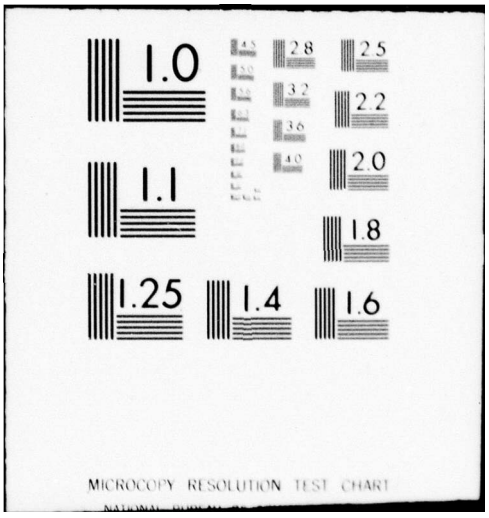
AD-A061 305 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHO--ETC F/G 5/3
AN ANALYSIS OF THE RELATIONSHIP BETWEEN OPEC OIL REVENUES AND S--ETC(U)
SEP 78 T P GARDNER, J L REUWER

UNCLASSIFIED AFIT-LSSR-37-78B NL

1 OF 2
AD
A061 305



1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

UNITED STATES AIR FORCE

AIR UNIVERSITY

AIR FORCE INSTITUTE OF TECHNOLOGY

Wright-Patterson Air Force Base, Ohio

AN ANALYSIS OF THE RELATIONSHIP BETWEEN OPEC OIL REVENUES AND SALES OF UNITED STATES ARMS

Thomas P. Gardner, GS-12
Joseph L. Reuwer, Jr., Captain, USAF

LSSR 37-78B

The contents of the document are technically accurate, and no sensitive items, detrimental ideas, or deliterious information are contained therein. Furthermore, the views expressed in the document are those of the School of Systems and Logistics, the Air University, the United States Air Force, or the Department of Defense.

USAF SCN 75-20B AFIT Control Number LSSR 37-78B

AFIT RESEARCH ASSESSMENT

The purpose of this questionnaire is to determine the potential for current and future applications of AFIT thesis research. Please return completed questionnaires to: AFIT/LSGR (Thesis Feedback), Wright-Patterson AFB, Ohio 45433.

1. Did this research contribute to a current Air Force project?

   a. Yes b. No

2. Do you believe this research topic is significant enough that it would have been researched (or contracted) by your organization or another agency if AFIT had not researched it?

   a. Yes b. No

3. The benefits of AFIT research can often be expressed by the equivalent value that your agency received by virtue of AFIT performing the research. Can you estimate what this research would have cost if it had been accomplished under contract or if it had been done in-house in terms of manpower and/or dollars?

   a. Man-years _____ $ _____ (Contract).

   b. Man-years _____ $ _____ (In-house).

4. Often it is not possible to attach equivalent dollar values to research, although the results of the research may, in fact, be important. Whether or not you were able to establish an equivalent value for this research (3 above), what is your estimate of its significance?

   a. Highly Significant b. Significant c. Slightly Significant d. Of No Significance

5. Comments:

Name and Grade _____ Position _____

Organization _____ Location _____

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

REPORT DOCUMENTATION PAGE		READ INSTRUCTIONS BEFORE COMPLETING FORM
1. REPORT NUMBER LSSR 37-78B	2. GOVT ACCESSION NO.	3. RECIPIENT'S CATALOG NUMBER
4. TITLE (and Subtitle) AN ANALYSIS OF THE RELATIONSHIP BETWEEN OPEC OIL REVENUES AND SALES OF UNITED STATES ARMS		5. TYPE OF REPORT & PERIOD COVERED Master's Thesis 6. PERFORMING ORG. REPORT NUMBER
7. AUTHOR(s) Thomas P. Gardner, GS-12 Joseph L. Reuwer, Jr., Captain, USAF		8. CONTRACT OR GRANT NUMBER(s)
9. PERFORMING ORGANIZATION NAME AND ADDRESS Graduate Education Division School of Systems and Logistics Air Force Institute of Technology, WPAFB OH		10. PROGRAM ELEMENT, PROJECT, TASK AREA & WORK UNIT NUMBERS
11. CONTROLLING OFFICE NAME AND ADDRESS Department of Research and Administrative Management AFIT/LSGR, WPAFB OH 45433		12. REPORT DATE September 1978 13. NUMBER OF PAGES 130
14. MONITORING AGENCY NAME & ADDRESS (if different from Controlling Office)		15. SECURITY CLASS. (of this report) UNCLASSIFIED 15a. DECLASSIFICATION/DOWNGRADING SCHEDULE

16. DISTRIBUTION STATEMENT (of this Report)

Approved for public release, distribution unlimited (AFR 190-17)

JOSEPH P. HIPPS, Major, USAF
Director of Information

SEP 20 1978

17. DISTRIBUTION STATEMENT (of the abstract entered in Block 20, if different from Report)

18. SUPPLEMENTARY NOTES

19. KEY WORDS (Continue on reverse side if necessary and identify by block number)

Arms Sales
Foreign Military Sales
Oil
Petroleum

20. ABSTRACT (Continue on reverse side if necessary and identify by block number)

Thesis Chairman: Richard T. Taliaferro, Ph.D.

DD FORM 1 JAN 73 1473 EDITION OF 1 NOV 65 IS OBSOLETE

UNCLASSIFIED

SECURITY CLASSIFICATION OF THIS PAGE (When Data Entered)

This research suggests a positive relationship between U.S. arms deliveries to OPEC and OPEC oil sales to the U.S. The thesis demonstrates that the constant dollar price of OPEC oil has essentially only doubled since 1970. The dominance of OPEC purchases in total U.S. arms sales is shown to have begun as early as 1971. The authors have examined and presented, in 1975 constant dollar terms, arms deliveries, arms agreements, all other U.S. exports and oil imports between the United States and OPEC countries. Difficulties in identifying original sources of oil imported into the U.S., particularly through U.S. possessions such as the Virgin Islands, have been highlighted.

LSSR 37-78B

(6) AN ANALYSIS OF THE RELATIONSHIP BETWEEN OPEC OIL REVENUES AND SALES OF UNITED STATES ARMS

(9) Master's thesis

(14) AFIT-LSSR-37-78B

A Thesis

Presented to the Faculty of the School of Systems and Logistics

of the Air Force Institute of Technology

Air University

In Partial Fulfillment of the Requirements for the

Degree of Master of Science in Logistics Management

(12) 148 p.

By

(10) Thomas P. Gardner, ~~BSME~~
GS-12

Joseph L. Reuwer, Jr., ~~BS~~
Captain, USAF

(11) September 1978

Approved for public release;
distribution unlimited

This thesis, written by

Mr. Thomas P. Gardner

and

Captain Joseph L. Reuwer, Jr.

has been accepted by the undersigned on behalf of the faculty of the School of Systems and Logistics in partial fulfillment of the requirements for the degree of

MASTER OF SCIENCE IN LOGISTICS MANAGEMENT
(INTERNATIONAL LOGISTICS MAJOR)

DATE: 8 September 1978

Richard T. Tabaferro

COMMITTEE CHAIRMAN

ACKNOWLEDGEMENTS

To our wives, Carolyn and Janet, and our children, Lynn, Larry, Jeff, Doug, Dave, Pat, Mary and Mike, we owe very special recognition for the deprivations they have endured for the past year. Their patience, understanding, and encouragement made bearable a very difficult year in our lives.

To our thesis chairman, Dr. Richard Taliaferro, we express appreciation for the rare combination of guidance and free reign he provided in the pursuit of this thesis.

A big "thank you" is due to Carolyn Gardner for her many hours of draft typing and editing, often under trying circumstances.

Final thanks is due Dee Babiarz for her patience and competence in the final typing of this thesis.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

Chapter 1

INTRODUCTION

Background

Few international events in recent memory have captured as much attention and have affected the life styles of Americans as much as has the Arab oil embargo of 1973—1974 and subsequent oil price increases (13:6). As noted by Melvin A. Conant, "U.S. dependence on oil imports is expected to increase rapidly [7:38]" and "the dominant place of oil in the total energy supply is secure through 1985 [7:37]."

Nations who find themselves able to produce more crude petroleum than they can consume have generally joined one or both of two international cartels. Some exceptions exist such as Canada, the USSR, and Oman, but these are relatively minor exporters (21:121,136). In Canada's case, reduced petroleum exports are designed to insure national energy resources through the rest of the 20th century. The two cartels are The Organization of the Petroleum Exporting Countries (OPEC) and The Organization of Arab Petroleum Exporting Countries (OAPEC).

Seven countries are members of both OPEC and OAPEC: Saudi Arabia, Kuwait, The United Arab Emirates, Iraq, Libya,

Algeria, and Qatar (27:40). Six others are in OPEC only: Iran, Indonesia, Nigeria, Gabon, Venezuela, and Ecuador. Three others are members of OAPEC only: Egypt, Syria, and Bahrain. The geographical relationships between these oil producing countries are shown in Figure 1.

As Figure 2 notes, net crude oil imports by the United States appear to be rising at a nearly exponential rate, increasing from 452 million barrels in 1965 to 2.73 billion barrels in 1977. It has been estimated that U.S. imports may rise to 4.69 billion barrels per year by 1985 (21:7). Concurrently, the net value of crude oil imports has risen from $1.74 billion in 1970 to $36.3 billion in 1977 (69:76). This equates to average costs of $2.35 per barrel in 1970 versus $13.30 per barrel in 1977, a 466% increase in cost to the United States. Authorities such as Samuelson (29:668) maintain that this increasingly significant oil bill must be balanced in the long run. This balance may be achieved by some combination of reduced overall imports, adjusted international debt positions and increased exports.

The Statistical Abstract of the United States (72:820) shows only one year (1975) in which the dollar value of imported commodities has declined between 1970 and 1977. Rather, these imports have risen from $40.0 billion (72:868) to $146.8 billion (43:96), an increase of 267% during this period. Of the classes of import/export

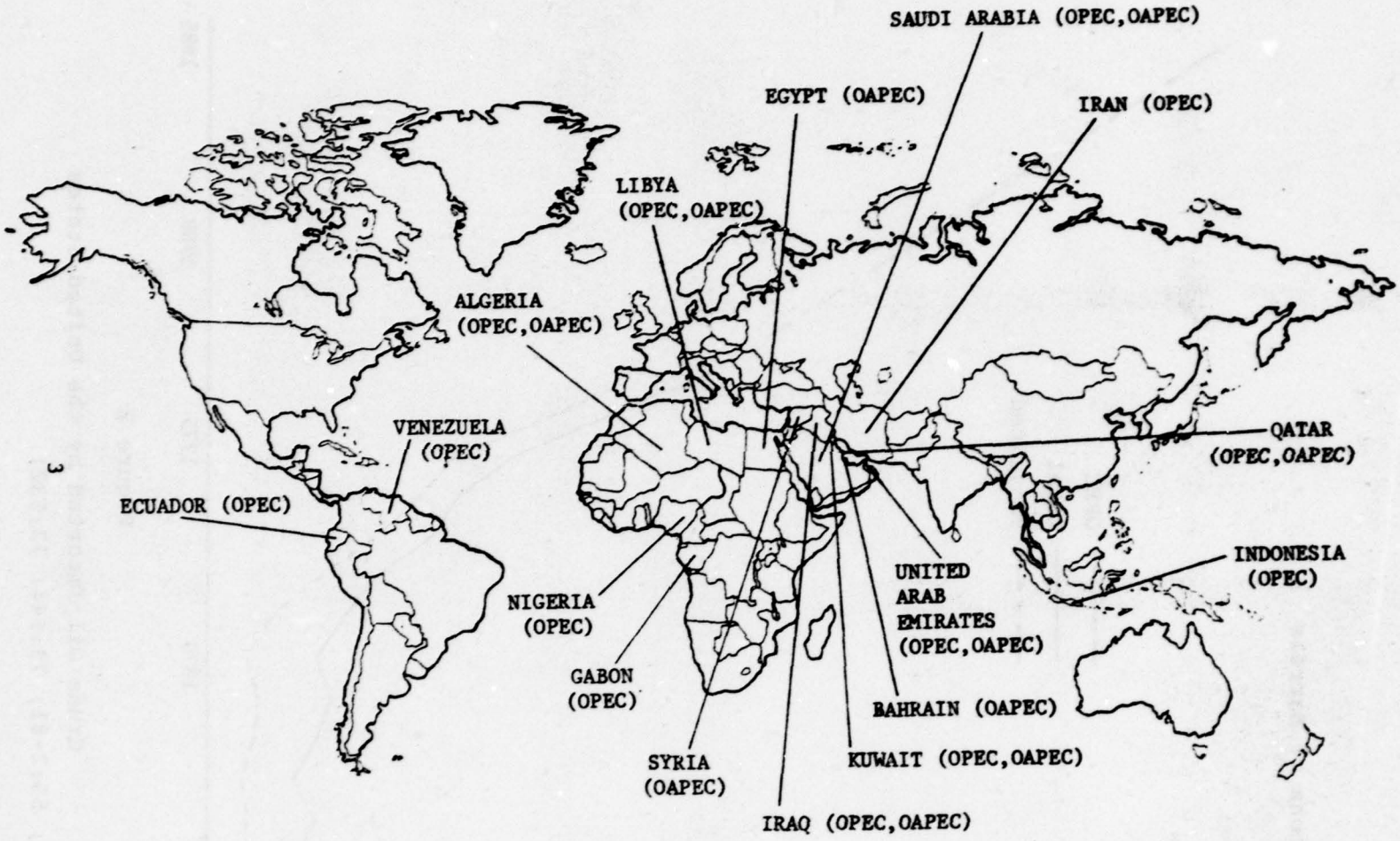


Figure 1

Map of Oil Exporting Countries

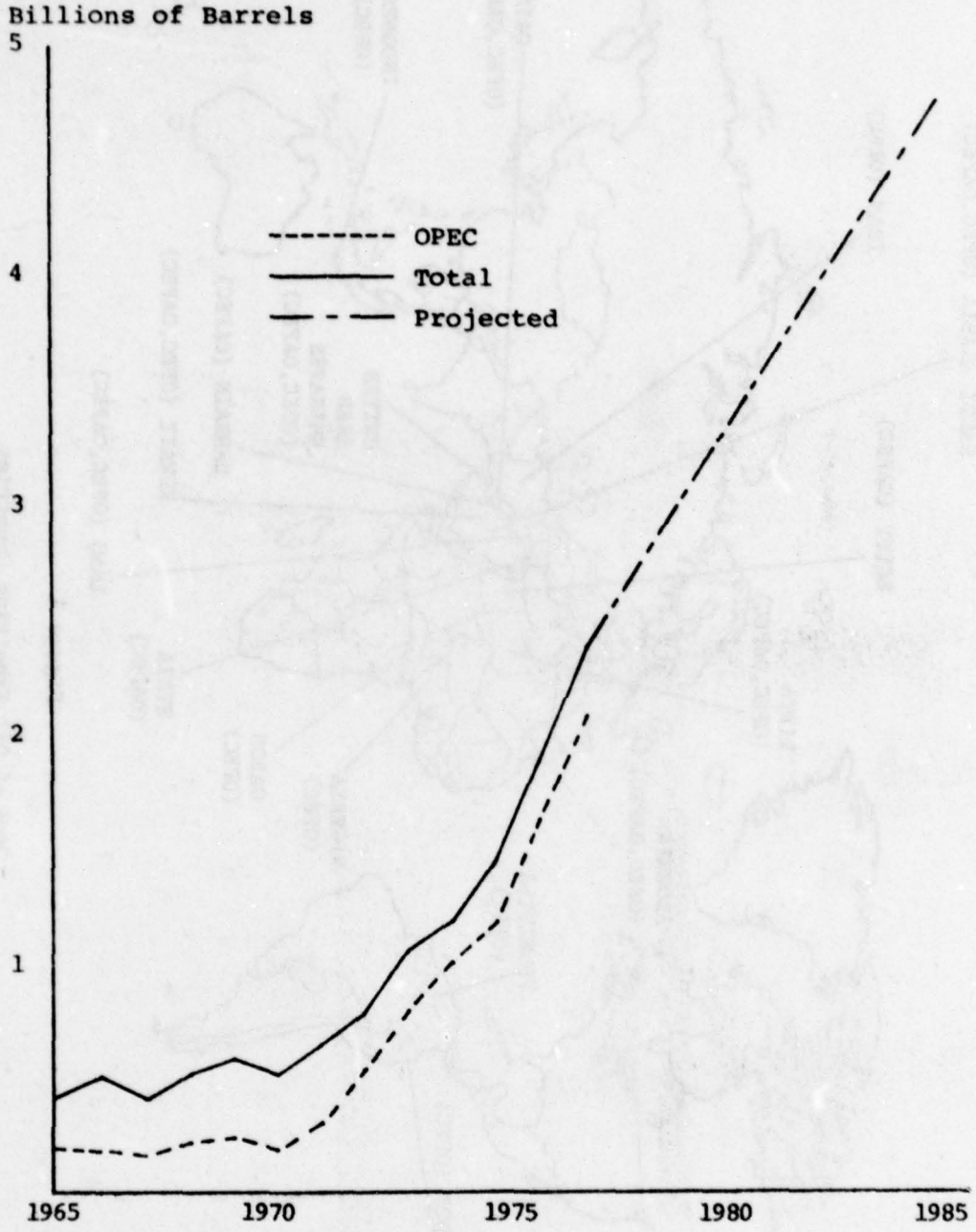


Figure 2

Crude Oil Imported by the United States
(7:7; 55:2-81; 70:644; 72:532)

commodities treated by the Statistical Abstract of the United States, the greatest increases have been in the cost of petroleum imports. Figure 3 reflects the extent of this growth for selected commodity groups.

While total U.S. exports have risen from $43.2 billion (72:868-871) in 1970 to $120.2 billion (43:29) in 1977 (a rise of 178%), exports to member nations of OPEC have risen from $2.1 billion to $14.0 billion (up 567%) during the same period (71:814-816; 72:24; 43:28). The increased revenues of net oil exporters have been used to purchase many commodities for immediate consumption and national development.[1]

Of major interest to the Department of Defense (DOD), however, has been the growth in arms sales largely managed by the three services. As Commander-in-Chief of the Armed Forces, President Carter noted in his May 1977 statement to Congress,

> Because of . . . spiraling arms traffic; and because of the special responsibilities we bear as the largest arms seller, I believe that the United States should take steps to restrain its arms transfers.

In the same address he continued,

> . . . embassies and military representatives abroad will not promote the sale of arms and the Secretary of Defense will continue his review of government procedures, particularly procurement regulations, which may provide incentives for foreign sales [6:1-2].

---

[1]For an extensive treatment of how one OPEC country—Saudi Arabia—has spent part of its oil revenue, see Drury and Glenboski (11:31-47).

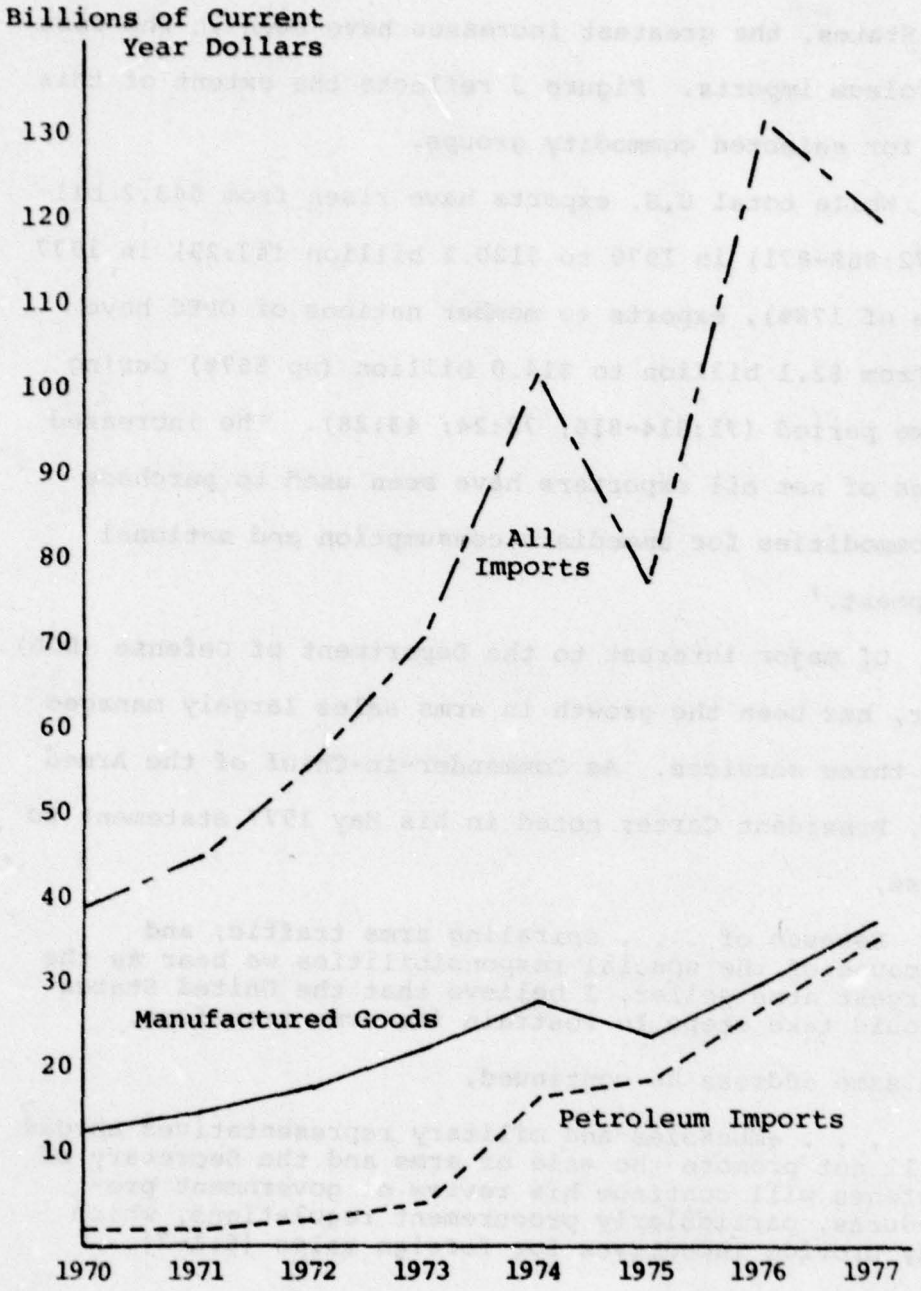


Figure 3

Selected Import Commodity Cost Growth

(43:69; 71:821; 72:845)

Foreign sales of arms in the fifteen years from 1950 to 1964 totaled $8.5 billion and in 1975 alone totaled $12.1 billion (75:39-47). Arms exports (actual deliveries) to the OPEC nations increased from only 110 million dollars in the 15 year period ending in 1964 to 1.3 billion dollars in 1975 alone (71:362). Recent arms sales agreements have far outdistanced actual deliveries. Sales agreements totaled just under 10.7 billion dollars in 1976 as shown in Figure 4. Over one-half of this total was sold to just two OPEC members—Saudi Arabia and Iran. Thus, a pattern of increasing exports *and* imports between the U.S. and OPEC members has been summarized in Table 1.

Abundant evidence indicates that neither arms exports nor oil imports are permitted to operate without political consideration by U.S. officials. President Carter's May 1977 Report to the Congress (6:3-13) and the U.S. responses to the 1973—1974 oil embargo, such as the U.S. Congress' feasibility study, "Oil Fields as Military Objectives," (24:211-253) offer significant examples of this. The DOD, as an agent of the executive branch of the United States government, is responsible for the administration of The Foreign Military Sales Act as specified in DOD Instruction 5105.38M, as amended (76). Thus, the complexities of the political arena have been added to the dynamics of American arms sales and oil purchases.

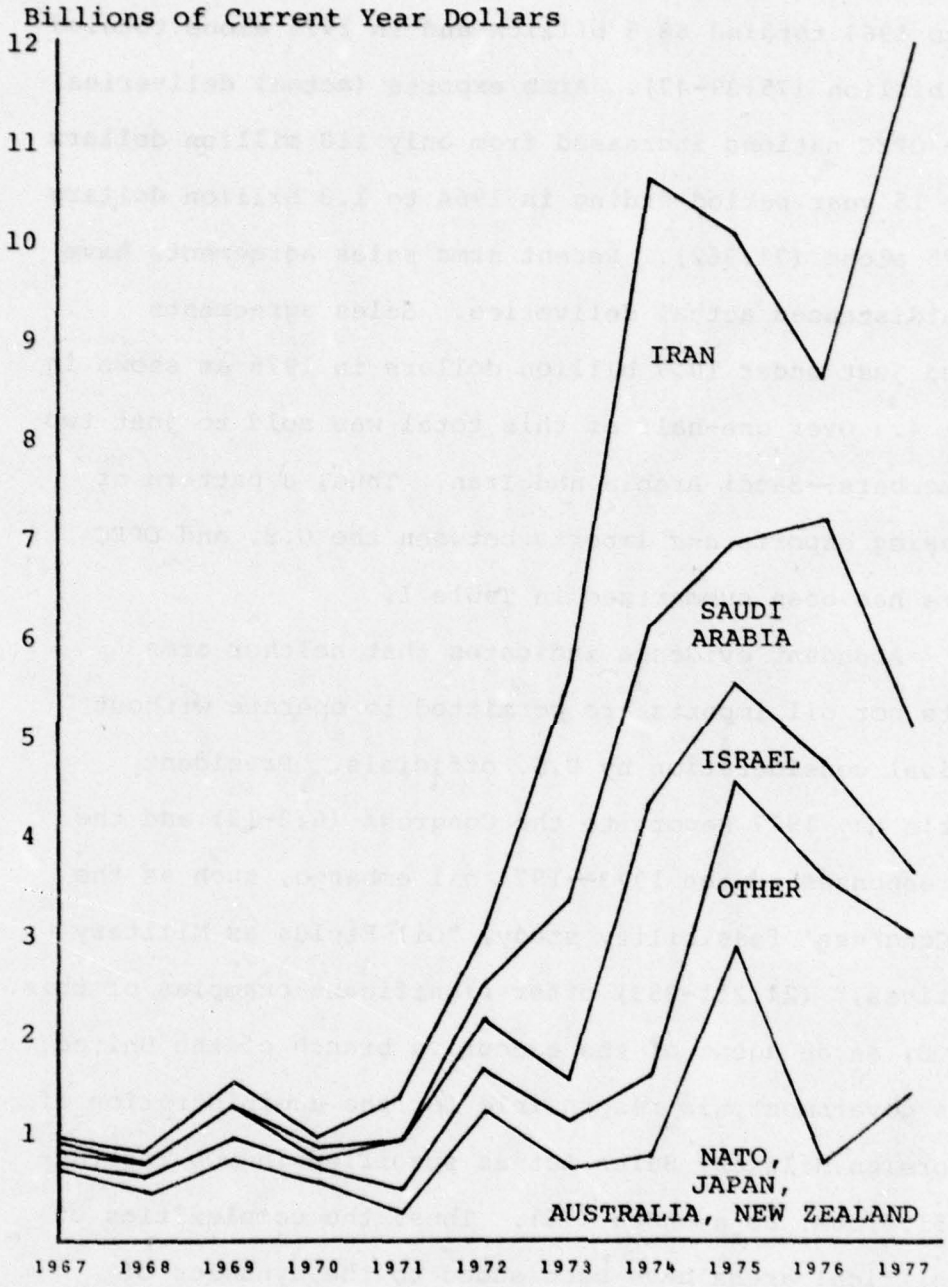


Figure 4

Foreign Military Sales Agreements

(6:13; 74:11-13)

Table 1

Synopsis of U.S./OPEC Trade
(Billions of 1975 Dollars)

EXPORTS	1970	1977	% Change
Total U.S. Exports Worldwide	68.5	108.2	+ 58
Total U.S. Exports to OPEC Members	3.3	12.6	+282
Total U.S. Arms Delivered To OPEC Members	0.4	3.7	+825
IMPORTS			
Total U.S. Imports Worldwide	63.3	132.2	+109
Total U.S. Oil Imports	7.4	39.1	+428*
Total U.S. Oil Imports From OPEC Members	3.4	30.0	+782*

(35:40-42,71; 43:24,36,71; 48:2-62 to 2-64; 55:2-87 to 2-91; 60; 72:868; 75:4-6)

*These figures reflect a rise in OPEC members' share of U.S. Oil imports from 49% in 1970 to 77% in 1977.

Literature Review

The rapidity of OPEC-inspired oil price rises and their tremendous impact upon the world's economies have spawned considerable research and analysis. However, relatively few of these efforts have been directed toward DOD involvement in various elements of the affected international economic systems.

One such effort occurred in 1975. A Defense Advanced Research Project Agency long-range forecasting model was evaluated at the Naval Postgraduate School by Commander Everett Alvarez, Jr. (3). The model identified arms exports and oil purchases as major factors in predicting both internal and external military and economic conditions. Commander Alvarez' evaluation concluded that the model was a valid predictor of naval escort requirements between the United States and other countries including the OPEC nations.

Non-DOD studies such as Bhattacharya's *The Myth of Petropower* (4) have directed little or no analysis to the place of arms in worldwide economic systems. Benjamin Shwodran, in his book *Middle East Oil: Issues and Problems*, said only the following concerning arms:

> . . . From an economic point of view, arms deals are the best and easiest and most desirable way to bring back the petro-dollars. For armaments are economically non-productive; they do not increase the economic possibilities of the nations acquiring them, and, within a relatively short time, become obsolete, and must be replaced by more modern ones [33:103].

It may be argued that this way of recycling OPEC petro-dollars is opposed to President Carter's view that

> . . . arms transfers are an exceptional foreign policy implement, to be used only in instances where it can be clearly demonstrated that the transfer contributes to our national security interests [6:1].

Perhaps a more balanced view is that held by authors such as Schurr and Homan who have established that the international oil trade represents an outstanding example of worldwide economic interdependence (31:28). Major James P. Wyman, in an Air Command and Staff College research paper (86:59), demonstrated that to a great extent, the key element of this interdependency in the Middle East is the military strength of oil producing states, principally Iran.

Robert E. Harkavy, in his book *The Arms Trade and International Systems*, noted that:

> . . . amidst this change of policy, there was an absence of focused analysis of the impact on America's balance of payments. One might suspect that it was a part of the reason for America's worsening payments situation in the late 1960s and early 1970s. In fact, recognition of this problem, in conjunction with massive currency outflows associated with the oil crisis in 1973—74, appeared to have engendered new massive American arms sales to Iran, Saudi Arabia and others [14:230].

It appears that there is a wide divergence of thought surrounding the multi-faceted issue of oil price rises and United States arms sales to OPEC nations. Very little of this thought has been directed specifically toward DOD actions involved in this complex situation.

Problem Statement

A review of Figures 3 and 4, pages 6 and 8 respectively, shows what appears to be a relationship between United States oil imports from OPEC members and increasing levels of U.S. Foreign Military Sales (FMS) contracts with these same nations. Although the dollar value of these FMS contracts represents approximately 54% of all exports from the U.S. to OPEC members in 1977, there has been little analysis performed to identify either the economic or the foreign policy implications this situation has for DOD managers. Department of Defense personnel who plan, organize, and manage FMS cases are major participants in an international economic system but may not have full cognizance of the implications their actions have. As has been indicated, the impact of that international economic system has been great, not only for Americans, but for the economies of all nations. Clearly, the actions of DOD personnel involved in FMS cases have effects felt far beyond the apparent scope of these transactions. The problem is that there has not been a cohesive attempt to synthesize the economic and political factors responsible for the observed changes in U.S.—OPEC trade patterns nor to assess their effects. We hypothesize that there is a cause-effect relationship existent in the altered trade patterns between the United States and the OPEC nations. Increased sales of U.S. arms to the OPEC

countries have accompanied the large claims against the U.S. accumulated by OPEC members after the spectacular oil price rises of 1973—74.

Objectives

This thesis will attempt to establish and describe the relationship postulated by Harkavy between U.S. oil imports and arms exports.

Specifically, our research objectives will be:

1. To provide a focused analysis of the various elements that have brought about the altered trade patterns between the U.S. and OPEC nations as noted in Table 2, page 17.

2. To describe economic, political, and military incentives and penalties for U.S. arms sales to OPEC members.

3. To describe the effects upon U.S. security and foreign policy that the postulated relationship between arms sales and oil imports has had.

Research Questions

1. Identify the constant dollar value of U.S. arms sales to OPEC members from 1970 to 1977.

2. Identify the constant dollar net balance of payment positions between the U.S. and various OPEC members.

3. Identify the constant dollar value of U.S. oil imports from OPEC members.

4. Determine the constant dollar value of U.S. arms

sales and all other commercial trade with OPEC members.

5. Identify the economic incentives, penalties and consequences of the hypothesized relationship between oil imports and arms exports.

6. Identify those U.S. foreign policy and international trade statements that influence the economic considerations affecting the oil-arms trade.

Chapter 2

PROCEDURES

Data Sources

Many sources of petroleum, arms transfer, trade, and financial data are readily available to researchers; however, many of these sources are not independent. For example, United Nations statistics are, most generally, contributed by member states which provide the same data to the International Monetary Fund (IMF) and the Organization for Economic Cooperation and Development (OECD). Because of the advanced state of collecting and reporting techniques, many of these data are available on the census level. In addition, those data dealing with physical volumes and dollar value equivalents are also ratio level data. As a general rule, data presented will be both census and ratio. Principal exceptions will be foreign policy data and certain aspects of arms transfers.

Petroleum data. Petroleum data sources were the *Statistical Abstract of the United States*, the *International Petroleum Encyclopedia*, and Bureau of the Census Publications FT 135, *U.S. General Imports*; FT 900, *Summary of U.S. Export and Import Merchandise Trade*; FT 990, *Highlights of the U.S. Export and Import Trade*; and IA 236 V, *U.S. Imports for*

Consumption and General Imports into the Virgin Islands from Foreign Countries.

Arms transfer data. Sources of data for arms transfers were the *Stockholm International Peace Research Institute (SIPRI) Yearbook*, the *International Institute for Strategic Studies Annual Reports*, and various sources of the Defense Security Assistance Agency.

Trade and financial data. Trade and financial data were obtained from the International Monetary Fund's *Balance of Payments Yearbook* and the *International Financial Statistics* as well as the *Statistical Abstract of the United States* and Bureau of the Census Publications FT900, *Summary of U.S. Export and Import Merchandise Trade*; FT 990, *Highlights of the U.S. Export and Import Trade*; and IA 236 V, *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries.*

Foreign policy data. Foreign policy data were obtained from annual reports to Congress pursuant to provisions of the International Security Assistance and Arms Export Control Act of 1976. Other sources will be the *Congressional Record* and the *Congressional Quarterly Almanac.*

Data Collection

Data classification and taxonomy. Data classification and taxonomy have been presented in those units consistent with

standard industry practice except where additional measures provide, in the judgment of the researchers, more meaningful indicators of the relationships posited by this thesis.

All monetary values were converted to U.S. dollars using factors published in the *Wholesale Price and Price Index* published by the U.S. Commerce Department and other Government sources and deflated to constant 1975 dollars. Thus, all dollar values have been presented in ratio data format. By international convention, all petroleum volumetric data have been corrected to standard temperature and pressure conditions.

Methodology

In order to facilitate comparisons of trade, arms transfers and oil revenues, dollar values have been expressed in 1975 dollars as has been noted throughout this thesis. The following price indices were used:

Table 2

Price Indices

Year	All Commodity Aggregate	Crude Petroleum	Refined Products	Wholesale Industrial Commodities
1970	110.4	106.1	101.0	110.0
1971	114.0	114.6	107.2	114.1
1972	119.1	113.8	108.9	117.9
1973	134.7	126.0	128.7	125.9
1974	160.1	211.8	223.4	153.8

Table 2 (continued)

Year	All Commodity Aggregate	Crude Petroleum	Refined Products	Wholesale Industrial Commodities
1975	174.9	245.7	257.5	171.5
1976	182.9	253.6	276.4	182.3
1977	194.2	274.2	308.1	195.1
1978	-	-	-	205.3*
1979	-	-	-	215.6*

(72:472; 77:8)

*Estimated.

The index numbers for "All Commodity Aggregate" were used to adjust total values of U.S. imports and exports to 1975 dollars. They were obtained from the *U.S. Statistical Abstract* (72:472) and the Bureau of Labor Statistics' (BLS) *Wholesale Prices and Price Indices* (77:8). They represent a price-relative index compiled by the BLS based on monthly samples of U.S. prices for over 6,000 raw, partially finished, and finished goods (67:57). The index numbers for crude petroleum and refined products were similarly obtained from BLS samples (72:473-475; 77:9-11). These samples represent price indices for the two classes of imported petroleum (77:5,51) which this thesis addresses and are well-suited for adjusting crude oil and petroleum product prices to 1975 constant-year dollars.

In the case of arms transfers there appears to be no single index of relative prices available (77:1008-1047;

72:1-3; 67:3-7). To adjust the value of arms transfers to 1975 dollars we have selected the BLS wholesale industrial commodities index of 2,700 items (77:5-8). This index does not include energy, farm products or consumer goods. It does include a sample of raw materials and partially finished goods believed to comprise the essential costs of goods to producers. We believe this index to be representative of arms transfers for the following three reasons:

1. Arms transfers are composed of items technologically similar to these industrial commodities.

2. Arms to be transferred are manufactured from raw materials and intermediate items that are found on the wholesale commodities index.

3. The DOD, which manages by far the largest volume of arms transfers, is required by public law (65:210) to neither profit from nor subsidize foreign military sales.

Since the Wholesale Industrial Commodities (WIC) list does not yet exist for dates beyond May 1978 (77:3), the 1978 and 1979 WIC indices were estimated. The estimates must be considered extremely uncertain due to the volatility of both domestic and foreign economies. James R. Capra of the Budget Analysis Division of the Congressional Budget Office has estimated inflationary growth to be approximately 5.3% in 1978 and 4.3% in 1979 (5:19). The Fiscal Year (FY) 1978 budget proposal to Congress (67:52) estimated even higher rates of 6.5% in 1978 and 5.6% in 1979. Accordingly,

the WIC estimates were increased by a conservative 5% for both 1978 and 1979, in an attempt to approximate the growth that will likely be experienced. From the latest IMF statistics (16:378-381), it seems likely that the arbitrarily-chosen 5% will be low—thus overstating, in 1975 dollars, arms transfers estimated for 1978 and 1979. In 1975 dollars wholesale prices have risen from 114.3% in January to 118.9% by May of this year. Readers must be aware that not only the estimates of arms sales but also their real growth in 1975 dollars are subject to drastic shifts.

Design to Answer the Research Questions

Information has been presented in numerical and graphical format relating arms sales, oil imports and general trade patterns. All appropriate measures of the relationships between the variables were explored. We have contrasted and compared the chronological appearance of major U.S. foreign policy statements with suitable measures of arms transfers and petroleum imports. These data have been the bases for logical arguments to resolve the research questions.

Chapter 3

UNITED STATES/OPEC TRADE PATTERNS

Introduction

The repercussions of the OPEC-imposed oil price rises of 1973—74 were felt by virtually every segment of the world economy. The principal theme of this thesis is the relationship between OPEC oil revenues and sales of U.S. arms to these oil producing countries. However, one must realize that no investigation of this nature can be undertaken in isolation from the interrelationships that exist between arms and oil transactions and those of world trade in general.

In this chapter, we will develop a trade financial and policy data base that will be used to establish trends in the United States' commerce with its trading partners. This will include not only imports and exports of general commercial commodities, but U.S. transfers of arms as well. The United States' balance of payments position with respect to OPEC nations will be examined from the standpoint of both general trade and arms transfers. The domestic economic consequences of the arms-oil relationship will be addressed. We will examine the influence of appropriate U.S. foreign policy and international trade policy considerations on arms-oil transfers.

General Trade Patterns

The purpose of this section is to examine trade patterns that have developed between the United States and the OPEC countries as well as between the United States and other worldwide trading partners. This will permit us to place the events of recent years with respect to OPEC and United States' actions in a more realistic perspective.

This section will focus on the development of trade patterns involving general exports and imports of consumer and capital goods. It will exclude any consideration of arms exports and imports of mineral fuels and related materials. This latter category includes crude and partly refined petroleum as well as refined petroleum products. Discussion of arms exports and petroleum imports are the subjects of separate sections.

Import coverage. United States import statistics reflect both government and nongovernment imports of merchandise from foreign countries into the U.S. Customs territory, which includes the 50 States, the District of Columbia, and Puerto Rico. Foreign country imports to the Virgin Islands are also included.

Excluded from consideration are American goods returned by the U.S. Armed Forces; intransit shipments through the United States; temporary shipments; shipments of

statistical insignificance (41:1) such as personal and household effects; low-value nondutiable imports by mail; and gold in various forms.

Source data on imports is presented in terms of "General Imports" as well as "Imports for Consumption." General imports, a combination of entries for immediate consumption and entries into customs bonded warehouses, generally reflect total arrivals of merchandise. Imports for consumption reflect entries for immediate consumption as well as withdrawals from customs bonded warehouses for consumption. As such, these imports are a measure of total commodities entering U.S. consumption channels. General import statistics will be used in this analysis because use of total import statistics is consistent with other measures used for the determination of international balance of payment positions.

Import valuation. Import data from various sources is often expressed in different value terms. A traditional term of reference is that of customs value. The customs valuation has been the sole basis upon which U.S. import data have been reported in Bureau of the Census publications. Effective with the statistics for January, 1974, publication of U.S. import data was based on "free alongside ship" (f.a.s.) value and "cost, insurance, and freight" (c.i.f.) valuation as well as the traditionally reported customs value.

While generally described as the market value of imported merchandise in the foreign country, the customs value is that value legally established under Section 402 and 402(a) of the Tariff Act of 1930, as amended, for determining import duty (51:III). Source data of 1973 and earlier often refer to this valuation (customs value) as foreign market value. For purposes of this thesis, the two terms are considered synonymous. The contemporary practice of using the term "customs value" will be followed.

The f.a.s. value represents the transaction value of imports at the foreign port of exportation. It is based on the purchase price, (i.e., the actual transaction value) and includes all charges incurred in placing merchandise alongside the carrier at the port of exportation in the country of exportation. This valuation is computed on the same basis as that used for reporting U.S. exports (i.e., f.a.s. port of exportation) and is the valuation required for balance of payments computations (51:III).

The c.i.f. value represents the value of imports at the first port of entry in the United States. It is the purchase price plus all freight, insurance, and other charges (excluding U.S. import duties) incurred in bringing merchandise from the exporting country and placing it alongside the carrier at the first port of entry in the United States. In the case of related buyers and sellers, the purchase price used to compute the c.i.f. value is based on

an "arm's-length" transaction price. This price is an equivalent price which would exist under free market conditions between unrelated buyers and sellers.

The importance of the different methods lies in their impact on the international balance of trade. The numerical differences in values represent additional costs of acquiring a good. A more important consideration is the question of which country receives payment for the services which are represented by the difference between f.a.s. and c.i.f. valuations. Should insurance and/or freight be provided by a foreign country, the United States' balance of trade position with that country would be adversely affected. This situation will cause increased claims by that country against the United States which must be offset by increased U.S. claims against that country.

In the interest of completeness, all three measures of import valuations will be presented in the appendix. F.a.s. valuation of imports will be used in all analyses in this thesis. This is in consonance with the practice cited in Department of Commerce Report FT 135/December 1973, *U.S. General Imports*, which states:

> . . . the f.a.s. data will be provided for balance of payments analysis as freight and insurance payments included in the c.i.f. valuation often accrue to the benefit of a third country [51:III].

A second major consideration in the presentation of dollar value data is the comparability between time periods. Adjustments to raw data will be made with 1975 as a base year as noted in the methodology discussion.

Import patterns. Table 3 presents a summary of U.S. general imports, less petroleum imports, for the years 1970—1977. This data has been computed from complete tabulations of general import data shown in the Appendix. Crude petroleum and refined products import data, displayed in the Appendix, were used to determine the values of U.S. general imports (excluding petroleum) presented in Table 3 below.

Table 3

Summary of U.S. General Imports (Excluding Petroleum)
(Millions of 1975 Dollars)

	Worldwide Imports			Imports from OPEC Only		
Calendar Year	Customs Value	F.a.s. Value	C.i.f. Value	Customs Value	F.a.s. Value	C.i.f. Value
1970	58,870	58,670	62,322	707	684	659
1971	64,920	64,441	68,656	821	763	764
1972	75,449	74,805	79,533	811	745	665
1973	80,546	79,803	84,726	1,106	1,108	879
1974	83,245	82,311	88,729	897	872	1,035
1975	72,235	71,409	76,903	1,018	1,003	1,146
1976	86,088	84,959	91,229	1,963	1,941	2,141
1977	95,887	94,905	101,526	1,627	1,609	1,951

(36:86-91; 38:86-91; 39:86-91; 40:82-87; 41:92-94; 42:92-94; 43:86-88; 44:7; 45:7; 46:15; 47:14-15; 48:2-72; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87; 56; 57; 58; 59; 60)

The actual data for each valuation method (customs, f.a.s., and c.i.f.) were not collected by the Bureau of the Census until January 1974. Prior to that time only customs valuation data were collected. To provide a basis for estimating f.a.s. and c.i.f. data for these years, the Census Bureau statistically sampled these data before 1974. Factors were developed for both total imports as well as each import commodity class (37:v; 38:v; 39:v). Using these factors the authors calculated values for the missing data.

A peculiarity of the Bureau of the Census factors results in an apparent contradictory situation. Referring to the "OPEC Only" section of Table 3, one observes that the f.a.s. and c.i.f. values prior to 1974 are both lower than the customs valuation. This might not be an unusual situation for the f.a.s. value, which is dependent on the variability of inland transportation charges involved in delivering goods to the port of exportation. However, c.i.f. valuation must exceed the f.a.s. value by an amount equal to the overseas transportation and insurance charges. This generally is a significant amount as noted by the 1974—1977 figures in the "OPEC Only" portion of Table 3. One explanation of why this situation exists may be facilitated by observing the data in Table 4 which represents the Bureau of the Census factors used to derive f.a.s. and c.i.f. values from known customs valuations.

Table 4

F.a.s. and C.i.f. Derivation Factors

Calendar Year	Total Imports		Petroleum Imports	
	F.a.s.	C.i.f.	F.a.s.	C.i.f.
1970	0.998	1.062	1.011	1.103
1971	0.994	1.061	1.013	1.099
1972	0.993	1.059	1.010	1.113
1973	0.993*	1.059*	1.010*	1.113*

(37:v; 38:v; 39:v)

*Assumed to be the same as 1972. No Bureau of the Census factor data available for 1973 and no actual data recorded.

Note that the f.a.s. factors for total imports are consistently lower than similar factors for petroleum imports. This has the effect of inflating petroleum import f.a.s. values with respect to total import f.a.s. values. Thus, the difference between the two (as shown in Table 3) might be expected to be lower than normal. The same situation exists with the c.i.f. factors. In this case, however, the magnitude of average difference between the factors is approximately three times greater. The resultant difference displayed in Table 3 is thus reduced even more.

The nature of the factor data may distort somewhat the relative values during the period 1970—1973, but the significant point of Table 3 remains quite clear. The OPEC countries, in total, account for a very small proportion of general imports (less petroleum imports) into the United

States. During the eight year period covered, the maximum combined OPEC exports to this country for any year were only 2.4% of the total. This is not unusual because many of the thirteen OPEC nations are underdeveloped and have a minimal economic base. It does serve to accentuate the importance of their one common major export commodity—oil—and the revenues that it produces. This will be more strikingly demonstrated in following sections.

A second significant point illustrated by Table 3 is the comparative trends in the expansion of nonpetroleum trade with the United States. Worldwide imports have increased each year (in absolute value), with the exception of 1975, to almost 1.6 times their 1970 level. On the other hand, OPEC nonpetroleum exports increased only very slightly (about 7%) through 1972. Overall growth through 1977 was much more erratic than worldwide growth, declining in 1974—75 before increasing by 1977 to about twice the original level. The general decline experienced in the 1974—75 time period is probably attributable to a lowered level of economic activity associated with the "energy crisis" of 1973—74.

Export coverage. The Bureau of the Census reports export data based principally on Shipper's Export Declarations filed on shipments leaving the United States (72:850). Export statistics include both government and nongovernment exports of domestic and foreign merchandise. The Bureau of

the Census in its publication *Highlights of U.S. Export and Import Trade* defines domestic merchandise to include:

> . . . commodities which are grown, produced, or manufactured in the United States, and commodities of foreign origin which have been changed in the United States from the form in which they were imported, or which have been enhanced in value by further manufacture in the United States.

It further defines foreign merchandise as:

> . . . commodities of foreign origin which have entered the United States as imports and which, at the time of exportation, are in substantially the same condition as when imported [41:3].

The export statistics cover goods shipped from the U.S. Customs territory and the Virgin Islands. Data includes economic assistance goods moving under the Foreign Assistance Act and agricultural commodities under The Agricultural Trade Development and Assistance Act of 1954, as amended (PL 83-840) and related laws (41:3). Exclusions from the statistics include commercial and arms sales, MAP Grant-aid and excess defense articles shipments, and international military education and training expenditures. Also excluded are the less significant commodities discussed in the section on imports coverage.

Export valuation. Unlike import valuations which are reported on three separate bases, the value of exports is reported on but one basis. This is generally equivalent to a free alongside ship (f.a.s.) value at the United States port of exportation. Making up this value are the transaction price, inland transportation, insurance, and any

other charges incurred in placing the goods alongside the exporting carrier at the United States port. By definition, all costs beyond the U.S. port of exportation are excluded in the f.a.s. valuation. To present these data on a consistent and comparable basis, adjustments to the raw value data will be made in a manner similar to that for import data.

Export patterns. Table 5 shows a summary of United States' general exports, less arms and arms related exports and expenditures. Data are presented for the period calendar year 1970—1977. Computation of the values in Table 5 was based on the complete tabulation of total U.S. exports data in the Appendix. These total export values were reduced by the values for arms and arms related exports and expenditures to determine the net general exports values.

Balance of payments. A country's international transactions are recorded in its annual balance of payments statement. These transactions include the transfers of goods, services, grants, and financial assets and liabilities between a nation and the rest of the world. Three major accounts make up the balance of payment statement. They are (1) current transactions, (2) capital transactions, and (3) official settlement transactions. The flow of payments for each element of these accounts usually results in either a surplus or a deficit balance for a given account. The overall balance

of payments statement will be maintained in equilibrium. This balance is achieved by appropriate changes in the settlement transactions to offset the net balance (either positive or negative) of the current and capital accounts. While each account obviously affects the other two, our major interest will be in the current account. It is the elements of this account which most directly relate to our analysis of OPEC oil revenues and United States' arms sales.

Table 5

Summary of United States' General Exports
(Less Arms Exports)
(Millions of 1975 Dollars)

Calendar Year	Worldwide Exports*	Exports to OPEC*	OPEC as % of Worldwide
1970	66,379	2,967	4.5
1971	65,564	3,261	5.0
1972	71,158	3,647	5.1
1973	90,854	4,241	4.7
1974	104,366	6,481	6.2
1975	104,326	9,454	9.1
1976	105,085	9,268	8.8
1977	102,230	9,101	8.9

(36:40-42; 38:44-46; 39:44-46; 40:44-46; 41:36-38; 42:40-42; 43:36-38,40-42; 74:4-30; 75:4-6)

*F.a.s. Valuation Basis

Current accounts. Most current transactions involve purchases and sales of goods and services. Both private and government actions are involved. Private sector elements

of this account include exports, imports, travel and transportation, investment income, and other services. The difference between the value of exports and imports is called the balance of trade. Elements of the government sector of the current account include such transactions as foreign military sales, U.S. government grants, and remittances, pensions, and other transfers. The value of all these transactions is the balance on current account. This balance may be positive or negative.

Capital accounts. Among other elements, the capital account includes long and short term private investment abroad and similar term government loans and credits overseas. Allocations of new Special Drawing Rights (SDRs) to the United States, unrecorded transactions called errors and omissions, and transfers of U.S. dollars from foreigners to their central banks complete the make-up of the capital account. The net value of these transactions, or the balance on capital account, may be positive or negative.

Official settlement accounts. Whether the net balance on current and capital accounts is positive or negative, there must be a way of settling the outstanding claims of one nation against another. These claims are resolved by official settlement transactions, which are actions necessary to balance all remaining claims after current and capital

transactions have been completed. This balance is achieved by an appropriate adjustment in international reserves and liabilities incurred.

Balance of payments positions. Shown in Table 6 are the end-of-year balance of payments positions for the OPEC countries and the United States. The data represent the net value of the combined current and capital accounts and are the claims which must be balanced by appropriate adjustments in international reserves and liabilities. These statistics, published by the International Monetary Fund (IMF), are based principally on data reported by its member countries. For comparative purposes, all values are reported by the IMF in terms of Special Drawing Rights (SDR). These SDRs, unconditional international reserve assets created by the Fund, were converted to U.S. dollars at average annual rates per SDR as specified by the Fund (15:iv).

Because the balance of payments shows the net value of the numerous elements which make it up, the individual categories of transactions are masked in the final figure presented. Table 7 gives a summary of U.S. and OPEC balance of trade in goods and services. This more clearly shows the area with which we are most concerned in our analysis of oil revenue and arms sales. Presented is the net value of imports minus exports. Both goods and services are included because services often make up a significant portion of the

Table 6

Summary of OPEC Balance of Payments Positions
With the United States
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976
Venezuela	147	755	295	796	4,760	2,388	-275
Ecuador	27	-18	109	118	122	-63	196
Iraq	11	152	250	873	2,123	N/A	N/A
Iran	-374	585	686	86	7,814	107	N/A
Kuwait	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	149	1,322	1,743	2,146	19,888	8,505	3,828
Qatar	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Arab Emirates	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indonesia	21	-2	598	447	765	-826	N/A
Algeria	-116	-38	135	806	652	-322	N/A
Libya	1,179	1,447	606	-1,391	1,918	-1,495	1,010
Nigeria	-155	-290	69	-265	-5,448	-181	364
Gabon	11	14	-3	30	57	44	N/A
TOTAL OPEC	900	3,927	4,488	3,646	32,651	8,050	5,123

(15)

(N/A = Not Available)

Table 7

Summary of OPEC Balance of Trade in Goods and Services With the United States
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976
Venezuela	N/A	259	97	1,169	6,401	2,385	1,636
Ecuador	-206	-264	-125	-22	7	-208	-35
Iraq	157	292	734	883	2,320	N/A	N/A
Iran		-187	-577	204	13,437	4,726	4,861
Kuwait	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Saudi Arabia	531	1,813	2,567	3,369	22,291	14,462	14,865
Qatar	N/A	N/A	N/A	N/A	N/A	N/A	N/A
United Arab Emirates	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Indonesia	-596	-640	-521	-578	498	-935	N/A
Algeria	-616	-670	-576	897	173	-1,718	N/A
Libya	1,272	1,410	530	290	1,851	104	1,516
Nigeria	-683	-624	-433	49	4,538	139	-172
Gabon	-11	29	-25	-58	104	-82	N/A
TOTAL OPEC	-152	1,418	1,671	6,203	51,620	18,873	22,671

(15)

(N/A = Not Available)

imports of less developed countries. Inclusion of services is also consistent with the basis on which arms related sales data are presented.

United States' Petroleum Imports

The importation of petroleum and petroleum related products has risen to a position of ever greater economic prominence given the impetus of the Arab oil embargo of 1973—74 and the accompanying skyrocketing oil prices. For the average American, the impact of these developments has hit home where it hurts the most—in the pocketbook. The average retail price of a gallon of regular gasoline has risen from 34.7¢ in 1970 (25:117) to 62.3¢ in 1977 (26:123). On a national basis, the economic impact was even more pronounced and widespread as the cost of imported oil assumed a larger and larger proportion of the country's import dollar. Table 8 reflects this trend.

During the eight year period under discussion, oil imports grew from almost twelve cents of each import dollar to 29 cents. Predictably, the largest single increase came in 1974. Both oil import expenditures and total general import costs rose almost continuously during this period; the 1975 general import figure was the lone exception. The values for general imports reflect an increase in the volume of merchandise imported. To a limited extent, this is true of oil imports also. However, with oil, the real

cost growth was caused by a spectacular leap in the unit price of both crude and refined foreign petroleum.

Table 8

U.S. General and Crude/Refined Petroleum Imports
(Millions of 1975 Dollars—F.a.s. Basis)

Year	Total General Imports	Petroleum Imports	Petroleum as a % of Total
1970	63,454	7,436	11.7
1971	70,058	8,443	12.1
1972	81,670	10,763	13.2
1973	90,405	16,074	17.8
1974	110,793	30,188	27.2
1975	98,073	26,664	27.2
1976	117,647	32,915	28.0
1977	134,660	39,082	29.0

(36:86-91; 38:86-91; 39:86-91; 40:82-87; 41:92-94; 42:92-94; 43:86-88; 44:7; 45:7; 46:15; 47:14-15; 48:2-72; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87; 56; 57; 58; 59; 60)

This dramatic price increase is shown in Table 9. In the period 1972—1977, the quantity of petroleum imports nearly doubled. At the same time the dollar expenditures for these commodities increased almost tenfold. Once again, the largest single increase occurred in 1974.

Table 9

U.S. Worldwide Imports of Crude/Refined Petroleum

Year	Millions of 1975 Dollars*	Millions of Barrels	1975 Dollars per Barrel
1970	7,436	1,369	5.43
1971	8,443	1,484	5.69
1972	10,763	1,791	6.01
1973	16,074	2,424	6.63
1974	30,188	2,354	12.82
1975	26,664	2,316	11.51
1976	32,915	2,792	11.78
1977	39,083	3,306	11.82

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

*F.a.s. Valuation Basis

Crude petroleum purchases. Department of Commerce statistics for petroleum classify this general commodity in two broad categories. One is crude petroleum and the other is refined products. Within the crude petroleum category a further breakdown is made between crude oil and partly refined petroleum for further refining. The distinction between the two is one of degree of processing. Partly refined petroleum has undergone minimal processing and requires additional refining prior to end-use. Crude oil, on the other hand, has not been processed beyond settling to remove basic sediment and water. Crude oil requires full refining

prior to end-use. By convention, crude oil and partly refined petroleum for further refining are considered as a single commodity "crude petroleum". This convention will be observed throughout this thesis.

Tables 10 and 11 present trend data on United States imports of crude petroleum. The first table shows OPEC figures and the second tabulates non-OPEC values. A very interesting trend is noted in Table 11 showing non-OPEC data. Crude petroleum from these sources increased in demand until 1973 and then declined to a point in 1977 only about 20% above the 1970 level.

In absolute terms, demand for OPEC crude petroleum, however, continued to increase steadily through the period. In 1977 OPEC supplied 85% of the United States' requirement for foreign crude petroleum. Figure 5 traces the development of this supply trend. The non-OPEC crude petroleum supply trend is, of course, the mirror image of the one shown. All data reported in Tables 10 and 11 and Figure 5 were summarized from complete tabulations of crude petroleum imports presented in Tables 30 through 41 in the Appendix.

Table 10

United States' Imports of OPEC Crude Petroleum

Year	Millions of 1975 Dollars*	Millions of Barrels	1975 Dollars per Barrel
1970	2,040	413	4.94
1971	2,647	548	4.83
1972	3,802	700	5.43
1973	6,254	1,008	6.20
1974	15,051	1,146	13.13
1975	16,183	1,426	11.35
1976	22,354	1,863	12.00
1977	27,839	2,346	11.87

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

*F.a.s. Valuation Basis

Table 11

United States' Imports of Non-OPEC Crude Petroleum

Year	Millions of 1975 Dollars*	Millions of Barrels	1975 Dollars per Barrel
1970	1,984	325	6.10
1971	2,054	328	6.26
1972	2,590	425	6.09
1973	3,811	568	6.71
1974	6,215	498	12.48
1975	4,933	415	11.89
1976	5,495	455	12.08
1977	4,714	385	12.24

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

*F.a.s. Valuation Basis

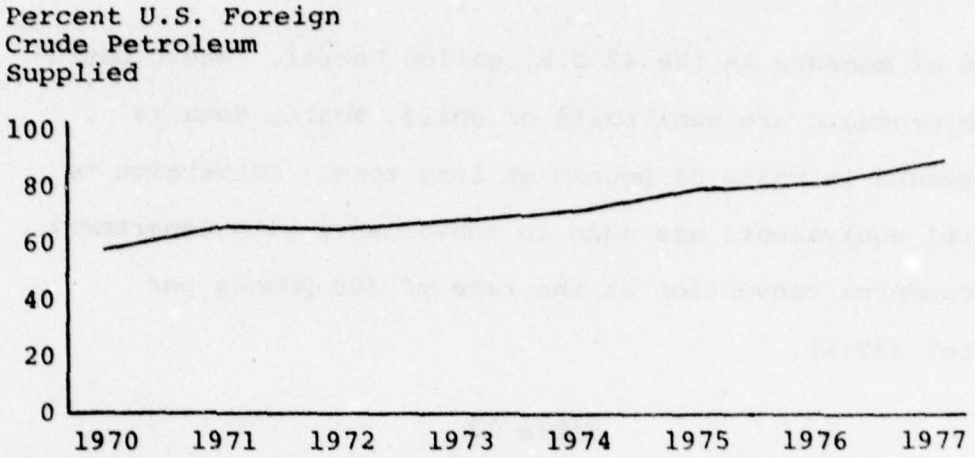


Figure 5

OPEC Crude Petroleum Supply Trend

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

Refined petroleum purchases. This category of petroleum includes all the finished products of the various refining processes. The major products are gasoline and motor fuels, jet fuel, kerosene, and fuel oils. These are considered to be energy products because their potential energy is transformed into kinetic energy to perform useful work. A second class of refined petroleum is nonenergy products such as naphtha, lubricating oils, greases, waxes, pitch, and asphalt. These products are nonenergy products because they are not normally subject to energy form transformation.

Tables 12 and 13 present refined petroleum imports from OPEC and non-OPEC producers respectively. The natural form of most petroleum products is a liquid and the common

unit of measure is the 42 U.S. gallon barrel. Where petroleum products are semi-solid or solid, source data is expressed in units of pounds or long tons. Conversion to barrel equivalents was made in conformance with Department of Commerce convention at the rate of 300 pounds per barrel (47:6).

Table 12

United States' Imports of OPEC Refined Petroleum

Year	Millions of 1975 Dollars*	Millions of Barrels	1975 Dollars per Barrel
1970	1,368	261	5.24
1971	1,558	258	6.04
1972	1,774	276	6.43
1973	1,933	309	6.26
1974	3,199	282	11.34
1975	1,616	146	11.07
1976	1,890	190	9.94
1977	2,202	203	10.84

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

*F.a.s. Valuation Basis

Table 13

United States' Imports of Non-OPEC Refined Petroleum

Year	Millions of 1975 Dollars*	Millions of Barrels	1975 Dollars per Barrel
1970	2,045	370	5.53
1971	2,184	350	6.24
1972	2,597	390	6.66
1973	4,076	539	7.56
1974	5,722	427	13.40
1975	3,931	328	11.98
1976	3,176	285	11.14
1977	4,327	372	13.92

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

*F.a.s. Valuation Basis

Demand from both OPEC and non-OPEC sources increased slowly, peaked in the year 1973, and declined. Demand for non-OPEC refined petroleum returned essentially to its 1970 level. Requirements for OPEC products declined to a level nearly 25% below the original level.

Figure 6 shows the trend of OPEC refined petroleum supplied as a percent of the total U.S. foreign requirement. Unlike the case of crude petroleum, which showed an increasing trend, the refined petroleum trend is essentially flat. The final year's percent supplied was 35.3 as opposed to an initial year's value of 41.4 . All crude petroleum data presented in Tables 12 and 13 and Figure 6 were extracted from complete tabular data recorded in the Appendix.

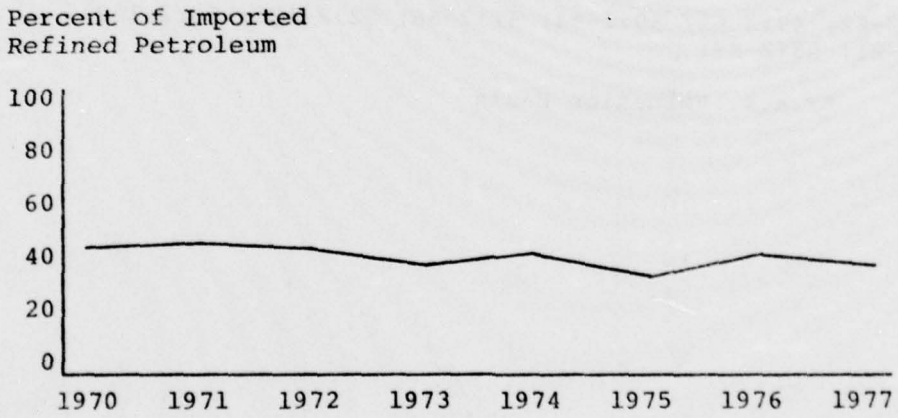


Figure 6

OPEC Refined Petroleum Supply Trend

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

It appears that the representation of U.S.-OPEC petroleum transfers will be one of increasing U.S. dependency on OPEC resources. As the members of OPEC continue to amass trade surpluses against the U.S., some method of obtaining goods, services or claims from the U.S. must be found. The relatively primitive economies of most OPEC members have given rise to solutions to that problem of balancing international accounts that have not resembled other U.S. experience since World War II. An example of one such solution—massive arms transfers—will be considered in the next section of this thesis.

Arms Transfers

When considering the rate of arms transfers to recipient nations and the impact of these sales on the United States economy during an accounting period, a clear distinction must be made between sales contracts and actual deliveries. While the larger, more spectacular sales announcements gather equally spectacular (23:37) headlines, only the far smaller dollar amounts of arms actually committed to transportation channels enter the international balance of payments statistics (71:842). The arbitrary use of either arms transfer deliveries or arms transfer contracts without explanation would militate against an accurate description of the effects such transfers would have upon the United States economic system. Accordingly, each category has been presented independently.

Arms transfer contracts. Two types of contracts exist. The first, and by far the largest, category is represented by Foreign Military Sales (FMS) which have been defined by the International Security Assistance and Arms Export Control Act of 1976 (as amended) in sections 21, 22, 23 and 24 as:

> . . . cash sales from stocks of the DoD; procurement for cash sales by the DoD; DoD credit sales, and DoD guarantees covering the private financing of credit sales of defense articles and defense services [65:25-28].

A second smaller category is commercial sales which have been defined by DoD manual 5105.38-M *Military Assistance and Sales Manual* as a ". . . sale made by U.S. industry directly to a foreign buyer not administered by the DoD and not involving credit under the provisions of the Arms Export Control Act [76:3]."

By virtue of these definitions, all sales of arms resulting in reimbursement for arms transfers out of the United States (except smuggling or covert government operations) will be included in one of these two categories. Arms transfers as a result of grant aid, for which the United States receives no reimbursement, are similarly excluded by this system of categorization since they cannot affect the balance of payments. A possible exception might be "forgiven" FMS financing to Israel which will be discussed in another section.

Similarly, all administrative charges appended to FMS sales contracts such as the standard 3% administrative

surcharge, the 5% supply support surcharge or the optional 5% surcharge for nonstandard items will be included (76:14-3). Such surcharges are, in fact, compensation to the United States government for services rendered to a foreign government by the U.S. defense establishment.

Selecting only the dollar value of FMS cases actually accepted by foreign governments and of U.S. contracts managed by DOD, FMS procedures are as portrayed in Figure 7.

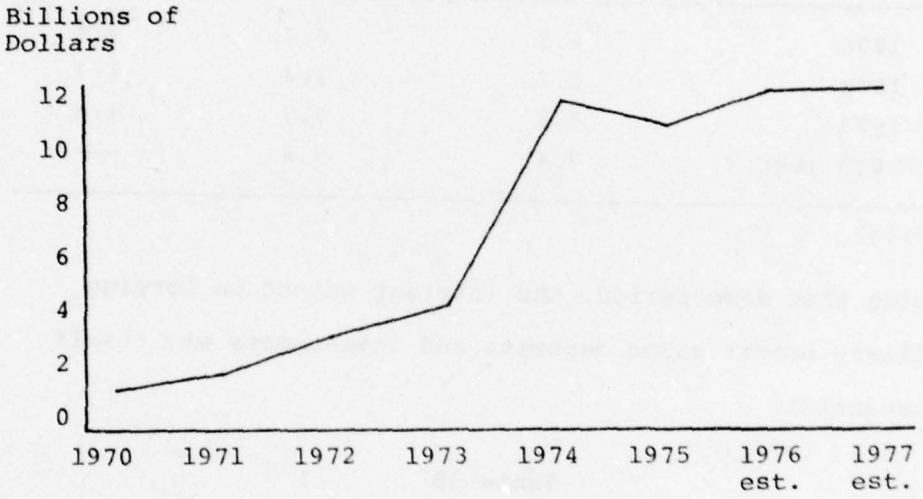


Figure 7

Dollar Value of Accepted DOD FMS Cases
(Billions of 1975 Dollars) (75:8)

To support these transfers to foreign governments, the DOD administers a foreign military sales trust fund into which purchasers deposit funds (owned or borrowed) and from which the DOD reimburses contractors or its own divisions

that have actually performed a service or provided a product. This fund is empowered to borrow from the public and also to invest funds being held in U.S. government debt. Recent trust fund operations are summarized below:

Table 14

Foreign Military Sales Trust Fund
(Billions of 1975 Dollars)

Fiscal Year	Expenditures	Receipts	Net
1976	6.3	6.9	+.4
197T	1.7	2.4	+.7
1977	7.3	7.7	+.4
1978 (est.)	7.4	7.4	——

(84:35)

During this same period, the interest earned on foreign military credit sales deposits and investments was itself substantial:

Table 15

FMS Trust Fund Interest Accrued
(Millions of 1975 Dollars)

Fiscal Year	Realization
1976	120
197T	67
1977	181
1978 (est.)	174

(82; 83; 84; 85)

These funds, deposited by FMS recipients prior to delivery, are held by the DOD until the producer of the service or goods demands payment. By law, (84:206) these funds must be invested in debt instruments issued by the U.S. government. These funds are, in effect, lent to the U.S. free of interest. Yet the "profits" in 1976 represent $206 million that would have been paid to private investors had the same amount been borrowed from them. The government would, surely, have borrowed to support the public debt which has existed for the entire history of the federal government.[1]

The second category, commercial sales contracts, represents a smaller but more difficult to measure trend in arms transfers. These sales contracts are private arrangements between U.S. firms and foreign governments and, although subject to statistical and legal control by the U.S. government, constitute proprietary information for both buyer and seller alike. The amounts of private contracts appear in Figure 8.

---

[1]The federal government has never closed its books without debt . . . it reached a record low of $38,000 in 1835 (68:711).

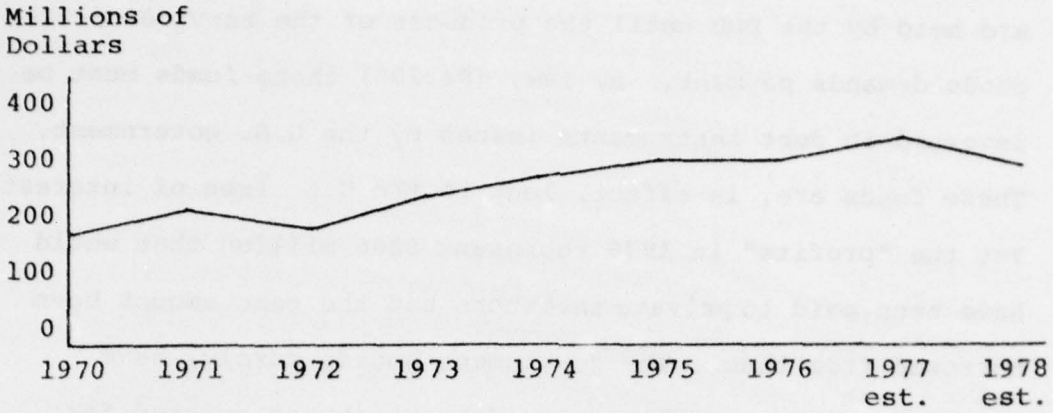


Figure 8

Private Commercial Arms Transfer Contracts (75:14)

Table 16 portrays commercial arms sales agreements in constant 1975 dollars for both OPEC and all non-OPEC recipients.

Table 16

Commercial Sales Agreements
(Billions of 1975 Dollars)

Purchaser	1975	1976	197T	1977	1978	1979
OPEC	121	183	45	152	163	168
Non-OPEC	515	597	148	945	975	1,010
All	636	780	194	1,097	1,138	1,178

(73:22-23; 74:22-23)

Since many of these FMS and commercial contracts may be "open-ended" (76:87) and are subject to renegoitation,

there is no guarantee the dollar amounts for which contracts exist will reflect actual deliveries of arms or services in future years. To the contrary, they will probably not do so.

Some scale may be assigned to this fluctuation by contrasting the annual FMS trust fund contract authority with annual liquidations, as may be seen in Table 17:

Table 17

FMS Financing Support
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976	197T
Total FMS Contract Authority	1,151	1,813	4,645	4,580	8,621	8,693	11,933	1,066
Liquidations	1,268	1,452	1,596	3,130	3,531	4,415	6,827	2,389
Departure	- 117	361	3,049	1,450	5,090	4,278	5,106	-1,323
% Departure	- 10%	20%	66%	32%	59%	49%	43%	-124%

(78:221; 79:215; 80:184; 81:129; 82:208; 83:197; 84:251)

The Defense Security Assistance Administration (DSAA) is one agency which is charged with management of the security assistance program. It annually reports to the U.S. Congress descriptive statistics of military goods and services to be transferred to other nations by the United States (75:3). This Congressional presentation identifies dollar values of various classes of arms transfers reported

to DSAA by implementing agencies. The report annually considers programs for countries reporting actual values for the past fiscal year, estimated values for the (75:7) current year and the proposed programs for the following fiscal year. Current year estimates are subject to the vagaries of delivery schedules, transportation availabilities and the conditions within the recipient nations, while the following fiscal year's estimates are subject to these as well as the actions of the United States government. Tables 18, 19, and 20 represent the actual values of arms transfers reported to Congress. Shown are actual values for 1970 through 1977 and estimated values for 1978 and 1979. These values include cash and credit foreign military sales.

These may be contrasted with the vestigial U.S. grant-aid program, Table 24, which has dropped from 45 recipient (65:42) nations in 1965 to only eight in 1977.

These figures indicate that OPEC members have been, without doubt, the largest source of U.S. arms sales in recent years while Table 21 contrasts OPEC and non-OPEC foreign military sales orders since 1950. The use of foreign military sales orders is perhaps the best single gross measure of the impact of arms transfers on U.S. manufacturing interests. While it does suffer the disadvantages of not identifying the year of delivery (hence year earned for balance-of-payments computation) and that orders may be

Table 18

Foreign Military Sales Agreements*
(Millions of Constant 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976**	1977	1978 est.	1979 est.
To OPEC	108	609	1,308	3,109	5,396	4,907	5,626	6,333	4,870	4,060
To Non-OPEC	1,578	1,688	3,186	2,171	4,829	7,336	5,105	3,090	4,046	4,312
Total	1,685	2,297	4,493	5,281	10,223	12,242	10,729	9,422	8,917	8,372

(75:1-4; 77:19-21)

*Excludes Corps of Engineers supervised construction in Saudi Arabia.

**Includes FY7T.

Table 19

Foreign Military Credit Sales
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976*	1977	1978 est.	1979 est.
To OPEC	0	32	12	10	12	5	33	35	43	40
To Non-OPEC	109	1,085	784	712	3,209	845	2,588	1,645	1,712	1,605
Total	109	1,115	796	723	3,221	850	2,621	1,680	1,755	1,645

(74:7; 75:7-11)

*Includes FY7T.

Table 20

Commercial Sales Deliveries
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976*	1977	1978 est.	1979 est.
To OPEC	76	89	70	40	69	80	245	151	163	169
To Non-OPEC	606	508	545	454	491	466	1,095	946	975	1,009
Total	683	597	617	493	560	547	1,340	1,097	1,138	1,178

(74:13-16; 75:21-23)

*Includes FY7T.

financed by U.S. grant-aid or loans to be repaid in future years (with future balance-of-payments impact) it does estimate the relative importance of the consumers of U.S. arms production.

Table 21

Foreign Military Sales Orders
(Millions of Current Year Dollars)

	1950-65	1966-70	1971-75	1976-78 (78 est.)	1950-78 (78 est.)
To OPEC	2,309	836	15,082	24,194	42,410
Non-OPEC	6,205	5,082	14,524	13,746	39,557
West Europe	4,173	2,232	6,495*	3,695	16,595
Israel	67	516	4,319	2,552	7,454
So. Amer.,** Mex., Canada	962	327	1,005	446	2,741
Japan	136	120	199	364	820
World Total	8,514	5,908	29,606	37,940	81,968

(6:43-44; 74:19-21; 75:19-21)

*Includes a $2.1 billion commitment for the F-16.
**Includes 2 OPEC members, Ecuador and Venezuela.

As was noted above, the ability of any individual or agency to predict the quantity and delivery dates of U.S. arms transfers is known with little precision. Generally, the larger the value of an agreed-upon arms transfer the greater will be the time elapsing until deliveries take place. At the end of 1976, $32,278,000,000 (Table 22) of U.S.

Table 22

Expected Delivery Schedules of Arms Transfers
(Millions of 1975 Dollars)
(Contracts Backordered 1 Oct 76)

	Undelivered Contract Value	1977	1978	1979	1980	1981	1982	1983	% Total
Aircraft	9,683.1	1,936.6	2,420.8	1,355.6	1,355.6	968.3	774.6	871.6	34
Ships	2,427.7	461.3	631.2	534.1	291.3	242.8	145.7	121.3	8
Vehicles and Weapons	1,609.8	676.1	724.4	209.3	0	0	0	0	6
Ammunition and Missiles	4,602.5	1,611.5	1,738.1	1,027.7	225.2	0	0	0	16
Comm. Equip.	802.9	144.6	329.2	168.6	56.2	32.1	32.1	40.1	3
Misc. Suppl. and Equip.	831.2	289.6	150.0	150.0	91.0	57.9	57.9	34.8	3
Construction (US-Provided)	4,528.6	634.8	1,142.7	1,185.0	677.2	296.3	296.3	296.3	16
Repair	279.8	82.4	64.8	44.2	44.2	44.2	0	0	1
Supply Operations	820.5	164.1	164.1	164.1	164.1	164.1	0	0	3
Training	408.5	106.2	126.6	57.2	32.7	28.6	28.6	28.6	1
Tech. Assist.	2,468.6	701.6	831.6	311.8	155.9	155.9	155.9	155.9	9
Total	28,463.2	6,808.8	8,323.5	5,207.6	3,093.4	1,990.2	1,491.1	1,548.6	XX
% Total	XX	24	29	18	11	7	5	6	100

(6:34-35)

arms could be classified as "orders outstanding" (6:28) which is $28,463,000,000 worth if commercial sales licensed by the Department of State are included and deflated to 1975 dollars. Table 23 is a Department of Defense estimate of the delivery rates of this 1976 backlog.

Table 23

Estimated Delivery Rates for 1976 Delivery Backorders
(Millions of 1975 Dollars)

	1977	1978	1979	1980	1981	1982	1983*
Estimated Dollar Amount	6,809	8,323	5,208	3,287	1,990	1,491	1,452
% of Backlog	24%	29%	18%	12%	7%	5%	5%

(6:32)

*Includes all residual remaining.

A further breakout of anticipated deliveries by type of product or service is revealing due to the fact that some arms transfers can be made more rapidly than others. The ability of the U.S. to control or be controlled by arms consuming nations is thus of variable sensitivity. The strength of the relationship is weakened by the close time sequencing of actual deliveries and payments.

Nonreimbursable transfers. While the level of reimbursed sales in the FMS and commercial sales arena has grown, the

levels of grant-aid, security supporting assistance and forgiven financing has generally declined. Two recent programs that have countered this trend have been the Military Assistance Service Funded (MASF) program to aid Southeast Asian countries from 1967 to 1974 and the continuing program of waiving the repayment of roughly one-half of FMS credit financing annually authorized (65:47) for the State of Israel. Table 24 depicts the magnitudes of various programs which have had the effect of transferring U.S. arms to foreign nations without repayment. This table does not attempt to evaluate the impact of transferring obsolete and surplus items from the U.S. to a foreign power even though by some accounting procedures the values may be significant. Even so, the gift of a surplus U.S. vessel (which has happened 3,900 times since 1950 (75:35)) or other item represents only the loss of salvage value to the U.S. government and does not directly impact the balance of payments or the business of U.S. arms producers. In a secondary effect, recipient nations may have to purchase repair and maintenance goods and service from U.S. sources, but these (if they are purchases) become sales reflected in the balance of payments accounts and arms transfers controlled by the U.S. State Department. With the consistent balance of payments deficits accrued by the U.S. in recent years has come the clamor (22:2) to reduce U.S. generosity to as few instances as possible without doing irreparable damage to

Table 24

U.S. Arms Transfers Not Requiring Reimbursement
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976*	1977	1978 (est.)	1979 (Propos.)
MAP Grants (Excludes MASF) Delivered and Expended	2,655	2,023	511	629	531	347	223	264	264	144
IMETP Grants—Reimbursements (MAP prior to FY 76)	41	41	42	30	27	21	27	26	26	26
FMS Financing to Israel Forgiven	0	0	0	0	1,673	100	800	440	418	398
Excess Defense Articles pro. (actual value)	476	410	393	387	52	6	74	0.9	3	0.8
Security Supporting Assistance (Ex. loans)							911	1,197	1,099	1,070
MASF (Asian nations) (MAP-IMETP-EDA)	1,364	2,246	4,332	6,203	1,509	1,349	0	0	0	0
Total	4,537	4,720	5,277	7,127	3,891	2,008	2,106	1,742	1,628	1,419

(74:13-22)

U.S. interests. Although the amount of funding applied to the nominal category "Military Assistance Program" has dropped as noted by Figure 9 which is a product of Library of Congress Research Service and DSAA research, the actual amount of nonreimbursable arms transfers is apparently far larger. Table 24 identifies seven U.S. government programs (including the MAP) which indicates that for fiscal year 1979, over 1.4 billion 1975 dollars worth of arms transfers to foreign countries will be financed by what could be termed "grant-aid" provided by the United States government. One must note that two nations—South Vietnam and Israel—have been the recipients of much of these unreimbursed arms transfer programs. Excluding the grants to just these two nations would substantially change the character of this table; in fact, it would nearly resemble the Library of Congress and DSAA portrait noted in Figure 9 referenced above.

Impact of FMS on U.S. Producers

The impact of foreign military sales activity and other transfers has been almost totally felt in the private sector since public production of arms (with the exception of nuclear devices) is rare. As shall be noted, by far the largest impact has been, and will continue to be, observed in the Aerospace Industry. "Aerospace" will be understood to

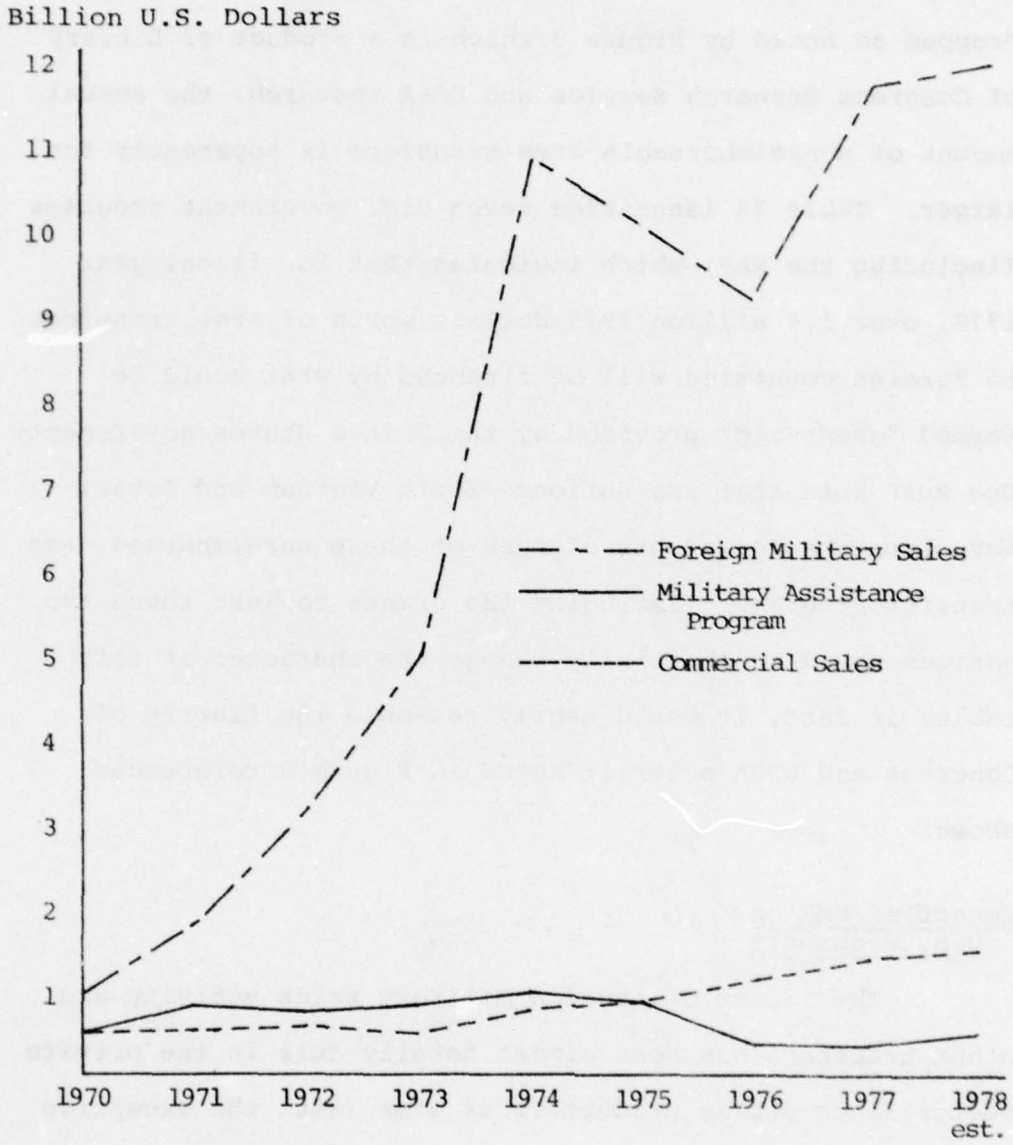


Figure 9

U.S. Foreign Military Sales, Military Assistance, and Commercial Military Sales

(30:7; 74:10,21-25)

describe those firms included in Department of Commerce industrial codes in the 37XX series.

As was noted before, the U.S. is the free world's largest arms producer and exporter (14:81). While only the government of the U.S.S.R. knows the values of its arms production and exports—and is not publishing them—observers have estimated the U.S.S.R. to be producing and selling slightly more or slightly less than the U.S. (14:60-85). Among actual commercial rivals, however, the U.S. transfers far more arms than either France or Great Britain. The Arms Control and Disarmament Agency (ACDA) estimated in 1976 that the importance of arms exports to the U.S. as a percent of GNP was roughly double that of either France or Britain. Table 25 summarizes the ACDA findings.

Table 25

Value of Arms Exports as a Percent of GNP

Year	U.S.	France	Great Britain
1972	.35%	.25%	.20%
1973	.38%	.24%	.19%
1974	.29%	.21%	.24%
1975	.32%	.18%	.18%

(30:67)

Quite naturally, the larger GNP of the United States as compared to France or Great Britain leads to relatively greater arms export totals for the U.S. as noted in Table 26.

Aggregated Economic Impact

Actual deliveries of foreign military sales lag somewhat behind agreements and appear as below in Table 26.

Table 26

Deliveries of FMS by Year
(Millions of 1975 Dollars)

	1970	1971	1972	1973	1974	1975	1976*	1977
To OPEC	295	340	415	459	868	1,311	2,389	3,525
To Non-OPEC	1,832	1,841	1,565	1,400	2,429	2,018	2,559	2,539
Total	2,127	2,181	1,980	1,859	3,297	3,328	4,948	6,064

(75:29)

*Includes FY 7T.

For the United States, the arms transfer statistics are, by recent custom, annually dominated by a few major agreements. Examples since 1973 would be:

Table 27

Major Arms Transfer Agreements

Year	Recipient	Item/Value, Billions	% of Annual FMS Total
1973	Iran	F-4, F-5, Helicopter Package/1.4	24
1974	Iran	Destroyers, F-14 Deal/2.3	20
1975	Belgium, Norway, Denmark, Holland	Consortium Buy of 348 F-16's/2.1	20

Table 27 (continued)

Year	Recipient	Item/Value, Billions	% of Annual FMS Total
1976	Saudi Arabia	Operate & Maintain F-5E Facilities/1.6	18
1977	Iran	7 E3A AWACS/1.2	9
1978	Israel, Egypt, Saudi Arabia	F-15, F-16, F-5 Package/4.8	45*

(6:14; 63:28)

*If agreements reach 10.7 billion dollars as anticipated; 35% if sales reach $14 billion in 1978.

This market concentration has resulted in the aerospace industry's rank as a leading earner of export trade revenues. As shown in Table 28, aerospace trade balances have been relatively large in recent years.

Table 28

Aerospace Balance of Trade
(Millions of 1975 Dollars)

Year	Exports	Imports	Positive Balance	% Imports To Exports
1970	5,394	488	4,906	9
1971	6,448	572	5,876	9
1972	5,573	830	4,743	15
1973	6,677	1,015	5,661	15
1974	7,751	814	6,937	11
1975	7,792	747	7,045	10
1976	7,500	551	6,949	7
1977	6,828	658	6,169	10

(2:109)

Viewing aerospace exports in the sense of military and civilian exports, the industry exhibits the statistics shown in Table 29 which again is export commodities only.

Table 29

Military/Civilian Aerospace Exports
(Millions of 1975 Dollars)

Year	Value Civilian Exports	Value Military Exports	% Military To Total
1970	3,423	1,386	26
1971	4,629	1,688	27
1972	4,297	1,223	22
1973	4,918	1,758	26
1974	5,760	1,990	26
1975	5,324	2,468	32
1976	5,429	2,071	28
1977	4,547	2,280	33

(1:19; 2:111)

Foreign Policy

The sheer bulk of U.S. foreign policy pronouncements, resolutions, laws, statements and acts prevents the agglomeration of all such material that affects U.S. arms transfers, energy usage and trade patterns. In this thesis, foreign policy implications will consider those instruments of foreign policy that are stated by United States government officials and organizations. Other factors, to be sure, can alter the energy, trade and arms affairs of the United States or any nation. Investigative reports (8:3) have demonstrated

that their actions can indeed change the arms transfer policy of the U.S. The economically-inspired actions of U.S. oil company presidents of unilaterally lowering the posted prices paid for Persian-Gulf crude oil in 1961 (17) may be viewed as a direct precursor of the OPEC's existence and, as such, a major factor in U.S. energy availability. To this list of unofficial U.S. foreign policy factors could be added the words and writings of influential government officials which may well carry foreign policy implications even if they do not appear in either the Federal Register or the *Congressional Record*. A recent example might be the "unofficial" offer by President Carter (20:16) of a Middle East fighter plane sale that rapidly grew into official reality.

Essentially, the task of identifying all meaningful U.S. foreign policy actions must be left to the future historian, if, in fact, such a complete identification can be made. Research in the areas of oil, arms and general commercial activity could not, however, be attempted without some consideration of how the United States represents herself to extranational commercial partners. The problem of selecting which foreign policy pronouncements to identify with either a specific time period or specific trends in weapons or oil activities becomes highly subjective.

The authors have selected in this treatment tabulations of general trade policies, domestic energy policies

and arms transfer policies published in scholarly research that meet three criteria: (1) that the policy in question has been officially espoused by the U.S. government since 1970; (2) that it has been recognized by other researchers as substantially responsible for conditions in one or more of the three target areas; and (3) that, in our judgment, had a significant impact on one or more of the three target areas.

Arms Transfer Policies

The official policy of the United States toward the extranational transfer of arms has been the subject of intense and emotional argument throughout the history of the republic (32:37) from the Washington administration to that of President Carter. From 1970 to the present both the Executive and Congressional branches of government have been active in stating United States policy with regards to arms transfers.

The Nixon doctrine. This policy was first enunciated in late 1969 and further refined in 1970. In part, the doctrine stated:

> We shall furnish military and economic assistance when requested and as appropriate. But we shall look to the nation directly threatened to assume the primary responsibility of providing the manpower for its defense [64:1].

This doctrine has been viewed as one encouraging the transfer of arms without encouraging the commitment of U.S. armed

forces which, perhaps, would have been unacceptable to a Vietnam-weary population. The doctrine did not change any aspect of U.S. law but did signal a change in the attitude of the U.S. Executive branch toward foreign arms transfers.

The International Security Assistance and Arms Export Control Act of 1976 (PL 94-329). This sweeping amendment to the Foreign Assistance Act of 1961, itself amended by the Foreign Military Sales Act of 1968, greatly changed the legislation that governs all policy, regulations and procedures concerning U.S. arms transfers (65:729-769). The Act signaled the intent of Congress to take a more active role in the control of foreign arms transfers as shown by these selected provisions:

1. Section 101(a)(1) limited the U.S. Military Assistance Program to eight recipient nations and specific dollar limitations in Fiscal years 1976 and 1977 (65:729).

2. Section 101(a)(3) limited the number of recipient nations of all forms of aid to 20 including the eight MAP recipients (65:729).

3. Section 101(a)(6) limited the Executive's ability to transfer any "sophisticated weapons such as missile systems or jet aircraft . . . [65:730]" to any lesser developed country.

4. Section 102(g) provided the President with a $67.5 million emergency fund to use if reported to the Congress (65:730).

5. Section 103 limited the value and conditions of deployment in foreign countries defense article stockpiles (65:730-731).

6. Section 104 terminated all Military Assistance and Advisory Groups in foreign nations (which were involved in arms transfer activities) and forbade use of defense attaches for similar purposes (65:731).

7. Section 105 terminated all Military Assistance Programs not specifically authorized by the Congress (65:732).

8. Section 202 stated the policy of the United States towards arms sales as:

> "It shall be the policy of the United States to exert leadership in the world community to bring about arrangements for reducing the international trade in implements of war and to lessen the danger of outbreak of regional conflict and the burdens of armaments. United States programs for or procedures governing the export, sale, and grant of defense articles and defense services to foreign countries and international organizations shall be administered in a manner which will carry out this policy.
>
> It is the sense of the Congress that the President should seek to initiate multilateral discussions for the purpose of reaching agreements among the principal arms suppliers and arms purchasers and other countries with respect to the control of the international trade in armaments. It is further the sense of Congress that the President should work actively with all nations to check and control the international sale and distribution of conventional weapons of death and destruction and to encourage regional arms control arrangements. In furtherance of this policy, the President should undertake a concerted effort to convene an international conference of major arms-supplying and arms-purchasing nations which shall consider measures to limit conventional arms transfers in the interest of international peace and stability [65:734]."

9. Section 202(b)(2) required of the President an annual reporting of several facets of arms transfers and activities to control them (65:735).

10. Section 204 required the President to notify the Congress 30 days in advance of his approval of any foreign arms transfer (65:735).

11. Section 205(e) mandated recovery of the administrative costs to the U.S. of any arms transfers made, and authorized the President to enter into NATO standardization agreements.

12. Section 209 and 216 required the President to estimate a year in advance and report for the past year both the size of and reasons for foreign military sales (65:741, 746).

13. Section 211 required the President to submit to both Houses of Congress a quarterly report of the status of arms transfers previously proposed, as well as any new proposals. This section also restricts sales to values of less than $25 million unless part of previously approved ". . . major defense equipment." Section 211 provides for two years' imprisonment and up to $100,000 in fines (or both) for attempting to avoid provisions of this act (65:745).

14. Section 214 mandated the recovery of all personnel and administrative charges involved in carrying out the functions of the act (65:746).

15. Section 217 placed strict limits on the ability of the Executive branch to transfer obsolete weapons (except as scrap) to foreign nations (65:747).

16. Section 218 directed the Secretaries of State and Defense to advise the Congress of the political consequences of the Act on the areas of: (1) U.S. foreign policy; (2) U.S. balance of payments; (3) trade with other countries; (4) unemployment in the United States; and (5) DOD weapons procurement.

International Security Assistance Act of 1977 (PL 95-92). This Act further amended both the Foreign Assistance Act of 1961 and the Arms Export Control Act of 1976. This continued to increase the amount of supervision and control of the Congress over U.S. foreign arms transfers.

1. In Section 5 the Congress forbade the use of any funds but those specifically appropriated for the defense assistance of any nation.

2. Section 6 reserved to the Congress the ability to authorize foreign assignment of persons to support security assistance programs. Sub-section "g" required all costs associated with such persons (reimbursed or not) be paid out of security assistance funds.

3. Section 9(a) stated that "It is the sense of the Congress that the security supporting assistance program for Egypt plays an important role in the Middle East peace

effort . . ." and requires executive reports of actions to support Egypt.

4. Section 11 forbade any security assistance or sales to Argentina.

5. Section 14 forbade the use of any funds appropriated by this act for nuclear power plants.

6. Section 16 reserves to Congress the power to disapprove of third-country transfers of U.S. arms. This section also institutes a 30-day delay between proposal and implementation of third country transfers unless an emergency exists.

Oil Import Policies

The U.S. government is involved in many aspects of energy policy in addition to that of imports. In broad terms, they could be viewed as tax policies, import policies, federal land leasing policies, and policies with regard to energy consumption and use (12:20). While each of these areas is of significance, this thesis requires a characterization of import policies alone.

Pre-1970 energy policies. Prior to the start of this decade there seems to have been little official U.S. concern for petroleum and petroleum product imports. In 1957, Congress had instituted mandatory limits on oil imports limiting them to 9 percent (12:20). The quota had been raised to 12.2% by 1962 and was often liberalized by exempting firms (and

some exporting nations) from control (12:20-21) reaching a limit of 23% of U.S. production by April 1972. Paul W. McAvoy has identified the "coupon" system used to control imports through this time (19:28) with significant economic benefits to small firms engaged in importation and refining.

Presidential establishment of the Energy Policy Office (EPO). With the establishment of the EPO came regulatory policies and conservation programs for all phases of energy production. The EPO was, in some ways, (19:9) a rival of the Department of the Interior's Office of Petroleum Association (OPA). Faced with the OAPEC embargo, both were absorbed by the Federal Energy Office (FEO) by President Nixon's executive order of 4 December 1973. The FEO was created as a response to Public Law 93-159 (1973) which called for emergency petroleum allocation.

The Federal Energy Administration (FEA). Faced with sentiments to both decontrol petroleum supplies and decrease U.S. sensitivity to further supply interruptions at the conclusion of the OAPEC embargo, Congress enacted PL 93-275 (1974) establishing the FEA. Although the FEA made no substantial changes in energy regulation (19:11), it did, for the first time, bring all federal energy policy under one agency. The FEA administered progressively more costly tariffs on imported oil from 1973 to 1975 (12:20) but these have not,

in the opinion of a federal advisory committee (19:157), reduced U.S. imports by any substantial amount.

The National Environmental Policy Act (NEPA). This act included two significant amending acts—The Clean Air Act and the Federal Water Pollution Control Act—all of which became public law in 1970 (20:5). Both acts discouraged the use of coal thus increasing the dependence on oil and gas. Simultaneously, these acts fostered the growth of a new industry—itself a major energy user—pollution control.

Proposed legislation. Substantive legislation proposed by President Carter has been before the Congress for over one year and has not yet been approved (34:iii).

General Trade Policies

U.S. national policy toward international trade has been characterized as ambivalent throughout much of the 20th century. William P. Deibold noted that:

> In the middle of the twentieth century the government of the United States had a clear view of the world economy it would like to see created . . . . As the last quarter of the century approached, clarity was lost [10:1].

Major international economic trade policies meeting our criteria are:

1. The 1973 call by Secretary of State Kissinger for a new "Atlantic Charter to link economic, political and security interests of Atlantic nations [18:27]." Japan was to be included if her unique security interests could be included.

2. The Trade Act of 1974 gave congressional approval to the U.S. participation in the General Agreement on Tariffs and Trade (GATT).

3. Numerous congressional acts (18:28) passed during the 1973—1975 world economic crisis that essentially ". . . pledged all major trading nations . . . from taking unilateral trade actions for balance-of-payments reasons . . . ." These acts eventually became drafts for OECD and IMF resolution concurrences appropriately watered down to preserve U.S. sovereignty.

4. The 15 August 1971 executive emergency program froze U.S. wages, prices and rents. In many areas, this action was known as the "Connally shock" (18:31) since it imposed a 10 percent surcharge on all imports and suspended the gold convertability of the U.S. dollars.

5. U.S. participation in the Conference on International Economic Cooperation in November 1975. This conference firmly established U.S. recognition (18:44) of the growing economic interdependence among all nations of the world.

Chapter 4

THE ANALYSIS OF OIL REVENUE AND ARMS SALES

Introduction

In this chapter we will analyze the various factors which affect trade between the United States and the OPEC nations. This analysis will include international economic and policy issues which may act singly or in combination to influence the actions of these trading partners. We will first consider those elements which have affected trade patterns between the United States and the OPEC countries. Next we will address the issue of incentives and penalties associated with the sales of U.S. weapons to the thirteen OPEC countries. Finally, we will assess the effect that the relationship between arms sales and oil revenues has had on United States security and foreign policy.

The Elements of Change

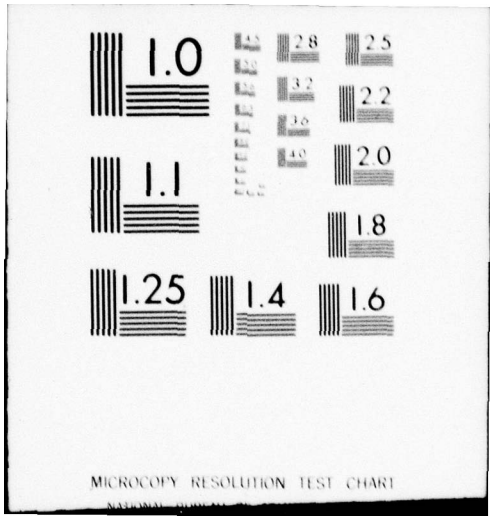
The Nixon doctrine. With the establishment of the Nixon doctrine in 1970 (28), the United States advertised its desire to arm its allies but withhold American military personnel except in the most extreme cases. Although most observers have cited the spectacular increases in OPEC arms purchases

AD-A061 305 AIR FORCE INST OF TECH WRIGHT-PATTERSON AFB OHIO SCHO--ETC F/G 5/3
AN ANALYSIS OF THE RELATIONSHIP BETWEEN OPEC OIL REVENUES AND S--ETC(U)
SEP 78 T P GARDNER, J L REUWER

UNCLASSIFIED AFIT-LSSR-37-78B NL

2 OF 2
AD
A061 305

END
DATE
FILMED
1-79
DDC


1.0
1.1
1.25
1.4
1.6
1.8
2.0
2.2
2.5
2.8
3.2
3.6
4.0
MICROCOPY RESOLUTION TEST CHART

from the U.S. in 1974—75, the dominance of these sales by OPEC members appears to be rooted in 1971 shortly after this act was announced. As Figure 10 shows, the OPEC share of U.S. arms transfers rose to 1/3 of the total in the 1971—72 time period.

From 6% of all U.S. foreign military sales agreements in 1970, OPEC members' shares rose to 27% in 1971 and 29% in 1972. In short, OPEC members were ordering relatively sophisticated and expensive U.S. arms in 1971 and 1972 for delivery and payment some 2—3 years later at about the time of the OAPEC/OPEC embargo and price increases. The percentage of agreements with and deliveries to OPEC nations presented in Figure 10 would be even higher except for foreign military credit sales to Israel. These Israeli credit sales, half of the costs of which are to be forgiven, are shown in Table 24, Chapter 3.

Dominance of arms transfers to OPEC. With reference to Figure 10, OPEC members' orders for U.S. arms reached 50% of the U.S. total in 1973 (the year of the OAPEC embargo), dropped slightly, and have risen since 1975. Viewed in constant 1975 dollars in Figure 11, actual deliveries of arms to OPEC members began a dramatic rise in 1973 as delivery of previously ordered items began. The rise in deliveries has continued to the present as the limits inherent to manufacturing processes and production scheduling have smoothed the 1974—75 jump in OPEC agreements.

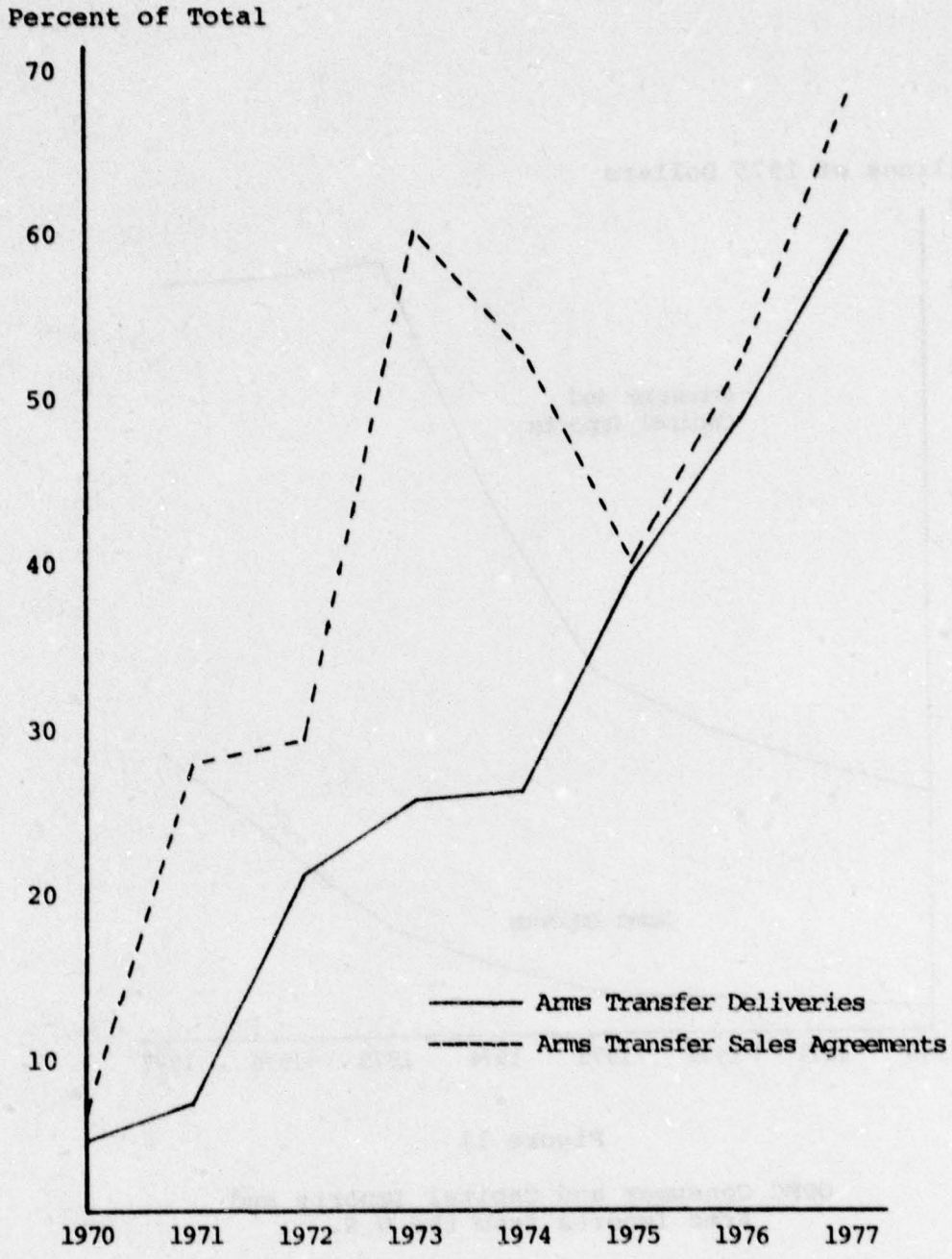


Figure 10

OPEC Share of U.S. Arms Transfers

(75:4-9)

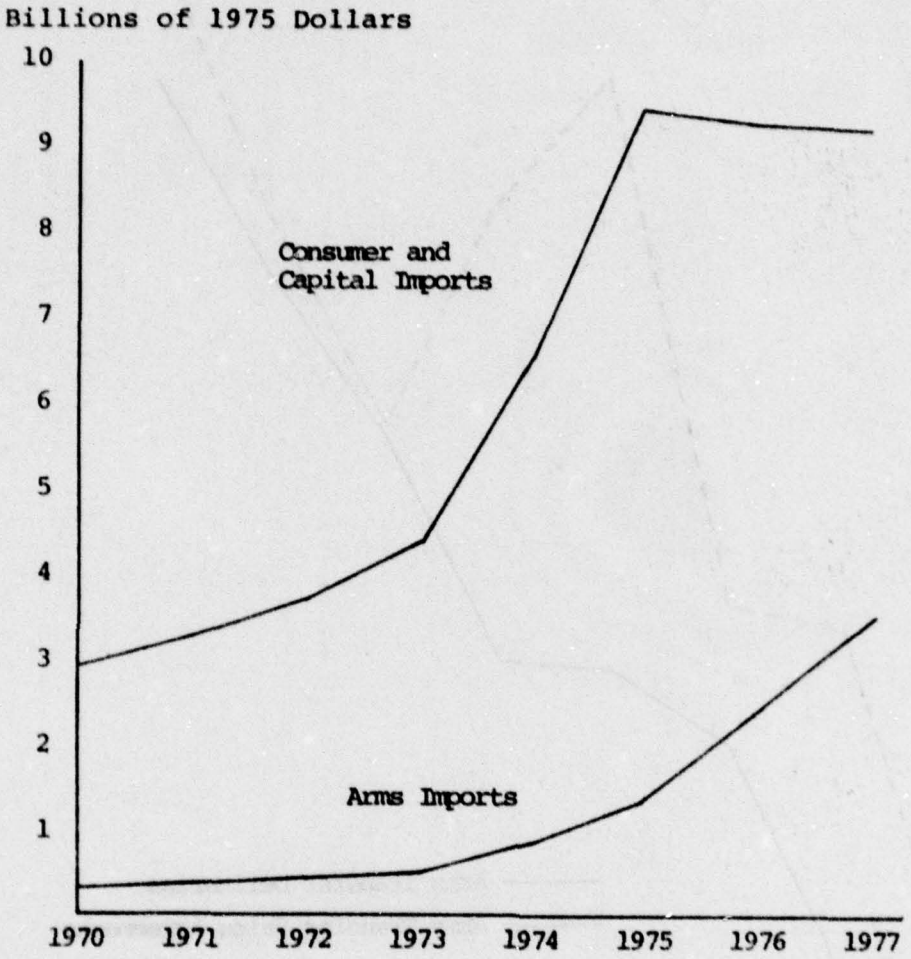


Figure 11

OPEC Consumer and Capital Imports and
Arms Imports from the U.S.

(36:40-42; 38:44-46; 39:44-46; 40:44-46; 41:36-38; 42:40-42; 43:36-38,40-42; 75:4-9)

Consumer goods delivered to OPEC, on the other hand, began to fall in 1975 and have continued to do so, possibly as the limited infrastructures and populations of OPEC members can no longer absorb the goods industrialized nations have to offer in return for OPEC oil.

United States' use of OPEC oil. OPEC members have, since 1971, consistently had balance of payments surpluses with the United States (Figure 6). The values of goods and services involved, less capital accounts (Figure 7), clearly show the effects of the 1973—74 rise in the price of OPEC crude oil combined with increasing United States' use of OPEC oil. Another reason for the growth of the OPEC balance of trade surpluses may be the increasing consumption of OPEC crude oil compared to non-OPEC oil. In 1976, for example, the OPEC nations had a 22.7 billion dollar trade surplus with U.S. of which 17.1 billion dollars was returned to the U.S. in the form of capital accounts (short and long term government and private investment). The remaining 5.6 billion dollars was returned in official settlement account changes of international reserves and liabilities.

Although the increased price the United States has paid for crude oil and for refined products from OPEC sources has been considerably above estimated production costs, the price increase does not appear to have been as severe as some observers have indicated. Figure 12 shows

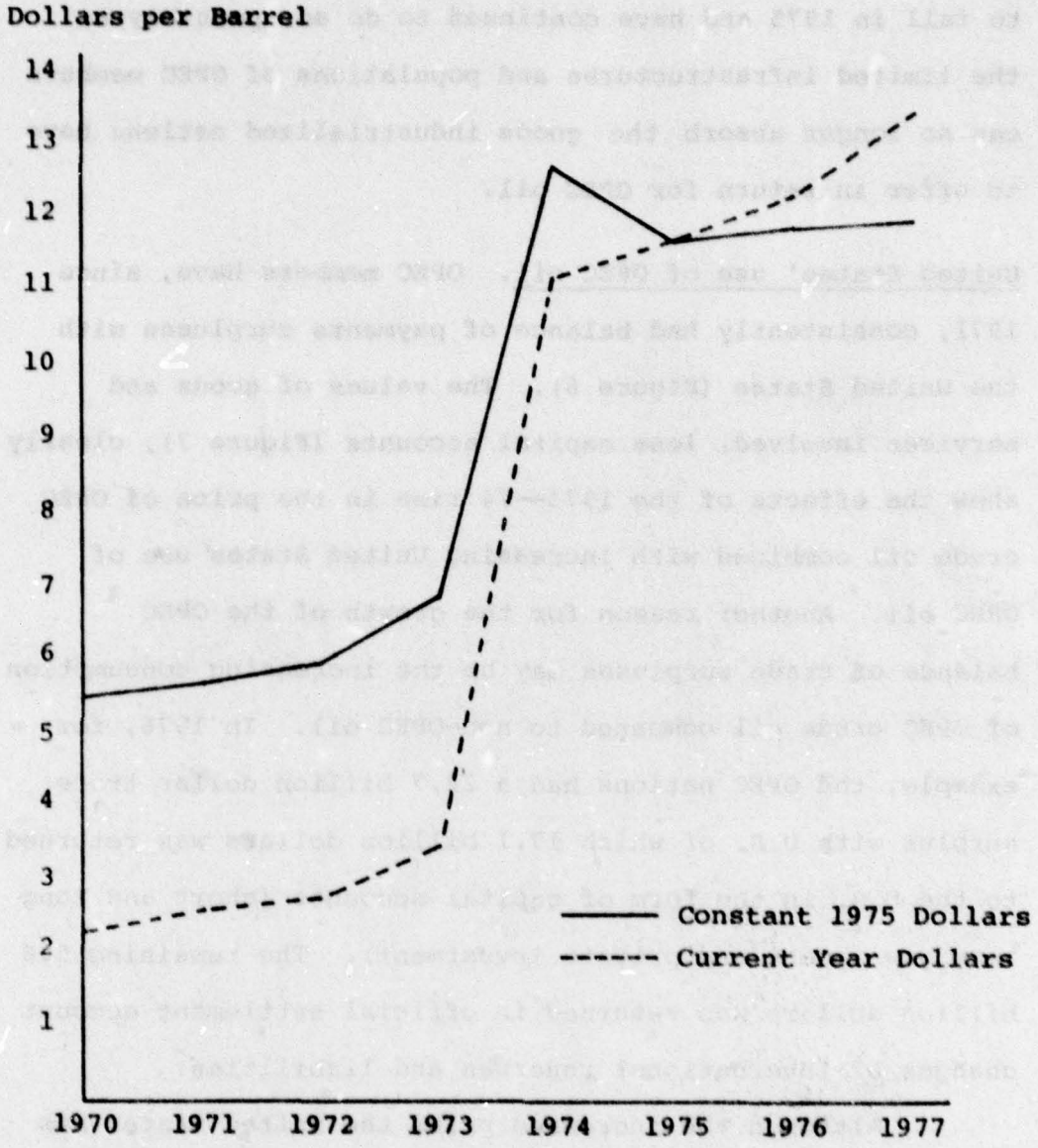


Figure 12

Average Price of Worldwide U.S. Imports of Petroleum

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87)

the average price paid by the U.S. per barrel of total crude and refined petroleum. Both constant 1975 dollar prices as well as the current year dollar prices have been presented. During the period 1970 to late 1973 the constant dollar price ranged narrowly from about $5.50 to $6.50. At that point, the competitive pressures for scarce OAPEC-embargoed oil, followed quickly by OPEC-dictated price increases, led to a doubling of costs to nearly $12.50 per barrel. Thus, the actual effect of the OPEC/OAPEC actions was to double, not "increase fourfold" (34:2), as was widely reported, the price paid by the U.S. for imported oil. As Figure 12 shows, if inflation is accounted for, the average price paid for imported petroleum resources could be described as doubling once in the winter of 1973—74. Prices remained essentially stable thereafter as increasing oil prices and inflation in the price of U.S. goods traded for that oil matched each other. This does not mean that the OPEC price increases were without economic effect—they most certainly were. It does, however, seem to indicate a remarkable stability in the real price of petroleum imports experienced before and since the 1973—1974 OPEC actions.

In Figure 13, again in 1975 dollars, the relative importance of OPEC versus non-OPEC sources of U.S. petroleum imports is apparent. OPEC claims against the U.S. have clearly exceeded non-OPEC sources' claims. A major facet of this has been the abundance of oil in OPEC nations and

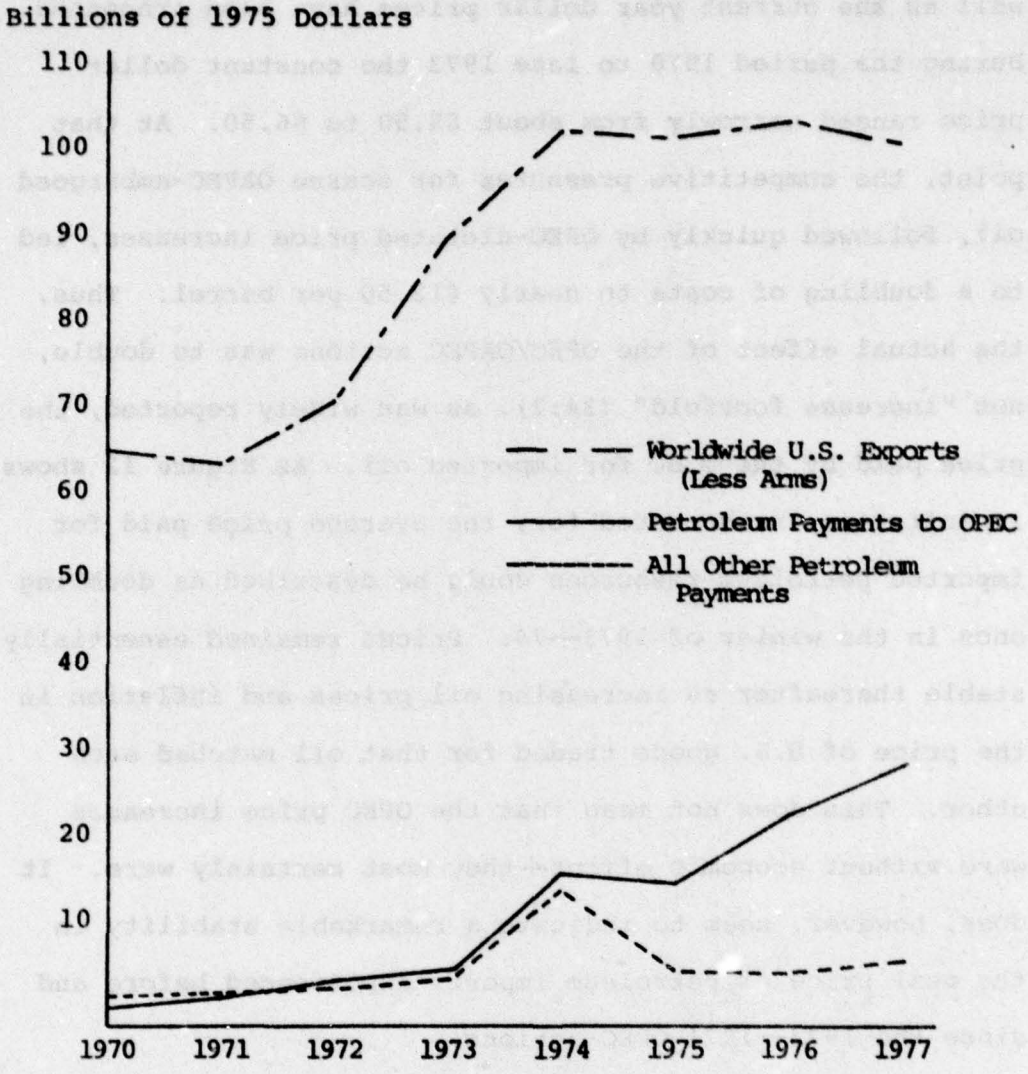


Figure 13

U.S. Export Revenues and Petroleum Payments

(36:40-42; 38:44-46; 39:44-46; 40:44-46; 41:36-38; 42:40-42; 43:36-38,40-42; 48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87; 74:4-30; 75:4-6)

the increasing desires of non-OPEC exporters such as Canada and the USSR to restrict exports in order to extend the time periods during which they will be self-sufficient. In Figure 14, we have portrayed both agreements and deliveries of U.S. arms to OPEC members and their ability to balance the revenues OPEC oil sales have earned from the U.S. It would appear that actual deliveries of arms to OPEC members have never constituted more than 10 to 15% of earned oil revenues and generally have constituted much less than 10% in most years since 1970. While agreements have amounted to as much as 50%—in 1973 — of OPEC oil earnings from the U.S., they represent only a future stream of goods and services flowing toward OPEC members and do not affect the current year's balance of trade.

All U.S. trade and arms transfers. The importance to the U.S. of arms transfers has grown. However, Figure 15 shows that, since 1970, arms transfers have not represented more than 6% of the value of all U.S. export exchange. Both total exports and exports less arms deliveries maintained a remarkable stability before 1972 and after 1974; positive growth was shown by both categories during the embargo and cartel pricing in the winters of 1973—74.

While the growth in U.S. arms shipments to OPEC members has accelerated, as shown in Figure 11, non-arms exports to OPEC members by the United States seem to have reached a relative peak in 1975 and have begun to decline.

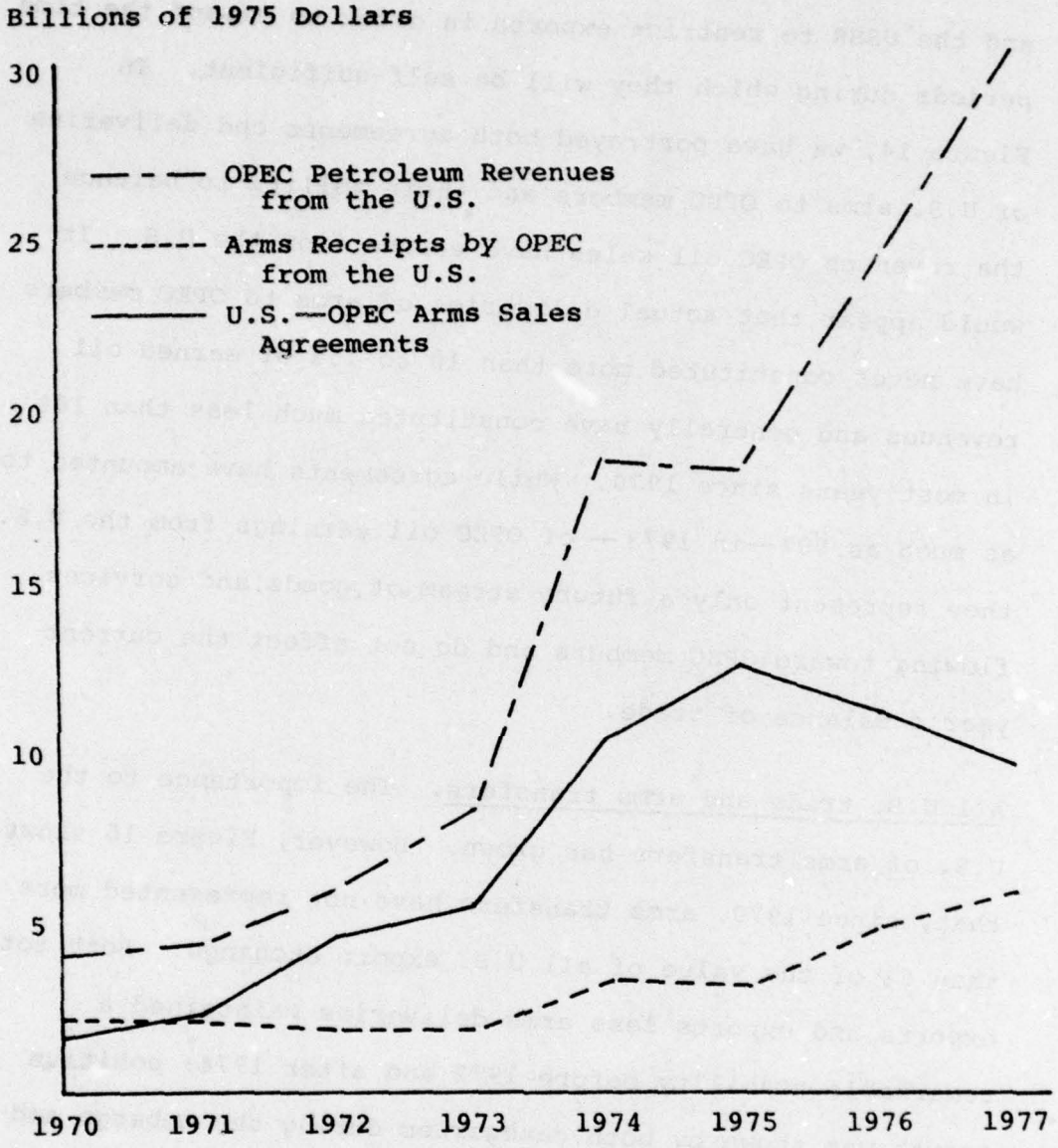


Figure 14

OPEC Petroleum Revenues, Arms Receipts, and U.S.—OPEC Arms Sales Agreements

(48:2-62; 49:2-62; 50:2-64; 51:2-66; 52:2-126; 53:2-122; 54:2-81; 55:2-87; 75:4-9)

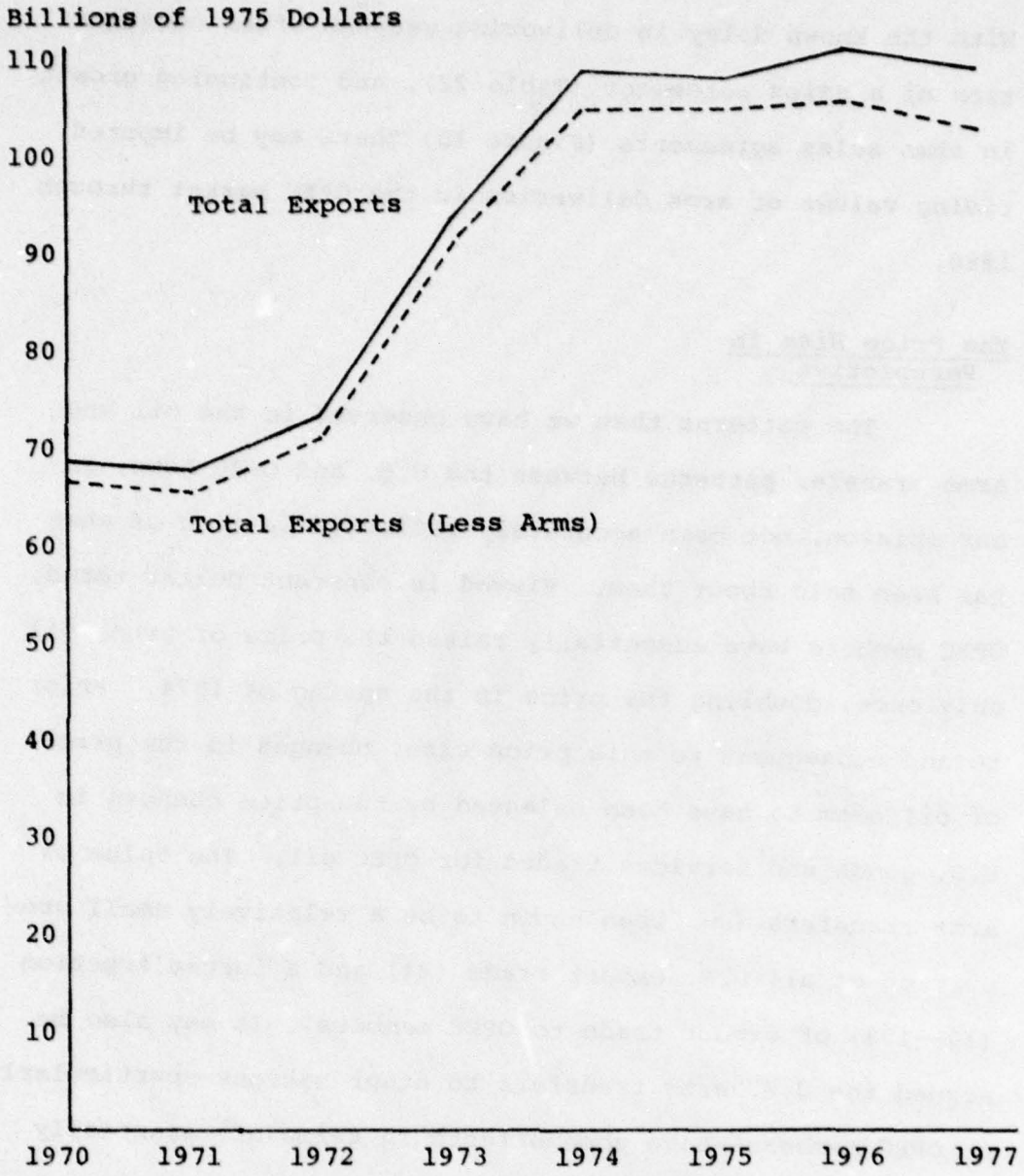


Figure 15

United States' Worldwide Exports

(36:40-42; 38:44-46; 39:44-46; 40:44-46; 41:36-38; 42:40-42; 43:36-38,40-42; 74:4-30; 75:4-6)

With the known delay in delivering weapons after consummation of a sales agreement (Table 22), and continuing growth in arms sales agreements (Figure 10) there may be imputed rising values of arms deliveries in the OPEC market through 1980.

The Price Rise in Perspective

The patterns that we have observed in the oil and arms transfer patterns between the U.S. and OPEC have, in our opinion, not been accurately reflected in much of what has been said about them. Viewed in constant dollar terms, OPEC members have essentially raised the price of crude oil only once, doubling the price in the spring of 1974. Prior to and subsequent to this price rise, changes in the price of oil seem to have been balanced by the price changes in U.S. goods and services traded for OPEC oil. The value of arms transfers has been shown to be a relatively small proportion of all U.S. export trade (8%) and a larger fraction (10—15%) of export trade to OPEC members. It may also be argued the U.S. arms transfers to other nations—particularly to OPEC members—have some effects in terms of essentially nonquantifiable things such as security, power, prestige or morality. Next, however, we shall address several factors of arms transfers which can be defined.

Incentives and Penalties of the Oil and Arms Trade

The oil and arms trade between the U.S. and OPEC serves purposes beyond those of supplying energy to the U.S. and weapons to OPEC members. As in any international trade, there must be a balance struck between the physical commodity transfers, financial transactions and currency valuations of the trading partners involved. In this section we will describe some effects of international trade between the United States and OPEC nations which occur because of arms transfers.

Interest-free borrowing. Foreign nations depositing mandated(76) advances in the foreign military sales trust fund are effectively loaning money, on which no interest is paid them, to the United States government. This has added from $200 to $500 million (76:87) in annual budget authority to the United States. Conversely, the FMS customers involved must consider these additions to the U.S. budget as opportunity costs of doing business with this country.

Lower production costs. Research by the Congressional Budget Office (5) has established that additional quantities of any given weapon decrease the unit cost, lengthen the time over which goods may be produced, more widely distribute fixed costs to be amortized, and improve the learning curve effect where it is operant. The Congressional Budget Office

(5:12) has estimated that an $8 billion FMS program would generate about $560 of savings (7%) related to these factors. Thus, if $14 billion of FMS are actually accumulated in 1978 by the United States some $980 million in savings may be imputed to the U.S. military services who procure the same systems from the same manufacturers.

Nonproductive transfers. Buyers of arms—as opposed to co-producers or copiers—do not purchase the productive capacity or legal rights to compete with U.S. producers for further sales. Arms transfers tend to be technologically sophisticated and thus expensive to foreign buyers (33:107). Additionally, the costs of maintenance and spares must, in large part, be satisfied by American resources. This brings more arms transfer business to United States firms. Notable in this respect are sales to Iran and Saudi Arabia, two countries which do not appear (11:91) to have the ability to perform significant amounts of even routine maintenance on sophisticated military goods they have purchased.

Another element of the sale of arms is the obvious fact that their intended use results in their own rapid destruction. An example might be the State of Israel which has been almost exclusively armed (14:102) and supported by the United States. In the four years preceding the 1973 Yom Kippur War she received at least $1,549,934 (1975 dollars) in FMS deliveries and military aid (75:4,13). Yet, pressed by the war, Israel was granted $2,973,000,000 (1975 dollars)

by The Emergency Security Assistance Act of December 23, 1973 (PL 93-199) which was termed only sufficient to replace what had been destroyed. A war, aside from human loss and suffering, requires massive logistical support. War by or against a U.S. arms client state will most probably result in demands on U.S. industry and on DOD logistics stocks. Congress (65:211) does, however, forbid the sale of U.S. made defense articles or services for any but defensive purposes.

As some authorities have noted, the actual effects of foreign military sales are masked by time lags between order, production and delivery (62:7). This has made estimation of the impact of foreign military sales on the U.S. economy difficult. However, if one selects aerospace manufacturers' data as representative of the foreign military sales contribution to the U.S. economy some idea of impact may be gained.

Effects on aerospace industries. While the effect of arms sales on the total U.S. economy has been significant, the effects of arms transfers on the aerospace industry has been phenomenal. In aircraft sales alone aerospace producers account for about 34% (2:17) of United States' military sales abroad. In 1977 alone, 116,600 production workers earned 1.8 billion dollars (2:126-127) and 136,700 management and administrative workers earned another 2.1 billion dollars.

This would total an estimated $3.9 billion contribution to the U.S. economy. Of that total, roughly 1/3, or $1.3 billion, could be (2:11,20) credited to FMS. Yet in spite of this economic contribution, the absolute number of aircraft production employees has dropped steadily since 1974 from 532,000 to 478,700. That reduction, it may be noted, has occurred during a period of steady or increasing domestic civil and military contracts (2:36,31) and a similar situation in foreign markets (2:115,113). Some authors, such as Morse, have estimated recent U.S. employment in support of FMS to be as high as 870,000 people which would represent about 1% of the labor force (72:342) in any year from 1970 to the present.

Aerospace industries have entered on major new projects to support aircraft operations and perform related services in nations—such as Iran and Saudi Arabia—which do not have the industrial base to do so themselves. The Congress has been eager to recover all possible costs to the U.S. resulting from Foreign Military Sales, as has been stated, and also to move FMS defense services to civilian firms. The International Security Assistance and Arms Export Control Act of 1976 stated:

> The President shall, to the maximum extent possible and consistent with the purposes of this Act, use civilian contract personnel in any foreign country to perform defense services sold under this Act [65:40].

The Aerospace Industries Association (AIA) has estimated that (2:11) the proportion of nonaerospace sales by the

aerospace industry have risen from 11% in 1970 to 19% in 1977. In 1975 constant dollar terms this equates to $4,122,000,000 in 1970 and $5,302,000,000 in 1977. This defines a case in which national policy has encouraged foreign military sales support of weapons systems previously sold to technologically unsophisticated client states. As a commodity export group (2:106), aerospace industry exports of goods and services have constituted the second largest single item contributing to a favorable U.S. trade balance with other nations. These sales are a positive factor in terms of United States' internal revenues generation also. They increase excise tax revenues as well as corporate and personal income tax receipts. In at least one case—that of Grumman Aircraft—some observers have credited FMS with preserving the existence of a major U.S. producer which receives some 90% of its business (9:19) from U.S. government contracts in support of the DOD and FMS.

Balance of trade. The position of the oil and arms trade in the economic relationships between the U.S. and other nations of the world has been portrayed in several figures in this chapter. As noted in Figure 16, the impressive size of arms agreements pales when compared to actual deliveries of arms. The balance of trade (and thus the balance of payments) is affected by actual deliveries of arms, not arms sales agreements. Even in the years of large arms transfers

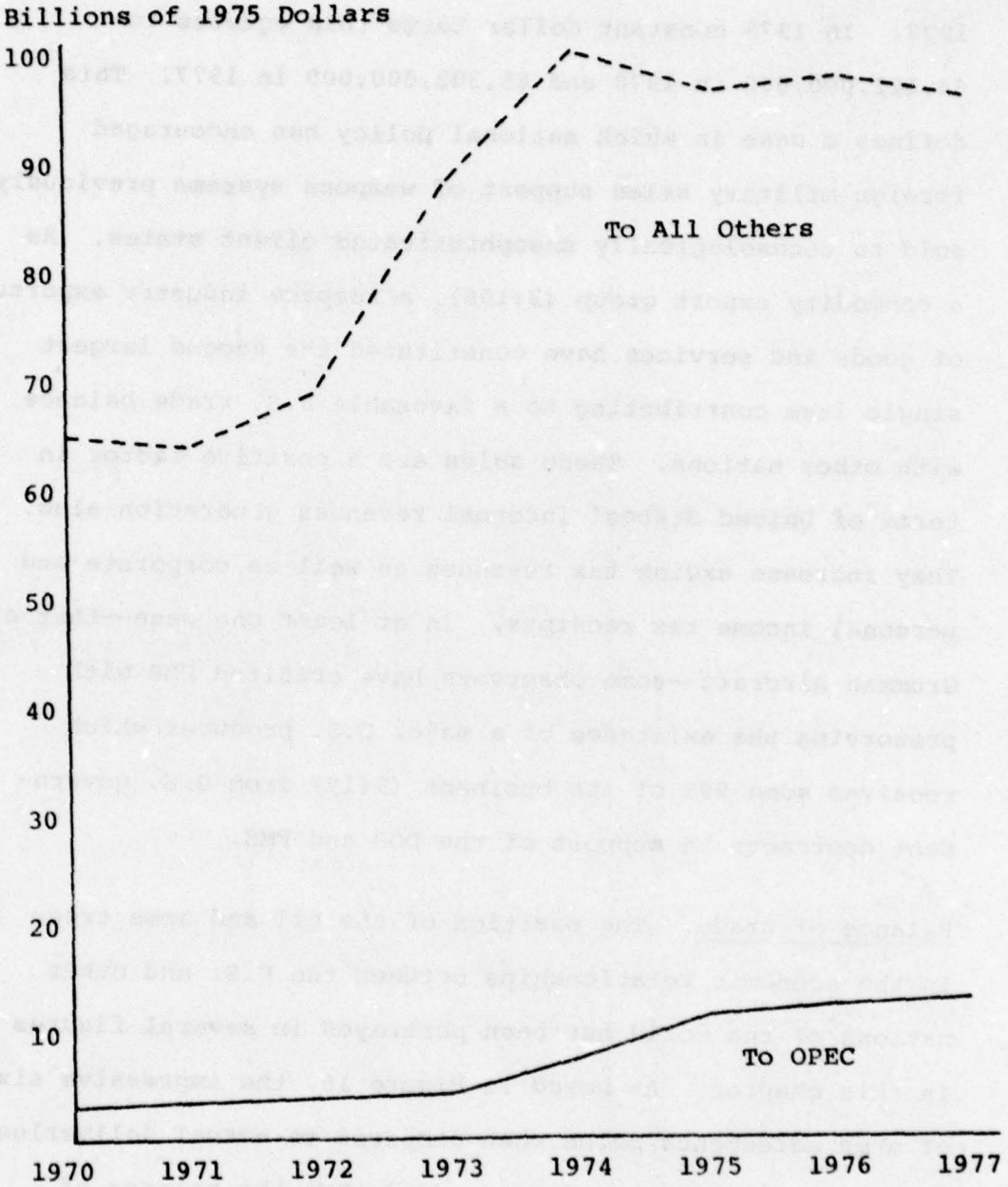


Figure 16

Total U.S. Exports (Including Arms)

(36:40-42; 38:44-46; 39:44-46; 40:44-46; 41:36-38; 42:40-42 43:36-38,40-42)

less than 8% of all U.S. export revenue was earned from those sales. In Figure 16, we noted that OPEC nations consumed 13% of all U.S. exports in 1977. This total is perhaps disproportionate to the small populations involved, but it is a vital part of balancing oil revenues earned by OPEC from the United States. Figure 10 shows that, since 1974, a significant part of total U.S. arms transfers has gone to OPEC members, principally Iran and Saudi Arabia. Thus, arms transfers constitute 40% of all U.S. exports to OPEC but only 8% of all U.S. exports worldwide. Arms transfers constitute a minor factor in returning to the United States dollars paid to import goods and services from all other nations; but, arms transfers constitute a major part of this same process between the U.S. and OPEC members.

U.S. Security and Foreign Policy Implications

The rising tide of oil imports and arms sales by the U.S. has colored the foreign policy of this country. It has simultaneously affected the security and defense interests of the U.S. in several ways.

President Carter's 1977 arms transfer policy. As both a response to pledges made as a candidate and to the startling rise in the consummation of arms agreements, President Carter acted in May of 1977. Calling arms sales ". . . an exceptional instrument of foreign policy . . . [6:3]," President

Carter imposed a desired ceiling on arms sales (6:51) as well as hinting at the possibility of a far more serious immediate 40% reduction. The imposition of controls upon commerce that had, for six years, seen uninhibited arms transfers ended the Nixon doctrine's unilateral importance in such affairs. An extension may be the impact of the Carter message on the ability of the United States to strengthen its own defenses by arming its client states. From the announcement of the Nixon doctrine, the United States passed part of the burden of defending itself to buyers of sophisticated and expensive U.S. arms. It would appear that OPEC buyers may have protected themselves from the costs of those purchases by passing those costs back to the U.S. in the form of higher prices for a commodity they have in abundance and for which other nations have an extreme need—oil.

The International Security Assistance and Arms Export Control Act of 1976. This important initiative by the U.S. Congress declared the intent of the legislative branch to assume more control over all types of U.S. arms transfers. The act also declares an interest in limiting or reducing the absolute level of FMS and nonreimbursable arms transfers. The numerous provisions of this act, previously noted in Chapter 3, made sweeping changes to many aspects of United States arms transfer policies and operations. The act has been, along with President Carter's May 1977 policy statement, criticized

as ineffective in halting U.S. arms transfers, although Figure 14 does seem to indicate a recent lack of growth in U.S. arms sales in real dollar terms. The constant dollar price of oil sold by OPEC (Figure 12) to support large arms purchases and other items does not show a similar real dollar decrease. The burden of supporting friendly OPEC nations with arms by paying more for OPEC oil does not seem diminished even by U.S.-imposed arms export restrictions.

Energy import policies. As noted in Chapter 3, there has been a lack of cohesive and substantive response by the U.S. government to rising imported energy costs. As indicated in Figure 13, the absolute volume and cost of U.S. imported oil shows no sign of lessening or even of slowing in rate of growth. Except for the creation of a central agency, the Department of Energy, little has changed with regard to oil import policy since 1970.

Summary

In reviewing the statistics of U.S. production, import/export trade, international finance and public policy, we believe that Harkavy's postulated oil and arms relationship is, in some ways, unwarranted. Viewed in constant dollar terms, OPEC hegemony of U.S. foreign military sales began in 1971, not after the 1974 cartel pricing action of crude oil. The trend was perhaps encouraged and strengthened by huge "petrodollar" surpluses accrued by OPEC members in

1974, particularly Iran and Saudi Arabia although Kuwait, Venezuela and Nigeria seem to display similar patterns. U.S. foreign military sales are, in constant dollar terms, a relatively small proportion of total U.S. exports to all countries remaining relatively constant before and after an upward adjustment occurring at the time of 1974 OPEC cartel pricing. Foreign military sales are, however, a major share of U.S. export trade to OPEC nations.

We have observed that OPEC crude oil prices have, when inflation is discounted, been doubled just once 1973—74. Prices of U.S. products have thus remained at roughly equivalent prices as imported crude oil prices. We have also observed that the revenues due to OPEC members because of predictable U.S. dependency upon foreign oil increased substantially due to our rising demand and the previously noted doubling of crude oil prices. The timing of the crediting of those revenues to OPEC accounts was most fortuitous as 1973—74 marked the start of deliveries of FMS arms ordered from 1971 forward. It has been shown that OPEC members have dominated United States' FMS since 1971. For most OPEC members these arms sales constitute the single largest category of goods and services imported from the United States, representing the passage of U.S. defense costs from our own defense establishment (supported by taxes) to those establishments of OPEC client states (supported by petrodollar earnings).

Chapter 5

CONCLUSIONS AND RECOMMENDATIONS

Commentary

Robert N. Harkavy's comment (14:230) that ". . . there has been little focused analysis . . ." on whether Middle Eastern oil profits have engendered new American arms sales appears to be about as true now as when it was published in 1974. Although we have found the trends and patterns of U.S. oil importation and U.S. arms sales to be unlike (in real dollar terms) what they are frequently portrayed to be, several important facets of these trade flows seem to render complete measurement and observation very difficult.

In the case of petroleum and petroleum product importation, we have noted that a significant amount of total U.S. supplies originates from questionable sources. The U.S. Territory of the Virgin Islands, for example, provides the U.S. with over 800,000 barrels/day (61:27) of crude petroleum and refined products or about 8% of U.S. daily average requirement. Department of Commerce Report IA 236V, for 1975, *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*, includes 1,532,000 barrels of crude oil from Trinidad, a

small island without a single oil well. In 1977, the report lists 10,832,000 barrels from Angola, a nation with which the U.S. has no official contact. At one time or another since 1970, report IA 236V cites the following nations in addition to OPEC members as sources for more than 500,000 barrels of crude oil or petroleum products: Trinidad; Tobago; the Netherland Antilles; Italy; West Germany; Colombia; Brazil; the USSR; Angola; "unidentified" (26,000,000 barrels in 1973); the Congo; and Zaire. Department of Commerce Report FT-135, *U.S. General Imports for 1976* (54:241) shows 49.2 million barrels of crude oil from Venezuela, a known large producer, and 44.1 million barrels from Trinidad, a nonproducer. Many more similar examples could be cited.

There is, in short, a frequent inability of researchers to identify the origin of a significant amount of United States petroleum imports. The true volume and cost of oil imported from OPEC sources may have been masked. Similarly the importance or insignificance of non-OPEC sources is also obscured. The net production of most nations is well-known, but since oil has not often been bartered for other commodities, it is sold and resold for financial instruments. Identifying the labyrinthian flows of profit and loss from this commerce would be a truly herculean task, which does not appear to have yet been completely accomplished.

Although a similar third country transfer problem does not seem to exist with respect to U.S. arms, some barriers to quantification of their impact exist. A significant problem exists in the relatively long lead times required to deliver arms for which contracts have been obtained. As was noted in Chapter 3, the bulk of most arms transfers occurs in from two to four years after agreement and may extend to eight years or beyond. That much time is sufficient to modify the conditions of the sale, redirect the foreign policies of either nation or abrogate the agreement as well as existing political relationships.

At best, the political goals and objectives of U.S. arms client states will be a matter of intuition and circumstantial conjecture. The innermost thoughts and beliefs of states and statesmen are often obscured for reasons of national interests or survival. Additionally, as complete and available as the data are, United States reports of oil imports and arms transfers are only a fraction of the world traffic in either commodity. Despite these difficulties, a number of conclusions may be drawn from and supported by the facts, data and information that have been presented in this research.

Conclusions

1. There appears to be a positive, demonstrable relationship between the constant dollar values of oil imported by the U.S. from OPEC nations and U.S. arms

delivered to those nations. This relationship involves arms delivered as opposed to arms that are ordered years prior to actual shipments, and is a subset of all trade between the U.S. and OPEC.

2. Department of Defense managers of foreign military sales are involved in a major fraction of total U.S. export activity to OPEC nations. FMS to OPEC members play a significant role in balancing the large claims against the United States earned by OPEC members for their oil. The complex interrelationships of this trade are ill-defined; however, foreign military sales have, since 1971, had the effect of improving U.S. balances of trade with OPEC as well as significantly influencing several facets of the United States' economy.

3. DOD management and analysis of foreign military sales has been largely reactive and limited to the superficial measures of FMS such as amounts delivered or contracts consummated. There are omissions in the data that have been collected to describe the flows of imported oil resources. Few attempts to predict future agreements for foreign military sales have been sufficiently accurate to permit planning of even the following year's FMS trust fund. Some indicators of commercial export and import activity, of which FMS is an integral part, may be useful in both describing and predicting DOD participation in the complex economic systems involved.

Recommendations

1. DOD management and operation of foreign military sales activities should be viewed and designed as integrated systems. The flows and the rate of flows of FMS transfers can only be effectively managed by the DOD if viewed as integral to other DOD activities. Implementation by the three services and independent operating agencies such as GSA and DLA should be integrated at the start of an FMS case so as to better understand the impact of FMS on both the United States and its trading partners. Simply aggregating historical statistics that describe the independent activities of various DOD agencies involved in transferring arms to one country prevents a full understanding of the effects of such transfers. Implementation by autonomous agencies denies the ability to provide effective management and control to a significant percentage of United States export activity.

2. The sensitivity of Department of Defense management information systems to external economic activity should be increased. Inclusion of current measures of general export trade activity and some process of modeling or simulating the impact that such activity has on DOD foreign military sales management should be considered. Accrual of contracts to deliver arms or any other goods and services to a particular nation is a signal of changes in the U.S.-foreign nation balance of trade in future years. The

balance of trade between two nations is often viewed as a key to political, economic and military relationships between the two sovereign powers involved. FMS cannot be viewed in isolation of its potential impacts upon aggregated economic systems; it must be considered in light of the FMS share of all such activity. When the value of FMS deliveries appears to be significant, other economic consequences must be planned for accordingly. This will ensure proper management of DOD operations that support security assistance to friendly nations as well as the security of the United States.

Consequences

In few arenas other than foreign military sales is the Department of Defense so greatly involved in the foreign economic affairs of the United States. The ability of DOD managers to control or understand the intricacies of these commercial systems of which FMS is a part may well be vital to the political and economic survival of the United States. Information systems to support DOD decision structures directing foreign military sales operations must accurately reflect not only arms transfers but also the United States' foreign economic affairs that are inexorably connected to arms sales.

APPENDIX

Table 30

Total U.S. General Imports
(Millions of Current Year Dollars—
F.a.s. Value Except as Noted)

Exporting Country	1970*	1971	1972	1973
Venezuela	1,080	1,264	1,324	1,800
Ecuador	108	89	126	183
Iraq	3	9	9	18
Iran	67	165	264	482
Kuwait	25	36	49	64
Saudi Arabia	20	98	194	524
Qatar	—	—	5	13
United Arab Emirates	61	87	27	67
Indonesia	182	206	276	503
Algeria	10	20	104	220
Libya	39	144	193	294
Nigeria	71	212	366	753
Gabon	9	14	28	28
Total OPEC	1,849	2,343	2,964	4,949
Total All Others	38,273	43,321	52,650	64,714
Total Worldwide	40,122	45,664	55,614	69,663
Worldwide Customs Value	40,202	45,939	56,006	70,116
Worldwide C.i.f. Value	42,695	48,742	59,311	74,249

(35:86-91; 36:86-91; 38:86-91; 39:86-91; 56; 57; 58)

*Only total Virgin Island import data available.
Columns do not sum to total.

Table 31

Total U.S. General Imports
(Millions of Current Year Dollars—
F.a.s. Value Except as Noted)

Exporting Country	1974*	1975	1976*	1977
Venezuela	4,671	3,729	3,574	5.098
Ecuador	473	461	539	609
Iraq	1	19	110	425
Iran	2,132	2,207	1,480	2,789
Kuwait	13	111	38	215
Saudi Arabia	1,671	2,732	5,213	6,455
Qatar	80	353	119	440
United Arab Emirates	366	718	1,359	2,066
Indonesia	1,688	2,296	3,004	3,491
Algeria	1,091	1,359	2,209	3,065
Libya	1	1,226	2,243	4,201
Nigeria	3,286	3,395	4,938	6,405
Gabon	162	197	190	231
Total OPEC	16,548	18,802	27,132	35,489
Total All Others	84,870	79,271	95,896	114,031
Total Worldwide	101,418	98,073	123,028	149,520
Worldwide Customs Value	102,207	98,850	124,166	151,570
Worldwide C.i.f. Value	109,289	105,493	132,088	159,580

(40:82-90; 41:92-94; 42:92-94; 43:86-88; 59; 60)

*Only total Virgin Island import data available. Columns do not sum to total.

Table 32

Total U.S. General Exports
(Millions of Current Year Dollars—
F.a.s. Value)

Exporting Country	1970	1971	1972	1973
Venezuela	759	787	924	1,033
Ecuador	127	134	134	173
Iraq	22	32	23	56
Iran	326	482	559	772
Kuwait	62	84	111	120
Saudi Arabia	141	164	314	442
Qatar	—	—	14	19
United Arab Emirates	49	66	69	121
Indonesia	266	263	308	442
Algeria	62	82	98	161
Libya	108	78	85	104
Nigeria	129	168	115	161
Gabon	7	6	13	19
Total OPEC	2,059	2,347	2,766	3,620
Total All Others	41,183	41,809	47,038	67,783
Total Worldwide	43,242	44,156	49,804	71,403

(35:86-91; 36:86-91; 38:86-91; 39:86-91; 56; 57; 58)

Table 33

Total U.S. General Exports
(Millions of Current Year Dollars—
F.a.s. Value)

Exporting Country	1974	1975	1976	1977
Venezuela	1,772	2,243	2,631	3,171
Ecuador	326	410	415	565
Iraq	285	310	382	211
Iran	1,734	3,244	2,772	2,731
Kuwait	209	366	472	548
Saudi Arabia	835	1,502	2,774	3,575
Qatar	34	50	79	113
United Arab Emirates	230	372	425	515
Indonesia	531	810	1,035	763
Algeria	315	632	487	527
Libya	139	232	277	314
Nigeria	286	536	770	958
Gabon	33	59	46	30
Total OPEC	6,727	10,765	12,567	14,019
Total All Others	91,825	96,889	102,499	106,225
Total Worldwide	98,552	107,654	115,066	120,244

(40:82-90; 41:92-94; 42:92-94; 43:86-88; 59; 60)

Table 34

1970 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels*	Value*	Barrels*	Value*
Venezuela	175	390	258	528
Ecuador	—	—	—	—
Iraq	+	++	—	—
Iran	12	21	1	4
Kuwait	12	23	—	—
Saudi Arabia	6	14	4	1
Qatar	—	—	—	—
United Arab Emirates	30	59	+	++
Indonesia	26	53	+	++
Algeria	3	6	1	2
Libya	18	37	+	++
Nigeria	17	36	1	1
Gabon	—	—	—	—
Total OPEC	413	881	261	537
Total All Others	325	855	370	802
Total Worldwide	738	1,737	631	1,339
Worldwide Customs Value	—	1,718	—	1,324
Worldwide C.i.f. Value	—	1,895	—	1,460

(48:2-62)

*Only total Virgin Island import data available. Columns do not sum to totals.

+Less than 500,000 barrels.

++Less than $500,000.

Table 35

1971 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels	Value	Barrels	Value
Venezuela	223	534	245	577
Ecuador	—	—	—	—
Iraq	3	6	—	—
Iran	73	107	3	11
Kuwait	13	32	1	
Saudi Arabia	35	78	6	
Qatar	—	—	—	—
United Arab Emirates	38	81	+	++
Indonesia	35	70	+	1
Algeria	5	17	+	1
Libya	53	144	+	++
Nigeria	68	165	1	3
Gabon	+	1	+	++
Total OPEC	548	1,234	258	611
Total All Others	328	958	350	857
Total Worldwide	876	2,192	608	1,468
Worldwide Customs Value	—	2,164	—	1,449
Worldwide C.i.f. Value	—	2,379	—	1,613

(49:2-62; 56)

+Less than 500,000 barrels.

++Less than $500,000.

Table 36

1972 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels	Value	Barrels	Value
Venezuela	208	530	258	650
Ecuador	6	15	1	1
Iraq	2	5	—	—
Iran	87	182	5	17
Kuwait	18	43	1	3
Saudi Arabia	76	178	5	13
Qatar	2	5	—	—
United Arab Emirates	12	26	—	—
Indonesia	59	120	1	3
Algeria	34	99	2	4
Libya	66	193	—	—
Nigeria	124	346	3	6
Gabon	7	17	+	++
Total OPEC	700	1,761	276	696
Total All Others	425	1,199	390	1,019
Total Worldwide	1,125	2,960	666	1,715
Worldwide Customs Value	—	2,931	—	1,698
Worldwide C.i.f. Value	—	3,262	—	1,889

(50:2-64; 57)

+Less than 500,000 barrels.

++Less than $500,000.

Table 37

1973 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels	Value	Barrels	Value
Venezuela	231	741	270	829
Ecuador	21	67	+	1
Iraq	3	11	—	—
Iran	142	371	6	25
Kuwait	18	52	2	8
Saudi Arabia	167	482	10	33
Qatar	3	13	—	—
United Arab Emirates	25	67	+	++
Indonesia	77	243	2	6
Algeria	53	182	8	32
Libya	79	272	3	13
Nigeria	184	690	6	18
Gabon	6	17	+	++
Total OPEC	1,008	3,207	309	966
Total All Others	568	1,954	539	2,037
Total Worldwide	1,576	5,161	848	3,003
Worldwide Customs Value	—	5,110	—	2,974
Worldwide C.i.f. Value	—	5,688	—	3,309

(51:2-66; 58)

+Less than 500,000 barrels.

++Less than $500,000.

Table 38

1974 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels*	Value*	Barrels*	Value*
Venezuela	185	1,999	253	2,439
Ecuador	24	268	+	1
Iraq	—	—	—	—
Iran	187	1,991	3	28
Kuwait	1	6	+	2
Saudi Arabia	152	1,590	5	55
Qatar	7	77	—	—
United Arab Emirates	32	363	+	1
Indonesia	104	1,197	7	84
Algeria	78	1,023	5	61
Libya	+	++	—	—
Nigeria	248	3,124	9	104
Gabon	12	148	+	++
Total OPEC	1,146	12,975	282	2,776
Total All Others	498	5,358	427	4,964
Total Worldwide	1,644	18,332	710	7,740
Worldwide Customs Value	—	18,259	—	7,747
Worldwide C.i.f. Value	—	19,798	—	8,270

(44:7; 52:2-126)

*Only total Virgin Island import data available. Columns do not sum to totals.

+Less than 500,000 barrels.

++Less than $500,000.

Table 39

1975 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels	Value	Barrels	Value
Venezuela	199	2,214	114	1,226
Ecuador	23	264	1	10
Iraq	1	10	+	4
Iran	197	2,091	+	11
Kuwait	5	54	4	50
Saudi Arabia	248	2,681	3	35
Qatar	34	350	—	—
United Arab Emirates	65	706	—	—
Indonesia	150	1,872	10	109
Algeria	107	1,261	8	96
Libya	104	1,196	+	28
Nigeria	280	3,317	4	45
Gabon	15	167	+	3
Total OPEC	1,426	16,183	146	1,616
Total All Others	415	4,933	328	3,931
Total Worldwide	1,841	21,116	474	5,548
Worldwide Customs Value	—	21,073	—	5,540
Worldwide C.i.f.	—	22,702	—	5,888

(45:7; 53:2-122; 59)

+Less than 500,000 barrels.

Table 40

1976 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels*	Value*	Barrels*	Value*
Venezuela	128	1,515	163	1,732
Ecuador	21	249	1	7
Iraq	9	106	—	—
Iran	113	1,361	—	—
Kuwait	1	8	1	18
Saudi Arabia	437	5,165	1	3
Qatar	10	115	—	—
United Arab Emirates	113	1,354	+	++
Indonesia	192	2,447	7	83
Algeria	162	2,103	7	79
Libya	176	2,203	4	39
Nigeria	370	4,821	4	47
Gabon	13	149	1	7
Total OPEC	1,863	23,073	190	2,029
Total All Others	455	5,672	285	3,409
Total Worldwide	2,318	28,745	474	5,437
Worldwide Customs Value	—	28,705	—	5,435
Worldwide C.i.f. Value	—	30,937	—	5,749

(46:15; 54:2-81)

*Only total Virgin Island import data available. Columns do not sum to totals.

+Less than 500,000 barrels.

++Less than $500,000.

Table 41

1977 U.S. Petroleum Imports
(Millions of Barrels; Millions of Current Year Dollars—F.a.s. Value Except as Noted)

Exporting Country	Crude Petroleum		Refined Petroleum	
	Barrels	Value	Barrels	Value
Venezuela	210	2,614	166	2,146
Ecuador	30	258	+	6
Iraq	33	420	—	—
Iran	207	2,639	1	10
Kuwait	15	180	1	10
Saudi Arabia	514	6,358	3	43
Qatar	34	440	—	—
United Arab Emirates	161	2,052	+	6
Indonesia	195	2,589	12	164
Algeria	209	2,971	5	71
Libya	297	4,117	6	80
Nigeria	439	6,269	5	65
Gabon	13	164	2	31
Total OPEC	2,346	31,068	203	2,635
Total All Others	385	5,261	372	5,179
Total Worldwide	2,731	36,329	575	7,813
Worldwide Customs Value	—	36,292	—	7,811
Worldwide C.i.f. Value	—	38,641	—	8,211

(47:14-15; 55:2-87; 60)

+Less than 500,000 barrels.

SELECTED BIBLIOGRAPHY

A. REFERENCES CITED

1. Aerospace Industries Association of America Incorporated. *Aerospace Facts and Figures 1977/1978.* New York: McGraw-Hill, 1977.

2. _____. *Aerospace Facts and Figures 1978/1979.* New York: McGraw-Hill, 1978.

3. Alvarez, Commander Everett, Jr., USN. "Analysis of a Long-Range Environmental Forecasting Model." Unpublished master's thesis. Unnumbered, Naval Postgraduate School, Monterey CA, 1976.

4. Bhattacharya, Anindya K. *The Myth of Petropower.* Lexington MA: Lexington Books, 1977.

5. Capra, James R., et. al. "Budgetary Cost Savings to the Department of Defense Resulting from Foreign Military Sales." Staff working paper, Congressional Budget Office, Congress of the United States, Washington, 1976.

6. Carter, James E., President of the United States. *Report to Congress on Arms Transfer Policy.* Washington: Government Printing Office, May, 1977.

7. Conant, Melvin A., and Fern R. Golo. "Geopolitics of Energy, Volume I, '1976—2000'." Unpublished research report, DNA001-76-C-0335, Office of the Assistant Secretary of Defense (International Security Affairs), Washington DC, 1977.

8. Crabbe, Colonel William M., Jr., USAF. "Security Assistance: Foreign Military Sales." Unpublished research paper, unnumbered, Industrial College of the Armed Forces, Washington, 1976.

9. "Defense Industry: Is the Foundation Crumbling?" *Government Executive*, March, 1976, p. 19.

10. Diebold, William P. *U.S. Trade Policy in the 20th Century.* New York: McGraw-Hill, 1975.

11. Drury, Captain Harry T., III, USAF, and Captain Peter J. Glenboski, Jr., USAF. "Peace Hawk: A Case Study of a Foreign Military Sales Case and Its Management." Unpublished master's thesis. LSSR 17-77A, AFIT/SL, Wright-Patterson AFB OH, 1977.

12. Epple, Dennis N. *Petroleum Discoveries and Government Policy*. Cambridge MA: Ballinger Publishing Company, 1975.

13. "Faisal—Man of the Year," *Time*, January 8, 1975, p. 13.

14. Harkavy, Robert E. *The Arms Trade and International Systems*. Cambridge MA: Ballinger Publishing Company, 1975.

15. International Monetary Fund. *Balance of Payments Yearbook, Volume 28*. Washington, 1977.

16. _____. *International Financial Statistics*. Washington, July, 1978.

17. Iskandor, Mariwan. *The Arab Oil Question*. Beirut: Middle East Economic Consultants, 1975.

18. Kohl, Wilfrid L. *Economic Foreign Policies of Industrial States*. Lexington MA: Lexington Books, 1977.

19. MacAvoy, Paul W. *Federal Energy Administration Regulation*. American Enterprise Institute for Public Policy Research, Washington, 1977.

20. Mancke, Richard B. *Squeaking By*. New York: Columbia University Press, 1976.

21. McCaslin, John C. *International Petroleum Encyclopedia*. Tulsa OK: Petroleum Publishing Company, 1976.

22. Morse, Colonel David L., USA. "Economic Issues in Foreign Military Sales." Unpublished research paper. Unnumbered, Naval War College, Newport RI, 1975.

23. "Oil," *Time*, May 13, 1978, p. 31.

24. Paust, Jordan J., and Albert P. Blaustein. *The Arab Oil Weapon*. New York: Oceana Publications, 1971.

25. "Retail Gasoline Prices," *The Oil and Gas Journal*, January 4, 1971, p. 117.

26. "Retail Gasoline Prices," *The Oil and Gas Journal*, January 2, 1978, p. 123.

27. "Rising Colossus," *Wall Street Journal*, November 22, 1977, p. 40.

28. Sampson, Anthony. *The Arms Bazaar from Lebanon to Lockheed.* New York: The Viking Press, 1977.

29. Samuelson, Paul A. *Economics.* New York: McGraw-Hill, 1973.

30. Schandler, Herbert Y., et. al. "Implications of President Carter's Conventional Arms Trasnfer Policy." Library of Congress research paper, Congressional Research Service, Washington, September, 1977.

31. Schurr, Sam H., and Paul T. Homan. *Middle Eastern Oil and The Western World.* New York: American Elsivier Publishing Company, 1971.

32. Sheffield, John Lord. *Observations on The Commerce of The American States.* New York: Augustus M. Kelley Publishers, 1970.

33. Shwodran, Benjamin. *Middle East Oil Issues and Problems.* Cambridge MA: Schenkman Publishing Company, 1977.

34. Sullivan, Thomas F. P. *Energy Law & Regulations.* Washington: Government Institutes, Inc., 1976.

35. U.S. Bureau of the Census. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1970. Washington: U.S. Government Printing Office, January, 1971.

36. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1971. Washington: U.S. Government Printing Office, January, 1972.

37. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, January, 1972. Washington: U.S. Government Printing Office, April, 1972.

38. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1972. Washington: U.S. Government Printing Office, January, 1973.

39. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1973. Washington: U.S. Government Printing Office, January, 1974.

40. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1974. Washington: U.S. Government Printing Office, January, 1975.

41. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1975. Washington: U.S. Government Printing Office, January, 1976.

42. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1976. Washington: U.S. Government Printing Office, January, 1977.

43. _____. *Highlights of the U.S. Export and Import Trade*, Report FT990, December, 1977. Washington: U.S. Government Printing Office, January, 1978.

44. _____. *Summary of U.S. Export and Import Merchandise Trade*, Report FT900, December, 1974. Washington: U.S. Government Printing Office, January, 1975.

45. _____. *Summary of U.S. Export and Import Merchandise Trade*, Report FT900, December, 1975. Washington: U.S. Government Printing Office, January, 1976.

46. _____. *Summary of U.S. Export and Import Merchandise Trade*, Report FT900, December, 1976. Washington: U.S. Government Printing Office, January, 1977.

47. _____. *Summary of U.S. Export and Import Merchandise Trade*, Report FT900, December, 1977. Washington: U.S. Government Printing Office, January, 1978.

48. _____. *U.S. General Imports*, Report FT135, December, 1970. Washington: U.S. Government Printing Office, March, 1971.

49. _____. *U.S. General Imports*, Report FT135, December, 1971. Washington: U.S. Government Printing Office, March, 1972.

50. _____. *U.S. General Imports*, Report FT135, December, 1972. Washington: U.S. Government Printing Office, March, 1973.

51. _____. *U.S. General Imports*, Report FT135, December, 1973. Washington: U.S. Government Printing Office, March, 1974.

52. _____. *U.S. General Imports*, Report FT135, December, 1974. Washington: U.S. Government Printing Office, March, 1975.

53. _____. *U.S. General Imports*, Report FT135, December, 1975. Washington: U.S. Government Printing Office, March, 1976.

54. _____. *U.S. General Imports*, Report FT135, December, 1976. Washington: U.S. Government Printing Office, March, 1977.

55. _____. *U.S. General Imports*, Report FT135, December, 1977. Washington: U.S. Government Printing Office, March, 1978.

56. _____. *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*. Unpublished report, IA 236 V. Washington: Foreign Trade Information Office, December, 1971.

57. _____. *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*. Unpublished report, IA 236 V. Washington: Foreign Trade Information Office, December, 1972.

58. _____. *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*. Unpublished report, IA 236 V. Washington: Foreign Trade Information Office, December, 1973.

59. _____. *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*. Unpublished report, IA 236 V. Washington: Foreign Trade Information Office, December, 1975.

60. _____. *U.S. Imports for Consumption and General Imports into the Virgin Islands from Foreign Countries*. Unpublished report, IA 236 V. Washington: Foreign Trade Information Office, December, 1977.

61. _____. *U.S. Trade with Puerto Rico and U.S. Possessions*, Report FT800, December, 1977. Washington: U.S. Government Printing Office, 1978.

62. U.S. Congress. *Budgetary Cost Savings to the Department of Defense Resulting from Foreign Military Sales*. Washington: Congressional Budget Office, 24 May 1976.

63. _____. *The Effect of Foreign Military Sales on the U.S. Economy*. Washington: The Congressional Budget Office, 23 July 1976.

64. _____. *Foreign Military Sales—A Growing Concern*. Washington: The Comptroller General of the United States, 1 June 1976.

65. _____. *The International Security Assistance and Arms Export Control Act of 1976*. Washington: Superintendent of Documents, 30 June 1976.

66. _____. *The International Security Assistance Act of 1977*. Washington: Superintendent of Documents, 4 August 1977.

67. U.S. Department of Commerce. *Federal Statistical Programs*. Washington: Superintendent of Documents, 1977.

68. _____. *Historical Statistics of the United States*. Washington: Bureau of the Census, 1961.

69. _____. *Statistical Abstract of the United States, 1971*. Washington: Bureau of the Census, July, 1971.

70. _____. *Statistical Abstract of the United States, 1975*. Washington: Bureau of the Census, July, 1975.

71. _____. *Statistical Abstract of the United States, 1976*. Washington: Bureau of the Census, July, 1976.

72. _____. *Statistical Abstract of the United States, 1977*. Washington: Bureau of the Census, July, 1977.

73. U.S. Department of Defense. *Defense Security Assistance Agency Congressional Presentation for FY 1977*. Washington: Department of Defense, 8 March 1976.

74. _____. *Defense Security Assistance Agency Congressional Presentation for FY 1979*. Washington: Department of Defense, 6 March 1978.

75. _____. *Foreign Military Sales and Military Assistance Facts, December, 1977*. Washington: Defense Security Assistance Agency, January, 1978.

76. _____. *Defense Security Assistance Agency (DSAA).* Instruction 5105.38M. Washington: Department of Defense, 11 August 1971.

77. U.S. Department of Labor. *Wholesale Price and Price Indices, December, 1977.* Washington: Bureau of Labor Statistics, 1978.

78. U.S. Government. *The Budget of the United States Government for Fiscal Year 1972.* Washington: Superintendent of Documents, February, 1971.

79. _____. *The Budget of the United States Government for Fiscal Year 1973.* Washington: Superintendent of Documents, February, 1972.

80. _____. *The Budget of the United States Government for Fiscal Year 1974.* Washington: Superintendent of Documents, February, 1973.

81. _____. *The Budget of the United States Government for Fiscal Year 1975.* Washington: Superintendent of Documents, February, 1974.

82. _____. *The Budget of the United States Government for Fiscal Year 1976.* Washington: Superintendent of Documents, February, 1975.

83. _____. *The Budget of the United States Government for Fiscal Year 1977.* Washington: Superintendent of Documents, February, 1976.

84. _____. *The Budget of the United States Government for Fiscal Year 1978.* Washington: Superintendent of Documents, February, 1977.

85. _____. *The Budget of the United States Government for Fiscal Year 1979.* Washington: Superintendent of Documents, February, 1978.

86. Wyman, Major James P., USAF. "Military Strength: Key to the Success of US/Iranian Interdependency." Unpublished research paper, unnumbered, Air Command and Staff College, Maxwell AFB AL, 1976.

B. RELATED SOURCES

Aboifathi, Farid, et. al. *The OPEC Market to 1985.* Lexington MA: D. C. Heath & Co., 1977.

Ben-Shahar, Haim. *Oil: Prices and Capital.* Lexington MA: Lexington Books, 1976.

Center for California Public Affairs. *Energy: A Guide to Organizations and Information Resources in the United States.* Claremont CA, 1974.

Chenery, Hollis, and Moises Syrquin. *Patterns of Development 1950—1970.* Washington: World Book Press, 1975.

Flowers, Captain Charles, USAF, and Captain Laurent J. J. Legault, USAF. "Foreign Military Sales Weapon System Cost Estimation Procedure: A Case Study of the F-4 Fighter/Attach Aircraft." Unpublished master's thesis. LSSR 13-77A, AFIT/LS Wright-Patterson AFB OH, 1977.

Fried, Edward R., and Charles L. Schultze. *Higher Oil Prices and the World Economy.* Washington: Brookings Institution, 1975.

Glassman, Jon D. *Arms for the Arabs.* Baltimore MD: The Johns Hopkins University Press, 1975.

Helleiner, George K., ed. *A World Divided.* London: Cambridge University Press, 1976.

Hill, J. Allen, et. al. "Determination of Causative Factors and Resultant Cost Growth in Foreign Military Sales Cases." Unpublished research paper, 7T2, U.S. Army Logistics Management Center, Fort Lee VA, 1976.

Horn, Paul V., and Henry Gonez. *International Trade.* Englewood NJ: Prentice-Hall, 1959.

Hurewitz, J. C., ed. *Oil, The Arab—Israel Dispute, & The Industrial World.* Boulder CO: Westview Press, 1976.

Kindleburger, Charles P. *Foreign Trade and the National Economy.* New Haven CT: Yale University Press, 1962.

Klinghoffer, Jay. *The Soviet Union and International Oil Politics.* New York: University Press, 1977.

Laird, Melvin R. *Energy—A Crisis in Public Policy.* American Enterprise Institute for Public Policy Research, Washington, 1977.

Leontief, Wassily, et. al. *The Future of the World Economy.* New York: Oxford University Press, 1977.

Looney, Robert E. *A Development Strategy for Iran Through the 1980's.* New York: Praeger Publishing Company, 1977.

McCaslin, John C. *International Petroleum Encyclopedia.* Tulsa OK: Petroleum Publishing Company, 1977.

McChesney, Major Jack L., USAF. "The Evolution of the Foreign Military Sales Program and Its Impact on Defense Procurement Policies and Procedures." Unpublished doctoral dissertation, George Washington University, Washington DC, 1976.

"The Military Balance," *Air Force*, December, 1977, p. 59.

Mosley, Leonard. *Power-Play Oil in the Middle East.* New York: Random House, 1973.

Neale, Alan D. *The Flow of Resources From Rich to Poor.* Cambridge MA: Howard University Press, 1961.

Nyrop, Richard F., Beryl L. Benderly, et. al. *Area Handbook for the Persian Gulf States.* Washington: U.S. Government Printing Office, 1977.

_____. *Area Handbook for Saudi Arabia.* Washington: U.S. Government Printing Office, 1977.

Padgett, Major Thomas C., USAF. "An Analysis of a New Cash Payment Plan for Foreign Military Sales to Iran." Unpublished research study, unnumbered, Air Command and Staff College, Maxwell AFB AL, 1977.

Park, Yoon S. *Oil, Money and the World Economy.* Boulder CO: Westview Press, 1976.

Shador, Fariborz. *The Evolution of OPEC Strategy.* Lexington MA: Lexington Books, 1977.

Sivard, Ruth L. *World Military and Social Expenditures 1976.* Leesburg VA: WMSE Publications, 1976.

Stockholm International Peace Research Institute. *Armaments and Disarmament in the Nuclear Age.* Stockholm: Almqvist & Wiksell International, 1976.

U.S. Department of Commerce. *Statistical Abstract of the United States 1966.* Washington: Bureau of the Census, July, 1966.

U.S. Department of State. *Preliminary Analysis of the International Security Assistance and Arms Export Control Act of 1976*. Washington: Office of the Legal Advisor, June, 1976.