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The Armadollar-Petrodollar Coalition and the Middle East

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Department of Economics
Working Paper 10/89

THE ARMADOLLAR-PETRODOLLAR COALITION
AND THE MIDDLE EAST

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Abstract

This is the third paper in a series of four essays that deal with recent developments affecting the political economy of armaments. It begins by identifying the 'military bias paradox' of divergent behaviour, whereby the large armament corporations experienced an almost uninterrupted growth since the peak of the Vietnam War while domestic military spending exhibited a decade-long decline. The resolution of this apparent paradox could be found in the emerging institution of arms exports, which supplemented domestic military budgets. The expansion of world markets for weapons coincided with the oil crisis of the 1970s. The Middle East became the focus of these developments. The interaction during the 1970s of rising military exports to this area and growing oil exports from the region provided a basis for cooperation between major armament and energy corporations in an 'Armadollar-Petrodollar Coalition'. The consolidation of this coalition removed a major conflict between 'civilian' and 'military' producers in the United States and affected the course of U.S. domestic and foreign military policies.

Resume

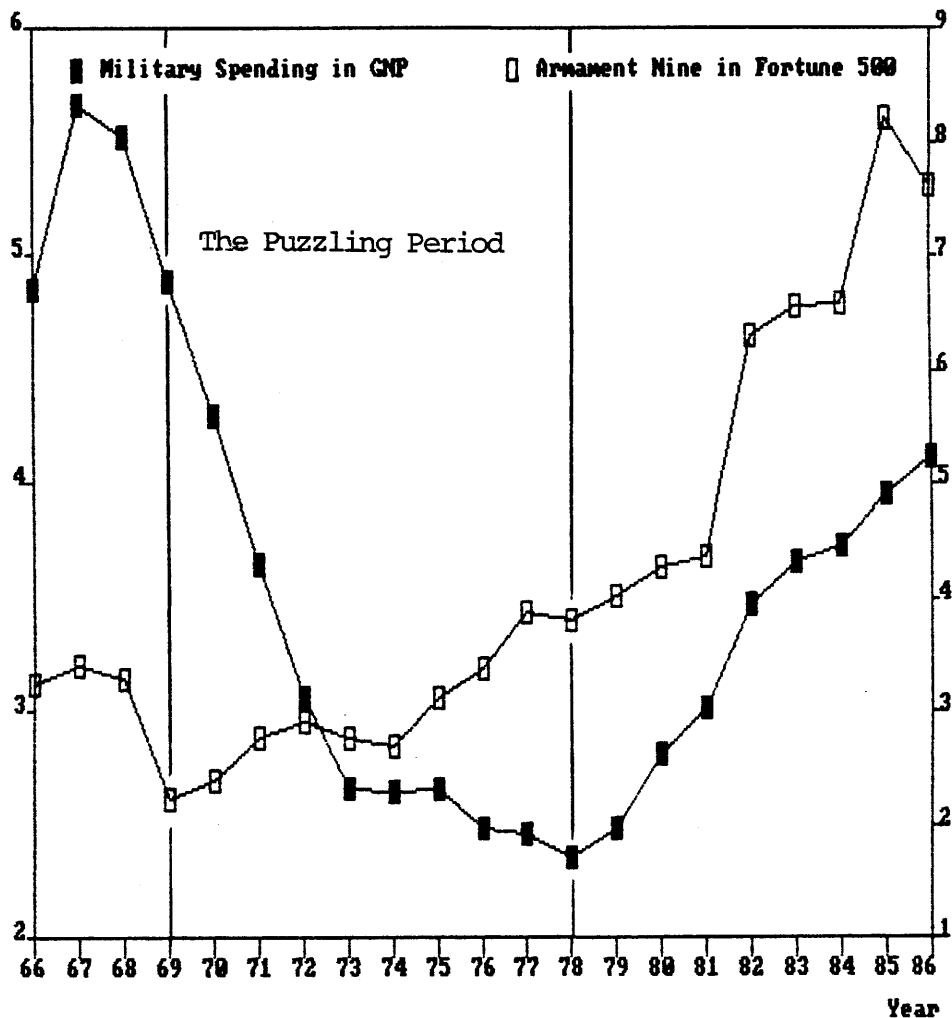
Ceci est le troisième d'une série de quatre articles sur les récents développements affectant l'économie politique des armements. L'article commence par identifier le 'paradoxe de la tendance militaire', selon lequel les grandes corporations d'armes ont connu une croissance presque ininterrompue depuis le summum de la guerre au Vietnam, alors que les dépenses militaires domestiques étaient en déclin depuis une décennie. L'explication de ce paradoxe apparent pourrait se trouver dans l'émergence des exportations d'armes, qui suppléaient aux budgets militaires domestiques. L'expansion des marchés mondiaux en matière d'armes coïncidait avec la crise du pétrole des années 70. Le Moyen-Orient devint le point central de ces développements. Durant les années 70, l'interaction entre les exportations militaires vers cette région et les exportations de pétrole de cette région, a fourni une base de coopération entre les principales corporations d'armes et d'énergie dans une 'Coalition Armadollar-Petrodollar'. La consolidation de cette coalition a supprimé un conflit majeur entre les producteurs 'civils' et 'militaires' aux Etats Unis, et affecté le cours des politiques militaires, domestiques et étrangères.

1. Introduction: The 'Military Bias Paradox'

After the Vietnam conflict escalated in the late 1960s, the world wide influence of many large U.S.-based corporations on civilian markets substantially declined from previous levels. These corporations moved the focus of their activities toward the shelter of military markets that were somewhat protected from foreign competition. A few of them constituted part of the growing 'Armament Core', which we describe in Nitzan, Rowley and Bichler (1989), while others took less prominent positions in U.S. Defense contracting. Paradoxically, however, this shift or 'military bias' in the big economy of the United States intensified while domestic military budgets exhibited a steady long-run decline. Whether expressed in terms of constant dollars or as a share of the U.S. gross national product, expenditures on armaments fell from the peak of spending on the Vietnam conflict in the late 1960s to the beginning of the 'largest defense buildup in history' a decade later.¹ This puzzling period is clearly illustrated in Figures 1 and 2 where we contrast the evolution of military spending and the performance of the large armament contractors over the two decades between 1966 and 1986. In Nitzan, Rowley and Bichler (1989), we identify the 'Armament Nine' as a group of U.S. corporations who have persistently been among the top ten recipients of prime Defense contracts on an annual basis. The figures show how the net income obtained by the Armament Nine rose during this period of general decline in military spending -- both as a share of the aggregate net income earned by all Fortune-500 corporations (Figure 1) and when expressed in terms of constant dollars (Figure 2).

Figure 1

THE 'MILITARY BIAS PARADOX':
DOMESTIC MILITARY SPENDING^a AS A SHARE OF GNP AND
THE SHARE OF THE ARMAMENT NINE IN NET PROFITS OF ALL FORTUNE-500 CORPORATIONS
(percent)

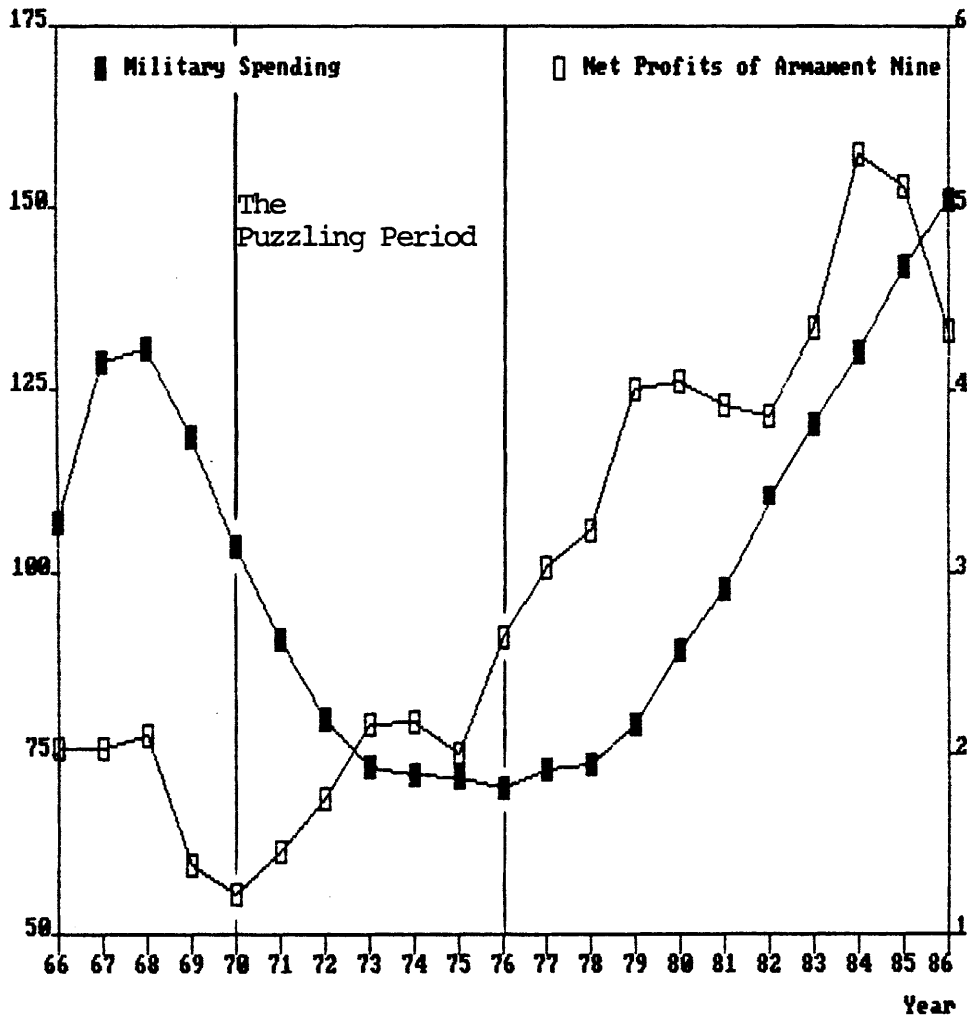


SOURCE: Military spending is calculated from *Citibase*, Citibank Economic Database [Machine-Readable Magnetic Data File, 1986] (New York: Citibank, N.A. 1978), p. X-3-3, Table 3.7b, series GGFEN and GGFNC; GNP data are from *Citibase*, p. X-1-1, Table 1.1, series GNP; Net profits of the Armament Nine are from Standard & Poor's Compustat Services (1986) *Industrial Compustat*, Compustat II/130-Item Annual Magnetic Tape (for 1966-1985); 'The Fortune 500', *Fortune*, April 27, 1987 (for 1986-1987); Net profits of Fortune-500 corporations are from U.S. Bureau of the Census, *Statistical Abstract of the United States*, various years.

^a Excluding compensation of employees.

Figure 2

THE 'MILITARY BIAS PARADOX':
DOMESTIC MILITARY SPENDING^a AND NET PROFITS OF THE ARMAMENT NINE
(\$ billion, 1982 prices^b)



SOURCE: For military spending and net profits of the Armament Nine, see Figure 1; GNP deflator data are from *Citibase*, p. X-1-1, Table 7.4, series GD.

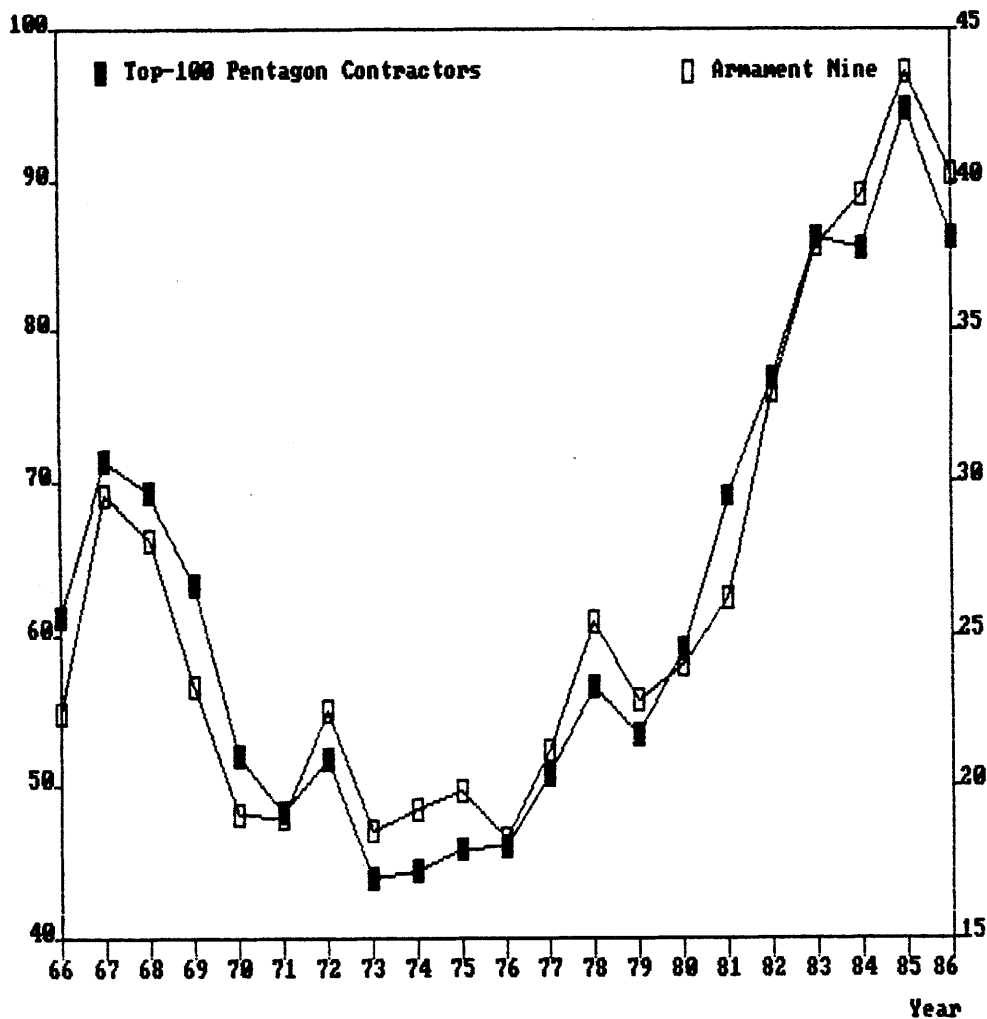
^a Excluding compensation of employees

^b Deflated by the GNP deflator with 1982 as base year.

One potential explanation for the occurrence of these disparate changes, affecting the relative performance of the Armament Nine, involves major compositional shifts among recipients of Defense contracts. Perhaps, for example, the share of contracts awarded to the large corporations increased disproportionately. This particular explanation seems inappropriate on the basis of available evidence since, as revealed by Figure 3, the prime contract awards of the Armament Nine and those of the Pentagon top-100 contractors were closely synchronized throughout the last two decades. Both experienced the stagnation that occurred during the period from 1967 to 1976. Furthermore, the value of prime Defense contracts awarded to the Armament Nine also declined relative to the value of overall sales by these corporations in this period. The historical evolution of the ratio of awards to sales is shown in Figure 4 and the decline in the rate is quite pronounced.² In addition to this development, we cannot detect any compensatory adjustment whereby the profitability associated with Defense contracts rose significantly as the size or number of orders fell. The correct explanation for the divergent behaviour of U.S. military spending and the performance of the Armament Nine ('the military bias paradox') lies elsewhere -- specifically, we suggest, in developments that affected the magnitude of arms exports from the United States.

Figure 3

PRIME CONTRACT AWARDS RECEIVED BY
THE PENTAGON'S TOP-100 CONTRACTORS AND BY THE ARMAMENT NINE
(\$ billion, 1982 prices^a)

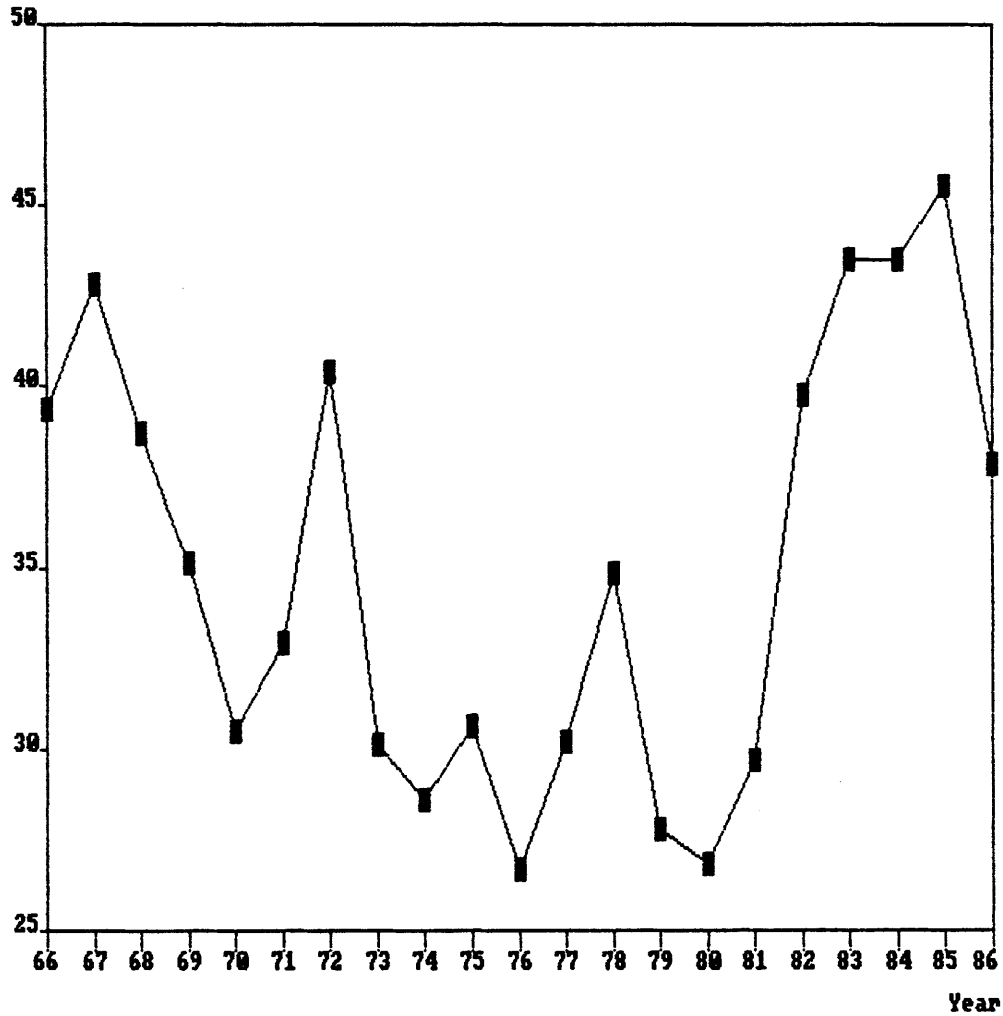


SOURCE: Prime contract award data are from U.S. Department of Defense, Washington Headquarters Services, Directorate for Information Operation and Reports *100 Companies Receiving The Largest Dollar Volume of Prime Contract Awards* (Washington, D.C.: Government Printing Office), fiscal years 1966-1986; For GNP deflator, see Figure 2.

^a Deflated by the GNP deflator with 1982 as base year.

Figure 4

THE ARMAMENT NINE:
RATIO OF DOD PRIME CONTRACT AWARDS TO TOTAL SALES REVENUES
(percent)



SOURCE: For prime contract award data, see Figure 3; Sales revenues are from Standard & Poor's Compustat Services (1986) *Industrial Compustat*, Compustat II/130-Item Annual Magnetic Tape (for 1966-1985); 'The Fortune 500', *Fortune*, April 27, 1987 (for 1986-1987)

2. Exporting Institutional Waste

The U.S. Arms Control and Disarmament Agency provides some relevant information with which we can explore the role of export sales for armaments. As indicated by the criticisms of Kolodziej (1979) and Brzosko (1982), the accuracy of this information may be questioned but the temptation to use a continuous time series for nominal arms transfers is difficult to resist. The agency (ACDA, 1985, pp. 142-3) defines these transfers in the following way:

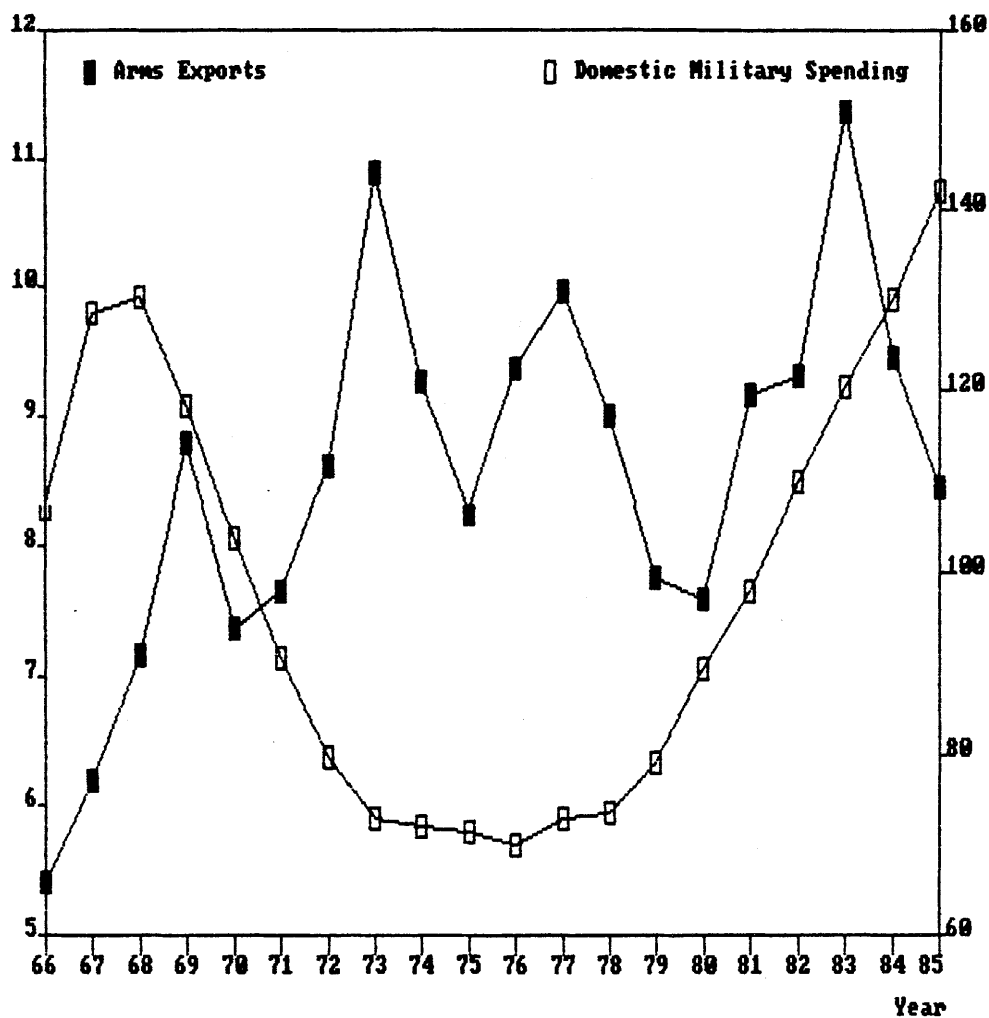
International transfer (under terms of grant, credit, barter or cash) of military equipment, usually referred to as 'conventional,' including weapons of war, parts thereof, ammunition, support equipment, and other commodities designed for military use ... Dual use equipment, which can have application in both military and civilian sectors, is included when its primary mission is identified as military ... The building of defense production facilities and licensing fees paid as royalties for the production of military equipment are included when they are contained in military transfer agreements.³

On the assumption that the data provided by this source are flawed but remain adequate for the determination of overall trends, the two lines in Figure 5 permit us to compare the historical evolution of domestic military spending within the United States (excluding compensation of employees) and the contemporaneous evolution of arms exports.

While the value of domestic military spending in the United States fell during the decade following the late 1960s, the value of military exports soared to new heights until the early 1970s and subsequently fluctuated around a higher mean. The size of military exports was clearly much lower than the size of domestic military procurement but, for the Armament Core as a whole, the significance of these exports far outstripped what their

Figure 5

U.S. DOMESTIC MILITARY SPENDING^a AND ARMS EXPORTS
(\$ billion, 1982 prices^b)



SOURCE: For military spending and the GNP deflator, see Figure 2; Arms exports data are from U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers* (Washington, D.C.: Government Printing Office), various years.

^a Excluding compensation of employees

^b Deflated by the GNP deflator with 1982 as base year.

relative size might suggest. Two particular aspects should be noted. First, the exporting of arms is a highly concentrated activity. The top ten contractors usually receive about a third of the prime contracts awarded by the U.S. Department of Defense but these contractors account for a much larger proportion of military sales to foreigners. Second, arms exports are extraordinarily profitable; even by comparison with domestic military sales. The prices of those weapons intended for export are frequently set well above the prices of their domestic counterparts. Unit production costs for the weapons, however, are lower since (1) overhead cost elements (such as research and development) are charged to domestic Defense contracts; and (2) weapon production is more efficient as companies progress along 'learning curves'. The potential for exports to have a major role in the rise of the Armament Core is evident.⁴

Besides the pressure of these economic factors, the role of military exports was affected by changes in the overall political climate. Until the 1960s, acceptance of the 'Eisenhower Doctrine' by the U.S. government meant the modest provision of support for friendly indigenous forces in peripheral regions but such support was limited to economic and military aid at a low level. Apart from this minor element, most U.S.-made arms were sold to the U.S. military establishment. A different pattern began to emerge in the late 1960s, when the involvement of the United States escalated in Vietnam and the level of arms exports to the Far East substantially increased. Concurrently, the United States directly entered the arms market in the Middle East. These two developments mark a watershed for the U.S. armament industry. A new phase began for the political economy of armaments; one

which can be characterized by the export of 'institutionalized waste' to satisfy the imperative of domestic stability in the United States, as well as to meet the objectives of an aggressive foreign policy.⁵

2.1 The Era of Arms Exports

The emergence of an active world wide market for armaments is clearly illustrated by the entries of Table 1, which show the historical distribution of arms imports (expressed both in nominal U.S. dollars and as proportions relative to the world total for imports) during the period that extended from 1963 to 1985. While the Far East was the most important area of activity until the early 1970s, the primary focus of sales eventually shifted to the Middle East and Africa (especially Libya). Important events can be identified for four years; namely, 1967, 1973, 1979 and 1985. During 1966-7, Israel and some Arab states were preparing for the confrontation that occurred in 1967. Arms imports of the Middle East region grew to a value of \$314 million in 1966 and then to \$556 million in the following year. However, the principal change to be noted here is not found in the higher level of activity for the antagonists but rather in the significant structural change by which the United States replaced France and the United Kingdom as the primary source of new weaponry for Israel.

Another turning point occurred in 1973. The military involvement of the United States in Vietnam ended while the level of domestic spending on military products declined in the United States itself. But in that year, arms exports to the Middle East almost doubled and the historical era with

Table 1

ARMS IMPORTS:
SELECTED WORLD REGIONS^a

Year	\$ million				Percent of world total			
	World	East Asia	Africa	Middle East	East Asia	Africa	Middle East	Mid. East & Africa
1963	3,242	571	113	378	18	3	12	15
1964	3,187	540	165	257	17	5	8	13
1965	3,815	1,117	182	285	31	5	7	12
1966	4,660	1,812	227	314	39	5	7	12
1967	5,055	1,982	140	556	39	3	11	14
1968	5,370	2,070	135	635	39	3	12	14
1969	5,860	2,090	145	820	36	2	14	16
1970	5,905	1,920	265	1,250	33	4	21	26
1971	6,405	2,110	290	1,175	33	5	18	23
1972	10,380	3,910	490	1,995	38	5	19	24
1973	13,660	4,350	470	3,745	32	3	27	31
1974	12,270	2,260	770	4,195	18	6	34	40
1975	13,180	2,220	1,540	3,950	17	12	30	42
1976	17,290	1,315	2,705	5,845	8	16	34	49
1977	20,270	1,290	3,570	7,960	6	18	39	57
1978	24,380	1,650	5,980	9,040	7	25	37	62
1979	28,190	3,895	5,310	9,725	14	19	34	53
1980	30,260	4,325	5,435	9,885	14	18	33	51
1981	37,460	3,720	6,360	14,600	10	17	39	56
1982	40,150	3,870	6,390	16,610	10	16	41	57
1983	39,800	3,725	5,170	17,340	9	13	44	57
1984	41,670	3,875	5,750	18,060	9	14	43	57
1985	28,850	3,985	3,810	9,390	14	13	33	46

SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers* (Washington, D.C.: Government Printing Office), various years.

^a Because of data updates, recorded figures are from the last annual publication in which they appear.

this area as the prime market for international armament sales was initiated. The world level of arms imports reached \$6 billion in 1970, with only 21 per cent of the total being directed toward the Middle East. Four years later, after the 1973 war, the region took 34 per cent of \$12 billion, the new level of worldwide sales. After a further four years, the proportion had grown to 37 per cent of \$24 billion, while the share received by Africa also rose.

The next change was ushered in by the Islamic Revolution of Iran that occurred in 1979 -- to be entrenched by the large demands for armaments that quickly followed the beginnings of the subsequent war between this country and Iraq. During the 1980s, the international trade in armaments grew to an annual level of \$40 billion, of which over 40 per cent went to the Middle East. Finally, in 1985, the trade declined by about 30 per cent to a lower annual level of some \$29 billion -- due largely to an easing of sales to the Middle East and Africa. A downward trend continued in 1987.

The U.S. Arms Control and Disarmament Agency does not provide annual disaggregated data for arms imports to the Middle East from major supplying countries but some cumulative data are available. The entries of Table 2 show the levels of arms transfers for three periods (1964-73; 1974-8; and 1979-83). Three source areas are identified; namely, the United States, the Soviet Union, and other countries (France, the United Kingdom, Italy, West Germany and China). To clarify the 'military bias paradox', the entries for the table can be jointly considered with the patterns revealed in Figures 6

Table 2

ARMS EXPORTS TO THE MIDDLE EAST
(cumulative)

Period	Total		Of which					
			From the United States		From the Soviet Union		From France, U.K. Italy, W. Germany and China	
	\$ mill.	%	\$ mill.	%	\$ mill.	%	\$ mill.	%
1964-73	9,447	100	3,251 ^a	34	4,738	50	557 ^b	6
1974-78	29,000	100	13,800	48	7,500	26	5,465	19
1979-83	65,355	100	14,225	22	20,375	31	19,305	30

SOURCE: U.S. Arms Control and Disarmament Agency, *World Military Expenditures and Arms Transfers* (Washington, D.C. : Government Printing Office).
For 1964-73, data are from the 1975 publication, p. 70.
For 1974-78, data are from the 1980 publication, p. 160.
For 1979-83, data are from the 1985 publication, p. 134.

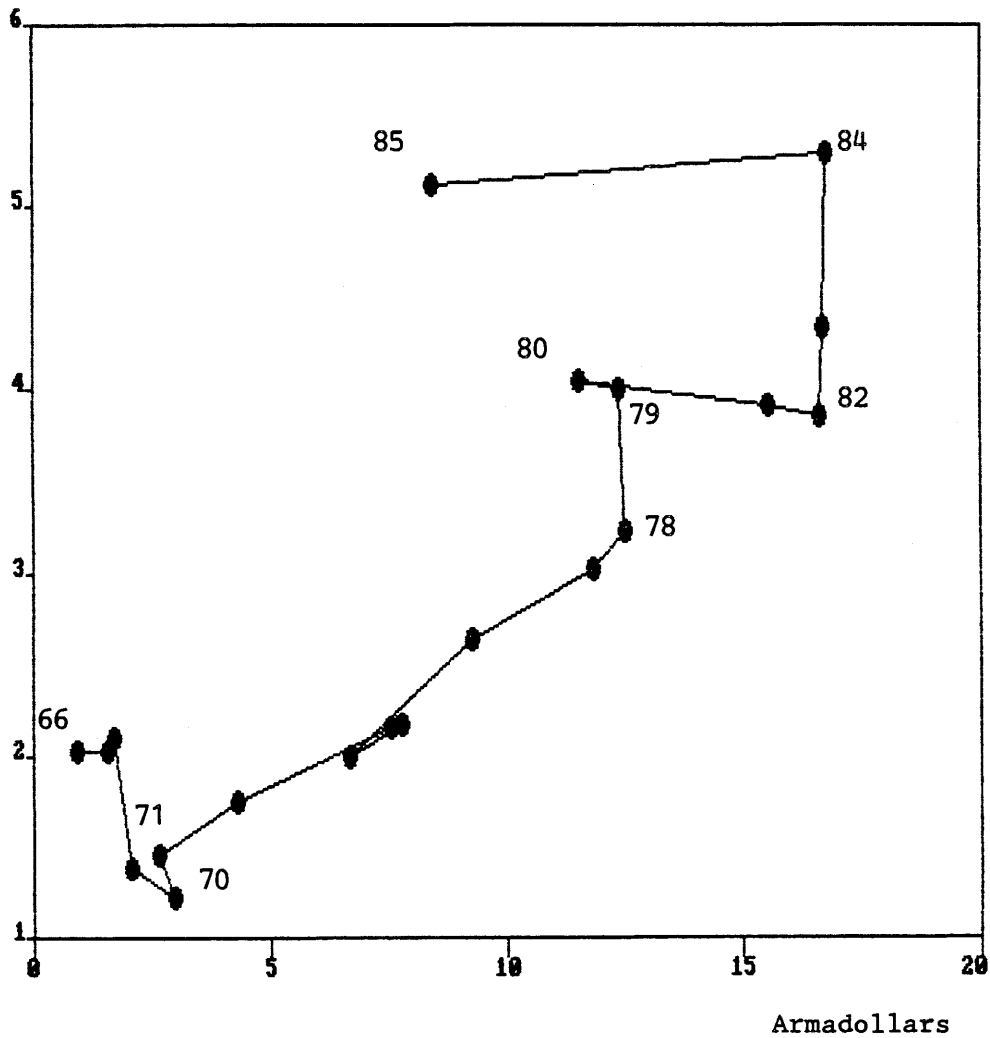
^a Data for the United States are for fiscal years. Total does not include the re-supply effort to Israel following the 1973 War.

^b Excluding Italy.

Figure 6

ARMADOLLARS AND ARMAPROFITS:
ARMS EXPORTS TO THE MIDDLE EAST AND NET PROFITS OF THE ARMAMENT NINE
(\$ billion, 1982 prices^a)

Armaprofits

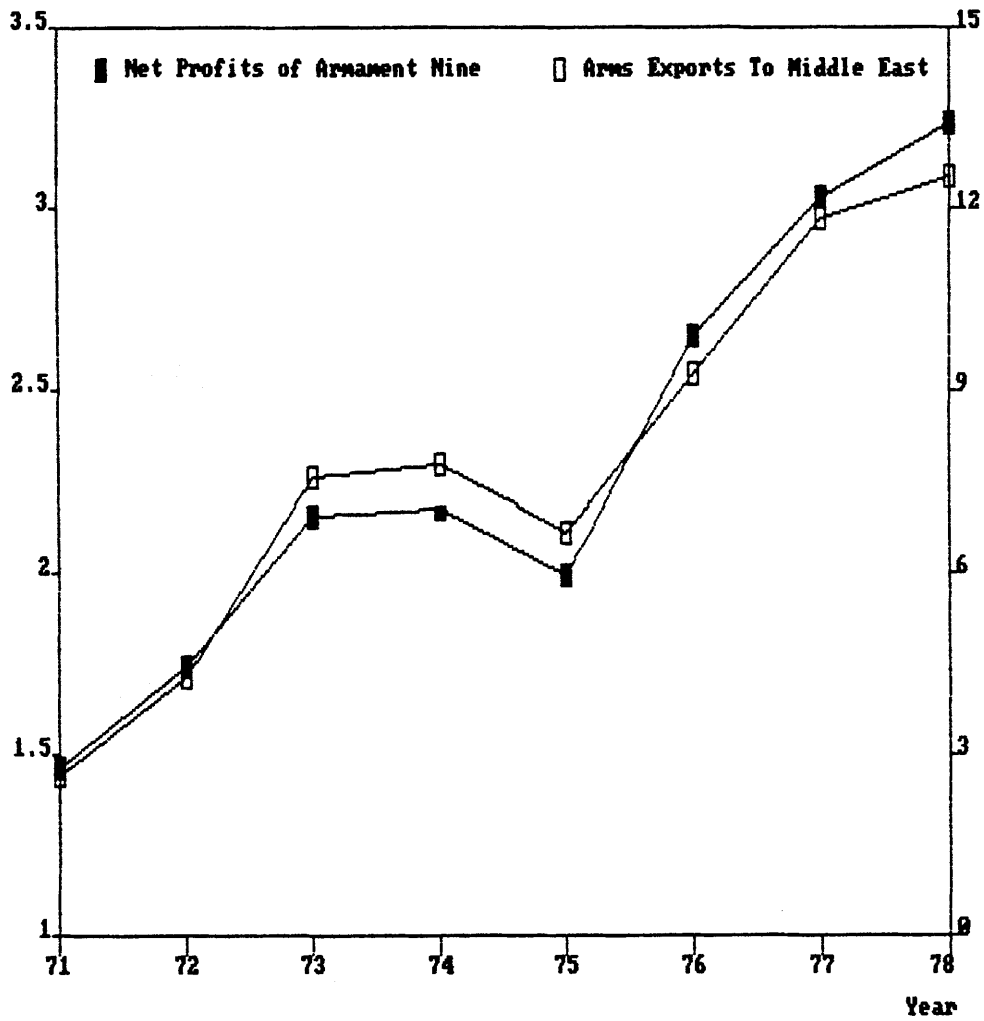


SOURCE: For arms exports to the Middle East, see Table 1; For net profits of the Armament Nine, see Figure 1; For GNP deflator, see Figure 2.

^a Deflated by the GNP deflator with 1982 as base year.

Figure 7

ARMADOLLARS AND ARMAPROFITS:
ARMS EXPORTS TO THE MIDDLE EAST AND NET PROFITS OF THE ARMAMENT NINE
1971-1978
(\$ billion, 1982 prices^a)



SOURCE: See Figure 6

^a Deflated by the GNP deflator with 1982 as base year.

and 7, which contrast total arms exports to the Middle East with aggregate net profits obtained by the Armament Nine.

Until about 1970, when the U.S. corporations were making their first significant sales in the arms market of the Middle East, the Armament Nine were preoccupied with the task of meeting the needs of the U.S. and South Vietnamese armies. The Middle East market probably accounted for a very modest share of their overall profits but this situation changed in the early 1970s. Figures 6 and 7 suggest that aggregate net profits of the Armament Nine enjoyed a close relationship with total arms exports to this region throughout the 1971-1978 period, during which the United States replaced the Soviet Union as the Middle East's largest arms supplier and the Armament Nine redirected part of their sales effort from the declining domestic market into the Middle East. Subsequent to 1979, however, this relationship weakened as competition from France, the United Kingdom, West Germany, Italy and China depressed profit margins on arms sales. The region remained one of crucial interest for U.S. arms producers but their share of the arms market declined and direct profitability suffered. On the other hand, the domestic military budget rapidly rose in the United States after a long period of decline and again began to provide the principal source of the Armament Nine's profits. Note this pattern of development is consistent with the view that, for the Armament Nine at least, the level of domestic procurement in the United States provided a stable revenue base -- despite the decline in overall military spending -- while sales to the Middle East market constituted the volatile edge of activity, one characterized by a marked impact on profitability. (U.S. companies also exported arms to other

world areas but such exports were either quite stable, as in sales to NATO countries, or relatively small, as in sales to the Far East and South America.)

2.2 Global Income Redistribution and Armament Markets

The potential dependency of key U.S. corporate groups on the arms market in the Middle East indicates some fundamental changes that have transformed the political economy of armaments. Traditional Marxist and institutional views of military spending had emphasized the role of the U.S. government in generating profit opportunities through *domestic* military procurement. Much of this literature, however, was written when the U.S. economy was relatively closed and when the hegemony of U.S.-based companies was still undisputed despite the emergence of multinational competitors. The post-1960s decline of U.S. corporations in civilian world markets complicated their relations with the U.S. government. On the one hand, the dependency of the corporations on that government gradually increased. Indeed much of their decline in civilian markets could be attributed to the attraction of profitable government business. On the other hand, business activity of U.S.-based companies increasingly became international in character, while a growing share of their sales and profits came from foreign operations. This new level of dependency reduced the potential ability of U.S. governments to counteract adverse international setbacks that these corporations might experience. Furthermore, in the early 1970s after the entanglement in Vietnam, governmental flexibility in using domestic military spending for 'economic' purposes was significantly

reduced. Hence, for the large U.S.-based corporations, particularly those within the Armament Core, the U.S. government became more important for their profitable well-being but less potent in safeguarding their economic interests.

Resolution of this new situation was achieved by the expansion of markets for arms exports. The institution of foreign military sales enabled the U.S. government to maintain part of its traditional role in affecting military business. Military exports were often considered vital to national security so the U.S. government provided military loans to 'client countries', which otherwise could not have purchased U.S.-made armaments. In this way, the Pentagon continued to support the Armament Core without any conspicuous increase in size of the domestic procurement budget. Ultimately, however, with the growing debt crisis that emerged after the 1970s, the U.S. government had to increasingly resort to military grants. Also a substantial portion of outstanding U.S. military loans to debt-plagued countries had to be 'forgiven' and turned into retroactive grants.⁶ Much of the appeal of arms exports was then lost since grant-financed foreign military sales required explicit budgeting and were subject to limitations that resembled those for domestic procurement. Subsequently, U.S. governmental finance had only a secondary role in the growth of arms exports. The primary element behind the expansion of this particular market was the global redistribution of income that stemmed from the oil crisis of the 1970s.

After 1973, oil-exporting countries in the Middle East became the world's largest arms-importing countries, with their purchases largely

financed from oil revenues. As we noted in Bichler, Nitzan and Rowley (1989), the interaction of petrodollars and arms sales has generally been explored from a macroeconomic perspective -- the oil crisis redistributed income from the Industrialized West to OPEC countries, who in turn closed the international circular flow by purchasing industrial commodities, including arms, from western capitalist countries. The weakness of this perspective arises from its incompleteness. Rising oil prices and OPEC revenues did more than simply change the international trade balance. They also affected the power structure and institutions of western capitalist countries.

The effects of changes in the oil industry were not evenly distributed within industrialized economies. Higher energy prices were transmitted through a complex structure of oligopolistic agencies rather than through the simple interaction of competitive supply and demand mechanisms. The consequence was a stagflationary process, which changed the previous structure of relative prices and had profound effects on the distribution of national income in general and of corporate profits in particular. In the United States, stagflation brought adversity to those corporations that concentrated their activities in civilian markets -- since rising energy costs had to be partially absorbed while the corporations faced stagnation in mass consumption. On the other hand, some 'winners' emerged from the redistribution of corporate profits during the 1970s: (1) the major oil companies experienced substantial increases in their 'degree of monopoly' (as tentatively measured by the levels of their eventual mark-ups over costs); (2) the large banks absorbed most of the world's petrodollars, which

they recirculated to oil-producing countries and energy-related projects; and (3) members of the Armament Core, who were relatively unharmed by higher energy costs, experienced a boom in their petrodollar-financed military exports.

The oil crisis created a potential for the emergence of an Armadollar-Petrodollar Coalition of major armament, energy and financial corporations, through which the traditional relationship that existed between arms producers and the U.S. government was enlarged. Furthermore, the governments of OPEC countries, especially those located in the Middle East, actively supplemented the role of the U.S. government in the arms business. A better understanding of the principal changes in the economic environment is gained if we briefly clarify the history of the involvement of the large oil companies in the Middle East. More details of this history are provided by Engler (1961, 1977), Schwadran (1973), Blair (1976), and Turner (1980). Our account draws on the treatment by Barnett (1980).

3. The Seven Sisters and Middle East Oil: From Access Rights to Pricing Might

The present significance of the Middle East for the oil business can be simply explained. The area accounts for over half of the world's proven oil reserves and Middle Eastern oil is relatively cheap to extract. Not surprisingly, as these facts emerged, the region became an active battleground for control of its resources by the world largest oil companies, and especially by a group of corporations that came to be known as the 'Seven Sisters'; namely, Exxon, Royal Dutch/Shell, British Petroleum, Texaco, Mobil, Chevron and Gulf.

3.1 The 'Free Flow' Era

In 1928, the world's three largest oil companies -- Royal Dutch/Shell, Exxon (then Standard Oil of New Jersey) and British Petroleum (then Anglo Iranian Oil Company) -- arrived at the Achnacarry Agreement, which sought to preserve the status quo and to stabilize the control by these particular companies of world oil supplies. For about two decades, acceptance of this agreement permitted British Petroleum (and to a lesser extent, Royal Dutch/Shell and other European producers) to dominate oil supplies from the Middle East. The situation began to change by the late 1940s as British political influence waned and as European companies gradually lost some of their market share to intrusions by the large U.S.-based oil firms. In 1947, Exxon, Mobil, Texaco and Chevron (then Socal) formed ARAMCO, the Arabian-American Company which obtained preferential access to Saudi Arabian oil. Six years later, the CIA backed a successful coup against the government of

Prime Minister Mossaddeq, who attempted to nationalize Iranian oil, and consequently the monopoly of British Petroleum was lost. Iranian oil was officially nationalized but, in effect, control was effectively divided among the 5 American majors (whose new stake amounted to 40 per cent), Royal Dutch/Shell (14 per cent), the French CFS (6 per cent) and British Petroleum (40 per cent).

Since the oil industry was first consolidated in the nineteenth century, no prolonged period of price competition has occurred. Despite a persistent concern with relative market shares, the principal oil companies have exhibited a remarkable degree of cooperation and, for much of their existence, they rarely permitted oil consumers to take advantage of any differences among producers. Nevertheless, in the long period prior to the emergence of OPEC, the Seven Sisters were unable to translate their joint cooperation into spectacular price increases, such as those that came to characterize the industry in the 1970s. The main key for higher profits was generally acknowledged to be one of access to cheap oil rather than the ability to increase unit mark-ups. Until the 1950s, the 'free flow' of Middle East oil was secured largely through private arrangements between the Seven Sisters and local rulers. Since production costs constituted only a minor fraction of the final price, even the most conspicuous demands of domestic kings were insignificant in comparison to access benefits that accrued to the oil companies.

During the 1950s, this comfortable arrangement was undermined by three important developments, which challenged the dominant position then being

enjoyed by the Seven Sisters in the Middle East and which eventually led to the formation of OPEC in 1960. First, 'independent' oil companies (such as the U.S.-based Getty Oil and Tidewater, the Italian state oil company ENI, and Japan Petroleum Trading Company) started to enter the Middle Eastern oil market and their activities raised the price of 'access' to oil resources. Royalty costs were dramatically increased and, eventually, reliance on the traditional royalty arrangements was replaced by involvement in joint ventures by the oil companies and local governments. Second, nationalist sentiments grew in the region. The strength of these sentiments signalled a major hazard to the position of the large oil companies. In 1956, the governments of Britain and France lost the joint military venture that they launched with Israeli support against Egypt, whose President Nasser closed the Suez canal. Another setback to the interests of the oil companies followed with the removal of Iraq's friendly ruler, Nuri as-Said. Third, the Seven Sisters lost some of their tight control of world oil output and, as production rapidly grew, oil prices began to drop. Oil companies were incapable of maintaining the price levels and the governments of oil-producing countries gained confidence in their own ability to affect market conditions. Adverse shifts in national oil revenues in the late 1950s provided the final incentive for these governments to act in concert and prepared the ground for the Baghdad Convention of 1960, at which OPEC was formed. During the 1960s, the newly formed OPEC cartel controlled about 80 per cent of world output and it effectively succeeded in preventing further price declines. However, the realization of the full extent of OPEC's power was not evident prior to 1970, when Muammar Qaddafi of Libya forced Occidental Petroleum, an 'independent' company, to cut output and raise

prices. This event was a clear challenge to the supremacy of the oil companies although Occidental Petroleum, itself, stood to gain from the move by the Libyan ruler. Occidental Petroleum resisted but finally had to accept Qaddafi's decree when Exxon declined to replace lost oil supplies.⁷

3.2 Toward a 'Limited Flow'

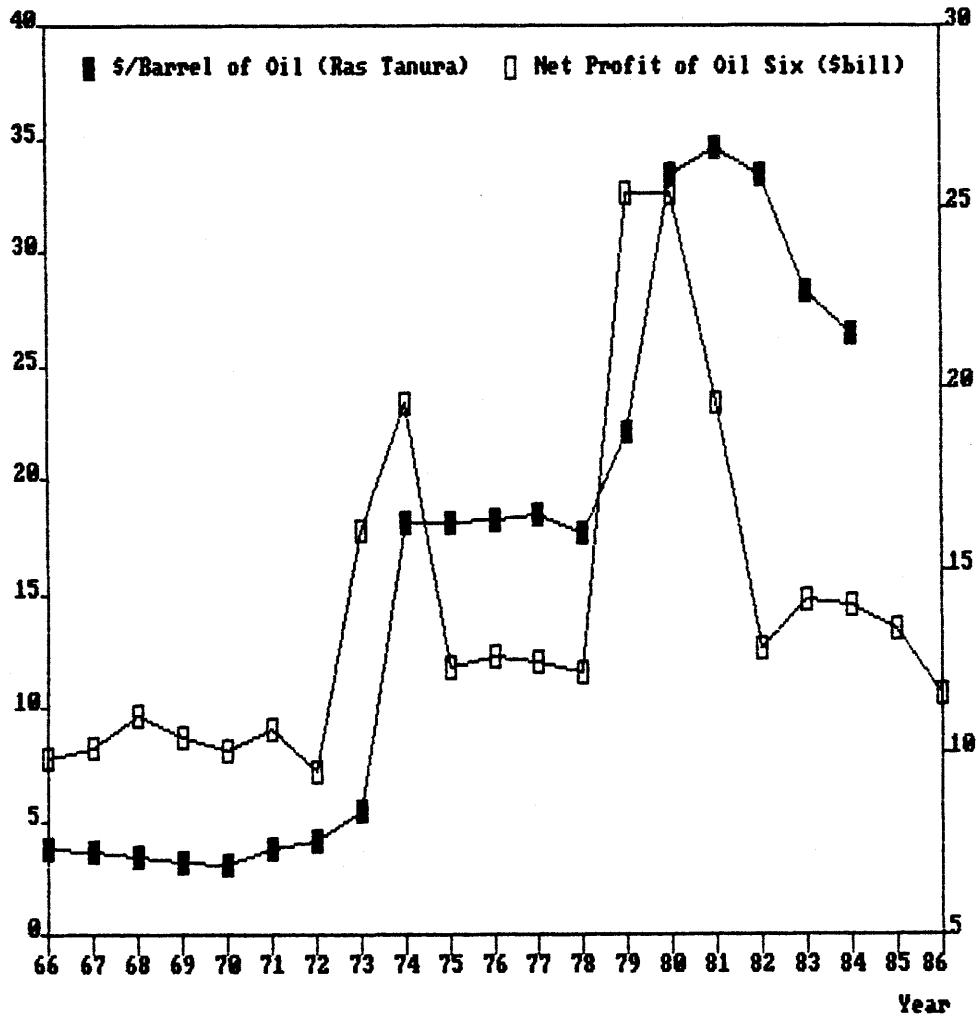
The formation of OPEC was generally perceived by the oil companies as a serious threat to their economic well-being. Nationalism and revolutions, they feared, would eventually lead to oil-producing countries attempting to take over the assets and activities of oil companies. However, the oil system was not revolutionized but rather it was simply reorganized. The oil companies could no longer rationalize the industry by themselves and a broader cooperation with governments was called for. Indeed, OPEC countries in the Middle East have been largely reluctant to take over the oil companies. The reasons for their hesitancy are not hard to grasp. The Seven Sisters control both the technology for production and the marketing system. In times of crisis, they could enjoy the American or European military support and also could expect this support to be extended to friendly OPEC governments. More importantly, OPEC governments in the Middle East depend on Western goodwill -- for their oil revenues are economically meaningless without the investment and consumption outlets provided by the Western countries. A substantial OPEC challenge to the Seven Sisters could induce a serious world crisis, which might then lead to the demise of the OPEC governments themselves.⁸

The large oil companies did not seem to grasp the opportunities offered to them by attitudes within OPEC before the early 1970s. Certainly we have little evidence with which to confirm speculations that a 'conspiracy' existed between the companies and OPEC to initiate the oil crisis that occurred in 1973. Proposals to cut output by OPEC in 1972 were still resisted by the companies, who presumably were preoccupied with their concern over a loss of control. Ultimately, however, the new reality was accepted. In Figure 8, we indicate one explanation for this development. Our two lines permit a comparison of crude oil prices with the combined net profits earned by the 'Oil Six' from 1966 to 1986. This group of corporations includes members of the Seven Sisters with the exception of Gulf Oil, which was acquired by Chevron for \$13 billion in 1984. (Our data are deflated by the U.S. deflator for GNP with 1982 as its base.) The price of crude oil apparently had an important impact on the overall petroprofits of the Oil Six since the two major oil crises of 1973 and 1979 led to dramatic increases in levels of profits, while subsequent price stability during the 1975-1978 period was associated with profit stability and price declines after 1981 led to drastic reductions in profits.

The potential impact of crude oil prices on overall profits is far from trivial. As vertically integrated companies, the Oil Six are engaged in all stages of production -- drilling, extracting, shipping, refining and the marketing of final petroleum products. Changes in crude oil prices should have a positive effect on profitability accruing from exploration and extraction but the changes may imply a negative impact on profits of downstream operations. The patterns exhibited in Figure 8 suggest that this

Figure 8

PETRO-PRICES AND PETROPROFITS:
CRUDE OIL PRICES AND THE NET PROFITS OF THE OIL SIX^a
(\$ billion, 1982 prices^b)



SOURCE: Crude oil prices are from International Monetary Fund, *International Financial Statistics Yearbook* (1986), pp. 170-171; Net profits of the Oil Six are from Standard & Poor's Compustat Services (1986) *Industrial Compustat*, Compustat II/130-Item Annual Magnetic Tape (for 1966-1985) and 'The Fortune 500', *Fortune*, April 27, 1987 (for 1986-1987); For GNP deflator, see Figure 2.

^a The Oil Six corporations are British Petroleum, Chevron, Exxon, Mobil, Royal Dutch/Shell and Texaco.

^b Deflated by the GNP deflator with 1982 as base year.

secondary negative impact of higher prices for crude oil was small. Further reflection provides a simple explanation. The price of crude oil forms the basis from which prices of subsequent petroleum products are determined. Traditionally, the oil companies have succeeded in stabilizing the unit markups over prime costs in their downstream operations. The absolute size of profits thus depends on the level of prime costs, which is determined by the prices of crude oil. During the late 1950s and 1960s, the large oil companies were unsuccessful in their attempts to raise the price of crude oil and hence, with stable markups in downstream operations, their overall profits stagnated. The situation changed after 1973 when OPEC governments assumed the role of rationing production. These governments obviously sought to increase their own revenues but, as evident in Figure 8, the changes in oil prices that were brought about by their actions also had a profound effect on the Oil Six's petroprofits.

Clearly, the year of 1973 can be identified with a qualitative change in the nature of the oil business. During the pre-1973 period, the key element to profits was viewed as the access to cheap crude oil but, since 1973, the primary emphasis has shifted to *price levels*. Consequently, the rhetoric of support for activities of large oil companies begin to emphasize the notion of 'scarcity' for these firms no longer follow 'free flow' doctrines but rather pursue a 'limited flow' principle, according to which output is restricted to maintain higher prices. This cosmetic change in rhetorical focus reflects more than a mere 'technical' change in business strategy since the new 'limited flow' principle is associated with an

important change in the power structure that prevails in the United States;
namely, the emergence of an 'Armadollar-Petrodollar Coalition.'

4. The Armadollar-Petrodollar Coalition

During the existence of the 'free flow' regime before 1973, the large oil companies objected to the militarization of the Middle Eastern area.⁹ They feared the outburst of regional armed conflicts which would constrain the flow of oil and adversely affect their own operations. This perspective was diametrically opposed to the position generally maintained by member corporations of the Armament Core, who were increasingly active in Middle Eastern weapon markets in the late 1960s and early 1970s. The conflict of interest between major groups of U.S. corporations partially explains the traditional hostility between the U.S. State Department, which generally supported oil interests, and the Pentagon, which favoured the concerns of arms producers. However, once the 'free flow' regime was abandoned, the conflict between oil and arms interests lost much of its rationale.

4.1 Armadollar-Petrodollar Cycles

Table 3 and Figure 9 permit a better understanding of the post-1973 reconciliation of competing interests. Their entries relate the overall oil revenues flowing into the Middle East and the arms revenues flowing out of that region since 1963. The figure reveals a 'step function' in this relationship. Between 1963 and 1973, both series exhibit an upward trend with armadollars growing faster than petrodollars -- the ratio between the two series grew from 5 per cent in 1964 to 16 per cent in 1973. The 'correction' of the oil crisis in 1973 significantly increased the flow of petrodollars and caused the armadollar-petrodollar ratio (which is recorded

Table 3

ARMADOLLARS AND PETRODOLLARS IN THE MIDDLE EAST^a
(\$ million)

Year	Arms Imports to the Middle East	Oil Export from the Middle East	Arms Imports as Percent of Oil Export
1963	378	4,330	8.7
1964	257	5,100	5.0
1965	285	5,395	5.3
1966	314	6,030	5.2
1967	556	6,600	8.3
1968	635	7,290	8.7
1969	820	7,720	10.6
1970	1,250	8,942	14.0
1971	1,175	12,980	9.1
1972	1,995	15,093	13.2
1973	3,745	23,374	16.0
1974	4,195	84,582	5.0
1975	3,950	77,597	5.1
1976	5,845	93,169	6.3
1977	7,960	100,325	7.9
1978	9,040	93,233	10.3
1979	9,725	134,594	7.2
1980	9,885	196,784	5.0
1981	14,600	180,223	8.1
1982	16,610	130,980	12.7
1983	17,340	103,060	16.8
1984	18,060	91,509	19.7
1985	9,390	----	----

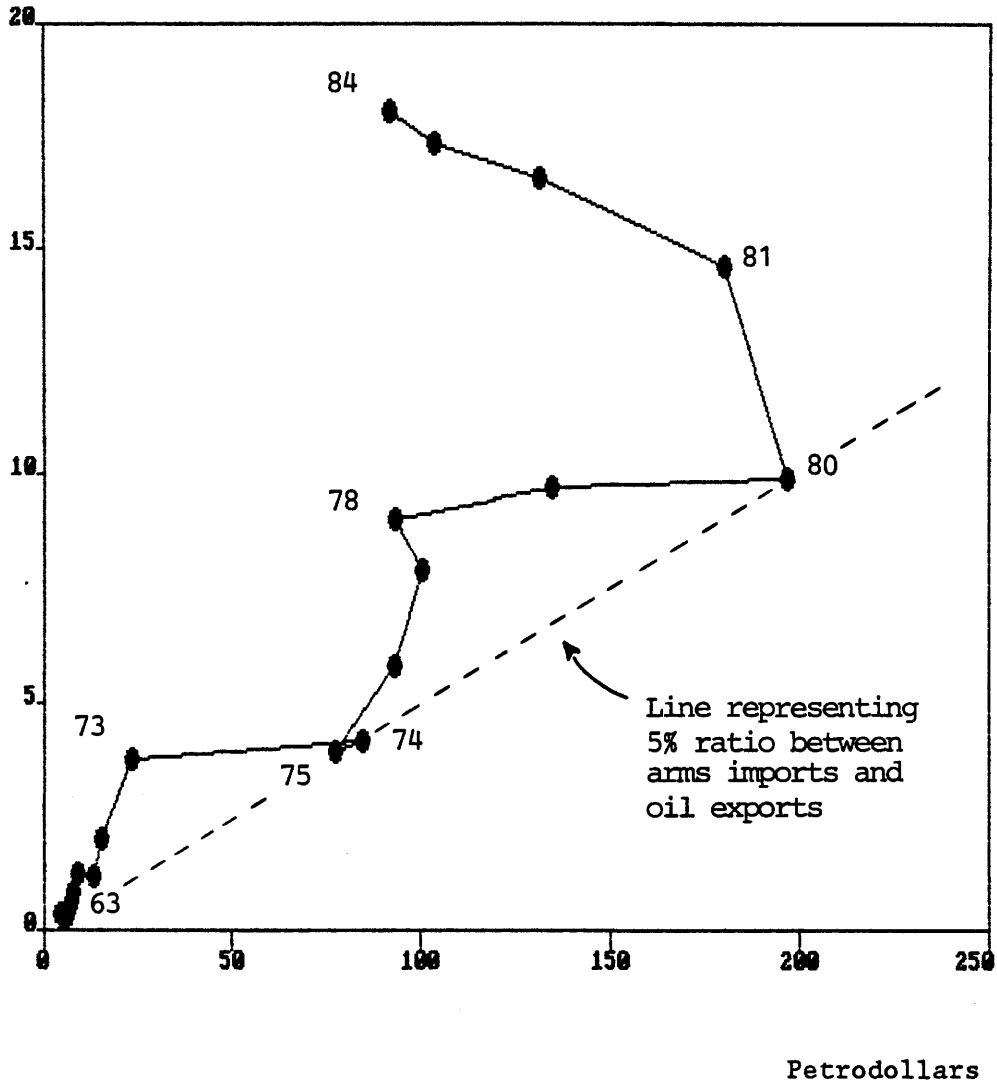
SOURCE: For arms imports, see Table 1; Oil export data are from United Nations, Department of International, Economic and Social Affairs, Statistical Office, *Statistical Yearbook* (various years).

^a The Middle East includes Baharain, Cyprus, Democratic Yeman, Egypt, Iran, Iraq, Israel, Jordain, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syria, Turkey, United Arab Emirates, Yeman. Oil export data exclude Egyptian shipments.

Figure 9

ARMADOLLARS AND PETRODOLLARS:
ARMS IMPORTS AND OIL EXPORTS IN THE MIDDLE EAST
(\$ billion)

Armadollars



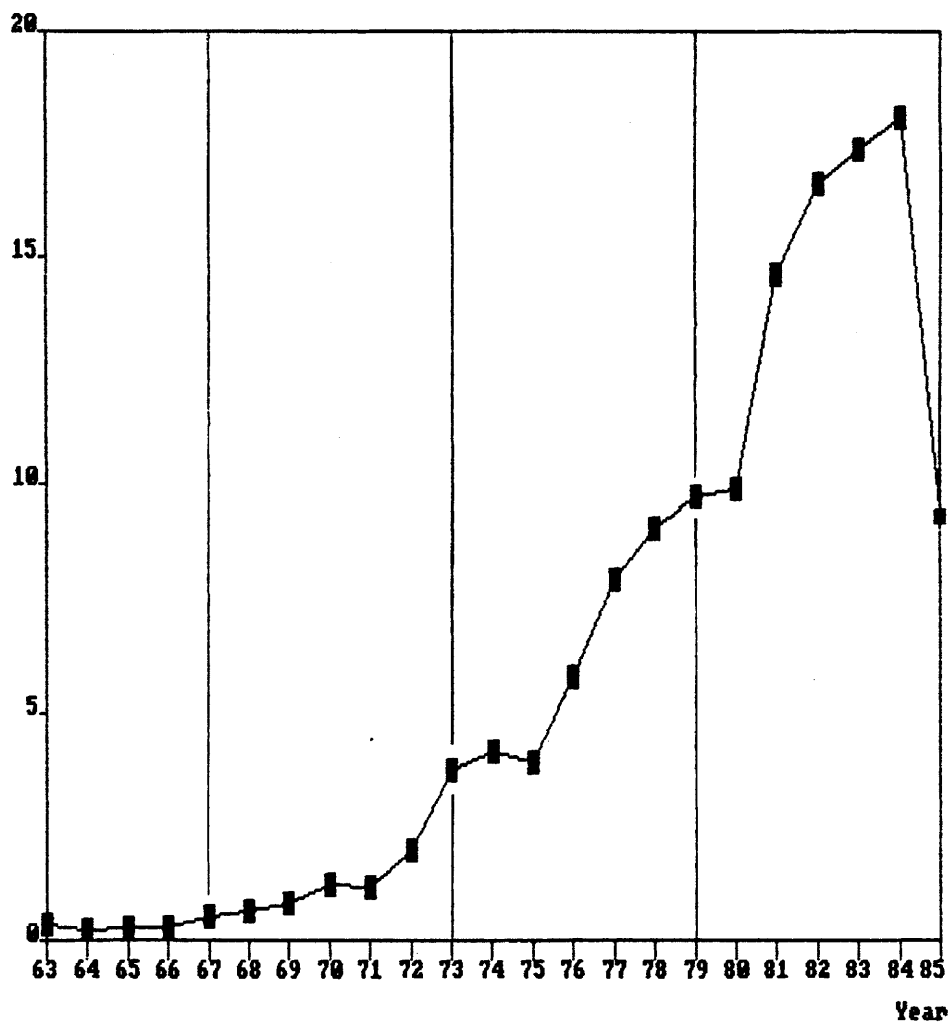
SOURCE: See Tables 1 and 3.

in the third column of Table 3) to fall back to an annual level of 5 per cent for this year. The oil crisis shifted the function but, for the period from 1974 to 1978, arms imports continue to rise at a rate somewhat faster than that for oil exports. As a result, the armadollar-petrodollar ratio climbed to 10.3 per cent in 1978. The second oil crisis in 1979 created another break and the armadollar-petrodollar ratio fell back to 5 per cent in 1980. Between 1981 and 1984, values of the ratio recovered but the constituent series moved in opposite directions with oil exports falling and arms imports rising.

Before considering the changes that occurred in the early 1980s, we should provide a closer examination of earlier developments. Our data confirm the impression that the oil crises of 1973 and 1979 were followed by booms in arms exports. While many researchers identified these booms as directly due to changes in oil revenues, little attention was paid to the reverse influence of arms imports on oil-export revenues. We must note the three oil crises of 1967, 1973 and 1979 occurred after armed conflicts--the 1967 mini-oil embargo came after an Israel-Arab war in that year; the 1973 oil crisis was triggered by the war between Israel, Egypt and Syria; and the 1979 oil crisis coincided with the Iranian Revolution and the onset of the Iraq-Iran War. In Figure 10, we denote the years when these three armed conflicts broke out and describe the related development of armadollar values for military exports into the Middle East. As entries in the figure make clear, each of these armed conflicts, and especially the latter two conflicts, was preceded by several years in which arms imports rose rapidly.

Figure 10

ARMADOLLARS: ARMS IMPORTS TO THE MIDDLE EAST
(\$ billion)



SOURCE: See Tables 1 and 3.

An acute sense of 'oil shortage' accompanied the dramatic increases for oil prices in 1973 and 1979. We suggest that the ability of the OPEC cartel to create this unpleasant atmosphere was significantly enhanced by the militarization of the region and the attendant outbursts of internecine armed conflicts. Thus the principal arms producers were not simply 'free riders' of the oil boom, late-comers who profited from the incidental increases in oil revenues accruing to Middle Eastern governments. Arms exports to the region were an active force that assisted both in the abolition of the 'free flow' regime and in its replacement by the new and more profitable 'limited flow' rationale for the oil industry. The interaction of arms imports and oil exports throughout the late 1960s and 1970s followed an almost-stylized sequence, whereby an increasing level of arms imports facilitated the onset of armed conflict, which in turn stimulated the outbreak of an oil crisis. The 'scarcity' created by the crisis would then lead to an increased level of oil revenues, which were partially used to offset the costs of further increases in arms imports that could initiate a new 'cycle' of interaction.¹⁰

4.2 Armaprofits, Petroprofits and the Coalition

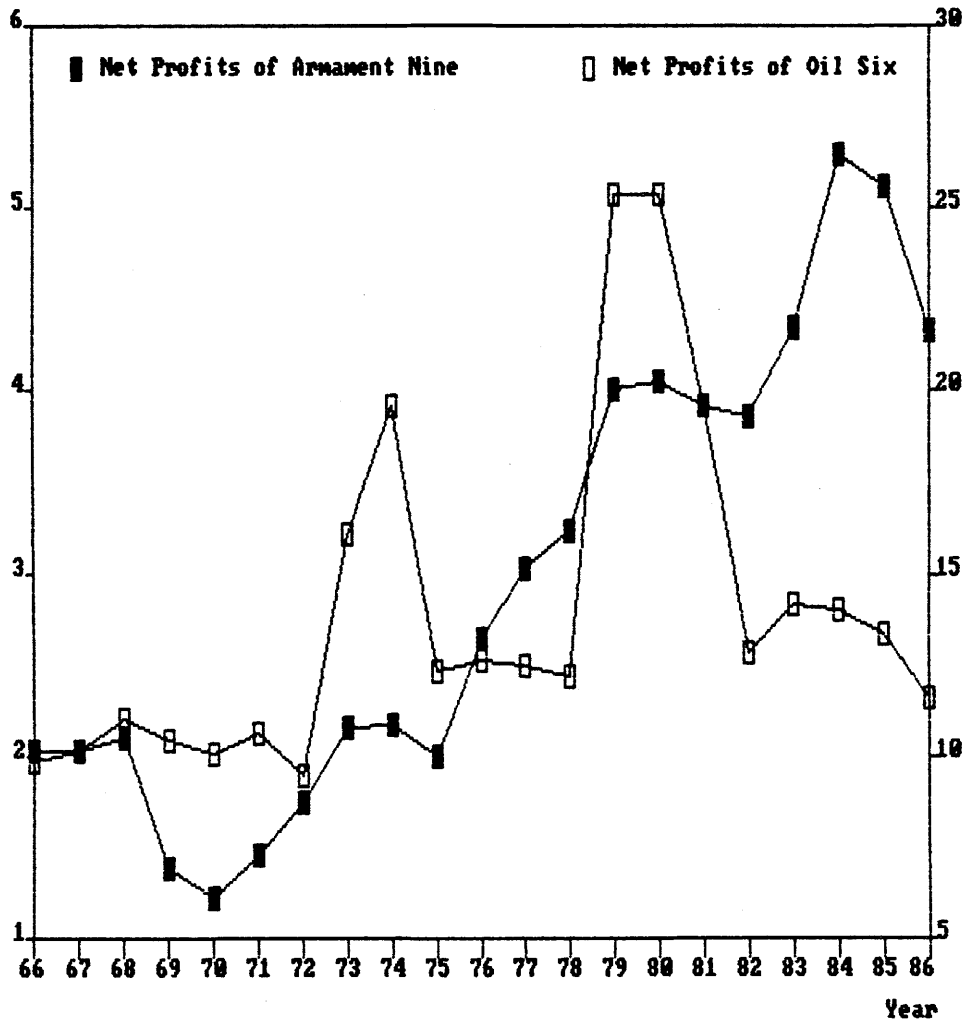
The crucial question to be addressed here does not ask how the cyclical sequence affects oil and arms revenues but rather it concerns the sequence's bearing on a convergence of corporate profits. If we abstract from our concrete historical and institutional setting, levels of profitability in the oil and arms industries need have little in common -- one industry produces a basic raw material and some related commodities, which are sold

to many industrial and private consumers, while the other industry manufactures high-technology products that are almost exclusively purchased by governments. On the basis of the preceding analysis, however, such abstraction may be quite misleading. The combination of militarization and oil production in the Middle East might have had a similar impact on the profits of both arms and oil producers; thus creating a potential for an Armadollar-Petrodollar Coalition between them.

The purpose of Figure 11 is to present evidence on the apparent convergence of interests across the two industries. Entries outline the temporal development of the combined net profits earned by the Armament Nine and contrast this development with that of the combined net profits received by the Oil Six (both deflated by the U.S. deflator for GNP, with 1982 as its base). The cyclical patterns exhibited by the two series are remarkably similar. Both peaked together after oil/military crises -- in 1968, after the Six-Day War and the mini-embargo; in 1974, after the Yom-Kippur War and the first oil crisis; and in 1980, after the Iranian Revolution, the onset of the Iran-Iraq war and the second oil crisis. Petroprofits peaked again in 1983 during the 'tanker-war' in the Persian Gulf, while armaprofits peaked a year later after the Israel-Lebanon War. A similar concurrence is also found in connection with troughs -- while armaprofits reached their lowest level in 1970, two years before the trough for petroprofits, subsequent troughs in armaprofits and petroprofits simultaneously occurred in 1975, 1982 and 1986. We conclude these financial data support our contention that, during the 1970s and early 1980s, the interests of large armament producers and oil

Figure 11

ARMAPROFITS AND PETROPROFITS:
NET PROFITS OF THE ARMAMENT NINE AND THE OIL SIX
(\$ billion, 1982 prices^a)



SOURCE: For net profits of the Armament Nine and Oil Six corporations, see Figures 1 and 8; For GNP deflator, see Figure 2.

^a Deflated by the GNP deflator with 1982 as base year.

companies indeed converged to create a solid basis for the emergence of a potential coalition between the two groups.

4.3 The Armadollar-Petrodollar Coalition and U.S. Foreign Policy During the 1970s

The implications of a coalition are complex. As a minimum, we are required to reassess some political events and to seek out the motivations and actions that surrounded these events. If we consider the first oil crisis, there is little evidence that either the large oil companies or armament companies were instrumental in 'engineering' the crisis but there are clear indications that the subsequent militarization and the second oil crisis were, at least partially, affected by the common interests of these firms. The role of the U.S. government as a mediator for the coalition also needs further exploration. For example, allegations have suggested that the administration of President Nixon supported Iran's attempt to raise oil prices. Both Nixon and Kissinger were promoting arms exports to the Shah's regime and they possibly considered higher revenues from oil sales as a primary source of funding for arms deliveries.¹¹ An alternative contention, expressed by Sampson (1981a), has Kissinger persuading the Shah to increase oil prices as a means of assisting Rockefeller since the Chase Manhattan Bank was experiencing awkward liquidity difficulties that could be somewhat eased by further deposits of petrodollars. The earlier support of military sales to Israel by Nixon and his dismissal of the warning from Saudi Arabia that such support could lead to an oil embargo are not inconsistent with speculations that the U.S. government mediated the wishes of an emerging coalition of arms and oil interests.

Such speculations are stimulated by the apparent political ties of government figures and industry representatives. Nixon, for example, was closely associated with the oil industry, which provided financial assistance to advance his political career and facilitate his election campaigns, as described by Barnett (1980, pp. 23-4). Representatives of some Rockefeller corporations were especially active in the network of activists that developed around this career. They include Volcker, Letty and Fiero who accepted key posts in the Nixon administration.¹² With respect to the arms industry, Nixon was subjected to mounting pressures from members of the Armament Core during his years in office, when the corporations were adversely affected by declines in their Pentagon orders after 1968. Clearly, we cannot definitively show that the Nixon Administration promoted increases in oil prices as a pragmatic response to serve the dual interests of armament and oil companies. The administration's policies, however, were favourable to these interests when they permitted the 'era of arms exports' and intensified the militarization of the Middle East.

A more substantial boost for the Armadollar-Petrodollar Coalition was provided by Nixon's presidential successors. During the Carter Administration, which was in office from 1977 to 1981, the domestic military budget again began to rise after a long period of decline. In those years the United States also emerged as the leading arms-exporting country. Although Carter expressed concern for the 'free flow' of oil, his policies reinforced the tendencies that led to the next oil crisis. Paradoxically, while often perceived as a peace-maker who promoted conciliation in the

region, Carter was the President of the United States who made the most contribution to the opening of the Middle East to arms producers. In 1978, he initiated the first 'combination deal' whereby U.S. armament producers simultaneously equipped several warring factions -- a pattern which was promptly institutionalized by other arms-exporting countries as a means of promoting peace through arms sales!¹³ Carter's strategy of 'stabilization' also allowed the United States to continue arming Iran when the Shah's regime faced both domestic and external challenges.

The United States was not the only foreign power active in the Middle East since actions by the Soviet Union and European countries also reinforced the trend toward militarization.¹⁴ However, without question, the United States was still the primary actor here. After the 1973 oil crisis, U.S. government administrations must have been aware that in building the military arsenals of various Middle East countries they could destabilize the region and endanger the 'free flow' of oil. In the light of such awareness, the involvement of the Carter Administration at the outset of the 1979 oil crisis is disturbing. Despite the delicate political situation that prevailed in Iran, Carter quickly granted asylum to the Shah after he was ousted and thus triggered the hostage crisis. When Iran threaten to withdraw its deposits from the vaults of banks in the United States, the president retaliated by seizing Iranian assets. Such reactions feed allegations that the president was unduly influenced by his special relationship with the Rockefeller group, who again feared the losses of their extensive loans to Iran.¹⁵

4.4 The Coalition and the Reagan Administration

The power of the Armadollar-Petrodollar Coalition reached its apex during the early 1980s. President Reagan nominated Haig, a director of Chase Manhattan and the president and chief operating officer of the large armament firm United Technologies, as his Secretary of State. Haig had previously served as President Nixon's Deputy Assistant for National Security Affairs and as the White House Chief of Staff. United Technologies exports helicopters and aircraft engines to the Middle East. Shiff and Yaari (1984) allege that, in his capacity as Secretary of State, Haig gave Israel the 'green light' to launch the 1982 Lebanon War. He was also able to persuade the Israeli government to install engines from United Technologies in its proposed Lavi aircraft -- although the I.D.F. preferred the alternative engines that General Electric could offer -- and may have assisted United Technologies to sell helicopters to both Taiwan and the Philippines. (Following his resignation from public office in 1982, Haig became a consultant to the company.) Reagan also nominated Regan, a partner and chairman of Merrill Lynch, as his Treasury Secretary. Merrill Lynch is the largest brokerage house in the United States and, like both Chase Manhattan and United Technologies, has a special connection with the Middle East. In 1978, Merrill Lynch had acquired White Weld, an international investment firm that advised the Saudi Arabian Monetary Agency (SAMA) on how the \$100 billion portfolio of the agency should be recycled and guided the investment of a daily inflow of about 450 million petrodollars. As his Assistant Secretary for International Affairs, Regan nominated Mulford, who until then had managed White Weld's operations in Saudi Arabia. Other

interesting appointments during the Reagan Administration that were associated with oil interests include the Chairmen of the Federal Reserve Board, Volcker and Greenspan -- one was linked to the Rockefeller group and the other was a director of both Mobil Oil and J.P. Morgan prior to their appointments.

The most important representatives of the Armadollar-Petrodollar Coalition that found their way into the Reagan Administration were several veterans of the privately-owned company Bechtel, the world's largest construction and engineering concern.¹⁶ As his initial Defense Secretary, Reagan chose Weinberger, a Bechtel vice-president; and in 1982, the president asked Shultz, Bechtel's president and formerly the Labor Secretary and Treasury Secretary of President Nixon, to become Secretary of State instead of Haig. Other Bechtel veterans with key positions were Casey (the CIA Director), Allen (National Security Advisor), Davis (Deputy Secretary of Energy) and Habib (Special Envoy to the Middle East). As the world's largest constructor of military installations and energy-related projects, Bechtel is the ideal embodiment of the Armadollar-Petrodollar Coalition. The full political leverage of the company has only emerged since the mid-1970s although its influence can be discerned from the Second World War.

When Shultz joined Bechtel in 1974, the company's business was still domestically oriented in the main but by 1982, when he left the company, about 50 per cent of its business was conducted outside the United States. Much of this transition in geographical focus could have been attributed to the oil crises. Bechtel became active in the Middle East, where its efforts

included the construction of natural gas projects in Algeria and Abu Dhabi, power stations in Cairo and refineries, airports and petrochemical cities in Saudi Arabia. Many of the company's other energy-related projects were launched as a result of the new environment of crisis.¹⁷ Petrodollar revenues also enabled Bechtel to take part in the militarization of the Middle East by building air fields and military installations. Estimates of the company's annual sales during the early 1980s exceed \$15 billion and its outstanding contract obligations might surpass \$60 billion. With so much at stake, it is hardly surprising that the company should be speculatively implicated in many Middle East scandals -- for example, in the Syrian coup of 1949, when the Syrian government raised obstacles to the construction of a Saudi-Syrian pipeline; the Iranian coup of 1953, when the Iranian government wanted to ship oil to the Soviet Union; the \$200 million bribe to Saudi Arabian officials in return for a \$3.4 billion contract to build a new airport in Riyadh; and the attempt to bribe Israeli Prime Minister Peres so that he would not to attack the proposed Iraqi-Jordanian pipeline that could cost \$1.5 billion to construct.¹⁸

All of this speculative activity, and the underlying reality that it reflects, suggests that the positive relationship between armaprofits and petroprofits, as charted in Figure 11, is not a statistical artifact. We are left with the overwhelming impression that somewhere lurking behind the financial flows, there must be significant individuals who represent the large arms, oil and financial companies and who are jointly involved in determining the primary thrust of U.S. policies for the Middle Eastern region.

The links between armament and oil corporations have also been reflected in a network of interlocking directorships. For example, during the 1980s, the chairman and chief executive officer of Standard Oil of Indiana (Swearingen) was a director of both Chase Manhattan and Lockheed; the board of directors of McDonnell Douglas include a director of Phillips Petroleum (Chetkovich) and a director of Shell Canada (MacDonald); the chairman and president of United Technologies (Gray) was a director of both Exxon and Citibank; Boeing shared one director with Mobil and three directors with Chevron, including the chairman of Chevron (Keller); and the Chevron board included a director from Allied Signal (Hills) and the president and chief executive of Hewlett Packard (Yound).¹⁹ Such interlocks facilitate a sharing of common interests and they serve as an informal mechanism for the transmission of views that permit strategic actions to be coordinated. The extensive network has a potential role in the mediation of cooperative efforts.

5. Concluding Comments

The emergence of cooperation brought a partial convergence of political pressures. Due to their dependency on the persistence of high levels of government spending, the armament companies traditionally sought to promote 'Keynesian'-type policies, which include various forms of intervention by the U.S. federal government in economic activities. The oil companies, on the other hand, have generally encouraged the adoption of 'monetarist' policies and low budgetary deficits that were consistent with a small tax burden on their own profitability. Thus the consolidation of the Armadollar-Petrodollar Coalition meant that some conciliatory changes in political rhetoric were necessary. In particular, the vigour of the oil industry's resistance to large military budgets had to weaken. The consequences were of immense significance. During earlier decades, civilian business interests served to provide a countervailing force against any military buildup-- thus providing the basis for a competitive struggle between rival business factions in the economic and political elite of the United States, as described by Kalecki (1967) and briefly considered by us in Bichler, Nitzan and Rowley (1989). This situation changed during the 1970s and early 1980s because the largest civilian business groups, essentially the oil companies, began to support the predatory demands of the Armament Core.²⁰ The concurrence of support is, we suggest, a crucial ingredient in any reasonable explanation of the ambient conditions from which it was possible to launch the largest peace-time buildup of defence expenditures in history.²¹ The basis for the arms-oil alliance, however, was inherently unstable for its continuation must ultimately hinge on the maintenance of

high levels for oil prices. Thus the oil companies would consent to the 'military Keynesianism' of President Reagan's Administration on the home front provided their own situation was enhanced by the pursuit of a militarization policy in the Middle East, which assisted them by raising oil prices. When the price of crude oil began to decline in the early 1980s, the uneasy foundations of the Armadollar-Petrodollar Coalition were shaken.

The pivotal significance of high oil prices was abruptly uncovered in 1986, when Saudi Arabia flooded the oil market with additional supplies and caused the price of crude petroleum to drop below \$10 per barrel. This action was recognized as so hazardous to the interests of the Armadollar-Petrodollar Coalition that some immediate political response was called for. Subsequently, the vice president was sent to the Middle East with the task of openly asking Saudi Arabia to reconsider the action and reinstate lower levels for production. Bush insisted that the government of the United States was 'fundamentally, irrevocably committed' to maintaining the free flow of oil and 'the interest in the United States is bound to be cheap energy prices'. However, the vice president also qualified this message:

[There] is some point at which the national security interests of the United States say, 'Hey, we must have a strong, viable domestic interest.' We recognize that as we talk about national interests that comes in conflict at some point -- and I don't know where that is -- with the totally free market concept that we basically favor in our economic approach to all industries.²²

To substantiate this sacrifice of the 'free market concept', President Reagan ordered a study to examine the impact of falling energy prices on 'national security'. This study, which was eventually completed and then classified as 'top secret', was never published. Regardless of its findings, any attempt to restrict the decline of oil prices must sacrifice the

benefits to be anticipated by many American consumers and producers from lower prices in order to stabilize the economic benefits accruing to members of the Armadollar-Petrodollar Coalition. While the outcome of this particular incident seems to show the strength of the coalition's leverage over the U.S. foreign policy, the eventual failure to keep high oil prices indicated the power of such leverage were limited. During the 1980s, important global changes revealed the inherent fragility of the coalition and caused its structure to be transformed.

Appendix: Price and Quantity Indices for Military Spending

In the United States, the Bureau of Economic Analysis adopts 'specification pricing', where each constituent commodity is defined by a set of physical characteristics -- rather than 'functional pricing', where the corresponding definition uses attributes that serve a particular purpose regardless of physical characteristics. The choice of the first procedure was partially affected by a desire to avoid the issue of 'quality change' which arose with the second method. In 'functional pricing', commodities that change and no longer fit the specifications are simply removed from the price index.

Unfortunately, this method resolves the problem only by ignoring it. In the case of military production, the output undergoes rapid and often drastic changes in its nature. New aircraft, missiles, tanks, ammunition, cannons and submarines are continuously introduced, while the characteristics of existing ones are ceaselessly amended. Under such dynamic conditions, a strict adherence to 'specification pricing' would require the eventual removal of most military commodities from the price index and the ultimate elimination of the index itself! The fact that price and quantity indices for military output are provided on a regular basis means that some 'functional pricing' methods are implicitly embedded in the 'specification pricing' procedure in order to help statisticians compare the changing quality of different military commodities in different period of times. But then changes in the 'quality' of weapon-systems must be evaluated in light

of contributions to their particular purpose, namely, to the promotion of 'national security'.

The U.S. Bureau of Economic Analysis does not conduct such complex evaluations and instead relies on an arbitrary procedure to overcome the difficulty. To estimate quality changes, the agency requires a change in specifications that entails additional production costs. [See the instructive account by Zimmer and Galbraith (1983).] Thus, for example, if General Dynamics amends the design specifications for the SSN-688 submarine and seeks a unit increase of some 20 per cent for both capital and labour outlays, then this event is recorded as an improvement in 'quality' of 20 per cent. Whether the amendment improves or reduces the potential performance of the submarine has no direct bearing on this calculation. In civilian markets, effective competition can mean that costly changes will occur only if the market accepts them. However, military markets often lack a similar degree of market discipline so reliance on cost information is an unreliable basis for the calculation of measurement proxies to represent quality. There is an environment here that permits contractors, not bound by fixed-price terms, to increase their profits by raising 'declared' costs. Numerous scandals have generated sufficient evidence to show that the linkage of cost increases with quality adjustments is somewhat tenuous. See 'Cracking Down on Contractors' in *Time* (April 8, 1985). The unsatisfactory explanation of BEA's methods for dealing with transformations from old to new weapon systems is also disconcerting for the reliability of measurements. Again, see Zimmer and Galbraith (1983) for a fuller comment.

Notes

1. The overall decline is revealed by a number of different indices. For example, the annual levels of contract awards and gross obligations of the U.S. Department of Defense move together and both reveal the same pattern of decline. Since the pricing of military products has some idiosyncratic features, the choice of deflators to obtain 'constant-dollar' aggregates is quite troublesome. Our examination focuses on corporate revenues from military production and because such earnings are reinvested in a wide variety of alternative uses, we chose to deflate nominal figures for defence spending by the GNP deflator rather than use the implicit deflator for military expenditures. The appendix contains a brief comment on the nature and measurement of prices and quantities in this context.
2. Data for awards of prime contracts by the U.S. Department of Defense do not provide information on actual payments. We rely on values for contract awards and obligations (with a reasonable assumption of short payment lags) to support the inference that the share of military revenues from U.S. sources declined for the corporations as a proportion of their overall sales revenues.
3. The ACDA also notes its statistics are 'estimates of goods actually delivered during the reference year, in contrast both to the value of programs, agreements, contracts or orders which may result in future deliveries, and to payments made during the period.' The data exclude the value of arms that are obtained by subnational groups and are thus predicated on direct transfers to national governments.
4. Adams (1982, p. 311) cites an internal 1975 report from the Lockheed corporation, for example, to the effect that its 'foreign military sales generally are more profitable than its domestic sales and generally provide favorable advances which have been a significant factor in Lockheed's total financing program.'
5. We briefly touch on the concept of 'institutional waste' in Bichler, Nitzan and Rowley (1989).
6. See for instance, 'Arms Sales Turn Into Gifts For Struggling Third World Nations' in *Business Week* (July 25, 1983).
7. See Turner (1980), pp. 139-40.
8. This view, for example, was openly expressed by Saudi Arabia. Barnett (1980, p. 61) cites a comment in 1969 by the Saudi petroleum minister, Yamani, on the strategy to develop an orderly alliance of market participants: 'For our part, we do not want the majors to lose their power and be forced to abandon their role as a buffer element between the producers and the consumers. We want the present setup to continue as long as possible and at all costs to avoid any disastrous clash of interests which would shake the foundations of the whole oil industry.'

9. The oil companies, of course, favoured the use of military force to promote their own concerns -- such as, for example, occurred in the Iranian coup of 1953 and the Egyptian episode of 1956. But the companies saw no need to arm oil-producing countries and they objected to U.S. military aid for Israel. In 1973, for instance, the ARAMCO partners disagreed with President Nixon's actions in providing military support to Israel. The partners even contributed to the funds of Arab organizations and refused to supply petroleum to the Sixth Fleet during the oil embargo of that year.

10. This use of a causal chain to explicate the emergence of new features in the political economy of armaments is a teleological device, the validity of which cannot be meaningfully assessed by a confrontation with conventional tests of statistical significance for hypotheses. No formal system of testing offers much assistance in verifying counterfactual issues such as whether the oil industry might have evolved in a different way if the arms sales has not occurred. Our tentative hypotheses should be judged by their internal consistency and by their usefulness in the presentation and interpretation of apposite 'facts'. Berlin (1969) and Carr (1961) illustrate different attitudes to historical explanation.

11. Allegations in this context were put forward on the program *Sixty Minutes* of the CBS network for May 3, 1980. Kissinger declined to reply to the allegations. See Chan (1980), p. 244, footnote 1.

12. Volcker was Under Secretary of the Treasury for Monetary Affairs, Letty was Assistant Secretary of the Treasury, and Fiero was Director of the Office of Foreign Direct Investment in the Commerce Department. For more information, see Barnet and Muller (1974, p. 251) and Turner (1980, p. 105).

13. The first 'combination deal' followed the Israel-Egypt Peace Treaty, when President Carter agreed to compensate Israel for its withdrawal from the Sinai Peninsula. He permitted U.S. companies, primarily Bechtel, to construct two new air fields in the Negev desert at a cost of \$2.2 billion and granted a 'reorganization' of armaments worth \$1.8 billion. Carter also agreed to sell Egypt arms worth \$400 million, while Saudi Arabia would receive weapons worth \$2.5 billion. As reported in *Ha'aretz* (April 3, 1983), Vance, who was Carter's Secretary of State and actively participated in the negotiations, explained the deal by noting that Egypt needed security in order to pursue the peace negotiations with Israel and that Saudi Arabia sought the arms to enhance regional stability. (The significance of the deal for the Armament Core was not explored in this explanation. In 1987 Vance was nominated as director of General Dynamics, a company that was one of the main beneficiaries of the agreement.)

14. By the mid-1970s, European companies were already supplying over 15 per cent of the region's arms imports. European-based oil companies, particularly Royal Dutch/Shell and British Petroleum, stood to gain from the outcome of another oil crisis.

15. The process which led to the seizure of Iranian assets is explained in Sampson (1981a; 1981b, ch. 17). During the period from 1976 to 1978, Iran borrowed \$3.8 billion to finance arms purchases. On the eve of the Iranian Revolution, an outstanding debt of \$500 million was owed to a consortium headed by Chase Manhattan but Iranian deposits of \$433 million were also held by the bank. However, Chase Manhattan had no legal authority to hold onto the fund and the money was eventually seized only after the hostage-crisis induced the United States government to freeze Iranian assets. Rockefeller was not passive in the onset of this crisis. Sampson reveals how Kissinger, a special advisor to Chase Manhattan at the time, and McCloy, a former chairman of the bank, were influential in the decision to grant asylum to the Shah despite the fragile political atmosphere. In the turmoil that followed, the government in Teheran threaten to withdraw its deposits from U.S. banks and President Carter froze them, arguing that this was necessary in order to prevent destabilization of the banking system. But this official reasoning was unfounded since only about \$8 billion dollars of Iranian assets were on deposit within the U.S. banking system -- markedly insufficient to destabilize the system. Moreover, most Iranian deposits were held in London. But while the American economy as a whole was in no real danger, some individual banks, notably Chase Manhattan and Citibank of the Rockefeller group, were vulnerable.

16. The Bechtel family owns 41 per cent of the company's shares while ownership of the remainder is spread among senior managers. The company could not be included in our statistical analyses because of its private ownership, which effectively precludes collection of appropriate data. See Golan (1982) for a brief comment on Bechtel.

17. These projects included hydroelectric dams (such as the James Bay Project in Northern Quebec), oil pipelines (the link from Alaska to the main body of the United States), and nuclear reactor plants in the United States and elsewhere. *Ha'aretz* (December 13, 1984) suggests that Shultz insisted Israel 'could not afford' a new reactor when the Israeli government decided to purchase a French-made option rather than one constructed by Bechtel. The deal struck with French interests was cancelled.

18. See Levine (1988), p. 16. Other speculative views have suggested scandalous behaviour in the 'fixing' of Bechtel's contract for the James Bay Project and in the bribing of Korean officials to win contracts for nuclear power plants. See Grieves (1984).

19. Such information can be readily obtained from *Moody's Industrial Manual*, which is published annually. See also the account by Adams (1982).

20. Many large civilian producers directly entered into the production of armaments, a development which added to the political leverage that could be exercised by the Armament Core. For a fuller account, see Nitzan, Rowley and Bichler (1989).

21. As a conservative politician, President Reagan promised to eradicate the budgetary deficit but, during his years in office, this deficit rapidly rose to unprecedented levels. Driven by pressures from the Armadollar-

Petrodollar Coalition, the president moved to introduce corporate tax cuts and enlarged military expenditures.

22. 'Bush Sees Threat to Security of U.S. in the Oil Price Slide' in *The New York Times* for April 7, 1986 (pp. A1, D12).

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