policy for the management of energy interdependence for years to come or an integral part of a drive towards greater self-reliance and energy independence. In the latter vein, energy independence could appear to mean "independence from,"--that is, from unreliable suppliers. A natural course to follow in this direction would be, first, a disengagement from OPEC oil; second, disengagement from OPEC oil. The precautionary policy

^{*} Church report, p. 7.

^{**} See their "Protecting the U.S. Petroleum Market Against Future Denials of Imports," RAND Corporation, R-1603-ARPA, October 1974, p. 75.

thus appears compatible with the long-term goal of energy independence, about which more will be said later. Under a precautionary import policy, the United States would choose a preferential or discriminatory international energy policy. The ingredients of a discriminatory policy would be: a) preference for Western Hemisphere sources; b) preference for non-OAPEC sources over OPEC sources; c) preference for non-OAPEC sources over OAPEC sources; d) preference that each individual country supply less than 10 percent of oil requirements. These guidelines, as part of Project Independence, would be complemented and enhanced by increases in American petroleum production, energy substitution and conservation. The range of the dual impact of various levels of import requirements depending on the objectives of Project Independence and a discriminatory oil import policy is illustrated in tabular form below. High import profile, as a base case, is given in Table 8.15. It is assumed here that demand for imports would climb to 10 million barrels daily by 1979, rather than decline--hence, a failure or abandonment of the goal of self-sufficiency.

Table 8.15

SUPPLY OF FOREIGN OIL BY SOURCES--
ALTERNATIVE IMPORT POLICIES FOR HIGH IMPORT REQUIREMENTS

	NON-DISCRIMINATORY						DISCRIMINATORY					
	1975		1978		1980		1975		1978		1980	
	*	%	*	%	*	%	*	%	*	%	*	%
OAPEC	3.5	20.0	4.5	22.5	5.0	23.0	2.5	14.0	2.5	12.5	1.0	5.0
SAUDI ARABIA	2.0	11.5	2.5	12.5	3.0	14.0	1.0	5.5	1.0	5.0	.5	2.5
KUWAIT	1.0	6.0	1.0	5.0	1.0	4.5	1.0	5.5	1.0	5.0	.5	2.5
OTHER	.5	2.5	1.0	5.0	1.0	4.5	.5	3.0	.5	2.5	-	-
IRAN	.5	2.5	1.0	5.0	1.0	4.5	1.0	5.5	1.5	7.5	1.5	7.0
INDONESIA	-	-	-	-	-	-	.5	3.0	1.0	5.0	1.5	7.0
NIGERIA	-	-	.5	-	.5	2.0	.5	3.0	1.0	5.0	1.5	7.0
CANADA	1.0	6.0	1.0	5.0	1.0	4.5	1.0	5.5	1.0	5.0	1.0	5.0
VENEZUELA	2.0	11.5	2.0	10.0	2.0	9.5	1.5	8.5	2.0	10.0	2.0	9.5
OTHER	.5	2.5	.5	2.5	.5	2.0	.5	3.0	.5	2.5	1.0	5.0
IMPORT DEMAND	7.5	43.0	9.5	50.0	10.0	46.5	7.5	42.5	9.5	50.0	10.0	46.5
OIL DEMAND	17.5	100.0	20.0	100.0	21.5	100.0	17.7	100.0	20.0	100.0	21.5	100.0

*MILLION BARRELS PER DAY

Evidently, a deliberately discriminating import policy could reduce American vulnerability to OAPEC from 22.5 percent to 12.5 percent by 1978 and to 5 percent by 1980. In other words, even in the "worst case assumption" of a high need for imports, a discriminatory policy could shield the United States within three years. In the absence of such a policy, the drift of events as reflected in import trends prevailing in the market under the majors' policies would have more than doubled American vulnerability to OAPEC relative to 1973.

A much more likely demand schedule is portrayed in Table 8.16.

Table 8.16

SUPPLY OF FOREIGN OIL BY SOURCES--
ALTERNATIVE IMPORT POLICIES FOR MEDIUM IMPORT REQUIREMENTS

	NON-DISCRIMINATORY						DISCRIMINATORY					
	1975		1978		1980		1975		1978		1980	
	*	%	*	%	*	%	*	%	*	%	*	%
OAPEC	3.0	17.0	4.0	20.0	3.5	16.5	2.5	14.0	2.0	10.0	.5	2.5
SAUDI ARABIA	1.5	8.5	2.0	10.0	2.5	12.0	1.0	6.0	1.0	5.0	.5	2.5
KUWAIT	1.0	6.0	1.0	5.0	1.0	4.5	1.0	6.0	1.0	5.0	-	-
OTHER	.5	2.5	1.0	5.0	-	-	.5	2.5	-	-	-	-
IRAN	.5	2.5	.5	2.5	1.0	4.5	1.0	5.5	1.5	7.5	1.5	7.0
INDONESIA	-	-	-	-	-	-	-	-	.5	2.5	1.0	5.0
NIGERIA	-	-	.5	2.5	.5	2.0	.5	2.5	1.0	5.0	1.5	7.0
CANADA	1.0	6.0	1.0	5.0	1.0	4.5	1.0	6.0	1.0	5.0	1.0	5.0
VENEZUELA	2.0	11.5	2.0	10.0	2.0	9.5	1.5	8.5	2.0	10.0	1.5	7.0
OTHER	.5	2.5	.5	2.5	-	-	.5	2.5	.5	2.5	1.0	5.0
U.S. IMPORT	7.0	40.0	8.5	42.5	8.0	37.0	7.0	40.0	8.5	42.5	8.0	37.0
OIL DEMAND	17.5	100.0	20.0	100.0	21.5	100.0	17.5	100.0	20.0	100.0	21.5	100.0

*MILLION BARRELS PER DAY

In this intermediate scenario, American import requirements increase to 8.5 million barrels per day by 1978, then they decline slightly to 8 million barrels daily by 1980. The implication of such progress in Project Independence is that even with no preferential policy, there is a trend towards a more acceptable situation in 1980. Nonetheless, a preferential policy makes a difference, and under this scenario virtual invulnerability to OAPEC can be reached by 1976 or so, and import vulnerability is further minimized toward the end of the decade. Thus, for 1978, the U.S. could diminish its vulnerability from a probable 20 percent to an acceptable 10 percent if it adopted a preferential policy.

Lastly, only under the most optimistic scenario of American import needs, as shown in Table 8.17, a preferential policy would be needed only for the short run. Assuming the objectives of Project Independence are almost entirely achieved, U.S. imports of foreign oil would then remain

level (in absolute terms) over the next few years, then decline to 4.5 million barrels per day by 1980.

Table 8.17

SUPPLY OF FOREIGN OIL BY SOURCES--
ALTERNATIVE IMPORT POLICIES FOR LOW IMPORT REQUIREMENTS

	NON-DISCRIMINATORY						DISCRIMINATORY					
	1975		1978		1980		1975		1978		1980	
	*	%	*	%	*	%	*	%	*	%	*	%
OAPEC	2.5	14.0	2.5	12.5	.5	2.5	1.5	8.5	-	-	-	-
SAUDI ARABIA	1.5	8.5	1.5	7.5	.5	2.5	1.0	6.0	-	-	-	-
KUWAIT	1.0	6.0	1.0	5.0	-	-	.5	2.5	-	-	-	-
OTHER	-	-	-	-	-	-	-	-	-	-	-	-
IRAN	.5	2.5	.5	2.5	1.0	4.5	.5	2.5	1.0	5.0	-	-
INDONESIA	-	-	-	-	-	-	-	-	.5	2.5	-	-
NIGERIA	-	-	-	-	-	-	.5	2.5	1.0	5.0	1.0	4.5
CANADA	1.0	6.0	1.0	5.0	1.0	4.5	1.0	6.0	1.0	5.0	1.0	4.5
VENEZUELA	2.0	1.5	2.0	10.0	2.0	9.5	1.5	8.5	2.0	10.0	2.0	9.5
OTHER	-	-	-	-	-	-	.5	2.5	.5	-	.5	2.5
TOTAL IMPORTS	6.0	34.0	6.0	30.0	4.5	21.0	6.0	34.0	6.0	30.0	4.5	21.0
TOTAL U.S. OIL DEMAND	17.5	100.0	20.0	100.0	21.5	100.0	17.5	100.0	20.0	100.0	21.5	100.0

*MILLION BARRELS PER DAY

Such a course of events would satisfy the security criteria of a preferential policy even without its formal implementation within three to four years. The utility of a preferential policy, however, lies in that it would expedite relative invulnerability to the point of attaining it in less than a year. Instead of having some 12.5 percent of the nation's oil supply exposed to potential OAPEC denial, the application of preference guidelines could create an even more favorable condition almost immediately and arrive at a state of total independence from Persian Gulf and Arabian oil by 1980. The extent of defense against future OAPEC supply interruptions offered by a discriminatory import policy can perhaps be appreciated by noting that, should another Arab disruption occur in 1978, under the worst import demand conditions a discriminatory

policy would cut import vulnerability by approximately 45 percent, as against a laissez-faire posture; under intermediate and most plausible import demand conditions, by 50 percent; and under an optimistic import demand scenario, import vulnerability would be eliminated altogether-- i.e., by 100 percent. A discriminatory oil import policy, therefore, implies that the United States would be at worst as vulnerable as it was in 1973 and at best far less so, irrespective of the extent to which Project Independence is successful in closing the gap between domestic energy supply and demand.

* * *

The implementability of a precautionary import diversification policy raises several questions. The very desirability of such a program should be evaluated against the possibility that it might sacrifice cheaper sources of supply. Similarly, the feasibility of the program depends upon 1) the ability to induce preferred suppliers to produce sufficiently to meet American demand; and 2) the concrete mechanisms for articulating import preferences.

It is arguable that a serious consideration of each of these factors does not lead to a rejection of the preferential formula. The price factor, for instance, is irrelevant insofar as non-OAPEC tax-paid costs or buy-back prices are not significantly different from OAPEC prices. While it is indeed true that the marginal cost of production in most OAPEC countries is on the average cheaper than in other OPEC countries, such difference is for all practical purposes irrelevant to consumers. In the past, the major oil companies absorbed all production cost advantages,

and in the future--along with the nationalization of the production stage--the oil exporting countries can be expected to benefit from these advantages by pricing oil in line with world prices. Another possible price handicap of the preferential import program has to do with OAPEC's price-depressing option which is a by-product of the same conditions which make its supply insecure. While OAPEC can force prices down by increasing production and flooding the market, the result is not likely to be two-tiered market prices but simply a market in which OAPEC exercises a price-leadership role, thus reducing non-OAPEC oil prices as well.

There obviously exists one possible scenario whereby OPEC as a cartel disintegrates and producer countries begin to undercut each other and compete for larger market shares. From such a development a precautionary import policy could emerge, putting the United States at a competitive disadvantage vis-a-vis other oil consumers in the industrialized world. The likelihood of such a development, however, is not high and the establishment of a price-floor would have the effect of preventing a collapse in OPEC prices.

Another exception could be the possibility of huge bilateral deals between OAPEC and the United States in which the former granted exceptionally lower prices than other sources. The likelihood of such an arrangement, bearing in mind the fate of Yamanl's 1972 proposal, is far from high, for OAPEC or certain of its individual members would have to offer substantial discounts to compensate for the undeniable unreliability of their oil supply. It can be concluded, therefore, that, since an OPEC breakup or massive bilateral deals with the Arabs do not appear imminent;

and since a precautionary import policy would be flexible enough not to stand in the way of the United States getting whatever is the cheapest oil on the market if it so desired, then such a policy could not be faulted by an assertion that it will necessarily lead to higher import policies.

The feasibility requisites are equally surmountable. The first potential difficulty is the degree to which production in favored countries would be amenable to shifts in American import needs as necessitated under the precautionary policy. The second difficulty has to do with the extent to which such shifts would lead to direct competition between the United States and other consumers harboring similar preferences for non-OAPEC oil.

The sources to be favored by the precautionary policy would be Western Hemisphere sources such as Canada and Venezuela, and non-OAPEC Eastern Hemisphere sources such as Indonesia, Nigeria and Iran. These sources, to be sure, have traditionally been supplying the bulk of U.S. crude and product imports--84 percent in January through October 1973. The trouble is that of these countries, both Canada and Venezuela, the geographically proximate sources, seem to be resistant to U.S. efforts to increase imports or even to maintain them at present levels. Thus, it is possible that of 3 million barrels per day demanded by a precautionary import policy under the intermediate scenario in 1978 (Table 8.16), only 2 million barrels would be forthcoming if severe conservationist policies are followed in these two countries. The deficiency of 1 million barrels per day, however, could be more than closed by intensified imports from the Eastern Hemisphere.

The United States can expect, therefore, a trend of increasing dependence on Eastern Hemisphere suppliers, but this need not signify greater dependence on OAPEC. Nigeria, Indonesia, and Iran are all much more suitable suppliers. The fact that American majors had such a stake in Saudi oil caused the United States to neglect the rapidly expanding Iranian export shares.*

The Saudi Arabians, on their part, see things differently and do not hide their intention to vigorously penetrate the American market. The explicit assumption underlying their plan of projected Saudi Arabian oil supplies, revealed in September 1974,** has been that "Saudi Arabia will capture 50 percent of the growing U.S. import market." When measured against Saudi penetrations of U.S. import needs, the amount to be exported to the U.S. would increase from 1,593,000 barrels per day in 1975, or 18.6 percent of total U.S. imports, to 2,758,000 barrels per day in 1978, or 25.3 percent share of total U.S. imports. Assuming U.S. imports to stabilize at such a level (between 10 million and 11 million barrels per day), the Saudis are indeed aiming at capturing one-half of the total import growth, thus securing for itself one-fourth of the total U.S. petroleum market. This, in brief, is the essence of the Saudi strategy of interdependence. Indeed, Sheik Yamani presented his plan to the Rotary Club in Chicago under the heading "Adjusting to Interdependence." Two salient facts stand out from this strategy. First, the Saudi government apparently is still adhering to its 1972 bilateral scheme to secure to itself the

*For an elaboration on this, see "The Arabian Fantasy," by Christopher T. Rand in Skeptic, Special Issue No. 5, January 1975, pp. 17-20.

**See the supplement to the 27 September 1974 Middle East Economic Survey.

American oil market. Secondly, the Saudi plan assumes U.S. import requirements which are consistent with the NPC's relatively pessimistic pre-1973 scenario. It is quite astonishing to see the Saudis relying in their plans on a prediction which assumed for all practical purposes a total failure of the U.S. drive to greater self-sufficiency, even at high oil prices. That Saudi Arabia's ARAMCO partner, Exxon Corporation, shares this view, makes one fear if not conspiracies, the self-fulfilling nature of gloomy predictions.

Saudi concern for a secured market, however, need not be a primary consideration in American energy policymaking. In fact, Mendershausen's comment that "the U.S. Government probably made no mistake when it failed to accept Sheik Yamani's proposal of a preferential U.S.-Saudi oil supply relationship proffered in September 1972."* is as valid now as it was in 1972. The essence of a precautionary policy would, of course, be that it would be pursued with national rather than corporate interests in mind. That these three Eastern Hemisphere countries could export to the U.S. approximately one-third of their 1979 production is clear. The implication, however, is that such an American preference would place it on a competitive course with Europe and Japan, which preceded the United States in favoring non-OAPEC sources to the extent possible. The operation of American companies in Indonesia and Nigeria could give the United States a certain advantage over its competitors, while Iran's capability to increase production above previously planned levels could improve the outlook there, too. In short, a supply of some 5 million barrels daily from Iran,

*Horst Mendershausen, "Enlisting Reliable Sources of Supply," The RAND Corporation, WN-8582-ARPA, January 1974, p. 15.

1 million daily from Indonesia, and 1.5 million daily from Nigeria could well satisfy the requirements of a preferential system under probable 1975-1980 demand conditions.

The final element for the preferential system is the particular mechanism designed to discriminate in favor of non-OAPEC sources. Three such mechanisms seem possible: discriminatory tariffs, country quota arrangements, and bilateral arrangements. Tariffs, while serving the purpose of protecting domestic prices and investments from international competitive pressure, are least satisfactory from the security standpoint, as their effectiveness depends on accurate information and estimates of the domestic supply or demand curves.* If tariffs are too loose for a preferential policy, bilateral deals are far too rigid.** They could back the United States into either high-cost oil or inflexible import patterns, thus foreclosing opportunities over time. The most attractive option, then, is that of a quantitative and qualitative quota system. There is no little irony in the fact that, as a result of a brief exposure to world energy interdependence after it practically abandoned the 1959 oil-import quota system, the U.S. would return to a modified quota policy. The advantages

*For a rigorous analysis of the economic effects of tariffs on oil imports, see the Institute for Defense Analysis' "Intermediate-Term Energy Programs to Protect Against Crude-Petroleum Import Interruptions," PB-237 209, September 1974.

**A truly flexible import policy which takes into consideration security concerns is the Center for Naval Analysis' "The Oil Security System--an Oil Import Policy for the United States," January 1974. The principal idea of that study is to design a policy for the scenario in which world oil prices fall substantially below average U.S. prices. Reconciling efficiency with security, the study proposes that imports from insecure sources be allowed, either upon payment of a fee or if backed by commitments of emergency oil supplies issued by suppliers of secure oil. Such guarantees would constitute obligations to sell oil on the market in an emergency from such sources as inventories, existing wells operated below capacity, capped wells, new wells drilled during the emergency, and diversions of U.S. exports of crude

of such a system are many. First, under such a quota, import rights could be auctioned off to buyers periodically, revenues from the auction accruing to the Treasury. It is not inconceivable that secret competitive auctioning would exacerbate OPEC unity and capture some of the monopoly rents now being paid to the exporting countries. Furthermore, the quota system permits the application of direct preferences for secure sources of supply, either by exempting them entirely and thereby granting them the opportunity to capture all of the difference between U.S. and world prices. Conversely, sources deemed less secure, say from Eastern Hemisphere countries, could be charged a security fee. The effect of such measures would be to give preferred suppliers incentive to enter the American market and encourage exchanges among importers who would substitute oil from secure sources for OPEC oil, in order to avoid the security penalty. As long as the supply of oil from countries considered secure was elastic (and it appears to be), the burden of the security penalty would fall upon the insecure producing countries, which is not an undesirable by-product of the policy. The security fee system, even if emulated by other consuming countries, would not affect all output, but would accentuate the element of supply dependability and bring about a rearrangement of import patterns along politically more sensible lines.*

and refined products. In turn, possession of a guarantee is the qualification for receiving a fee-exempt import allowance. Both guarantees and fee-exempt import allowances would be bought and sold. Importers of oil would thus choose the cheaper way of importing between paying the fee and acquiring a fee-exempt import allowance. The net effect of such a system--provided indeed prices drop--would be to reduce the cost of importing oil while increasing oil security in the form of emergency oil supplies.

** A concise and useful comparison between tariffs and quotas as instruments of oil policy can be found in Chapter 6 of the MIT Energy Laboratory Policy Study Group's Energy Self-Sufficiency (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1974), pp. 66-69.

A security-structure import quota system, in other words, would simultaneously serve two purposes: it would encourage competition among OPEC members, thus putting stress on the cartel and alleviating its monopolistic control; and it would incorporate the preferential criteria desirable under a precautionary import policy. The latter effect could be achieved under a tariff system by setting tariff levels for oil from secure and insecure sources; the former effect, however, could not be attained through the tariff system. Yet, it should be noted that a precautionary import policy does not necessarily require the adoption of formal discriminatory mechanisms. A subtle strategy of interdependence suggested by RAND is described as:

"...nudging certain producing countries and companies to increase the flow of non-Arab oil to the U.S. market, and encouraging that flow by incidental market opening measures."*

RAND suggests that the governments of Indonesia, Nigeria, and Iran be stimulated in the desired direction by correlating the U.S. interest with their demand for development, technological and military assistance. With regard to Canada and Venezuela, the nudging policy would be aimed at stabilizing U.S. imports from these countries over the next three to five years. Thus, whether in conjunction with a formal import quota system, as seems advisable, or even in its absence, a disengagement from the insecure OPEC oil is both desirable and feasible. The RAND report summed it up as follows:

"To attempt to fix a maximum for imports of Arab oil in a certain time span, or a minimum of imports from certain non-Arab sources, would give artificial rigidity to a precautionary import policy and might make it impractical.

*Mendershausen and Nehring, "Protecting the U.S. Petroleum Market," p. vii.

What seems most desirable is to introduce into government attitudes--whether articulated in direct government purchases or in guidance to the oil companies from the FEA, the State Department, or elsewhere--a consideration favoring oil flows from non-Arab sources in the years ahead, reinforcing market tendencies that go in that direction, and cautionary or restraining tendencies that go in the opposite direction."*

A precautionary U.S. import policy coupled with quota and storage policies, as suggested above could reconcile a continued reliance of the American market on imports with a greater measure of security from politically inspired supply disruptions. Thus, it could go a long way toward alleviating the import vulnerabilities present during the interim period as the nation moves toward the announced goal of relative energy self-sufficiency.

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This analysis demonstrates that the multilateral energy system as it existed for more than twenty years after World War II under the aegis of American hegemony was a fragile construct. Its basic stability hinged on the continuation of a series of delicate internal balances. Most important among these was that between the patterns of export and import dependence. As a result of the multinational oil industry's ability to keep down the price of oil and due to competition in the market, the system evolved symmetrically in the two crucial dependence areas and multilaterally with respect to its mode of operation. Attempts to capitalize on the vulnerabilities inherent in complex interdependencies failed, as shown by the examples of the Suez and 1967 Mid-East crises,

* ibid., p. 87.

because the reciprocal conditions of relatively high dependency among exporters and importers alike balanced the system, and as such it proved to be quite flexible and efficient.

The system came under pressure in the 1960s, when an American decline was paralleled by the emergence of resource nationalism in the oil exporting countries. The principal process in that respect has been the rise of the OPEC cartel. That coalition failed in its declared purpose as long as the oil industry was backed by home governments committed to the competitive multilateral system--in effect, a product of American British domination. However, a backing away from such commitment in 1970 marked the beginning of a revolutionary period in which the system was to lose its stability and consequently the security of its adequate functioning. With the U.S. leading the group, the consuming nations changed their position from resisting OPEC to accommodating it. Consequently, prices skyrocketed, the industry lost almost all influence over production and pricing, and supply ceased being responsive to demand as curtailment of output occurred, be it for explicit economic reasons or the expedient establishment of economic-diplomatic linkages. By 1973 the asymmetry between the degrees of dependence experienced by importers and exporters reached the threshold of an acute crisis. The structural conditions of imbalance and the policies of appeasement precipitated a major supply and price disruption in which exporters sought to exploit the state of the system for economic benefits and some of them for political purposes as well. The primary economic objectives were achieved, the secondary political ones--failed. The two, however, were symptoms of the same causes: the cartelization and politicization by oil producers of the

oil market, and the consumer's weakness in the face of such a challenge. That the effects of the challenge have not been disastrous to the oil consuming nations is not because of restraint on the part of the exporting countries but due to certain external constraints on their economic and particularly on their political leverage. However, the forces now at work augur an exacerbation of the imbalance between exporters and importers as the enhancement of capabilities and adverse intentions on the part of the former more than offset the potential reduction in vulnerability among the latter.

In reaction to the crisis and in an effort to resolve its systemic tensions, four alternative courses of action have emerged. The rationale dominating the first, a proposal for joint consumers' cooperation in energy, is that since disunity among consumers and solidarity by exporters have been major causes of the crisis, only the forging of a concerted program of action by consumers could restore a semblance of balance to the system. Dealing with the security aspect of the crisis first, that approach has produced an International Energy Agency and an emergency oil-sharing agreement. The horizontal approach, however, has failed so far to move from a defensive position to an offensive one vis-à-vis its producers' counterpart--OPEC. One of the reasons for such failure has to do with the contending approach among consumers, that of vertical bilateralism. That approach, which recommends the establishment of closer and more extensive ties between consumers and producers on a government-to-government basis, has resulted in alleviating some of the financial problems caused by the crisis without resolving any of its security aspects.

As the limits to cooperative efforts are rapidly reached, it becomes more and more apparent that two alternative approaches might be elected instead. The option of an unilateral drive towards self-sufficiency, as reflected in Project Independence, is a case in point. The potential distance from energy independence varies from less than a decade for the U.S. and for certain European countries to about twice that long for the rest of the advanced industrialized nations. Escape from interdependence, however, need not be completely autarkical. Thus, a prudent energy policy for the U.S. could be that of gradual disengagement from globalism in energy by the adoption of preferential import policies compatible with its security concerns.

To keep its energy options open the U.S. has typically pursued all four strategies simultaneously: it led to the creation of the IEA; it engaged in comprehensive bilateral deals; it promulgated energy self-sufficiency as a national objective; and it introduced precautionary ingredients into its import policies. Pursuit of these policies together may have been sensible for the short run, but it is too expensive, economically and politically, to sustain over the long run. In effect, the American energy dilemma is but a component of its general international predicament. If the U.S. were to reverse the process of its decline, then the energy problem could be exogeneously resolved as a new system of international economic collective security is erected and policies of appeasement give way to resistance postures. If, on the other hand, present political trends continue, then the optimal mix of energy strategies for the U.S. would be that which stresses relative energy independence attained through a precautionary import policy.

The crisis of energy interdependence, in conclusion, could result in its future avoidance rather than its restructuring or Intensification. Gradually, all major oil importing countries would chose to escape energy interdependence by returning to semi-autarkic postures. It is this trend more than anything else which could restore balance and order to the world's energy system.

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13 ABSTRACT This report sets down the results of research on some of the significant problems relating to energy and national security. The relationship of the security of oil supplies to market conditions in the past and in the future is examined. An analysis is made of the scope of oil revenues for domestic and foreign investment and of the patterns of economic development and investment in Middle East oil producing countries. The general questions of access to non-oil global resources and the relationship of energy and American economic security are addressed.			