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I am submitting herewith a dissertation written by Jafar Alavi entitled "The Export Performance of Less Developed Countries: The Case of Iran's Non-Oil Exports." I have examined the final copy of this dissertation for form and content and recommend that it be accepted in partial fulfillment of the requirements for the degree of Doctor of Philosophy, with a major in Economics.

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We have read this dissertation and recommend its acceptance:

Accepted for the Council:

Vice Provost
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THE EXPORT PERFORMANCE OF LESS DEVELOPED COUNTRIES: THE CASE OF IRAN'S NON-OIL EXPORTS

A Dissertation

Presented for the

Doctor of Philosophy

Degree

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TO MY PARENTS

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ABSTRACT

This dissertation is an ex-post study of Iran's non-oil export performance. More specifically, this is a study of the commodity and market pattern of the Iranian non-oil exports during three seperate five-year periods. The technique used to analize the non-oil export performance is Constant Market Share (CMS) model which was first used in international trade by Tyzynski in 1951. The underlying assumption of the CMS model is that, the country's share of total export of each commodity to each market remains constant over the period under study. It is because of this assumption that this study uses short periods of time (five-year) to utilize the CMS model.

The CMS model is a mathematical technique which is used for decomposing the change in export over time into four different components: (1) world demand effect, (2) commodity composition effect, (3) market distribution effect, and (4) competitiveness effect. It is then based on the sign and the size of each one of these four "effects" that one is able to judge a country's export performance compared to the "rest of the world." For example, if the commodity composition effect is positive for a particular period then it is said that the country concentrated on commodities for which demand grew faster than the "average." It should be reminded, however, that since the model is an equality it can not be used for forecasting purposes.

The results of the CMS analyses indicate that despite the emphasis by the planners on reducing Iran's dependency on oil revenues,

Iran has become ever more dependent on the oil sector. However, during the Fourth Development Plan period (1968-72) non-oil exports grew more than any other plan period before and after. The results of CMS analyses for this period indicate that this growth was mostly possible due to the improved commodity composition and market distribution. On the other hand, non-oil exports during the Fifth Development Plan (1973-77) grew slower than any other period before, and this is shown to be due mostly to Iran's inability to compete with other countries (i.e., less developed countries).

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CHAPTER I

INTRODUCTION

Iran's economic growth during 1960's and 1970's (up to 1977) was extraordinary compared to the growth of the less developed countries (LDCs) in general. During the fifteen-year period (1963-77) under investigation in this study, Iran's gross domestic product (GDP) grew at the average annual rate of around ten percent, at constant prices Bank Markazi Iran, 1981, p. 130). In comparison, for LDCs as a whole, GDP grew at an average annual rate of around 5.6 percent (UNIDO, 1981, pp. 90, and 93). It is important to note that Iran achieved this unusually high growth rate with very little inflation, except for the period after the oil price boom of 1973-74.

This tremendous achievement was largely possible due to the ever increasing revenue generated by the oil sector. Massive government investments and financing of the industrialization which took place during the Fourth (1968-72) and the Fifth (1973-77) Development Plans would not have been possible without the inflow of revenues from the oil sector (the revenue from export of oil increased from less than one billion dollars in 1968, to more than $25 billion in 1977). In short, the oil sector has been providing the capital needed in the modern sector (manufacturing and services), and the indigenous (traditional agricaltural) sector.

Looney (1977) observed that, if Iran is to become an advanced country, the modern sector should ultimately be able to generate its own capital requirement. Thus the oil sector should not be looked

upon as the source of revenue for capital requirement, but as a source of inexpensive raw materials and energy. It is this independency from the oil sector as the "only" source of revenue and the expansion of the modern sector and ultimately the non-oil export sector which is the focul point in this study.

Although, there has always (since the turn of the century) been talk and sometimes efforts on the part of the government to reduce this great dependency on the oil sector as the main source of revenue and foreign exchange, the country still remains an "oil-based" economy (contribution of the oil sector to GDP is larger than any other single sector's). However, before the World War II the Iranian economy could be charactrized as an agriculture economy.

The greatest push for independence from the oil sector came during the Fourth Development Plan (1968-72) which emphasized export diversification away from the oil sector. This plan was somehow successful, in that the value of Iran's non-oil exports more than doubled during this period (at current prices). In comparison, during the same five-year period, LDCs' non-oil exports increased by almost 60 percent.

After the oil price boom of 1973-74, however, the situation changed considerably. The country which was normally faced with a limited amount of exchange in the past for many different projects, now had to tackle a completely different problem. More specifically, the government was no longer restricted in its development projects by the amount of exchange availability, but rather it had the problem of

finding outlets for spending. Funds were given to different minstries and govenment agencies simply by them asking for it.

With this spending spree came double digit inflation (between 10 and 20 percent) caused by the increase in domestic income and consequently domestic demand. This increase in domestic prices made Iran's non-oil exports less competitive in the international market. In addition, the increase in domestic demand absorbed most of the surpluses which used to be exported, especially in the case of food. The value of non-oil exports during the 1973-77 period only increased by one half of a percentage point, at the time when the growth for LDCs as a whole was almost 85 percent. This stagnation in growth of non-oil exports was partly due to increase in domestic demand and partly due to inadequency of supply in both agriculture and industrial sectors.

The objective of this study is to analyze the non-oil export performance of Iran (1963-77) in comparison to other LDCs. In the face of a steady decline in the growth of demand for oil by the more advanced countries (the major consumers) since 1973-74, and especially in the past few years, due to conservation programs and other measures, it is essential for the major oil exporting countries, including Iran, to look for other sources of foregin exchange if they are to continue to sustain economic growth into the future. Furthermore, since oil is not a renewable resource it is bound to run out, sooner or later. The question therefore arises as to whether Iran's non-oil exports will be adequate to finance the ever increasing

imports needed to sustain the growth she had enjoyed during 1960's and 1970's.

The argument for diversification of exports away from a single primary product does not stop at its financial aspect, however. Equally important are the indirect benefits which come with this diversification of exports. Among these benefits are: (1) improvement of human resources through "learning by doing," and (2) the fact that involvement in the international market will bring the country into closer communication and contact with the developed and other less developed countries which is essential for the exchange of technology and ideas which will further improve the country's competitive position (Keesing, 1967, pp. 305-06).

To analyze the non-oil export performance of Iran this study first briefly reviews the economic growth of Iran since the turn of the century (Chapter II). The primary focus of this chapter is on the development of the industrial sector and non-oil exports, especially for the period of 1963-1977.

To better understand why this study attaches so much importance to the export (non-oil) sector in the process of economic development, Chapter III contains the review of some of the literature on the subject of the linkage between foreign trade and economic growth. This review covers both the theoritical and the empirical aspects of the linkage. Although this study found that there are differences of opinion among development economists, it will continue on the premise

that, especially for raw material producing countries, it is vital to diversify their exports away from a single commodity.

In Chapter IV, the non-oil export performance of Iran is analyzed. Because of restrictions in the availability of data, the analysis covers only fifteen-years (1963-77), during which three five-year national development plans were executed. This study therefore presents the opportunity to analyze the non-oil export performance during each plan individually and then make a comparison across these three plans. The methodology used for this analysis is called "Constant Market Share" which will be explained at the begining of the chapter.

Chapter V examines the future prospects for LDCs' non-oil exports to both developed and less developed countries, respectively. This examination is done by simply looking at the past trends of LDCs' exports. It follows that because Iran is, in many respects a less developed country, some of the results of this chapter may be generalized to include Iran. Finally, Chapter VI summarizes the results and attempts to draw some conclusions based on those results.

CHAPTER II

AN OVERVIEW OF IRANIAN ECONOMIC GROWTH

The purpose of this chapter is to give a brief review of Iranian economic development since the turn of the century. The focus of this chapter is on the development of the modern (i.e., manufacture) sector and the non-oil export sector during this period. This would lay a foundation to analyze the non-oil export performance, which is the main objective of this study. The chapter is divided into two sections covering two distinct periods: (1) the prewar period (up to 1949), and (2) the postwar period (1949-77). The year 1949 is chosen as the break point because it was the beginning of organized economic planning by the government. The Plan Organization, a government agency, was created in 1949 as a planning and coordinating body to supervise the execution of the First Development Plan (1949-55). In the later years, however, the Plan Organization (referred to as the Plan and Budget Organization) became more powerful, to the extent that it actually began executing some projects on its own.

A note of caution should be exercised regarding the reliability of the data used in this chapter. It was not until 1959 that the Central Bank of Iran (Bank Markazi Iran) began, on a regular basis, to gather and publish "official" national income accounting data. The data avilable for the period prior to 1959 were published by independent individuals and agencies, making them less reliable and inconsistent.

A. PREWAR PERIOD (UP TO 1949)

The Iranian economy during the first half of the century can best be described as an agricultural economy. During this period almost 80 percent of the population lived in the rural areas (Bharier, 1971, p. 27). During the first quarter of the century 90 percent of the labor force (active male 10 years and over) were employed in the agriculture sector and accounted for 80-90 percent of the gross national product (Ibid., p. 34). From 1926 to 1950 the agriculture sector's contribution to GNP fell to 50 percent and its employment fell to 75 percent of the labor force (in 1946). For the most part the production of this sector was just sufficient for domestic consumption with only a few commodities (i.e., fresh or dried fruits, rice, and raw cotton) being exported in small quantities.

The Iranian manufacturing sector around the turn of the century was confined to small workshops producing wide variety of products, mainly for domestic consumption. At the same time, however, some products such as: carpets, cotton fabric, and leather products were being exported in small quantities to Britain and the Soviet Union. The few attempts to introduce modern, large scale manufaturing (manufacturing employing more than 10 people) all failed. The failure of these projects were mostly due to their inability to compete with imports and inefficiency of labor (Ibid., p. 170).

The push for industrialization and establishment of large-scale manufacturing began in the mid 1920's. To encourage industrialization

the government exempted the import of capital goods from tariff duties. The policy was designed so that through tariff and quota exemptions and preferential tariff rates the government could encourage participation of the private sector in the establishment of modern manufacturing industries. To further encourage industrialization, government also granted a five year tax exemption for the newly established private factories (Banani, 1961, p. 120).

Among the industries established, mostly in the 1930's, were: cotton textiles, cement, sugar, and matches. There were also a number of smaller industries including glassworks, chemicals, soap, tea processing, flour mills and oil processing. By 1947, a total of 48,555 people were employed in 175 large manufacturing firms (excluding oil industry). The dominant industry during this period was textiles employing more than 60 percent of the labor force found in large scale manufacturing industries (Table II-1). By this time, some 100,000 people were employed in all industries, large and small. The industrial production rose from an insignificant proportion of gross national product in 1926, to 5 percent in 1947 (Bharier, 1971, p. 181).

From the beginning of the century, over half of the value of non-oil exports was made up of three commodities: carpets and rugs, raw cotton, and fresh or dried fruits. A further 45 percent was comprised of other primary commodities such as wool, rice, gum tragacanth, and animal skins or intestines. And before the imposed restrictions on opium production in the late 1920's, opium exports accounted for about 10 percent of the Iranian non-oil exports (Ibid., p. 110). The value

TABLE II-1

LARGE-SCALE MANUFACTURING INDUSTRY
(1947)

Industry	No. of firms	Total employment
I.Food and Beverages:		
Sugar refining	8	4,500
Conserves	2	275
Flour milling	7	1,055
Tea processing	5	390
Rice milling	11	300
Beverages	20	520
II.Textiles:		
Cotton ginning	18	590
Cotton spinning and weaving	24	14,430
Wool preparing	2	40
Wool spinning and weaving	7	6,300
Knitting	18	745
Other textiles	5	8,060
III.Other industries:		
Leather industry	7	610
Soap making	6	230
Glass	5	1,045
Chemicals	8	1,415
Cement	1	1,025
Tobacco	1	2,110
Match making	11	4,035
Saw mill	1	300
Miscellaneous	8	580
Total	175	48,555

Source: Bharier, J., Economic Development in Iran 1900-1970, 1971, p. 179.

of both non-oil and oil exports for some specific years is given in Table II-2. As shown in this table, since Iran began exporting oil the share of non-oil exports from total exports has declined throughout the period, except for a few interrupted years. As far as the market for Iran's non-oil exports is concerned, until 1919, the Soviet Union with almost 70 percent and Britain with 15 percent, were the major importers of the Iranian non-oil exports. In the later years (the 1950's and 1960's), however, the United States, West Germany ,the Soviet Union, and Britain were importing almost equally (Ibid., p. 110).

B. POSTWAR PERIOD (1949-1977)

Occupation of Iran by the Allied forces during the Second World War brought economic disorder causing among other things, three digit inflation, shortages of food, and shortages of raw materials and spare parts. These shortages and the inherent inefficiency of the industrial sector caused many factories to close down. After the war factories with insufficient funds for renovation, repair and replacement were also forced to close down. Thus the industrialization program had to start practically from scratch. This time, however, the government became more involved in the process of industrialization.

1. The First and the Second Development Plans

After four years of discussion and preparation, in 1949 the First Development Plan was approved by the Majlis (Parliment). In the same year, the Plan Organization was created to implement and supervise the

TABLE II-2

VALUE OF TOTAL EXPORTS 1900-1948
(MILLIONS OF CURRENT RIALS)

Year	Non-Oil Exports	Oil Exports	Total Exports	Percent of Non-Oil
1900	---	---	---	---
1905	293	0	293	100
1910	375	0	375	100
1915	355	22	377	94
1920	137	234	371	37
1925	515	545	1,059	49
1930	459	1,005	1,464	31
1935	659	1,296	1,956	34
1940	940	1,314	7,248	41
1945	1707	5,612	7,319	23
1948	1867	17,140	19,007	10

Source: same as Table II-1, pp. 111-112.

execution of this plan. The Plan Organizaton was originally intended to act as an initiating, funding and supervising agency. Most projects were to be carried out by the regular ministries, but it was left to the discretion of the Plan Organization to execute a project when it was not being executed by the ministeries (Baldwin, 1967, p. 23).

The First Development Plan (1949-55) was limited to specific spending targets for six sectors of the economy (Table II-3). The plan included several specific public investment projects totaling 21 billion rials ($656 million), with little attention given to the private sector. As can be seen in this table, 69 percent of the revenue needed for execution of this plan was expeted to come from two sources: (1) exports of oil, and (2) the World Bank.

The First Plan never really got underway. In the first place, the Bank Melli Iran could not provide the full amount of projected loans. Secondly, the loan from the World Bank was rejected due to a technicality--the loan was requested informally. Therefore the pressure was on the oil sector to provide the revenue needed for all development projects. However, following the nationalization of oil in 1951, there was a boycott of Iranian oil, bringing Iranian oil export to a halt. Although the export of oil resumed in 1954, the three year halt of the oil revenue was enough to eliminate any possibility of achieving the targets of the Plan. The accomplishment of the Plan was therefore confined to a few factories, some road and rail constructions, and a few minor developments in irrigation and mechanization in the

TABLE II-3

PROJECTED REVENUES AND EXPENDITURES OF THE FIRST DEVELOPMENT PLAN (1949-55) (BILLIONS OF CURRENT RIALS)

	Amount	Percent of Total
Revenues:		
Oil revenue	7.8	37.1
Sale of govenment property	1.0	4.8
Private participation	1.0	4.8
Borrowing-Bank Melli Iran	4.5	21.4
Borrowing-World Bank	6.7	31.9
Total revenue	21.0	100.0
Expenditures:		
Agriculture	5.3	25.0
Roads,Railways,Airports	5.0	23.8
Mines and industry	3.0	14.3
Establishment of Iran Oil Exploration Co.	1.0	4.8
Post,Telegraphs,Telephones	0.8	3.6
Social wefare works	6.0	28.5
Total expenditures	21.0	100.0

Source: Plan Organization, Division of Economic Affairs, Review of the Second Seven-Year Plan program of Iran, Tehran, 1960, p. 4

agriculture sector. The Plan was aborted six months before it was due to end.

The Second Development Plan (1956-62) was approved by the Majlis in Febuary of 1956. The goals, as indicated in the Plan, included: increased production, increased exports, and improvements in agricultural and industrial sectors. The projects to be undertaken were put in four main categories (Table II-4): agriculture and irrigation, communications and telecommunications, industries and mines, and public utilities and services. Total expenditure was initially projected to be 70 billion rials from which 17.2 billion rials were to be spent on projects committed under the first plan, 49.3 billion rials committed to established projects, and 3.5 billion rials to new projects. To finance these projects the government was relying solely on oil revenue. From the projected 101.5 billion rials oil revenue during the life of the Plan, 73 billion rials was committed to the Plan Organization for implementation of the above projects.

One and a half years into the Plan, the Plan Organization realized that the projected revenue of 70 billion rials was not enough to finance all projects. A 20 percent increase in expenditure allocation requested by the Plan Organization was approved by the Majlis in January of 1958. However, in March of 1958 and again in March of 1959, the revenues committed to the Plan was cut, reducing the total revenue available to the Plan Organization to complete the Plan to 60 billion rials which was 24 billion rials short of the needed fund. To

TABLE II-4

PROJECTED REVENUES AND EXPENDITURES OF THE SECOND DEVELOPMENT PLAN (1956-62) (BILLIONS OF CURRENT RIALS)

Revenue:				Amount	
Total revenue (70 percent of total oil revenue)				73.0	
	1st Plan Commitment	Second Plan	2nd Plan Others	Total	Percent of Total
Expenditures:					
Agriculture and irrigation	6.3	9.5	2.5	18.3	26
Communication and Telecommunication	5.4	17.5	---	22.9	33
Industries and Mines	2.8	6.8	1.0	10.6	15
Public Utilities and Services	2.8	15.6	---	18.4	26
Total Expenditures	17.2	49.3	3.5	70.2	100

Source: Plan Organization, Second Seven-Year Plan of Iran, Tehran, 1956, pp. 1-5

cover the difference, a loan was arranged through the World Bank from which 25 billion rials was used by the end of the Plan.

To evaluate the performance of the Second Plan, one should consider two different periods (Plan Organization, 1964, p. 12). The first was a period of progress (1956-60), and second, a period recession and stagnation (1960-62). The development success in the first four years of the Plan was due primarly to two factors: (1) increase in oil revenue, loans, and aid from foreign sources which gave rise to an increase in government expenditures, largely through the Plan Organization, (2) the increase in govenment expenditures together with liberal banking credit and easy access to foreign exchange generated a major boom in private investment, primarly in urban housing and manufacturing industries.

One important factor in increased participation of the private sector seems to have been the establishment of the Industrial and Mining Development Bank of Iran in 1959. The role of this bank involved assistance to private investors with financial and technical aspects of investment and was crucial in encouraging private investments. However, prosperity of the first four year of the Plan caused the rising of prices (5 percent annualy) and falling of the exchange reserves. To combat these problems the government put forward a stabilization program in 1960 (revised in 1961) involving fiscal and monetary restraint. It was this stablization program which is believed to have caused the recession of the following three years (1960-62).

By the end of the Second Seven-Year Development Plan (1962), the contribution of the industrial sector to GNP was just over 8.6 percent. That was an improvement when compared with 5 percent in 1947. However, the agriculture sector remained the largest contributer to the GNP with almost 30 percent (Bharier, 1971, p. 60).

Table II-5 summarizes the value of Iran's exports during the 14 year life of the First and the Second Development Plans. As is shown in this table, the best years for Iranian non-oil exports was from 1952 to 1954, during which Iranian oil was boycotted because of nationalization of the oil industry, so Iran had to rely on other sources (i.e., non-oil exports) to earn the foreign exchange it needed for its development projects. Non-oil exports in 1954 reached 10.3 billion Rials which was not matched again until 10 years later. During the 14 years of the First and the Second Plans, the major non-oil export markets were fairly divided between the United States, Britain, the Soviet Union, and West Germany, and it consisted of Iran's traditional exports (i.e., carpets, raw cotton, textile fabrics, etc.).

2. The Third Development Plan

The Third Development Plan (1963-67) was more comprehensive and sophisticated than the previous two plans in the sense that all major targets for the economy were stated in the plan. The general policy for industrial expansion as stated in the plan was to "protect domestic industries by restricting the import of goods similar to those manufactured at home; exempting custom duties on

TABLE II-5

THE VALUE OF TOTAL EXPORTS, 1949-1962
(MILLIONS OF CURRENT RIALS)

Year	Non-oil exports	Oil exports	Total exports	Percent of non-oil
1949	1,785	15,389	17,175	10
1950	3,563	22,184	25,747	14
1951	4,391	6,843	11,233	39
1952	5,832	12	5,843	100
1953	8,426	263	8,689	97
1954	10,288	2,008	12,296	84
1955	8,034	9,405	17,439	46
1956	7,931	15,909	23,939	33
1957	8,353	19,298	27,651	30
1958	7,941	22,859	30,800	26
1959	7,701	49,450	57,151	13
1960	8,360	53,391	61,750	13
1961	9,593	56,451	66,045	14
1962	8,604	60,845	69,449	12

Source: same as Table II-1, p. 112.

machinery, equipment, spare parts and raw materials essentials for domestic industries; tax exemptions; granting credit facilities and long term loans" (Plan Organization, 1962, p. 48).

The Third Plan was far larger than the previous two plans. For example, the actual expenditure on different projects during the five year life of this plan was 204 billion Rials which is twice the amount spent on the two previous plans (Bank Markazi Iran, 1968, p. 229). The most attention was given to the agriculture and communication sectors with appropriation of almost 50 percent of the total expenditure. Again, the main source for financing the Plan came from oil revenues (67 percent of total). Other sources of revenues, in the order of importance were: domestic loan, foreign loans, and sales of treasury bonds (Ibid., pp. 226-7).

The gross national product during the five and a half years of the Third Plan, grew at the annual rate of 8.8 percent which was 2.8 percent higher than the plan's target. This high growth rate of GNP was partly due to the large increase in capital investment which grew in real terms from 48.7 billion rials in 1962 to 106.5 billion rials in 1967, or an increase of 118.7 percent. Government participation increased dramatically during this period, with public investment growing from 33 percent of the total investment in 1962 to 57 percent in 1967 (Ibid., p. 228).

One of the most important developments in this period was the change in the contribution of different sectors to the make-up of GNP. As shown in Table II-6, the share of the agricultural sector in

TABLE II-6

CONTRIBUTION OF THE MAIN ECONOMIC SECTORS TO THE GNP
(BILLIONS OF RIALS)
(IN 1965 PRICES)

Sector	1962		1967		
	Amount	percent of total	Amount	percent of total	annual growth (percent)
1.Agriculture and Annimal Husbandry	101.0	30.9	115.8	23.4	2.8
2.Industry and Mining	39.1	12.0	71.2	14.4	12.7
3.Construction	17.5	5.3	30.0	6.1	11.4
4.Water and Power	3.1	0.9	6.1	1.2	14.5
5.Oil(Iran's share)	38.0	11.6	71.7	14.5	13.6
6.Other Sectors	128.3	39.3	199.8	40.4	9.3
GNP (at factor prices)	327.0	100.0	494.6	100.0	8.6
Indirect Tax	23.0	---	40.0	---	11.7
GNP (at market prices)	350.0	---	534.6	---	8.8

Source: Plan Organization, Progress Report on the Third Development Plan (1962-1967), Tehran, p.14

the GNP declined from 30.9 percent in 1962 to 23.4 percent in 1967. This was due mostly to increases in the production of the industrial and the oil sectors. The annual growth of the agriculture sector, inspite of employing almost half of the labor force, was only 2.8 percent for short of the plan's target of 4 percent. At the same time the annual growth rate of the industrial sector (excluding oil) was an imperessive 12.7 percent exceeding the plan's target. All in all, the Third Plan was the first successful plan, with GNP growing at the annual rate of 8.8 percent with very little effect on prices.

Although the value of non-oil exports increased by more than 50 percent during this period (see Table II-7), as a percentage of the total exports they fell from 13.4 to 9.6 percent. It is significant to note that most of the increase in non-oil exports was in manufactured products which rose by 86.7 percent over the period. This increase was mostly due to increase in exports of basic manufactures (from $27 to almost $50 million) which consisted of, primarly, Iran's traditional non-oil exports.

3. The Fourth Development Plan

The Fourth Development Plan (1968-72) started in March of 1968 with a great emphasis on the industrialization of the country. As stated in the plan "[T]he Fourth Plan is the first stage of a long term programme to industrialize the country, the objective of which is to make the country independent of consumer goods and to manufacture capital and intermediate goods inside the country so as to minimize the volume of imports and to diversify the export of locally

TABLE II-7

IRANIAN NON-OIL EXPORTS AT THE BEGINNING AND THE END OF THE THIRD DEVELOPMENT PLAN
(THOUSANDS OF CURRENT DOLLARS)

SITC No.	Description	1963	1967	Growth (percent)
	Primary Commodities:	90,005	123,411	37.1
0	Food and Live Animals	30,181	45,965	52.3
1	Beverages and Tobacco	136	735	440.0
2	Crude Material Excluding Oil	59,054	73,788	24.9
4	Animal,Vegetable Oil,Fat	634	2,923	361.0
	Manufactured commodities:	33,307	62,194	86.7
5	Chemicals	5,652	5,819	2.9
6	Basic Manufactures	27,221	49,653	82.4
7	Machines, transport Equip.	267	154	-42.4
8	Misc. Manufactured Goods	167	6,568	3932.9
	Total	123,312	185,605	

Source: United Nations Statistical Office, Commodity Trade Statistics, 1963, and 1967.

manufactured goods to foreign countries. This will reduce the dependence of the economy on oil revenues" (Plan Organization, 1968, p. 120). Based on this general guideline, the annual growth of the industrial sector was set at 15 percent.

The target growth rate for GNP was set at 9 percent. As stated in the plan, the amount of fixed investment required to achieve this rate of growth was put at 810 billion rials from which 443.5 billion rials was to be invested by the public sector. To finance the development projects, the oil sector was to be the main source of funds. Eighty percent of oil revenues were to be diverted for development purposes, which together with 150 billion rials borrowed from foreign sources constituted nearly 90 percent of the total funds availabe to the Plan Organization (Plan Organization, 1968, pp. 39-40, and p. 63).

The performance of the Fourth Plan was more successful than previous plans. Gross national product increased by 11.9 percent annually which was 2.9 percent higher than the plan's target. The sectoral performances were also impressive except, for the agricultural sector which grew at the annual rate of 4 percent, short of the planned 4.5 percent. The annual growth rate of the industry and mining (excluding oil) sector reached 13.8 percent, creating 737 thousand new jobs, both exceeding the plan's target. But inspite of the impressive growth of the industrial sector, its relative contribution to the gross domestic product only increased by 0.7 percent (Bank Markazi Iran, 1973, p. 14-16).

As far as the growth of non-oil exports are concerned, the 1968-72 period was exceptional. As shown Table II-8, the value of non-oil exports more than doubled during this period. The value of non-oil exports as a percentage of the total exports increased from 10.7 to 11.7 percent. Furthermore, there was a trend to move away from traditional commodities, reflecting a decline in the value of the traditional non-oil exports as percentage of the total non-oil exports from 67.1 percent in 1968, to 57.9 percent in 1972.

4. The Fifth Development Plan

The Fifth Development Plan (1973-77) was approved by the Majlis in early 1973. But the sharp increase in the international price of oil in 1973-74 prompted the Plan Organization to revise the original plan. As stated in the revised plan, "[U]nlike previous development plans, which were based on the distribution of somewhat limited domestic and foreign financial resources, the revised Fifth Plan has to contend with other problems and limiting factors, which have become apparent as a result of the fact that domestic and foreign financial resources are no longer the main limiting factor" (Plan Organization, 1974,p. 1). Therefore in setting the plan priorities and growth rate, such apparent production bottlenecks as inadequate skilled manpower, shortages of raw materials, and inadequate infrastructural capacity were taken into account, allowing for potential foreign investments and increased foreign exchange reserves.

The target rate of growth of the GNP was set at 25.9 percent. To achieve that rate of growth and to insure a continuous growth in the

TABLE II-8

IRANIAN NON-OIL EXPORTS AT THE BEGINNING AND THE END OF THE FOURTH DEVELOPMENT PLAN
(THOUSANDS OF CURRENT DOLLARS)

SITC No	Commodity	1968	1972	Change (percent)
	Primary commodities:	138,768	255,903	84.4
0	Food and Live Animals	53,564	86,918	62.3
1	Beverages, and Tobacco	316	281	-11.1
2	Crude Material, Excl. Fuels	79,714	161,983	103.2
4	Animal, vegitable oil, Fat	5,174	6,721	29.9
	Manufactured commodities:	76,474	191,542	150.5
5	Chemicals	5,588	26,955	382.4
6	Basic Manufactures	62,202	121,921	96.0
7	Machine, Transport Equip.	1,352	5,315	293.0
8	Misc. Manufactures	7,332	37,351	409.0
	Total	215,242	447,445	107.8

Source: Same as Table II-7, 1968 AND 1972.

long run, the total investment required was put at 4.7 billion rials which sets the annual rate of growth of gross domestic capital formation in real terms at 29.7 percent as opposed to 13.7 percent of the Fourth Plan period (Plan Organization, 1974, pp. 16 and 23).

Due to various shortages and bottlenecks, the expected growth rates of the different sectors were not fully realized. As shown in Table II-9, the gross national income grew only at 17 percent per annum as opposed to the projected 25.9 percent. Regardless of the failure to achieve the plan's target for different sectors, the growth of GNP during this period was very impressive. It was because of this rapid economic growth that the economy suffered an unprecedented rate of inflation. Despite the fact that stablization of prices was one of the goals for this period, the average annual growth rates of wholesale and consumer prices were 12.7 and 15.5 percent, respectively. Increase n government expenditure created an unprecedented expansionary effect and the consequent increase in effective demand was the main source of the high inflation rate for the period. There was an increase in migration from rural to urban areas, causing increased demand for housing and the consequent shortages in housing units and construction materials caused the highest rate of inflation in this sector copmared to other sectors. Acceleration of inflation in the housing and construction sector influenced other sectors as well, thereby increasing the inflationary pressure on all the sectors of the economy.

TABLE II-9

ECONOMIC GROWTH IN THE FIFTH DEVELOPMENT PLAN
1973-77
(PERCENT)

Value added in:	projected	actual
1. Agriculture	7.0	4.6
2. Oil (1)	51.5	25.9
3. Industry and Mining	18.0	15.5
4. Services	16.4	15.3
5. Gross National Income	25.9	17.0
6. Non-oil GDP (1)	15.0	13.3

(1) Including the compensation for valuation of the terms of trade.

Source: Bank Markazi Iran (central bank of Iran), Annual Report and Balance Sheet, 1978, p. 15.

The non-oil export performance during the Fifth Development Plan was a disappointment, despite the fact that the plan emphasized the expansion of non-oil exports "to reduce the country's dependency on oil revenue" (Plan Organization, 1974, p. 5). The value of non-oil exports over the five year period increased only by 0.5 percent (Table II-10). The value of non-oil exports as the percentage of the total exports decreased from 10.2 in 1973 to 2.4 percent in 1977. Although the value of traditional non-oil exports as a percentage of total non-oil exports fell from 66.9 in 1973 to 57.3 percent in 1977, indicating some diversification, at the same time exports of manufactured commodities dropped by 8.9 percent.

C. SUMMARY

The overall strategy, during 1960's and 70's, to industrialize the country and to reduce its dependence on the oil sector, can be described as import substitution industrialization. To encourage participation of the private sector in the process of industrialization government provided low interest loans for investment in the manufacturing sector. In addition tax exemptions were granted for "essential" industries for a specified period of time. Even for those paying profit taxes the rate was very low. To further encourage investment in the modern sector and "protect" domestic industries the government imposed very tight import restrictions.

Like most other LDCs, Iran had come to adopt import substitution industrialization strategy as a way to economic growth and

TABLE II-10

IRANIAN NON-OIL EXPORTS AT THE BEGINNING AND THE END OF THE FIFTH DEVELOPMENT PLAN
(THOUSANDS OF CURRENT DOLLARS)

SITC NO.	Commodity	1973	1977	Change (percent)
	Primary commodities:	386,891	410,556	6.1
0	Food and Live Animals	140,013	172,461	23.2
1	Beverages and Tobacco	485	400	-17.5
2	Crude Materials Excl. Fuels	239,193	237,695	-0.6
4	Animal, Vegetable oil, Fat	7,200	---	-100.0
	Manufactured commodities:	234,010	213,216	-8.9
5	Chemicals	28,617	33,654	17.6
6	Basic Manufactures	162,012	111,477	-31.2
7	Machine, Transport Equip.	15,121	41,458	174.2
8	Misc. Manufactures	28,260	26,627	-7.6
	Total	620,901	623,772	0.5

Source: Same as Table II-7, 1973 AND 1977.

development. "But there was one major difference: many of the other newly industrializing countries, in addition to relying on primary exports and foreign loans, promoted their manufacturing exports to pay for a proportion of their imports of capital and intermediate goods" (Looney, 1982, p. 28). Iran's failure to do this is evident in data showing that during the Fifth Plan exports of manufactured commodities went down by almost 9 percent (see Table II-10, p. 29). One of the main reason for not seriously promoting the exports of non-oil (ie., manufactured) products might be sought in the ever increasing growth of the oil revenues especially during 1970's. The increase in price of oil diminished whatever incentives might have existed previously to promote non-oil exports (see Table II-8, p. 25 , non-oil exports more than doubled during the Fourth Plan period).

Although the growth in Iran's non-oil exports had slowed down drastically during the late 1970's (see Table II-10), there had been some periods where Iran showed some promising signs in that regard. Consider, for example, the period of the oil boycott of the early 1950's. During these few years Iran's non-oil exports grew considerably (see Table II-5, p. 18). Another example was during the Fourth Development Plan period. During this period non-oil exports more than doubled and ever more interestingly was the 150 percent growth in export of manufactured commodities (see Table II-8). These two examples might be an indication that Iran has the potential of improving its non-oil export sector (this point will be analyzed in Chapters IV and V).

CHAPTER III

FOREIGN TRADE AND ECONOMIC GROWTH: REVIEW OF LITERATURE

While this study is based upon the assumption that foreign trade promotes economic growth and development, we must pause to acknowledge that economic analysts are not unanimously in support of this position. Some, like Haberler (in Meier, 1964, p. 353), propose that ". . . trade has made a tremendous contribution to the development of less developed countries." On the other hand, Prebisch (1962) and Myrdal (1959), among others, argue that foreign trade has inhibited industrial growth in the poorer countries. This chapter therefore begins with a summary of the theoretical debate about the role of exports in economic growth. That will be followed by a discussion of the key empirical studies of the export role. The reader is asked to note that much of the empirical work places emphasis upon demand for exports and upon the commodity composition of exports. These aspects relate directly to the analysis undertaken in this study.

A. THE ROLE OF EXPORTS IN THEORY

The importance of trade in the process of economic development is emphasized in the writing of the "classical" economists. Adam Smith, throughout his writing, asserted that the division of labor, which is important for specialization, is limited by the extent of trade. Smith (in Caves and Johnson, 1968, p. 319) emphasized that "[I]nternational trade overcomes the narrowness of the home market and

provides an outlet for the surplus product above domestic requirements. . . . [B]y widening the extent of the market, international trade also improves the division of labour and raises the general level of productivity within the country." According to Nurkse (1961), it was this specialization and increase in productivity which played an important role in economic growth of the "new" countries overseas and also the "old" countries in Europe during the nineteenth century.

Nurkse (1961) saw trade as a means whereby a vigorous process of economic growth came to be transmitted from the center to the outlying areas of the world, and not just the matter of optimum allocation of productive resources. He asserted that one of the basic reasons for the development of the "new" countries was their increase of exports. This was due to the tremendous increase in demand for foodstuffs and raw materials in Western Europe during the nineteenth century, especially on the part of Great Britain. In Nurkse's opinion: "[T]rade in the nineteenth century. . . was above all an engine of growth" (Nurkse, 1961, p. 243).

Nurkse also observed, however, that there were areas which did not experience the high level of growth achieved by the new countries in spite of growth in demand for their exports. For such areas as Southeast Asia, where trade and the inflow of capital were active, the impact of trade was to create a "lop-sided" pattern of development, some times in the form of a "dual economy" where, ". . . a well

developed export sector coexisted with a primitive domestic economy" (Ibid., p. 289). This, Nurkse asserted, was due to the absence of "other conditions" for development which limits the ability of trade to work as the "engine of growth."

While Nurkse and others concentrated mostly on demand and supply aspects and found trade generally beneficial, G. Myrdal and R. Prebisch challenged the classical view that trade will bring about equality between trading partners. According to Prebisch, the assumption underlying the alleged economic advantages of the international division of labor is that the benefits of technical progress tend to be distributed equally over the whole community. Thus, "[T]he countries producing raw materials obtain their share of these benefits through international exchange, and therefore have no need to industrialize. If they were to do so, their lesser efficiency would result in their losing the conventional advantages of such exchange" (R. Prebisch, 1962, pp. 1, 4-6). In actuality, however, these benefits have gone only to the "great industrialized countries" and not to the whole community, at least according to Prebisch.

G. Myrdal (1959), sharing the same view writes that:

> Contrary to what the equilibrium theory of international trade seems to suggest, the play of the market forces does not work toward equality in the remunerations to factors of production and, consequently in incomes. If left to take its own course, economic development is a process of circular and cumulative causation which tend to award its favours to those who are already well endowed and even to thwart the efforts of those who happen to live in regions that are lagging behind.

Overall, the events of the 20th century—two World Wars and the Great Depression--caused a great reduction in the volume of

international trade. This reduction in trade was caused by the imposition of trade barriers on the part of developed countries to protect their domestic industries from foreign competition, during the Great Depression. On the other hand, less developed countries (hereafter refer to as LDCs) which were exporters of raw materials and food to developed countries, were affected drastically by this slow down in growth of the industrialized countries. This lack of demand for exports of primary products from LDCs, which caused prices to move against primary commodities and in favor of manufactures, forced most LDCs to look elsewhere for a source of economic growth--import substitution industrialization.

B. EMPIRICAL STUDIES

This section considers foreign trade and economic growth during three different time periods. First, the nineteenth century experience, where the focus will be on the "new" countries which were exporters of primary products (food and raw materials) and experienced a high level of economic growth. The second period concentrates on the economic growth experience of LDCs in the twentieth century, including the Great Depression, World War II, and the postwar period up to the mid-1960's. During part of that period most LDCs faced a great decline in demand for their raw materials because of the Great Depression of the 1930's. Many of them therefore adopted a new strategy to achieve economic growth and development, industrialization through import substitution. By the mid-1960's, however, the failures

of some of the LDCs pursuing import substitution prompted some economists to rethink that strategy. This led to more "outward looking" policies or trade oriented policies which are currently popular among many academic economists and many policy makers.

1. The Nineteenth Century Experience

Irving Kravis (1970) examined Nurkse's hypothesis of trade as "engine of growth" during the nineteenth century. Kravis proposed that if Nurkse was right, one should expect to find at least some of the following features in the economic history of the "successful" countries (Kravis, 1970, p. 853):

> (1) A large and/or growing share of exports in domestic production; (2) an association between the timing of changes in exports and in GNP with the latter following the former; (3) a concentration of exports in sectors marked by relatively rapid growth and/or rapid growth of industries related to the export industries; (4) the attraction of foreign capital to export industries or industries supported by them.

Of the seven "new" countries[1] mentioned by Nurkse, which were affected by the pattern of growth through trade, Kravis only examined the most successful case, the United States, for which the data shows some signs of export dominated growth. He concluded that, growth and development of the United States during the nineteenth century was due to internal rather than external forces. To further support this conclusion, Kravis cited the case of countries such as India and Ceylon where trade expanded just as rapidly as in the United States but economic growth was much slower. In short, Kravis saw trade as the

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[1] These countries were: The United States, Canada, Argentina, Uruguay, South Africa, Austrialia, and New Zealand.

"handmaiden of growth" instead of the "engine of growth." "One of the most important parts of this handmaiden role for today's less developed countries may be to serve as a check on the appropriateness of new industries by keeping the price and cost structures in touch with external prices and costs" (Ibid., p. 869).

2. The Twentieth Century Experience

The Great Depression of the 1930's, which affected the volume of trade greatly, convinced most development economists that less developed countries could no longer rely on exports of raw materials and primary commodities to the more developed countries as the source of economic growth and development. This view can be seen in the writings of development economists such as: R. Nurkse (1961), R. Prebisch (1962), and G. Myrdal (1956).

Nurkse (1961) observed that not only was there a slow down in the growth of volume of trade (i.e., 57 percent during 1928-1958, as opposed to 270 percent during 1850-1880) but there was also a change in the composition of trade. This change in the product composition of trade was away from raw materials (excluding oil)[2] and toward manufactured products, which occurred because of the shift in demand. Nurkse argues that this slow slow down in demand for primary products

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[2] The events of the past few years in the oil market, however, indicate that crude oil is subject to the same unpredictable market behaviors (i.e., price fluctuation) as are other raw materials. Therefore, when it comes to economic analysis and policy making decisions, oil needs to be treated as any other raw materials and oil producing LDCs as any other LDCs.

(i.e., raw materials) was due to the following changes: (1) There had been a shift from "light" to "heavy" industries (i.e., engineering and chemicals), where the raw material contents of the finished product was lower; (2) there had been an increase in the share of service industries; (3) the fact that income elasticity for agricultural products is generally low; (4) protection of the agricultural sector in the more advanced countries, especially Western Europe; (5) policies toward conservation of raw materials; and, (6) last but certainly not the least, substitution of synthetic and man-made materials for natural ones through expansion of chemical industries.

In light of this slow down in demand for primary commodities, LDCs were forced to seek other means of economic growth than reliance on the external demand for their exports. Two alternatives were proposed by development economists: (1) industrialization for the export markets, or (2) output expansion for domestic consumption.

The first alternative was proposed by economists such as W.A. Lewis who regarded it as a "suitable" solution especially for densely populated countries (i.e., India). The idea was that these countries should concentrate on export of "cheap" labor-intensive manufactures. Nurkse (1959), however, argues that what is being referred to as "cheap" labor is actually "potentially" cheap and "abundant" labor, and creation of "industrial" labor in these countries is a difficult and expensive task.

Therefore, Nurkse, among others, proposed the second alternative, namely expansion of output for domestic market. The difficulty of using this approach, Nurkse admits, is that in low income countries the market for manufactured products does not exist. It is so because most of the population is too poor to purchase manufactured products. To remove this obstacle, he proposes, there should be a simultaneous growth of both the indigenous and the manufacturing sector--a balanced growth. This will result in increased income of the indigenous population and consequently creation of markets for the manufactured sector. On the other hand, the growth of the indigenous sector will result in a marketable surplus which is essential for the growth of the manufacturing sector. Thus, the two sectors complement each other.

The way to expand output for the domestic market proposed by some development economists (i.e., R. Prebisch, 1962) was through import substitution. Import substitution as an strategy for industrialization became very popular with most LDCs. One of the main reasons for the popularity of this strategy is the fact that there is basically no need for research and development of products, since production is for markets that already exist. Therefore, there is no need to take a chance on developing a new product for which a market also needs to be developed, both of which require sophisticated R&D and marketing expertise where LDCs have a comparative disadvantage.

3. Recent Developments

Bella Balassa (1978) looked into the relationship between growth of exports and the economic growth for eleven LDCs[3] that already had an established "industrial base." He tested the hypothesis that export-oriented policies lead to a better growth performance than policies favoring import substitution industrialization. The period under investigation was 1960-1973.

Balassa found that in Korea and Taiwan, where export-oriented policies were adopted at an early stage, the respective increases in GNP would have been 37 and 25 percent smaller if their exports growth rates equalled the average of all the countries concerned in the study. On the other hand, for countries such as India and Chile where inward-oriented policies were pursued, the respective increases in GNP would have been 14 and 20 percent higher had their export growth rates equalled the average of all countries investigated.

The results of the Balassa study, therefore, "[P]oint to the fact that trade orientation has been an important factor contributing to intercountry differences in growth of incomes" (B. Balassa, 1978, p. 188). Thus, he concluded that export-oriented policies are more beneficial than the policies oriented towards import substitution.

A similar study was done by Michael Michaely (1977) on 41 LDCs for the period 1950-1973. The hypothesis was that a rapid growth of exports accelerates the economy's growth. His approach was different

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[3] Countries studied were: Korea, Singapore, Taiwan, Argentina, Brazil, Colombia, Mexico, Chile, India, Israel, and Yugoslavia

from his predecessors; Emery (1967), Maizels (1968, chapter two), and Kravis (1970). The difference was Michaely's choice of variables. Where in the past studies change in national product or per capita income was chosen to represent growth, Michaely asserted that a positive correlation between growth of exports and growth in GNP is inevitable since exports are a part of national income. Therefore, he proposes more "meaningful" variables to test the hypothesis. He used the rate of change in the proportion of exports in national product as a proxy for expansion of exports, and the rate of change of per capita income as a proxy for the rate of the economy's growth.

Michaely's finding was that there is a positive relationship between growth of exports and the economy's growth. He notes that this positive reationship is particularly strong for the more developed of the LDCs, exporters of manufactured products, and does not exist for the least developed countries. So in this respect, one can see that Michaely's findings are very similar to that of Balassa (1978). These recent empirical studies strongly indicate that some of the more developed of the LDCs have been successful in achieving a somewhat greater rate of growth through expansion of their exports than might otherwise have been the case.

Donges and Riedel (1977) looked into two "crucial" empirical issues regarding exports, specifically exports of manufacturers. First, whether export performance is due to governmental promotional efforts, and secondly, if lack of external demand is the ultimate obstacle to the expansion of manufactured exports.

Their study included twelve LDCs[4], and the period under investigation was early 1950's to 1973. The findings of this study indicated that there was a strong association between policy reorientation toward export promotion, and improvement in the export performance of the sample countries, suggesting that governments have some leverage in promoting exports. This was further evident when they found that in countries such as Taiwan, South Korea, Spain, Pakistan, and Brazil, where government efforts were the greatest, the growth rates in exports were higher than elsewhere.

On the issue of lack of demand, Donges and Riedel (1977, p. 85) found that:

> . . .apart from textile, clothing, and footware, constraints on the demand sides do not at present appear to be quite so severe as developing countries seem to believe. The market for LDC exports in the industrialized countries are large, growing, and at present far from fully penetrated. Moreover artificial trade barriers do not appear to be particularly serious, although the threat of increasing non-tariff barriers to LDC exports is a real and justifiable concern.

A study by UNIDO (1979) shows that, between 1969 and 1975, the share of LDCs in world manufacturing value-added grew steadily, from seven to 8.6 percent. Consequently the share of manufactured exports from LDCs rose from 20 percent in 1960 to 45 percent in 1975 (R. Ballance, et al., 1982, p. 50). It is interesting to know that this increase was concentrated on exports of manufactures for final consumption instead of unfinished products.

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[4] Countries in this study included: Brazil, Colombia, Mexico, Egypt, India, Israel, Pakistan, South Korea, Turkey, Taiwan, Spain, and Yugoslavia.

It is based on recent developments in international trade that one can conclude: (1) There is a growing market for exports from LDCs, especially in manufactures (this point will be analyzed in Chapter V), and (2) those countries with more aggressive export promotional policies were more successful than those adhering to import substitution policies.

W.A. Lewis (1979) emphasized the importance of "inter-LDC" trade in the face of the slow down of the economic activities during the recession which started in the early 1970's. For LDCs to have access to a large market so that they can take advantage of economies of scale, Lewis proposed increases in "inter-LDC" trade through formation of customs unions. The type of customs union he proposes is not restricted to the "next-door neighbors," and internal free trade is confined to a few "integration" industries, instead of all commodities.

In the preceding pages the empirical and theoretical studies of the linkage between exports and economic growth were discussed. Although there are differences in opinion as to the extent of the role international trade plays in advancement of LDCs, there seems to general agreement in the more recent studies that trade can be beneficial to developing countries. This study will therefore proceed on the assumption that export promotion should occupy a prominent place in any development plan. It is also especially noteworthy that the more recent empirical studies demonstrate that the linkages between exports and growth are especially strong in the case of manufactures and much less so in the case of raw commodities.

We will now move beyond questioning the role of exports and explore the role of demand and the role of product mix, among other things, in explaining the level and growth of exports. Given that exports promote growth, how might a country, Iran for example, improve its export performance? To give even a tentative answer to that question, we should look for some of the factors that help to explain recent export performance. This study will not result in definitive policy conclusions. However, its disaggregated approach to explaining recent export performance, should furnish a stable platfrom from which policy studies could be launched. In constructing one section of that platform, we will utilize a "technique" that is largely new to international economics: Constant Market Shares analysis. This technique will be explained in the next chapter and the results of its application to Iran's non-oil export performance during three development plans periods, will be made clear.

CHAPTER IV

THE NON-OIL EXPORT PERFORMANCE OF IRAN 1963-77: A CONSTANT MARKET SHARE ANALYSIS

In Chapter II the non-oil export performance of Iran since the turn of the century was briefly reviewed. It was shown that since the discovery of oil in Iran, around the turn of the century, the share of non-oil exports in total exports has been on the decline, except for a few interrupted periods. The purpose of the present chapter is to analyze the Iranian non-oil export performance in more detail. Specifically, the Constant Market Share model (hereafter CMS) will be used to explain the level of export performance. Because of problems of data availabity, this study is restricted to a period of fifteen years. In turn, the period under consideration is divided into three five-year segments (The Third, Fourth, and The Fifth Development Plan). By focusing on planning periods, we will be able to search for connections between government policy and the analytical results provided by the CMS approach.

A. THE CMS MODEL

As the name implies, the CMS analysis is a technique where the underlying assumption is that a country's export share of the world market "should" remain unchanged over the period of time under study. Although this assumption is unrealistic and without any theoretical basis (see Richardson, 1970, chapter 2), it will serve as a hypothetical norm on which to base calculations. It is because of

this assumption that the model is normally used for short term analysis, and the shorter the period under study, the more useful the results of the analysis.

The first use of the CMS model seems to have been by Creamer (1943) in a regional study of manufacturing industries. The first use of the model in international trade, however, was by Tyszynski (1951) in analyzing the world trade performance of manufactured products for 1899-1950 period. The model has since grown in popularity, primarly because of its ease of use for already available data, both in the field of regional economics and international trade. In the field of regional economics a version of the CMS model called the Shift-Share model is used to analyze the growth of regional variables such as employment, income, or output.

The basic premise of the CMS model is that the value of a country's exports (hereafter called exports) may fail to grow as rapidly as the world average for three reasons: (1) exports may be concentrated in commodities for which the demand is growing slower than the world average; (2) exports may be going primarly to regions which are stagnant relative to the rest of the world; or, (3) the country in question may have been unable or unwilling to compete effectively with other sources of supply. It has been observed that reasons (1) and (2) are linked together. For example, one can suggest that the reason why a country's exports were going to slow growth markets is because of its concentration on commodities with slower growth than the

average, and vice versa. Therefore, in analyzing the results obtained by the use of the CMS model, one should be aware of this linkage.

The CMS model, or technique, is designed to decompose a country's growth in exports during a certain period into four "effects." That is to say, growth in exports can be caused by one or a combination of the followings: (1) world demand effect, which is the portion of the increase in exports caused by the increase in world demand, (2) commodity composition effect, this is an indicator of whether or not the country in question was exporting those products for which demand was growing faster than the average, (3) market distribution effect, which is an indicator of whether or not the country was exporting to those markets with faster growth than the average, and (4) competitiveness effect, which is a residual indicating whether or not the country became more competitive, both in terms of price and non-price factors (i.e., better marketing, better quality, etc.), during the period.

The CMS technique is a mathematical model where:

X = total exports of the country in question at the beginning of the period;

X' = total exports of the country in question at the end of the period;

R = the rate of growth in the world exports during the period;

i = denoting the commodity grouping (using SITC groupings);

j = denoting the importing regions.

Therefore, Xi represents the country's exports of commodity group (i) to all regions, and Xij represents the countries exports of commodity (i) to region (j) at the begining of the period. Ri represents the percentage change in value of world trade of commodity group (i) to all regions, and Rij represents the percentage change in world trade of commodity group (i) with region (j) during the period. And finally, X'ij represents the country's export of commodiy group (i) to region (j) at the end of period.

$$X' - X = RXi + \left(\sum_{i=1}^{n} RiXi - \sum_{i=1}^{n} RXi\right) + \left(\sum_{i=1}^{n}\sum_{j=1}^{m} RijXij - \sum_{i=1}^{n} RiXi\right) + \left(\sum_{i=1}^{n}\sum_{j=1}^{m} X'ij - \sum_{i=1}^{n}\sum_{j=1}^{m} Xij - \sum_{i=1}^{n}\sum_{j=1}^{m} RijXij\right)$$

In this equality:

1. $\sum_{i=1}^{n} RXi$ represents the portion of the change in the country's exports due to the change in world demand (world demand effect). This will show the amount by which the country's exports would have changed, from an initial year, if it had changed at the same rate as did total of world trade. For example, if growth in the country's exports is larger than the world demand effect (i.e., $(X' - X) > \sum_{i=1}^{n} RXi$), then exports of the country in question grew more than "its share." This increase in the "share" can be the result of: (1) concentration on exports of those commodities for which demand grew faster than the world average, or/and (2) a better market distribution (i.e., exporting to those markets which grew faster than others), or/and (3) improvement in the competitive position, which could have resulted not

only due to price competition but also non-price competition (i.e., better quality, marketing, and services).

2. $\left(\sum_{i=1}^{n} RiXi - \sum_{i=1}^{n} RXi\right)$ represents the commodity composition effect. This will indicate the extent to which the country's exports were concentrated in commodity groups with growth rates more favorable than the world average. It should be emphasized that this does not show any indication of the pattern of growth over the period under study and it is only a static effect (i.e., Xi represents exports at the beginning of the period). Thus if the country in question had concentrated on those commodities for which the world demand was growing faster than the world average then this term will be positive. Otherwise, it will be negative.

3. $\left(\sum_{i=1}^{n}\sum_{j=1}^{m} RijXij - \sum_{i=1}^{n} RiXi\right)$ represents the market distribution effect. It will indicate the extent to which the country's exports were concentrated to the regions with the growth rate more favorable than the world average. Thus if the country in question concentrated on those regions whose imports were growing faster than the world average then this term will be positive. Otherwise, it will be negative. Once again, it should be emphasized that the market effect defines a state of being in the beginning of the period rather than a pattern of growth.

It is noteworthy that the choice of calculating the commodity effect before the market effect is an arbitrary one. If one were to do so, then the middle two components of the right hand side of the equation will be:

$$\left(\sum_{j=1}^{m} RjXj - \sum_{i=1}^{n} RXi \right) + \left(\sum_{i=1}^{n} \sum_{j=1}^{m} RijXij - \sum_{j=1}^{m} RjXj \right).$$

The first term now becomes the market distribution effect and the second term is the commodity composition effect. This does not change the Identity, but it gives different values to each of the above effects. Richardson (1970), using hypotetical data, showed that the effect may vary substantially depending on which one is calculated first.

4. $\left(\sum_{i=1}^{n} \sum_{j=1}^{m} X'ij - \sum_{i=1}^{n} \sum_{j=1}^{m} Xij - \sum_{i=1}^{n} \sum_{j=1}^{m} Rij\ Xij \right)$ represents the competitiveness effect. It is the difference between the actual growth of exports and the growth that would have occurred if the country in question had maintained its share of exports of each commodity to each market. For example, a negative competitiveness effect indicates the country's failure to maintain its share of the world market. This term is an indication of the general competitiveness in the sense that it reflects not only the price competitiveness but as well, the influence of quality variation, the introduction of new exports, promotional expenditures, possible changes in marketing arrangments, and the ability to service export orders promptly (Leamer and Stern, 1970, p. 175).

B. LIMITATIONS TO THE CMS MODEL

The CMS model is an identity equation used for ex-post analysis of data. So, like any other identities in economic theory it fails to establish causal relationships (Banerji, 1974, p. 456). Despite this obvious limitation, the model nonetheless is a useful tool for

identifying the areas where one should look for an explanation. For example, if the competitiveness effect is negative for any specific period, policy-makers should look into factors which affect competitive power for an explanation. It must be remembered that both price and non-price factors affect the competitive position of a country.

Inspite of the frequent use of the CMS model since it was first used by Tyszynski (1951) for analyzing exports, there have been many critisims of the model. The most comprehensive and critical look at the model is by John David Richarson (1970). In his study Richardson concluded that the CMS model has "little foundation in theory" and at its best, the "technique" is a "categorization scheme." Aside from theoretical problem, the assumption that a country's share of export "should" remain constant, which is in the nature of the CMS model, and the linkage (leakage) between commodity composition and market distribution effects, there are two areas which have been critisized more than others when it comes to the application of the model: (1) the choice of "standard," and (2) the "index number" problem.

1. The Choice of Standard

In the "traditional" CMS model, the growth in world exports is a standard and reference for calculating the various effects (i.e., R). In other words, the export performance of the country in question is compared to the world's export performance as a whole. Since all countries are not involved in world trade with the same degree of intensity, then for the result of the analysis to be more meaningful

one should use different standards for different types of countries (Ibid., p. 37). For example, if a less developed country's export is to be analyzed, then the standard to be used should be the growth in LDCs' exports. By the same token, if the country under investigation is a developed country, then the standard should be the growth in the exports of developed countries. If possible, one should narrow down this classification even further. For example, export performance of a country belonging to European Economic Community (EEC) should be compared with other EEC countries, because, for instance, their currencies are pegged to each other. Other things equal, therefore, a stronger dollar relative to European currencies very likely affects all EEC members in more or less the same manner.

Regional economists have paid more attention to this problem than their counterparts in international trade. There has been an excellent study by Lichtenberg (1960) of the industries in the New York metropolitan area. In this study Lichtenberg first divided the industries into two groups: (1) those which competed at the national level, and (2) those which did not. He applied the CMS (Shift-Share) technique by using national standards for the first group, and using the Middle Atlantic region as the standard for the second group. This is a clear example of what is most often referred to as an "appropriate" or "correct" choice of standard. There are others who have addressed this problem (i.e., Houston (1967), and Brown (1969)), but Lichtenberg seems to be the first who actually used this idea in an empirical study.

2. The Index Number Problem

The problem of appropriate "index number," which is referred to by some regional economists as the "weights" problem, arises from the fact that the CMS model does not take into account the changes in the structure of exports over the period. To clarify this point, consider (R) as it is defined in the traditional CMS model explained in the previous section. (R) is defined as the rate of growth in the world exports during the period, and it is calculated as:

$$R = (X'w - Xw)/Xw.$$

Where Xw and X'w are world exports at the beginning and the end of period, respectively. So the change in world exports is "weighted" on the initial year, one given point in time. This results in an analysis that is "static" rather than "dynamic." Inspite of this fact there is always a tendency on the part of researchers to refer to the "effects" generated by the CMS model as "over the period" effects (Richardson, 1970, p. 41).

To correct for this problem of "weights" and to make the model more "dynamic," Magee (1968) suggested that an arithmetic average of the beginning and the end of the period should be used as the weights, thereby, considering the change in exports "over time." Richardson, however, suggested another way of making the CMS model more dynamic. He proposed that seperate calculations should be made, one using the beginning and the other, the end of the period as "weights." It is then that by comparing the two results one can talk about the change in the effects "over the time period" (Richardson, 1970, pp. 45-51).

C. CMS ANALYSIS OF IRAN'S EXPORTS

In light of the foregoing discussion on improving the CMS model, the following innovations are introduced for purposes of the present study. First, since Iran's major competitors in the world market are other LDCs, this study uses the growth in LDCs' exports as the "standard," instead of the world exports. In addition the analysis is carried out for both primary and manufactured commodity groups. For a more disaggregated study of the Iranian exports, each commodity group and each market group is analyzed individually using the CMS model. Finally, seperate calculations were performed using both the beginning and the end of each period as weights. However, since there were not significant differences in the results, those shown in this study were obtained when the beginnings of the periods were used.

Because of the scarcity of diaggregated data for all periods under study, there are only ten commodity groups and eight market groups under investigation.

The commodity groups (according to SITC number) are:

1. 0,1 : food, beverages, and tobacco;
2. 2,4 (26,28) : crude materials not including fuels excluding textile fibers, and metalliferous ores and metal scrap;
3. 26 : textile fibers;
4. 28 : metalliferous ores and metal scrap;
5. 5 : chemicals;
6. 7 : machinery and transport equipment;

7. 6,8 (65,67,68) : other manufactured goods excluding textile yarn and fabrics, iron and steel, and non-ferrous metal;

8. 65 : textile yarn and fabrics;

9. 67 : iron and steel;

10. 68 : non-ferrous metal.

And the market groups are:

1. Africa;

2. North America;

3. Japan;

4. Middle East;

5. Other Asia;

6. Western Europe;

7. Centrally Planned Economies;

8. Others.

D. RESULTS OF THE CMS ANALYSIS

As mentioned at the beginning of this chapter, this study investigates Iran's non-oil export performance for a period of fifteen years (1963-1977). Since fifteen years is considerd to be a rather long period of time when using CMS, Iran's export performance will be analyzed for three consecutive five-year periods. The reason for dividing the fifteen year period into these particular three segments is because they cover three five-year development plans (the Third, Fourth, and The Fifth). The data used for the analysis in this section are compiled from: (1) various issues of Commodity Trade

Statistics, and (2) various issues of Year Book of International Trade Statistics, both published by the United Nations Statistical Office.

1. First Period, (1963-67)

The summary results of the CMS analysis of the Iranian non-oil exports (hereafter referred to as exports) are shown in Table IV-1. Column 1 shows the results when the CMS analysis was applied to Iran's exports in general, that is whithout any consideration to the type of exports. Column 2 shows the results when only manufactured commodities were included in the analysis (i.e., SITCs 5 through 8). And finally, column 3 shows the result when only primary commodities were analized.

Table IV-1 indicates that Iran's exports increased by $60.9 million during this first period. From this total increase, $28.8 million was the increase in manufactured commodities and the remainder was due to an increase in exports of primary commodities. Column 1 shows that if Iran were to keep "its share" of the market (i.e., have the same rate of growth of exports as other LDCs), then exports should have gone up by $72.4 million. The negative commodity composition and market distribution effects may indicate that this slow growth of exports was caused by Iran's concentration on slow growing commodities and markets. It is typical of most LDCs, however, for commodity composition and market distribution effects to be negative. (see Ballance, et al., 1980, Chapter 4). This is partly due to the fact that LDCs are less integrated in the world world market than developed countries, partly because their exports are concentrated on

TABLE IV-1

ANALYSIS OF THE CHANGES IN IRANIAN NON-OIL EXPORTS (1963-67)
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

	(1) All Commodities	(2) Manufactured Commodities	(3) Primary Commodities
Changes in Exports	60,857 (100.0)	28,761 (100.0)	32,096 (100.0)
1. Market Demand Effect	72,448 (119.0)	17,613 (61.3)	54,511 (169.8)
2. Commodity Composition Effect	-32,759 (-53.8)	-8,994 (-31.3)	-23,442 (-73.0)
3. Market Distribution Effect	-14,934 (-24.5)	-3,442 (-12.0)	-11,491 (-35.8)
4. Competitiveness Effect	36,102 (59.3)	23,584 (82.0)	12,518 (39.0)

a few primary commodities rather than a variety of goods as is more often the case with developed countries.

The positive competitiveness effect, however, reveals that Iran remained competitive throughout the period. As was mentioned earlier, this positive effect could be due to price or/and non-price competitiveness of Iran's exports as compared to other LDCs, during the period.

Column (2) shows the result of the CMS analysis of exports of manufactured commodities (SITC #'s 5 through 8). We see that Iran's exports of manufactured goods grew faster than the LDCs' average (i.e., only 61.3 percent of the increase in exports is due to market demand effect). Furthermore, Iran remained competitive in the world market (the competitive effect is positive). The market distribution and commodity composition effects were both negative but relatively small.

The result of the CMS analysis for primary commodities (column 3) shows that, Iran's exports failed to grow as fast as the average of the LDCs (if it grew as fast as other LDCs' exports then it should have grown by $54.5 million instead of $32.1). That was due to poor market distribution and commodity composition, as indicated by the respective negative coefficients. What is common among the results in the three columns of Table IV-1 is that all show negative commodity composition and market distribution effects. This warrents a closer look at these two effects.

To examine the market distribution and commodity composition effects more closely, the CMS technique was applied to each market

group and commodity group, individually. To use the CMS model at this level of disaggregation, the original model was modified slightly as shown in the Appendix. The results of the commodity and market groups analysis are summarized in the Appendix, Tables A-1 and A-2. It was found that most of the increase in Iran's exports during this period was accounted for by three commodity groups: (1) textile yarn and fabrics; (2) food, beverages, and tobacco, and (3) crude materials, etc.. On the other hand, the exports of food, beverages, and tobacco did not grow as fast as the average of other LDCs. It is of interest to mention that, as shown in column 1 of Table A-1, the world demand effect for two important commodity groups is negative: crude materials, etc. and textile fibers. This indicates that world demand for these two commodity groups (from LDCs) actually went down during this period. This could well be the case of concentrating on a "wrong" commodity, which shows up in the analysis as a negative coefficient for the commodity composition effect.

Table A-2 represents the results of the CMS analysis according to market groupings. The results show that most of the increase in Iranian exports was concentrated in two areas: the Centrally Planned Economies, and the Middle Eastern countries. For these two market regions a large percentage of the change in exports was due to increased competitiveness and that is one explanation as to why Iran's exports to these regions grew faster than those to other LDCs'. Market demand explained less than fifty percent of the change in exports into both regions. On the other hand, Iran's exports to Western Europe,

one of the fastest growing markets, grew far less than that region's imports from other LDCs primarly due to poor commodity composition. As a matter of fact, the commodity composition effects to all market regions were negative, indicating that Iran's exports were concentrated on those commodities for which the demand was growing slower than the average of each market region's demand for LDCs' exports in general.

2. Second Period, (1968-72)

The results of the CMS analysis of the second period is summarized in Table IV-2. Comparing these results with those for the first period (Table IV-1) reveals that Iran's export performance was much more impressive in the second period. In the first place Iran's exports grew faster than the LDCs' average, the world demand effect explains less than 100 percent of the changes in export in all three columns. Secondly, the market distribution and commodity composition effects are either positive or only slightly negative. This indicates that Iran's exports began to move towards those markets which exhibited greater than average growth, and the exports basket includes more of the commodities with higher than average growth in demand. To see why these two effects were positive each of the commodity groupings and each of the market groupings were analyzed individually (see Tables A-3 and A-4).

The results of the CMS analysis according to commodity groupings is tabulated in Table A-3 where can be seen that in almost all cases Iran's exports grew faster than other LDCs to the world (i.e., the world demand effect explains less than 100 percent of the total change

TABLE IV-2

ANALYSIS OF THE CHANGES IN IRANIAN NON-OIL EXPORTS (1968-72)
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

	(1) All Commodities	(2) Manufactured Commodities	(3) Primary Commodities
Changes in Exports	207,269 (100.0)	87,428 (100.0)	119,841 (100.0)
1. World Demand Effect	127,119 (61.3)	71,984 (82.3)	58,730 (49.0)
2. Commodity Composition Effect	2,379 (1.1)	3,495 (4.0)	-4,711 (-3.9)
3. Market Distribution	2,608 (1.3)	-183 (-0.2)	2,792 (2.3)
4. Competitiveness Effect	75,162 (36.3)	12,132 (13.9)	63,030 (52.6)

in each case). This might also help explain why the commodity composition was positive (see Table IV-2).

Table A-4 shows the results of the CMS analysis when applied to different market groups individually. It shows that the largest increase in Iran's exports was to Centrally Planned Economies, and Western Europe, and in both cases Iran's exports increased more than the average of all LDCs'. Recall that Iran's exports to Western Europe in the first period were far below the average, but as can be seen, it is more than the average in the second period. The results of this analysis also indicate that in almost all markets Iran became less competitive during the period.

3. Third Period, (1973-77)

Non-oil exports increased very modestly during this period, by only $4.9 million. However, if the increase had been at the same rate experienced by other LDCs, the value of exports should have gone up by $518.7 million. According to results summarized in Table IV-3, the reasons why Iran's exports did not grow as fast as those of other LDCs were declines in competitiveness and commodity composition effects (see column 1, 2, and 3 of this Table). The market distribution effect, however is large and positive in all three levels of analysis, indicating Iran's concentration on the markets with growth faster than average. This would seem to be saying that Iran focused on the market regions with the best growth potential, but featured the wrong products and, worse still, Iran was not very competitive with those products.

TABLE IV-3

ANALYSIS OF THE CHANGES IN IRANIAN NON-OIL EXPORTS (1973-77)
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

	(1) All Commodities	(2) Manufactured Commodities	(3) Primary Commodities
Changes in Exports	4,879 (100.0)	-21,480 (100.0)	26,359 (10.0)
1. World Demand Effect	518,719 (10631.7)	216,127 (1006.2)	297,997 (1130.5)
2. Commodity Composition Effect	-116,215 (-2382.0)	-30,367 (-141.4)	-81,254 (-308.2)
3. Market Distribution Effect	113,762 (2331.7)	64,722 (301.3)	49,040 (186.0)
4. Competitiveness Effect	-511,387 (-10481.4)	-271,962 (-1266.1)	-239,424 (-908.3)

It must be noted, however, that the wide differences between the actual increase in exports and the potential change (i.e., what the change would have been if Iran were to keep "its share") causes some difficulty in interpreting the results of the CMS analysis. Under normal circumstances (i.e., if the difference between the actual increase and the hypothetical increase were not so large), then one might feel more comfortable with the normal interpretation of the results, as it was done in the preceeding two sections. A closer examination of the results obtained by analyzing the commodity groups and market groups individually might possibly help to clear the matter (results are shown in the Appendix, Tables A-5 and A-6).

Tables A-5 and A-6 contain the results of analyzing the individual commodity and market groups respectively. These results show that for almost all commodities growth in Iran's exports was much less than for other LDCs' exports (in Table A-5 world demand effects explains more than 100 percent of the change in Iran's exports of these commodities), except in the case of metalliferous ores, metal scrap, machinery and transport equipment. In fact, in some instances Iran's exports actually declined. Secondly, Iran's exports to all the markets grew much less than the average of other LDCs, and of course there were instances where there was a decline in exports (see Table A-6). It is these more disaggregated analyses which make one cautious and reluctant of drawing any general conclusions based on the results of the analysis of this period.

Overall, as far as the Iranian non-oil exports performance is concerned, the most improvement was during the second period (1968-72) which was under the Fourth Development Plan. One of the major goals stated in that plan was to reduce Iran's dependency on the export of oil, which seems to be well accomplished. On the other hand, the same goal was set in the draft of the Fifth Development Plan (1973-77), however, as shown above, the non-oil exports grew by a very small amount during this period. One of the main reasons for Iran's failure to expand its exports by as much as other LDCs, during the third period, seems to have been due to the increase in domestic demand. Traditionally, Iran's non-oil exports have been that portion of supply which was not consumed domestically, so when the increase in the price of oil in the early 70's raised income in Iran, domestic demand increased, thereby absorbing most of the surpluses that were heretofore exported. Furthermore, this increase in domestic demand had caused prices to increase, thus making Iran's exports less competitive in the world market.

This chapter was mainly concerned with Iran's non-oil export performance in the past. However, the next chapter of the study will take one further step in an effort to throw some light on future world market prospects for Iran's non-oil exports.

CHAPTER V

CHANGES IN THE COMMODITY AND AREA PATTERN OF LDCs'[1] NON-OIL EXPORTS (1960-79)

In the foregoing chapter, the importance of commodity composition and choice of markets was emphasized. World demand for some commodities may mushroom, while for others it stagnates. Likewise, when we look at the world market for exports over time we see that some regions feature relatively rapid growth of demand while other markets lag in growth. We saw that even during the second plan period when Iran's exports performed well, the major markets for her exports featured slow growth. The analysis in this chapter is intended to provide baseline information that will aid in the selection of those commodities and those markets that show the most promise.

This chapter will examine the commodity pattern of LDCs' non-oil exports (hereafter referred to as exports) to both developed[2] and less developed countries during the twenty-year period of 1960 to 1979. If we assume that the past trend of LDCs' exports reflects underlying demand and supply factors in the world market, then by analyzing the past trend one will be able to make recommendations as to which

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[1] LDCs are defined based on the classification by the United Nations Statistical Office. They include: All Central and South American countries; Africa excluding South Africa; Asia excluding the People's Republic of China and Japan; Europe excluding Eastern European countries and Russia.

[2] Developed countries include: North America; Western Europe (EEC and EFTA), Japan, South Africa, Australia, and New Zealand.

commodities and/or which markets should be emphasized by the policy-makers in LDCs. This kind of ex-post analysis can be used by LDCs as one input into decisions to diversify their export industries.

Once again, because of lack of data[3], especially on export price indices, the analysis in this chapter is at a very aggregated level. First, this study only covers a twenty year period (1960-79) which is considered to be short for finding trends. Secondly, there are only five broad commodity groups to be considered, food etc. (SITC 0,1); raw materials excluding fuels (SITC 2,4); chemicals (SITC 5); machinery (SITC 7); and other manufactures (SITC 6,8). Mineral fuels (SITC 3) are excluded from this study. Note that, typically, primary commodities are defined as SITC 0 through SITC 4, and manufactured commodities as SITC 5 through SITC 8. Finally, the areas or markets considered in this study are only two categories, developed market economies (hereafter, developed countries) and less developed countries. Centrally planned economies are excluded in this study because of lack of data, therefore this study is only concerned with the market economies.

Since the early 1960's, there has been a drastic change in the commodity composition and the area distribution of the LDCs exports, which is discussed later in this chapter. The most noticeable change is in the commodity composition of LDCs exports. Tables V-1 and V-2 show LDCs exports (in 1970 prices) to both developed and less developed

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[3] The data used in this chapter are compiled from various issues of the Yearbook of International Trade Statistics published by the United Nations Statistical Office.

TABLE V-1

LESS DEVELOPED COUNTRIES EXPORTS TO DEVELOPED COUNTRIES: 1960-79
BILLIONS OF DOLLARS (1970 PRICES)
(PERCENT OF TOTAL)

Year	Food Etc.	Raw Materials Excluding Fuels	Chemicals	Machinery	Other Manufactures	Total
1960	7.18 (44.63)	5.33 (33.13)	0.25 (1.57)	0.07 (0.44)	3.25 (20.22)	16.09 (100.00)
1961	6.86 (42.80)	5.44 (33.92)	0.24 (1.49)	0.08 (0.53)	3.41 (21.26)	16.03 (100.00)
1962	7.45 (43.87)	5.50 (32.41)	0.26 (1.57)	0.08 (0.50)	3.67 (21.64)	16.98 (100.00)
1963	7.74 (43.45)	5.62 (31.54)	0.26 (1.48)	0.09 (0.54)	4.09 (22.98)	17.83 (100.00)
1964	7.61 (41.56)	5.76 (31.43)	0.27 (1.45)	0.11 (0.58)	4.57 (24.97)	18.32 (100.00)
1965	8.12 (40.78)	6.17 (30.97)	0.32 (1.60)	0.15 (0.77)	5.15 (25.87)	19.91 (100.00)
1966	8.02 (40.11)	6.40 (32.03)	0.30 (1.52)	0.21 (1.07)	5.06 (25.28)	20.00 (100.00)
1967	8.39 (43.02)	5.26 (26.95)	0.30 (1.52)	0.27 (1.41)	5.28 (27.10	19.51 (100.00)
1968	8.77 (39.22)	6.47 (28.97)	0.32 (1.42)	0.39 (1.77)	6.39 (28.61)	22.35 (100.00)
1969	8.79 (36.18)	7.02 (28.89)	0.35 (1.44)	0.55 (2.27)	7.58 (31.21)	24.30 (100.00)
1970	9.82 (37.65)	7.33 (28.10)	0.44 (1.69)	0.76 (2.91)	7.73 (29.64)	26.08 (100.00)
1971	9.74 (36.15)	7.42 (27.53)	0.48 (1.80)	1.05 (3.90)	8.25 (30.61)	26.94 (100.00)
1972	10.48 (34.43)	8.31 (27.30)	0.60 (1.96)	1.63 (5.35)	9.42 (30.96)	30.43 (100.00)
1973	11.02 (33.59)	8.51 (25.95)	0.65 (2.00)	1.99 (6.07)	10.63 (32.39)	32.81 (100.00)
1974	9.26 (29.12)	8.39 (26.38)	1.09 (3.44)	2.10 (6.60)	10.96 (34.46)	31.80 (100.00)
1975	9.54 (31.38)	7.49 (24.64)	0.85 (2.78)	2.15 (7.06)	10.37 (34.12)	30.40 (100.00)
1976	11.21 (30.92)	7.57 (20.88)	0.97 (2.66)	2.82 (7.79)	13.68 (37.74)	36.26 (100.00)
1977	11.06 (30.63)	7.36 (20.38)	1.18 (3.27)	3.13 (8.67)	13.37 (37.04)	36.09 (100.00)
1978	11.20 (28.95)	7.39 (19.09)	1.13 (2.91)	3.96 (10.24)	15.02 (38.80)	38.70 (100.00)
1979	11.69 (27.69)	8.51 (20.15)	1.10 (2.59)	4.53 (10.74)	16.39 (38.83)	42.22 (100.00)

TABLE V-2

LESS DEVELOPED COUNTRIES INTER-TRADE: 1960-79
BILLIONS OF DOLLARS (1970 PRICES)
(PERCENT OF TOTAL)

Year	Food Etc.	Raw Materials Excluding Fuels	Chemicals	Machinery	Other Manufactures	Total
1960	1.81 (44.84)	1.02 (25.20)	0.12 (2.86)	0.15 (3.65)	0.95 (23.44)	4.04 (100.00)
1961	1.72 (42.30)	1.01 (24.83)	0.12 (3.10)	0.17 (4.14)	1.04 (25.62)	4.07 (100.00)
1962	1.76 (41.57)	1.07 (25.38)	0.15 (3.56)	0.21 (5.08)	1.03 (24.40)	4.23 (100.00)
1963	1.85 (40.67)	1.03 (22.68)	0.18 (4.15)	0.25 (5.62)	1.22 (26.88)	4.55 (100.00)
1964	2.03 (41.17)	1.03 (20.89)	0.26 (5.23)	0.26 (5.23)	1.35 (27.47)	4.93 (100.00)
1965	2.10 (39.73)	1.12 (21.32)	0.27 (5.05)	0.31 (5.89)	1.48 (28.00)	5.28 (100.00)
1966	2.03 (39.09)	1.17 (22.44)	0.27 (5.14)	0.31 (5.90)	1.42 (27.42)	5.20 (100.00)
1967	2.04 (39.44)	1.06 (2.466)	0.29 (5.62)	0.30 (5.81)	1.48 (28.67)	5.18 (100.00)
1968	2.15 (36.70)	1.27 (21.69)	0.33 (5.69)	0.35 (6.04)	1.75 (29.87)	5.86 (100.00)
1969	2.10 (31.94)	1.57 (23.86)	0.43 (6.58)	0.51 (7.83)	1.96 (29.77)	6.58 (100.00)
1970	2.08 (28.45)	1.59 (21.75)	0.45 (6.15)	0.65 (8.89)	2.54 (34.75)	7.31 (100.00)
1971	2.38 (30.57)	1.63 (20.90)	0.50 (6.48)	0.79 (10.10)	2.48 (31.93)	7.78 (100.00)
1972	2.61 (29.10)	1.87 (20.83)	0.62 (6.91)	1.03 (11.46)	2.84 (31.68)	8.97 (100.00)
1973	2.75 (27.03)	2.19 (21.44)	0.71 (7.00)	1.20 (11.76)	3.34 (32.77)	10.20 (100.00)
1974	3.12 (27.11)	2.10 (18.29)	0.91 (7.95)	1.59 (13.84)	3.77 (32.79)	11.51 (100.00)
1975	3.47 (27.70)	1.87 (14.93)	0.98 (7.79)	2.02 (16.08)	4.20 (33.50)	12.54 (100.00)
1976	3.22 (23.97)	2.05 (15.25)	0.93 (6.91)	2.35 (17.53)	4.88 (36.33)	13.43 (100.00)
1977	2.98 (20.74)	2.28 (15.86)	0.98 (6.86)	2.62 (18.29)	15.49 (38.24)	14.36 (100.00)
1978	3.16 (20.12)	2.62 (16.67)	1.13 (7.22)	3.03 (19.29)	15.76 (36.70)	15.70 (100.00)
1979	4.70 (23.44)	3.03 (15.13)	1.42 (7.07)	3.67 (18.31)	17.22 (36.04)	20.04 (100.00)

countries, respectively. They show that in 1960, the bulk of LDCs' exports to both markets was composed of the two primary commodity groups (food etc., and raw materials excluding fuels).

Table V-1 shows that the LDCs' exports of primary commodities to developed countries increased from 12.51 billion dollars in 1960, to 20.2 billion dollars in 1979. But the share of primary commodities in total exports declined from 77.76 percent in 1960 to 47.84 in 1979. At the same time the share of the manufactured commodity (chemicals, machinery, and other manufactures) in the LDCs exports bundle to developed countries increased from 22.24 percent in 1960, to 52.16 percent in 1979. Thus, by 1979, the major commodity group exported by LDCs to developed countries changed from food etc. in 1960, to other manufactures. But the largest increase was in the export of machinery, which rose from 0.44 percent to 10.74 percent of the total export.

The changes in the commodity composition of the inter-LDC trade were basically the same as the changes in their exports to developed countries (see Table V-2). Again, it shows a shift away from exports of primary to manufactured commodities during the period under study, with the largest increase in share being in the export of machinery. Other manufactures became the main commodity group in the inter-LDC trade.

As one would expect, this increase in exports of manufactured commodities is not equally spread across all LDCs. For example,

exports of manufactures by the "Newly Industrializing Countries"[4] such as: Brazil, Republic of Korea, Hong Kong, and Singapore combined were 43.1 percent of the total of all manufactured commodities exported by all LDCs (UNIDO, 1981, p. 69). Furthermore, as far as the type of manufactures is concerned, most of the increases in exports were of "traditional" manufactured commodities. These traditional manufactured commodities are considered to be labor-intensive as opposed to capital or skilled-labor intensive. However, export of motor vehicles, non-electrical machines, etc. (SITC 7) should not be ignored, since they have contributed to earning of foreign exchange for some LDCs (i.e., Brazil).

The change in the commodity composition and area pattern of Iran's non-oil exports were somehow different from other LDCs. Exports of primary commodities as percentage of total exports declined from 73 to 57 percent during 1963-72 period (see Tables II-7, p. 22, and II-8, p. 25). By 1977, however, this percentage increased to 65 (see Table II-10, p. 29). As far as the area pattern for Iran's exports are concerned, Iran seems to have paid more attention to the neighboring countries, that is, the Middle Eastern countries and the Soviet Union

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[4] The newly industrializing countries, as defined by United Nations Industrial Development Organization (World Industry in 1980, p. 66), are those which are "important" exporters of manufactures and have already reacher a relatively advanced level of industrialization. UNIDO used the following criteria for selecting these countries: (1) a minimum per capita income of $1,100 in 1978, and (2) a share of net manufacturing output equal to at least 20 percent of GDP in 1978.

(see Tables A-2, A-4, and A-6). This increase in trade in the neighboring area was partly due to a trade agreements Iran made with Turkey, and Pakistan in the late 1960's, and also trade agreements with the Soviet Union to increase regional trade.

The shift of concentration in LDCs exports from primary to manufactured commodities is not coincidental. As discussed earlier, there was a growing interest, shortly after World War II, in the development and economic growth of the less developed countries, mainly by those countries themselves. Faced with the decline in demand for their exports, which by and large consisted of primary commodities for which the demand is rather inelastic, they were led to employ a new strategy for economic development. This new strategy, import substitution industrialization, was recommended by such economists as Raul Prebisch, and emphasized an increase in the level of industrial activity to satisfy domestic demand as the way to industrialization for LDCs.

By the mid 1950's, most LDCs had come to employ this new strategy. But the strategy or the way it was implemented, proved to have some severe shortcomings, especially for some South American countries. Most LDCs employing the ISI strategy were facing over-valued currencies because of the high level of protection of their industries, and a shortage of capital needed for these new industries. Futhermore, the agricultural sector was neglected in favor of the industrial sector.

The disappointing outcomes of countries employing import substitution industrialization in contrast with the success of countries such as Taiwan, South Korea, and Israel which employed manufactures export promotion policies, prompted other LDCs to rethink their industrialization strategy. By the early and mid 1960's there was a shift by many LDCs to more "outward-looking" policies which included export promotion according to "comparative advantage." In most cases this meant a shift toward more labor-intensive industries.

As to the area pattern of LDCs' exports, in recent decades there has been a shift toward inter-LDC trade. Nevertheless, developed countries still remain the largest market for LDCs exports (see Table V-3). The trend shows that while in 1960 almost 80 percent of the LDCs' exports were to developed countries, by 1979 their share had been reduced to about 68 percent. One reason for this shift was the increasing level of restrictions in the developed countries on imports from LDCs, in the forms of both tariff and non-tariff barriers. A consequence of these kinds of restrictions by developed countries has been the development of greater regional integration and cooperation on the part of the less developed countries (i.e., customs unions) which have promoted the increase in inter-LDC trade.

To further examine the trend in LDCs exports, this study utilizes the methodology used by Tyszynski (1951) to find the trend in world (12 major exporting countries) exports of manufactures. The procedure is to regress the percentage of total exports for different commodity groups on time, using ordinary least squares. In doing so one will be

TABLE V-3

LESS DEVELOPED COUNTRIES EXPORTS TO THE WORLD: 1960-79
BILLIONS OF DOLLARS (1970 PRICES)
(PERCENT OF TOTAL)

Year	Developed Countries	Less Developed Countries	Total
1960	16.09 (79.93)	4.04 (20.07)	20.13 (100.00)
1961	16.03 (79.75)	4.07 (20.25)	20.10 (100.00)
1962	16.98 (80.06)	4.23 (19.94)	21.21 (100.00)
1963	17.83 (79.67)	4.55 (20.33)	22.38 (100.00)
1964	18.32 (78.80)	4.93 (21.20)	23.25 (100.00)
1965	19.91 (79.04)	5.28 (20.96)	25.19 (100.00)
1966	20.00 (79.37)	5.20 (20.63)	25.20 (100.00)
1967	19.51 (79.02)	5.18 (20.98)	24.69 (100.00)
1968	22.35 (79.23)	5.86 (20.77)	28.21 (100.00)
1969	24.30 (78.69)	6.58 (21.31)	30.88 (100.00)
1970	26.08 (78.11)	7.31 (21.89)	33.39 (100.00)
1971	26.94 (77.59)	7.78 (22.41)	34.72 (100.00)
1972	30.43 (77.23)	8.97 (22.77)	39.40 (100.00)
1973	32.81 (76.28)	10.20 (23.72)	43.01 (100.00)
1974	31.80 (73.42)	11.51 (26.58)	43.31 (100.00)
1975	30.40 (70.80)	12.54 (29.20)	42.94 (100.00)
1976	36.26 (72.97)	13.43 (27.03)	49.69 (100.00)
1977	36.09 (71.54)	14.36 (28.46)	50.45 (100.00)
1978	38.70 (71.14)	15.70 (28.86)	54.40 (100.00)
1979	42.22 (67.82)	20.04 (32.18)	62.26 (100.00)

able to recognize whether demand for a particular commodity group is (has been) increasing or declining. The reason Tyszynski recommends regression analysis for finding the trend, as opposed to simply looking at exports at the beginning of the period and comparing it with the end of the period, is to include the fluctuations during the years under study.

Since it is more interesting and more meaningful to study the trend of the change in the volume rather than value of exports, Tyszynski proposed to use relative volume indices as the dependent variable for finding the trend. To calculate relative volume indices, all export values are deflated or inflated to 1970 prices. Then a volume index is calculated by taking 1970 as the base year. Finally, the relative volume indices are calculated by finding the percentage of each volume indices.

In the present study two sets of regressions were run, one for the LDCs exports to developed countries, and the other for the inter-LDC trade. In each case the regression is run for all five commodity groups.

The results of the regression analysis are summarized in Table V-4. The results show that, over the twenty year period under study, LDCs' exports of primary commdity groups to both developed and less developed countries had a declining trend. This is shown by the fact that when the relative volume indices for the two primary commodity groups (food, etc., and raw materials excluding fuels) were regressed against time, the resulting coefficients were negative. The largest

declining trend was in the exports of food, etc. commodity group to less developed countries (i.e., regression coefficient of -1.303).

The relative decline in the export of food, etc. commodity group, among other things, could be attributed to the increased in competitiveness of developed countries agriculture. Another factor was the increase in the domestic consumption of the LDCs. This, in turn, might be attributed to rapid economic growth during the two decades under study. This economic growth for most LDCs was accompanied by expansion of the "modern" sector and, often, official neglect of the agricultural sector. Thus, a larger domestic market for agricultural products was created, with the consequence that less was available for export. On the other hand, the decline in the export of raw materials, excluding fuels, was probably largely due to the sluggish growth of world demand for those commodities. This decline in demand has resulted from development of synthetic materials by developed countries.

LDCs' exports of all manufactures to both developed and less developed countries, however, increased during the twenty years under study (all the regression coefficients for manufactured commodity groups are positive). As can be seen in Table V-4, the slowest commodity group was the inter-LDC trade of other manufactures, and the fastest growing one was the export of machinery to developed countries.

The results from all the analyses done in this chapter point to the fact that less developed countries in general have given more attention to their export sector than in the past. Certainly,

TABLE V-4

LDCS' NON-OIL EXPORTS (1960-79)
REGRESSION COEFFICIENTS USING
RELATIVE VOLUME INDICES
(T-ratio)

commodity groups	exports to DCs	R-square	exports to LDCs	R-square
Food, etc.	-2.460 (-16.45)	0.9376	-4.580 (-17.85)	0.9465
Raw Materials, Excl.Fuels	-2.620 (-13.36)	0.9084	-2.322 (-7.96)	0.7786
Chemicals	5.451 (5.94)	0.6620	3.798 (9.66)	0.8384
Machinery	19.692 (14.28)	0.9189	9.831 (14.53)	0.9214
Other Manufactures	3.364 (29.73)	0.9800	2.051 (14.23)	0.9184

they have tried to diversify their exports. Instead of focusing only on primary commodities (most LDCs were exporting one or two primary commodities), and being concerned with the volatile market for primary products (the lesson they learned during the Great Deprssion), now they are concentrating on a variety of products where they still have comparative advantage (i.e., other manufactures commodity groups which mostly includes labor-intensive products). Further, there has been a greater tendency in less developed countries to trade with each other. As was mentioned in the begining of this chapter, this can be the result of, (1) a greater inter-regional integration and cooperation among LDCs, and (2) a greater import restriction by developed countries imposed on LDCs' exports.

The important questions that policy-makers in less developed countries are faced with are which commodity groups and what markets have experienced faster growth regardless of where exports originated? To answer these questions in a very aggregative context, the same methodology that was used for LDCs exports in the preceding pages is used for world exports. The results of this analysis is summarized in Table V-5.

The results show negative regression coefficients for the two primary commodity groups to both markets. Another negative coefficient is found for the world export of other manufactures to LDCs. These negative coefficients indicate that these are declining commodity groups. On the other hand, the fastest growing market is the

TABLE V-5

WORLD NON-OIL EXPORTS (1960-79)
REGRESSION COEFFICIENTS USING
RELATIVE VOLUME INDICES
(T-ratio)

commodity groups:	exports to DCs	R-square	exports to LDCs	R-square
Food, etc.	-3.072 (-10.04)	0.8486	-2.754 (-9.98)	0.8469
Raw Materials, Excl.Fuels	-4.337 (-15.49)	0.9303	-0.531 (-1.82)	0.1559
Chemicals	3.118 (23.84)	0.9680	1.280 (4.31)	0.5080
Machinery	1.624 (7.51)	0.7579	1.147 (4.99)	0.5812
Other Manufactures	0.825 (10.19)	0.8522	-0.485 (-3.70)	0.4321

developed countries' market for the import of chemicals. This point will be discussed further toward the end of this chapter.

Thus, one can conclude that LDCs have been concentrating in the wrong areas for the expansion of their exports (recall from Table V-4 that the fastest growing commodity group was the export of machinery to developed countries). However if LDCs are to take advantage of the more expanding markets and faster growing commodity groups (i.e., chemicals to developed country), they will have to diversify their export industries even futher. In the particular case of the chemicals commodity group, LDCs would be switching over to an industry which is resource based and also capital-intensive[5]. But that would mean switching to areas where they do not have a comparative advantage, except possibly for the oil producing countries. It might be wrong, therefore, to advise LDCs that no matter where their comparative advantages are (i.e., labor-intensive products) they should concentate on products with the strongest demand in the international market (i.e., capital-intensive and skilled labor-intensive products).

It might be argued, however, that if all LDCs concentrate on exports of labor-intensive products in the long run it can "threaten to repeat the early twentieth century pattern of international division of labor, with a surplus of labor intensive products

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[5] This is based on the classification by the United Nations industrial Development Organization, UNIDO, (see World Industry in 1980, p. 105, 1981).

competing for limited markets and declining income terms of trade" (H. B. Chenery and H. Hughes, 1972, pp. 75 sqq.). Banerji (1974) argues that this could happen if LDCs were to maintain forever their specialization pattern in a very narrow range of labor-intensive products. He claims, however, that this case is unlikely to happen, because:

> "First, in the long run the specialization patterns can be expected to change because of the dynamics of comparative advantage. In moving from low to higher level of development countries are likely to develop more skill, acquire better technology and accumulate more capital in the process. The ensuing increase in productivity will probably open up the possibility of creating new and better products leading ultimately to a change in the line of specialization. Secondly, unlike in primary products the scope for product differenciation in manufactures is much wider. The range of products which the labor intensive manufactures encompass is also probably larger than is usually thought. Hence specialization in labor intensive products does not necessarily imply specializing in a narrow sense. The fear that there will be a secular fall in the international prices of labor intensive manufactures (as it did happen for the prices of primary products) may, therefore, turn out to be unfounded. Finally, the potential international market for labor intensive exports from LDCs is conceivably quite large and this market can as well be expected to grow as the world income increases."

As mentioned before, since the largest market for LDCs' exports is still developed countries, for this potential market for labor-intensive products to become a relevant market, it is absolutely necessary that the barriers in developed countries be substantially dismantled.

The case of Iran, however, requires a special attention. Iran being an oil producing country, and having the second largest gas reserve in the world (Turner and Bedore, 1979, p. 37) might have a considerable edge over most LDCs if it attempted to take advantage of

the fast growth in demand for chemicals (see Table V-5) and particularly petrochemical products (which comprise 25 percent of all chemicals). On the one hand, the revenue from export of oil can be used to finance the capital needed for petrochemical industry, and on the other, the large reserve of natural gas provides a "cheap" source of raw material needed for this industry.

On the pessimistic side, it is noted that world demand for petrochemical products is not now growing as fast as was the case in the 1960's, and that oil producing countries such as Saudi Arabia are expanding their petrochemical industry at a rapid pace. Nevertheless, there is a virtual unanimity within the industry that demand will continue to grow and no current forecast points to falling or even stagnant demand (UNIDO, 1983, p. 322). Therefore, "there is sufficient room for new firms and the existing ones to expand, and by contrast with firms in some other industries, petrochemical firms are not likely to have to compete for a shrinking market (UNIDO, 1983, p. 333). The evidence therefore seems to indicate that Iran should carefully study the possibility of taking advantage of the growing market by expanding its petrochemical industry. This by no means suggests that labor-intensive industries should be ignored, especially since Iran's population is around forty million and growing fast.

CHAPTER VI

SUMMARY AND CONCLUSIONS

In the preceding pages Iran's non-oil exports during three five-year national development planning periods were analyzed. The methodology used for these analyses was the Constant Market Share (CMS) model. The CMS model, despite all its flaws, was able to answer at least two questions: (1) whether or not Iran's exports grew as fast as the average of all LDCs, and (2) if it did or did not, then why? The model divides changes in exports into four components. A country's exports could have gone up due to one or a combination of the following reasons: (1) increase in world demand, (2) more favorable composition of exports, (3) more favorable distribution of market, and (3) more competitiveness.

The findings of the CMS analyses of Iran's non-oil exports can be summarized as follow:

1. The first period (1963-67): Iran's growth of exports during this period, in general, was slightly slower than the average of all LDCs (see Table IV-1, p. 56). When exports were divided into the two categories of manufactures and primary commodities, however, Iran's performance was better in export of manufactures. This better performance was not only reflected in the fact that Iran exported more than the LDCs' average, but also a better product composition and market distribution than the ones for primary commodities. Overall, a large portion of the increase in

Iran's non-oil exports during this period was due to increased competitiveness.

2. The second period (1968-72): This was the period of the Fourth Development Plan. Non-oil export performance during this period was the best for the three periods under study. Iran's exports grew faster than the LDCs' average for both manufactures and primary products (see Table IV-2, p. 60). But most important were the improvements in market distribution and commodity composition compared to the previous period. This indicates that Iran's exports were concentrated on those markets and commodities for which the demand was growing faster than the average. Table A-3 shows that the market distribution effects for the three commodity groups which contributed most to the growth of Iran's non-oil exports (i.e., crude materials excluding fuels textile fibers, metalliferous ores and metal scrap, textile fibers, and textile yarn and fabrics) are positive. From Table A-4 we see that most of the growth in exports were concentrated in Western Europe, and Centrally Planned Economies market groups--both with positive commodity composition effects.

3. The third period (1973-77): During this period, Iran's non-oil exports increased by less than one percentage point, where as LDCs' exports increased by more than 80 percent. The reasons for this extremely poor performance seems to be: (1) increases in domestic demand, caused by the increase in income which followed the 1973-74 oil price boom and which made fewer goods available for

export, and (2) increase in domestic prices caused by (1) which made Iran's export less competitive in the international market.

This study also looked at the pattern of LDCs' exports of non-oil commodities for a period of twenty years (1960-79). This was done to find the trend of LDCs' exports of different types of commodities to different markets. The results show that (see Chapter V) both product composition and market distribution of LDCs' exports has changed drastically during the twenty year period under this study. Where in 1960, more than 75 percent of LDCs' non-oil exports to both developed and less developed countries, was composed of primary commodities, by 1979, this portion had declined to less than 45 percent. This change in product composition is an indication that LDCs have, based on the past experience, realized the danger of depending on a single primary commodity (i.e., raw material) as the main source of revenue and foreign exchange.

As far as the market distribution is concerned, this study shows that the movement is toward more inter-LDC trade. This tendency is partly due to the fact that developed countries' import restrictions on LDCs' exports have been growing. But despite this movement, developed countries still remain the largest market for LDCs' exports (i.e., in 1979 almost 68 percent of the total LDCs' non-oil export were to developed countries).

Based on this and other studies (some of these studies have been cited in Chapters III and V) the following conclusions can be drawn:

1. Iran certainly has the resources (i.e., oil revenue and a

large reserve of natural gas) and potential (it was shown in its performance during the second period under this study) to develop a diversified export sector and to decrease its dependency on the oil sector. As was shown in Chapter V the opportunity exists for Iran to become an exporter of petrochemical products for which the growth in demand is faster and more certain than for many other products. Iran is among the few countries fortunate enough to have tremendous oil and natural gas reserves.

2. There is certainly a market for the non-oil exports from LDCs (including Iran). As shown in Chapter V, this market is expanding rapidly for the export of manufactures. This market can further be expanded by reduction in import tariffs and import quotas imposed by developed countries on LDCs' exports. But despite all the efforts to dismantle these kinds of restrictions on imports of manufactures and semimanufactures (i.e., Generalized System of Preference), LDCs still face a stiff restriction on their exports to developed countries. Although, the increase in inter-LDC trade has been beneficial to LDCs as far as the expansion of markets go, they need to have free access to markets in developed countries if they are to benefit from economies of scale in their industries.

This study showed that despite the seeming effort by the government to reduce the country's dependency on the oil sector as the sole generator of exchage, Iran had come to depend more and more on the oil revenues. The non-oil exports still remain an insignificant

portion of the total exports (in 1977 the value of non-oil exports were 2.5 percent of total exports) despite a few years of rather rapid growth during the Fourth Plan period (in 1972 the value of non-oil exports reached at 13.5 percent of total exports). At the same time, non-oil exports still consists largely of the "traditional" Iranian exports. These traditional exports include, carpets and luxury food item such as kaviar and some dried fruits. Many of the agricultural products which used to be exported (i.e., rice, fresh fruits, etc.) are no longer being exported due to domestic shortages (Iran imports almost all of its needed grains).

Although, Iran exported some manufactured commodities (i.e., shoes, textile fabrics, transport equipment, appliances, etc.), their share of total exports still remained negligible. This slow growth in the export of manufactured commodities (it actually declined during the Fifth Development Plan period) was due to both demand and supply conditions. On the one hand, as was the case with agricultural products, domestic demand absorbed most of manufactured production. This increase in demand, as previously mentioned, was due to increase in income especially during the last period of this study (1973-77). On the other hand, the slow growth in manufactured export might have been one of the consequences of import substitution industrialization strategy which started in the early 1960's and continued throughout the 1970's. "By contributing to low production efficiency and high cost and prices of the majority of industries, the protective policies (to promote import substitution industrialization) have almost

eliminated the posibilities of developing manufactured exports from import substitutes" (Fahim-Nader, 1978, p. 174). These high prices might very well be the reason for Iran's loss of competitiveness during the 1973-77 period (see Table IV-3, p.62). This same reason might have caused the shift from Western European and North American markets to the centrally planned economies markets (see Table A-6). It is possible that the eastern bloc countries were buying Iran's overpriced manufactured goods for political reasons (Fahim-Nader, 1978, p. 176).

Overall, if Iran is to continue economic growth in the future it needs to find new sources of revenue and foreign exchange besides the oil sector. There is a need for Iran to develop a strong export sector in order to finance development projects needed for economic growth, and oil should be conserved as a source of raw materials and inexpensive energy for its future. One area where Iran seems to have comparitive advantage might be resource-based industries. In particular is the petrochemical industries.

As recent studies (i.e., UNIDO, 1983, p. 322) suggest there exists a growing market for petrochemical products. This accompanied with the fact that Iran posseses the second largest natural gas reserve in the world should prompt the policy makers in Iran to give some serious consideration to the possibility of the expansion of petrochemical industries. However, this by no means suggests that labor-intensive industries should be ignored, or worse yet is the ignorance of the agriculture sector as has been the case in the past.

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APPENDIX

MODIFICATION OF THE CMS MODEL AND THE OBTAINED RESULTS

To analize the commodity groups and market groups individually, the CMS model was modified slightly. This modified version of the CMS made it easier to explain the commodity composition and the market distribution effects obtained at the more aggregated level of analysis.

a. For analyzing different commodity groups the model is:

$$X'i - Xi = RiXi + \left(\sum_{j=1}^{m} RijXij - RiXi\right) + \left(X'i - Xi - \sum_{j=1}^{m} RijXij\right)$$

1. RiXi is that portion of the change in export of commodity (i) which is explained by the change in world demand for that commodity.

2. $\left(\sum_{j=1}^{m} RijXij - RiXi\right)$ represents the portion of the change in export of commodity (i) which was due to market distribution.

3. $\left(X'i - Xi - \sum_{j=1}^{m} RijXij\right)$ represents the competitiveness effect in the market for commodity (i).

b. For analyzing the market groups, the version of the CMS used is:

$$X'j - Xj = RjXj + \left(\sum_{i=1}^{n} RijXij - RjXj\right) + \left(X'j - Xj - \sum_{i=1}^{n} RijXij\right)$$

1. RjXj represents the increase in Iran's export to market (j) which was due to their increase in demand for exports of LDCs.

2. $\left(\sum_{i=1}^{n} RijXij - RjXj\right)$ represents the commodity composition effect of the Iranian exports to market (j).

3. $(X'j - Xj - \sum_{i=1}^{n} RijXij)$ is that portion of the change in Iranian exports to market (j) which was caused by Iran's increased competitiveness in market (j).

TABLE A-1

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1963-67)
ACCORDING TO COMMODITY GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Commodity Groups	Total Change	(1) World Demand Effect	(2) Market Distribution Effect	(3) Competitiveness Effect
Food,Beverages,and Tobacco	15,528 (100.0)	32,259 (207.7)	-11,750 (-75.7)	-4,981 (-32.1)
Crude Materials excluding Fuels Textile Fibers,Metalliferous Ores and Metal Scrap	10,746 (100.0)	-121 (-1.1)	-99 (-0.9)	10,966 (102.1)
Textile Fibers	2,031 (100.0)	-2,841 (-139.9)	816 (40.2)	4,056 (199.7)
Metalliferous Ores and Metal Scrap	3,792 (100.0)	1,773 (46.7)	-458 (-12.1)	2,477 (65.3)
Chemicals	-55 (-100.0)	2,397 (4358.2)	-1,255 (-2283.0)	-1,196 (-2175.1)
Machinery and Transport Equipment	-199 (-100.0)	158 (79.7)	-184 (-92.6)	-173 (-87.1)
Other Manufactured Goods Excluding Textile yarn and Fabrics,Iron and Steel,and non-ferrous Metal	7,132 (100.0)	634 (8.9)	-235 (-3.3)	6,732 (94.4)
Textile yarn and Fabrics	21,883 (100.0)	5,429 (24.8)	-1,767 (-8.1)	18,221 (83.3)
Iran and Steel	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Non-Ferrous Metal	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)

TABLE A-2

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1963-67)
ACCORDING TO MARKET GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Market Groups	Total Change	(1) Each Market Demand Effect	(2) Commodity Composition Effect	(3) Competitiveness Effect
Africa	-124 (-100.0)	1,404 (1132.2)	-1,773 (-1430.3)	245 (198.1)
North America	7,732 (100.0)	2,114 (27.3)	-2,769 (-35.8)	8,387 (108.5)
Japan	2,884 (100.0)	1,739 (60.3)	-831 (-28.8)	1,975 (68.5)
Middle East	18,431 (100.0)	4,639 (25.2)	-54 (-3.0)	14,341 (77.8)
Other Asia	1,899 (100.0)	2,666 (140.4)	922 (48.5)	-1,689 (-89.0)
Western Europe	7,541 (100.0)	42,459 (563.0)	-28,815 (-382.0)	-6,103 (-80.9)
Centrally Planned Economies	22,421 (100.0)	7,875 (35.1)	-5,141 (-22.9)	19,686 (87.8)
Others	73 (100.0)	603 (826.0)	210 (228.0)	-740 (-1014.9)

TABLE A-3

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1968-72)
ACCORDING TO COMMODITY GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Commodity Groups	Total Change	(1) World Demand Effect	(2) Market Distribution Effect	(3) Competitiveness Effect
Food,Beverages,and Tobacco	33,367 (100.0)	24,954 (74.8)	-2,333 (-7.0)	10,746 (32.2)
Crude Materials excluding Fuels Textile Fibers,Metalliferous Ores and Metal Scrap	39,093 (100.0)	10,574 (27.0)	921 (2.4)	27,596 (70.6)
Textile Fibers	36,214 (100.0)	14,080 (38.9)	4,002 (11.0)	18,131 (50.1)
Metalliferous Ores and Metal Scrap	11,167 (100.0)	4,409 (39.5)	201 (1.8)	6,556 (58.7)
Chemicals	21,503 (100.0)	6,761 (31.4)	-1,348 (-6.3)	16,090 (74.8)
Machinery and Transport Equipment	4,022 (100.0)	4,712 (117.2)	-1,937 (-48.2)	1,247 (31.0)
Other Manufactured Goods excluding Textile yarn and Fabrics,Iron and Steel,and non-ferrous Metal	8,117 (100.0)	4,092 (50.4)	-419 (-5.2)	4,444 (54.7)
Textile yarn and Fabrics	52,302 (100.0)	59,770 (114.3)	3,550 (6.8)	-11,019 (-21.1)
Iran and Steel	324 (100.0)	143 (44.3)	-29 (-9.0)	209 (64.7)
Non-Ferrous Metal	1,160 (100.0)	0 (0.0)	0 (0.0)	1160 (100.0)

TABLE A-4

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1968-72)
ACCORDING TO MARKET GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Market Groups	Total Change	(1) Each Market Demand Effect	(2) Commodity Composition Effect	(3) Competitiveness Effect
Africa	2,080 (100.0)	3,175 (151.8)	504 (24.2)	-1,581 (-76.0)
North America	19,731 (100.0)	15,098 (76.5)	-7,237 (-36.7)	11,870 (60.2)
Japan	7,309 (100.0)	4,709 (64.4)	388 (4.6)	2,261 (30.9)
Middle East	19,640 (100.0)	18,629 (94.9)	-1,165 (-5.9)	2,176 (11.1)
Other Asia	11,925 (100.0)	11,746 (98.5)	-1,698 (-14.2)	1,877 (15.7)
Western Europe	55,832 (100.0)	29,573 (53.0)	27,719 (49.6)	-1,461 (-2.6)
Centrally Planned Economies	90,951 (100.0)	23,816 (26.2)	5,217 (5.7)	61,916 (68.1)
Others	-199 (-100.0)	3,505 (1761.2)	-1,807 (-908.2)	-1,896 (953.0)

TABLE A-5

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1973-77)
ACCORDING TO COMMODITY GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Commodity Groups	Total Change	(1) World demand Effect	(2) Market Distribution Effect	(3) Competitiveness Effect
Food, Beverages, and Tobacco	32,363 (100.0)	149,078 (460.6)	25,730 (79.5)	-142,445 (-440.1)
Crude Materials excluding Fuels Textile Fibers, Metalliferous Ores and Metal Scrap	21,030 (100.0)	32,546 (154.8)	18,119 (86.2)	-29,635 (-140.9)
Textile Fibers	-52,482 (-100.0)	22,183 (42.3)	4,273 (8.1)	-78,939 (-150.4)
Metalliferous Ores and Metal Scrap	25,448 (100.0)	12,934 (50.8)	917 (3.6)	11,596 (45.6)
Chemicals	5,037 (100.0)	34,909 (693.1)	-1,463 (-29.0)	-28,409 (-564.0)
Machinery and Transport Equipment	26,337 (100.0)	20,685 (78.5)	23,634 (89.7)	-17,982 (-68.3)
Other Manufactured Goods excluding Textile yarn and Fabrics, Iron and Steel, and non-ferrous Metal	131 (100.0)	51,029 (38953.8)	6,173 (4712.3)	-57,071 (-43566.2)
Textile yarn and Fabrics	-39,954 (-100.0)	77,202 (193.2)	38,677 (96.8)	-155,833 (-390.0)
Iran and Steel	373 (100.0)	705 (189.2)	1,407 (377.3)	-1,740 (-466.5)
Non-Ferrous Metal	-13,404 (-100.0)	1,227 (9.2)	-3,706 (27.6)	-10,925 (-81.5)

TABLE A-6

ANALYSIS OF IRANIAN NON-OIL EXPORTS (1973-77)
ACCORDING TO MARKET GROUPINGS
THOUSANDS OF CURRENT DOLLARS
(PERCENT)

Market Groups	Total Change	(1) Each Market Demand Effect	(2) Commodity Composition Effect	(3) Competitiveness Effect
Africa	15,806 (100.0)	23,583 (149.2)	-12,400 (-78.4)	4,623 (29.2)
North America	17,919 (100.0)	52,091 (290.7)	-13,030 (-72.7)	-21,142 (-118.0)
Japan	-29,417 (-100.0)	14,868 (50.5)	2,398 (8.1)	-46,684 (-158.7)
Middle East	50,157 (100.0)	176,065 (351.0)	-6,981 (-13.9)	-118,927 (-237.1)
Other Asia	-14,291 (-100.0)	27,053 (189.3)	-6,125 (-42.9)	-35,218 (-246.4)
Western Europe	-69,170 (-100.0)	170,052 (245.8)	-35,257 (-50.9)	-230,965 (-294.9)
Centrally Planned Economies	32,636 (100.0)	164,853 (505.1)	-45,668 (-139.9)	-86,549 (-265.2)
Others	1,239 (100.0)	3,709 (299.4)	1,052 (85.0)	-3,523 (-284.4)

VITA

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