This is to certify that the

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AN EXAMINATION OF
ABSORPTIVE CAPACITY IN
SAUDI ARABIA

presented by

Abdulhamid A. Bassam

has been accepted towards fulfillment
of the requirements for

Ph.D. degree in Resource Development

Milton N. Steinmueller

Major professor

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AN EXAMINATION OF ABSORPTIVE CAPACITY IN SAUDI ARABIA

By

Abdulhamid A. Bassam

A DISSERTATION

Submitted to
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Department of Resource Development

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ABSTRACT

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IN SAUDI ARABIA

By

Abdulhamid A. Bassam

This study is an examination of the concept of absorptive capacity in a selected member of the Organization of Petroleum Exporting Countries (OPEC). The Kingdom of Saudi Arabia, the largest oil producer with the largest reserves, has been chosen as a case to study.

Because of the oil price and production increases, in the last decade, a huge transfer of wealth and income began moving from the consuming to the oil-producing countries. Moreover, the industrialized developed countries entered a new era of slower economic growth as compared to the pre-OPEC era. The oil producing countries' rates of economic growth, on the other hand, have skyrocketed, and all their economic indicators are steeply upward and positive.

During the past decade, therefore, Saudi Arabia has undergone rapid economic growth and development. This newly acquired and still increasing revenue has permitted the government to embark upon a series of ambitious and expensive five-year development plans to industrialize the

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Because of the limited duration of this development effort and the absence of studies of the process itself as it unfolded in Saudi Arabia, it is not at all clear why this success had been achieved. Therefore, the question to be asked is: How was it possible for Saudi Arabia to have made such rapid progress in the achievement of its development goals?

It is proposed that a number of questions about this achievement can be answered by using concepts formulated by development economists, most notably Adler, and using the data that are now available. Essentially, these concepts are embodied in the idea of absorptive capacity. This idea can be rather easily conceptualized, but measuring it and determining factors that affect it are likely to be much more difficult.

It was determined through this study that the rapid increase in domestic absorptive capacity was due, first of all, to the large increases in oil revenues, which permitted importation and augmentation of cooperant factors. Second, this absorptive capacity also expanded as a result of skillful and insightful planning that was undertaken to eliminate bottlenecks, establish priorities and maintain a degree of balance.

Without the presence of both these elements in the economy, the absorptive capacity could not have expanded so dramatically.

In memory of my beloved grandfather Mr. Abdulaziz Ali Al-Bassam, and to my beloved grandmother.

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I would like to express my deep gratitude to my doctoral committee--Professor Anthony Koo, Professor Milton Steinmuller, Professor Raleigh Barlowe, and Professor Frank Fear--for their help and encouragement.

I would like also to thank Mr. Paul C. Souder, chairman of the board, Michigan National Bank, and Mrs. Souder for their parental guidance throughout my stay at Michigan State University.

A. A. Bassam

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TABLE OF CONTENTS

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IV. ABS
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TABLE OF CONTENTS (continued)

TABLE OF CONTENTS (continued)

LIST OF TABLES

LIST OF TABLES (continued)

LIST OF FIGURES

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CHAPTER I

INTRODUCTION

The Problem

During the past decade the Kingdom of Saudi Arabia has undergone rapid economic growth and development. This expansion stems from increases in the Kingdom's production of petroleum and its subsequent exportation. Steady increases in the demand for oil and higher oil prices have amassed new, relatively large, revenues for the Saudi Arabian government which have permitted the government to embark upon a series of ambitious and expensive five-year development plans.

Fulfilling the plans' objectives would help industrialize the Kingdom by 1985, thereby reducing future revenue dependence on crude oil, the production of which may be substantially diminished by the year 2000. Concomitant with the expansion of Saudi Arabia's economy has been the dramatic growth in the Kingdom's holdings and international reserves as well as in the country's inflation rate, which has averaged nearly twenty percent annually since the beginning of the first comprehensive development plan in 1970.

Because of the limited duration of the development effort and the absence of studies of the process itself as it unfolded in Saudi Arabia, it is not at all clear why this significant success has been achieved. Therefore, the problem to be addressed in this study, or, more precisely, the question to be asked, is: How was it possible for Saudi Arabia to have made such rapid progress in the achievement of its development goals?

It is proposed that a number of questions about this achievement can be answered by using concepts formulated by development economists, most notably Adler, and by using the data that are now available. Essentially, these concepts are embodied in the idea of absorptive capacity. This idea can be rather easily conceptualized, but measuring it and determining factors that affect it are likely to be much more difficult.

Need for the Study

The need for this study can be stated rather briefly. First, there is need to examine the experience of countries which are trying to develop rapidly to provide information for those countries which are contemplating similar attempts. Secondly, there is need to systematize these experiences for use by others. The author feels this study will partially fulfill these needs.

Scope of the Study and Methods of Approach

Oil exporting countries differ with respect to the size of their population, their other natural resource endowments, and their degree of commitment to the cause of economic development. That is to say, what is true for any one of them is not necessarily true for the rest of them. It is for this reason that members of OPEC have been classified economically into low and high absorbers.[1]

Therefore, it is both logical and practical to concentrate on a single oil exporting country. It is the purpose here to investigate the impact of the rise in oil revenues on the absorptive capacity of the Saudi Arabian economy in general. In particular, the purpose is to examine the utilization of crude oil reserves within the context of the country's comprehensive development policy since the beginning of the first five-year development plan in 1970 and impacts on selected sectors of the economy, and to assess the future prospects for accelerated economic growth in Saudi Arabia.

The sectors receiving major emphasis are the following:[2]

1. Government sector: which includes the public sector.

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[1]IBRD, Prospects for the Developing Countries, Chapter III, p. 477, July 8, 1974. The low absorbers are: Abu Dhabi, Kuwait, Libya, Qatar, and Saudi Arabia; the high absorbers are: Algeria, Indonesia, Iran, Iraq, Nigeria, and Venezuela.

[2]Saudi Arabian Monetary Agency (Saudi Arabia).

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2. Non-oil private sector: it is a residual sector which includes commercial and private economic initiatives.

3. Oil sector: includes oil related activities only.

4. Construction sector: it includes public and private construction activities in the Kingdom.

5. Transport and equipment sector: this sector includes both public and private ventures in air, roads, and sea transportation activities, such as government-owned airlines and the joint government and privately owned fleet of oil tankers of the Kingdom.

6. Machinery and equipment sector: includes all heavy machinery imported for the newly constructed industrial complexes in the cities of Jubail and Yanbu. In addition, it includes the machinery imported for the newly constructed government agricultural projects throughout the Kingdom.

Because of its very small population (approximately 5 million) and limited economic base, Saudi Arabia is classified as a low absorber and a middle income country, which is one of the reasons that it has been chosen for this case study. The other reasons are that Saudi Arabia is endowed with some fertile land in the southwestern part of the Kingdom and an ample supply of natural resources. The Saudi Arabian government has had little experience in economic development planning and implementation.

Hypothesis

The hypothesis being examined in this study is whether or not the steep rise in the revenues received from the export of crude oil, which has been in effect since the beginning of 1974, has had a positive impact on the absorptive capacity of the Saudi Arabian economy.

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Absorptive capacity has been defined by Adler as:

> ...that amount of investment or that rate of gross domestic investment expressed as a proportion of GNP that can be made at an acceptable rate of return, with the supply of cooperant factors considered as given.[3]

Visibly absorptive capacity is controlled by two primary factors: acceptable rate of return and supply of cooperant factors. The basis for rate of return owes its origin to Keynes' "marginal efficiency of capital" which is a theory that reduces the concept of absorptive capacity to a schedule relating investment to the rate of return. In other words, the lower the rate of return acceptable to the investor--the body responsible for making investment decisions--the higher the level of investment and subsequently the larger the absorptive capacity of the economy.

It may be noted that the definition contains no reference to any specific rate of return. This is a deliberate preterition. For instance, when limiting its meaning to financial rate of returns, the result would be an implication that the cutoff rate is the long-run rate of interest prevailing outside of the economy. In essence, the absorptive capacity of the economy is that amount of invested capital which sets the rate of return exactly at the rate available outside the economy. Considering this a limited interpretation, it is preferable to consider a social rate

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[3]John H. Adler, Absorptive Capacity (Washington, D.C.: The Brookings Institution, June 1965) p.5.

of return in order to account for the complementarity and indivisibility of investment projects and the external economies and diseconomies associated with their undertaking.[4]

The constancy of the supply of cooperant factors (skilled labor, managerial and entrepreneurial talents, etc.) assumes investment activity would come to a complete halt upon the exhaustion of any cooperant factor. This assumption denies the possibilities of factor mobility or substitution and is only valid within the context of a closed economy. Without explaining why, Adler points out that augmenting the supply of cooperant factors in the short run, "is either a physical impossibility or is so costly that it... reduces the return on capital below the acceptable rate."[5]

As before, this is a strict assumption. Absorptive capacity can be expanded in the short run at a high cost. It is possible to incur such a cost by permitting investment to proceed at higher costs through deliberately accepting higher capital-output ratios in cases where capital can be substituted for skilled labor. This can occur when the latter is in short supply, or by importing foreign labor. Thus, perceiving the principle of substitution and the present international setting where the mobility of factors of production is more or less free, it would be difficult to

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[4]Ibid., pp. 9-15.

[5]Ibid., p. 5.

justify the proposition that the cost of ameliorating the economy's absorptive capacity would be prohibitive.

In summarizing the discussion to this point, it can be noted that a situation prevails where:

1. Potential domestic savings are likely to surpass domestic investment requirements;
2. The investment planner, however rational, is not a profit maximizer and is therefore likely to choose a low financial rate of return; and
3. Cooperant factors can be augmented through importation, or the substitution of other factors in comparative abundance.

These implications prompt us to hypothesize that the quadrupling of oil prices and the concomitant increase in crude oil revenues should have a positive impact on the absorptive capacity of the Saudi Arabian economy. This study aims at testing this hypothesis, i.e., at ascertaining whether there has been an expansion in the absorptive capacity of the Saudi Arabian economy subsequent to the sharp increase in oil revenues and, if so, by how much. The study also aims at analyzing the factors responsible for sustaining the new level of investment along with its implications for the future growth of the economy.

The test of this hypothesis encompasses two steps. First, it is essential to adopt a measure of absorptive capacity. Chenery and MacEwan's observations led them to postulate that the level of investment in any particular

period of time could not surpass the level of investment in the preceding period, times an exogeneously determined growth rate in the range of 15 to 20 percent.[6]

Relative to this, in a study involving Colombia, Adelman and Sparrow capriciously assessed the upper limit upon total investment in any one sector to be more than 150 percent of investment during the base year.[7] According to their reasoning, an absorptive capacity limit takes the form of a maximum ceiling on the level of investment in any given period.

It is proposed that the absorptive capacity of the Saudi Arabian economy be measured in a similar manner. We postulate that the observed rate of growth of domestic investment in Saudi Arabia, throughout the period preceding the rise in crude oil prices, is a maximum rate determined by the limit of absorptive capacity of the economy.

This postulate is based on the empirical observation that domestic savings consistently exceeded domestic investment throughout the period 1970-1980. Since Saudi Arabia did not experience shortages in investable funds, its

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[6]H.B. Chenery and A. MacEwan "Optimal Patterns of Trade and Aid: The Case of Pakistan," in Irma Adelman and Erik Thorbecke, eds., The Theory and Design of Economic Development (Baltimore: The John Hopkins University Press, 1966), pp. 151-152.

[7]I. Adelman and F. T. Sparrow, "Experiments with Linear and Piece-Wise Linear Dynamic Programming Models," in Irma Adelman and Erik Thorbecke, eds., The Theory and Design of Economic Development (Baltimore: The John Hopkins University Press, 1966), p. 296.

failure to achieve higher levels of domestic investment must logically be attributed to the limits of its absorptive capacity. This hypothesis is corroborated by the fact that a reasonable effort to expand the country's absorptive capacity had been exerted, as was demonstrated by a consistent surplus of revenues designated for public investment over actual public investment expenditures. Further evidence involves the lack of any serious attempt on the part of the investment planners to mobilize private domestic savings as well as foreign savings (public or private) for domestic investment purposes. This lack of enthusiasm is understandable in the face of an inability of the authorities to exhaust public savings at their disposal.

Second, in order to demonstrate that the increase in crude oil revenues has had a positive impact on the absorptive capacity of Saudi Arabia, it must be shown that an upward shift in investment has in fact occurred. This study, therefore, compares the actual level of investment during the years following the rise in oil prices with the expected, i.e., extrapolated, level of investment for those years. In order to evaluate the implications of the change in the level of investment, if any, it is proposed that a repeat of the test be made for public and private investment as well as investment in the various economic sectors, i.e., government sector, non-oil private sector, oil sector, construction sector, transport equipment sector, and machinery sector.

The analysis is based on data gathered from Saudi Arabian resources, particularly the Ministry of National Economy and Finance, the Saudi Arabian Monetary Agency, and the Central Department of Statistics. Various tools of economic analysis, including both descriptive and inferential statistics, are used as necessary.[8]

Limitations of the Study

It is difficult to collect data about the economy, as the government has little data available for use. In addition, the existing data the Saudi government has are relatively unreliable. In recent years, however, data availability has improved. In some parts of this study, "outside" data will be incorporated, as will published data from the first and second five-year comprehensive development plans. Data in these two plans are relatively more reliable.

Format of the Study

There are five chapters in this study: Chapter One, the present chapter, is a general introduction to the problem. Chapter Two is a background to the physical, economic and cultural setting in Saudi Arabia.

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[8]The above section is derived from: K. A. Al-Eyd, "Oil Revenues, Absorptive Capacity, and Prospects For Accelerated Growth: A Case Study of Iraq" (Ph.D. dissertation, Washington, D.C.: The George Washington University, 1978).

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Chapter Three tends to be more theoretical in nature. It begins with definitions of the absorptive capacity concept and the limitations of absorptive capacity in development and in economic growth are examined. There are five major limitations. Also in this chapter the growth of domestic fixed capital formation in Saudi Arabia for various years in both the public and private sectors is discussed. Finally, a model for measuring the sectoral absorptive capacity of the economy is provided.

Chapter Four provides an analytical background to the concept of absorptive capacity and domestic investment planning. It is a well-known fact that, without huge inflows of petro-dollars--the Kingdom's major source of income--Saudi Arabia would have experienced major barriers in development. It would not have been possible to resolve the problems of limited absorptive capacity through comprehensive planning techniques, which require huge financial allocations to be successful. This chapter provides a background for this issue.

As a result of the huge inflow of petro-dollars, it becomes possible to utilize wide-scale planning in all bottleneck sectors. Chapter Four, therefore, explains the significance of the first and second five-year development plans in easing bottleneck sectors and thus expanding the absorptive capacity of the economy.

Chapter Five is a summary and a general conclusion. Today, in Saudi Arabia, the absorptive capacity is a

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short-run phenomenon. Through proper wide-scale comprehensive planning and capital resource availability, the bottleneck sectors are in the process of being eliminated as time goes by. Finally, it is anticipated that by the end of the third five-year comprehensive plan, absorptive capacity will be virtually eliminated as a limiting factor in economic growth, and most bottleneck sectors will be expanded for an accelerating rate of growth in the aggregate economy.

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CHAPTER II

SAUDI ARABIA: THE PHYSICAL, ECONOMIC AND CULTURAL SETTING

Physical Features

Simulating the shape of a great plateau sloping eastward from the Red Sea to the Arabian Gulf, Saudi Arabia lies upon a foundation of precambrian age, composed of granite and crystalline rocks known as schists. Preceding the crustal faulting that created the Red Sea basin, the Arabian peninsula was a portion of the African continental block, separating from Africa during the tertiary period. The Arabian shield, also called the basement complex, is exposed in the western highlands and mountains, and ranges in elevation from 3,760 meters in the Yemen mountain region to slightly less than 1,900 meters as it approaches the northwest Jordanian border.[1]

The bulk of the Saudi Arabian surface east of the Arabian shield is made up of sedimentary formations, i.e., sandstone, limestone, shale, and alluvium, which contain groundwater reservoirs and aquifers. Moving from west to

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[1]James E. Pasteur, Soil and Land Classification in Saudi Arabia, A report for the Ministry of Agriculture and Water (Riyadh: The Ministry of Agriculture, 1971), p. 2.

east, these sedimentary formations increase in thickness and contain large oil deposits existing as remnants of organic matter deposited in the Tethys Sea. The western portion of the Arabian shield comprises volcanic formations and lava beds. Dry-water courses, containing some alluvium and numerous drysalt flats, slice through most of the Arabian surface.

Saudi Arabia occupies four-fifths of the Arabian peninsula and is bordered by the Red Sea and the Gulf of Aqaba on the west, and by the Arabian Gulf, Qatar, Oman and the United Arab Emirates on the east. To the north it borders Jordan, Iraq, and Kuwait, and to the south, Yemen and the Republic of South Yemen.

The topography of the Kingdom can be best described in terms of a cross-section from west to east. Bordering from north to south, a narrow coastal plain along the Red Sea makes up the first zone. The southern portion of this plain is fertile due to clay and silt deposits from several large streams. Known as As-Sarat, this western range of mountains is found parallel to the first zone. Toward the south, these highlands increase in elevation and width, sloping slightly to the east and then sharply to the west. As a result, the scene is one of great valleys penetrating the mountains to the coastal plain toward the Red Sea.

The formidable Nejd plateau radiates east of the mountains and is interrupted midway by Jabal Tuwayk, a slope or scarp extending from northeast to southwest. The desert of

Nafūd, bounds the Nejd plateau to the north. The "Al-Rub'al-Khālī," or famous empty quarter, borders the Nejd on the south, while the sands of Ad-Dhana create a border to the east. The Nejd plateau slopes from west to east and northeast. The narrow north-south belt of the Ad-Dhana desert precedes the land, which slowly declines eastward, forming the eastern coastal plain of the Arabian Gulf. Here, the oil fields are found.[2]

Climate

A high pressure system controls the sub-tropical climate of Saudi Arabia. The average annual rainfall is approximately three inches, excluding the southwest region where the average reaches twelve inches due to the effect of the Indian Ocean and Arabian Sea summer monsoon. The rainfall usually occurs in winter and spring, and usually is insufficient for agriculture.

With a maximum temperature of 120°F, and an average 112°F, the summers are hot and dry in the interior region. The southwestern region of the Kingdom averages lower temperatures of approximately 77°F. A 20° to 30°F range characterizes the diurnal temperature.

Winters are cool and dry with frequent freezing temperatures in central Saudi Arabia and snowfall in the

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[2]The above section is derived from M. H. Al-Fair, "The Faisal Settlement Project at Haradh, Saudi Arabia: A Study in Nomad Attitudes Toward Sedentarization." (Ph.D. Dissertation, Michigan: Michigan State University, 1977).

southwestern mountains.

Due to the influence of bordering seas, relative humidity and summer temperatures for the coastal strips are almost invariably higher than in the interior region, causing uncomfortable living conditions. Throughout the entire spring and early summer, the dry, northwesterly winds prevail over the eastern province. Storms of sand and dust also occur in the east, and are caused by cold fronts from the north and northeast meeting eastward-moving low pressure systems.[3]

Natural Resources of Saudi Arabia

A number of natural resources create favorable potential for economic development and growth in Saudi Arabia. Although it does not have a wide variety of discovered natural resources, it has an abundance of oil.

Oil

At its foundation, oil is the key to the Saudi Arabian economy and development. The eastern province accommodates most of the oil wells, while the remainder are located in the neutral zone where both Saudi Arabia and Kuwait share equitably in the production.

ARAMCO, the Getty Oil Company, and the Arabian Oil Company, Ltd. direct drilling and production. These three

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[3]The above section is derived from M. H. Al-Fiar, op. cit.

companies also share in continued exploration throughout the Kingdom, under the Arabian Gulf and under the Red Sea.

In 1974, Saudi Arabia's crude oil production represented 15.3 percent of world output, 27.8 percent of OPEC-member production, and 46.4 percent of Arabian production.[4] As of that year the Kingdom still retained its position as the third largest world producer after the United States and the Soviet Union, whose shares in world production were 17.3 percent and 15.9 percent, respectively.[5] In 1978, Saudi Arabia was responsible for 16.7 percent of world production and 34 percent of OPEC production.

Table II.1 demonstrates more comprehensive information regarding Saudi Arabia's rank in crude oil production among the large international oil producers. The average daily production of crude oil in the Kingdom was 10.4 million barrels in 1978 against 9.2 million barrels in 1977. Thus, 1978 annual production rose by 13.1 percent to 3798.6 million barrels compared to 3360.3 million barrels in 1977.

Based on an ARAMCO decision to increase its crude oil production capacity to 11.6 million barrels per day by the end of 1975, and assuming that supply and demand trends will respond to market conditions, it is estimated that Saudi

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[4]Kingdom of Saudi Arabia, Ministry of Planning, Second Development Plan 1395-1400 A.H., 1975-1980 A.D. (Jeddah: Dar Okaz), p. 140. Derived from M. H. Al-Fiar, op. cit.

[5]Saudi Arabian Monetary Agency. Annual Report, 1975 (Jeddah: Banawi Printers, 1975), p. 18. Derived from M. H. Al-Fiar, op. cit.

TABLE II.1

OIL EFFECTIVE PRODUCERS
(Thousands of barrels/day)

Country or Organization	1972	1973	1974	1975	1976	1977	1978	1979
Saudi Arabia	6,016	7,595	8,480	7,075	8,580	9,206	10,406	9,800
OAPEC[1]	15,727	18,090	17,735	16,165	18,420	19,510	NA	NA
OPEC[2]	27,067	30,965	30,675	27,135	30,360	31,083	30,693	28,483
World	50,550	55,745	55,865	52,990	57,020	59,769	62,181	60,194

[1]The members of the Organization of Arab Petroleum Exporting Countries are Abu Dhabi, Algeria, Bahrain, Egypt, Iraq, Kuwait, Libya, Qatar, Saudi Arabia, and Syria.

[2]The members of the Organization of Petroleum Exporting Countries consists of OAPEC (excluding Bahrain, Egypt and Syria) plus Dubai, Ecuador, Gabon, Indonesia, Iran, Nigeria, Sharjah, and Venezuela.

SOURCE: United States of America, Central Intelligence Agency, International Oil Developments, Statistical Survey (Washington, D.C., The Office of Economic Research, No. 7, April 1977), pp. 1-3. U.S. Department of Commerce, Federal Energy Administration, Monthly Energy Review (Springfield, VA: National Technical Information Services, No. 3, March 1977), p. 84. Extended from M. H. Al-Fiar, "The Faisal Settlement Project at Haradh, Saudi Arabia: A Study in Nomad Attitudes Toward Sedentarization," op. cit.

Arabian production potential in 1980 might range from 14 to 18 million barrels per day.[6]

Oil revenues for the Kingdom increased to $22,573 million in 1974 as a result of increasing price, production levels and a gradual increase in royalty and income tax rates. Ninety-nine percent of that revenue was paid to the government by ARAMCO, the largest operating oil company in the Kingdom.

It has been estimated that by the end of 1980 Saudi Arabia's crude oil revenue will total $36 to $50 billion, 25 percent of OPEC's total estimated revenues. Crude oil revenue accounts for about 95 percent of total national revenues.[7] The estimates were close to actual figures published in 1979.[8]

According to Wells,

> There is a strong possibility that revenues will be stabilized because of the existing flexibility in setting petroleum production levels in Saudi Arabia and because of the predominant role of Saudi Arabia in determining the world price of petroleum,

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[6]Donald A. Wells, Saudi Arabian Revenues and Expenditures (Baltimore, Maryland: Resources for the Future, Inc., 1974), pp. 4-5. Derived from M. H. Al-Fiar, op. cit.

[7]Emile A. Nakhleh, The United States and Saudi Arabia, A Policy Analysis (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1975), p. 9. Derived from M. H. Al-Fiar, op. cit.

[8]The above section is derived from M. H. Al-Fiar, op. cit.

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Mineral Resources

Through extensive exploration and research, mineral resources such as copper, gold, iron, silver, sulfur phosphates, lead, and zinc have been found in large commercial quantities. For example, an iron deposit was estimated to contain 1.5 billion tons of low grade (30-40 percent) iron ore. More mineral resources are likely to be found since recent explorations have located other deposits, particularly in the western portion of the Kingdom.[10]

Land and Water Resources

Land should be considered a production factor. Raleigh Barlowe speaks of land "as the nature-given source of food, fibers, building materials, minerals, energy resources, and other raw materials used in modern society."[11] The total Saudi Arabian land mass is one-third the size of the United States. Another land factor is the relatively small Saudi population which does not exceed 5 million, and creates no

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[9]Donald A. Wells, Saudi Arabian Development Strategy (Washington, D.C.: American Enterprise Institute for Public Policy Research, 1976), p. 4. Derived from M. H. Al-Fiar, op. cit.

[10]Ramon Knquerhase, The Saudi Arabian Economy (New York: Praeger Publishers, Inc., 1975), pp. 11-12. Derived from M. H. Al-Fiar, op. cit.

[11]Raleigh Barlowe, Land Resource Economics, The Economics of Real Property (Englewood Cliffs, N.J.: Prentice-Hall, Inc. 1972), p. 9. Derived from M. H. Al-Fiar, op. cit.

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density problem for the approximately 830,000 square miles. The overall population density is estimated at seven persons per square mile. Most densely populated is the southwestern region, excluding major urban centers.

The population density is misleading, however, as in 1970-71 cultivated land was approximately 525,000 hectares, less than 1 percent of the total land mass. When considering the ratio of population to cultivated land, we find about 10 people per hectare.

An estimated 121,000 hectares of the total 525,000 cultivated hectares are irrigated with the remainder being rainfed. Since most of Saudi Arabia is arid or semi-arid, most of the cultivated land is required for pastoralization if land is to be used as a major production factor in economic development.

Water supply is the most precious resource in the Kingdom. Its scarcity can be considered the most serious natural resource constraint on the country's economic development. Given the fact that the average annual rainfall is only three inches, groundwater must meet the major portion of the Kingdom's combined agricultural, industrial and urban demand. Surface (run-off) water satisfies a smaller share and more limited amounts have been supplied by desalinization.

According to government studies, deep groundwater and desalinated water have shown the greatest potential for eventually contributing to the country's development. The

second five-year plan (1975-1980) proposes to continue developing groundwater resources to meet urban, industrial and agricultural demands in locations distant from the sea coast. Moreover, the plan suggests accelerated development of desalinated sea water supplies to meet urban and industrial demand in locations on or near the sea coast, as well as in selected interior locations.[12] By the end of the second plan period in 1980, the Red Sea coast desalinization plants should be completed with sufficient capacity to supply more than 213 million cubic meters per year, whereas the eastern coast plants will supply more than 263 million cubic meters annually. Taking into account the country's urban center's 1974 estimated demand for water of 170 million cubic meters[13], the expected 1980 supply of 476 million cubic meters of desalinated water on both coasts should exceed any increase in urban demand by that time, leaving a surplus for other uses. In addition, the completion of several dams by 1980 will provide some storage areas for surface run-off, which occurs during intense rainfalls. The dams will minimize the loss of surface water and establish a more efficient system for recharging the groundwater aquifiers in the interior regions.[14]

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[12] Second Development Plan, op. cit., p. 102. Derived from M. H. Al-Fiar, op. cit.

[13] Towns of over 5,000 residents.

[14] The above section is derived from M. H. Al-Fiar, op. cit.

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Human Resources

Human resource development is at least equal in importance to that of other natural resources for Saudi Arabian economic development. Ranging between five and six million, the accepted population of the country is placed at five million, with an estimated 10 percent considered to be nomadic.

An annual population growth rate of 2.75 percent was estimated prior to the 1970-75 initial economic development plan. The rate was expected to rise to 3.0 percent by the end of 1975. This increase was expected to result from a decreasing mortality rate due to improved health care and nutritional standards.[15]

There is unfortunately no accurate census to provide exact information on the numbers and proportions of the population in the three important population categories of nomads, villagers, and urban dwellers. At present, it is clear that the urban sector comprises the majority of the Saudi Arabian population. In fact, there are three population clusters: the Western Province, which includes the port city of Jeddah and the holy cities of Mecca and Medina; the Central Province, which includes the capital city of Riyadh and the Qasim area; and the Eastern Province, with

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[15]The Kingdom of Saudi Arabia, Central Planning Organization, First Development Plan 1390 A.H. (Dammam: Al-Mutawa Press Co. 1970), pp. 65-67. Derived from M. H. Al-Fiar, op. cit.

the commercial cities of Dammam, Al-Khobar and Dhahran.

The Saudi trend of rural-to-urban migration by villagers and nomads seeking jobs and personal opportunity is characteristic of developing countries. Although no accurate measure exists, this migration is evidenced by the growing urban sprawl as well as the decrease in the agricultural labor force, which is composed of villagers and nomads and dropped from 46.2 percent to 28.0 percent between 1967 and 1975. This movement is generated by traditionally low income conditions in agricultural and pastoral sectors. The desire for higher wages, better education, and, in general, a better standard of living has drawn people to the cities.

In the late 1960's, before the first development plan, about 46 percent of the Saudi population was below 15 years of age and was consequently excluded from the labor force age bracket. The distribution of the 1967 labor force, just before implementation of the first development plan, was as follows: 46.2 percent in agriculture, including nomads; 16.9 percent in industry; and 36.9 percent in other services.

This first planning period brought an increase in the labor force of approximately 3.8 percent annually, from 1,328,000 in 1970 to 1,600,000 in 1975. Although the increase in the rate was lower for Saudis than non-Saudis, 3.7 percent and 4.2 percent, respectively; the Saudis accounted for 80 percent of the 1975 labor force. More specifically, the proportion of the Saudi population in the

labor force increased from 22.2 percent to 23.3 percent over the five years of the first plan.[16] This increase is attributed to systematic training programs developed subsequent to Saudi government policy. As Wells notes:

> Initial efforts concentrated on the education of government employees, primarily through scholarships to enable them to attend foreign universities, and the establishment of the Institute of Public Administration in Riyadh, which has provided training in English and in various job skills for more than 10,000 government employees.[17]

However, Wells also states that,

> While some vocational training has been provided through six training centers, fewer than 4,000 persons have been graduated from these centers, so the effect thus far on the skills available in the labor force has been minimal. The structure and pace of Saudi economic development is conditioned by the lack of skills in the labor force more than by any other factor.[18]

To meet the objectives of the five-year plans, labor force employment had to increase from 1.5 million at the end of the first planning period to 2.3 million by the end of the second planning period. The first plan, from 1970-75, witnessed a labor force employment increase of 418,3000, while the second plan, from 1975-80, saw a growth of 808,5000. Essentially this indicates that the annual labor

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[16]Second Development Plan, op. cit., p. 12. Derived from M. H. Al-Fiar, op. cit.

[17]Donald A. Wells, Saudi Arabian Development Strategy, op. cit., p. 10. Derived from M. H. Al-Fiar, op. cit.

[18]Ibid., p. 10. Derived from M. H. Al-Fiar, op. cit.

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force employment growth increased from 6.6 percent to 8.9 percent during the second plan. In the private sector, labor force employment was projected to increase by 624,600 at an annual growth rate of 7.9 percent. In comparison, the public sector labor force employment increased by 183,900 during the second plan, consistent with the plan's manpower requirements. The second plan aimed at increasing the Saudi labor force by 232,000 from 1975-1980, at an annual growth rate of 3.4 percent. Consequently, improvement in the Saudi labor force covered only 65 percent of the manpower required to complete the second plan, while the remainder was filled by non-Saudi workers.[19,20]

Economic Development: the Utilization of Resources

Quality and quantity, coupled with organization and an infrastructure to enforce them, are the vital factors for resource economic development in Saudi Arabia, as in any country. These factors must take shape within a structure of values and principles.

As the Islamic traditions are an inherent part of Saudi Arabian culture, the utilization of resources and the historical-cultural foundation merge as guidelines for development. With this important fact in mind, the

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[19]Second Development Plan, op. cit. Derived from M. H. Al-Fiar, op. cit.

[20]The above section is derived from M. H. Al-Fiar, op. cit.

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country's economic development goals can be stated as follows:

- Maintain the religious and moral values of Islam.
- Assure the defense and internal security of the country.
- Maintain a high rate of economic growth by developing economic resources, maximizing earnings from crude oil over the long term, and conserving depletable natural resources.
- Reduce economic dependence on crude oil exports as a main source of income.
- Develop human resources by education, training and raising standards of health and living.
- Increase the well-being of all groups within the society and foster social stability under circumstances of rapid social change.
- Develop the physical infrastructure to support achievement of the above goals.[21]

Considering this comprehensive policy, economic development directions and achievements can be examined. The first five-year development plan, ending in 1975, and the second development plan, extending from 1975-80, provide the most fundamental record of Saudi Arabian economic development and growth. The first plan was initiated under financial constraints which were greatly relaxed during its span due to increases in oil revenue beginning in 1974.[22] For this reason, and because of labor shortages, the first plan achieved mixed results. In some aspects it fell short of

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[21]Second Development Plan, p. 4, op. cit. Derived from M. H. Al-Fiar, op. cit.

[22]Ibid., p. 10. Derived from M. H. Al-Fiar, op. cit.

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its targets; in others, it exceeded them. In general, it has been considered successful. For a comprehensive understanding of development impact on various economic sectors in Saudi Arabia, the Gross Domestic Product (GDP) will be used as a measure to indicate trends and changes in the economy.[23]

Foreign Trade

Foreign trade plays a vital role in the economy of Saudi Arabia. On the export side, crude oil exports account for the major portion of government revenues and foreign exchange earnings. On the import side, since the Saudi economy is still in the process of development, it depends substantially upon imports as well as capital investment goods for its economic development, even though the number of commodities being produced within the country has been steadily rising. Due to a combination of factors, including development expenditure, rising income, and high marginal propensity to import, there has been a rapid increase in imports, which has had the effect of substantially diminishing the Kingdom's current account surplus.

Exports

Crude and refined oil make up most of Saudi Arabia's exports. The share of crude oil in total oil exports rose

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[23]The above section is derived from M. H. Al-Fiar, op. cit.

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from 92.6 percent in 1973 to 95.1 percent in 1977, while the share of refined oil correspondingly declined from 7.4 percent in 1973 to 4.9 percent in 1977. Table II.2 shows that gross receipts from oil exports at posted prices increased by 13.1 percent in 1977 to $43,537 (Rls 153,473) million from $38,501 (Rls 135,910) million in 1976, compared with an increase of 30.2 percent in 1976 over the 1975 level of $29,579 (Rls 104,119) million.

While the regional distribution of oil exports indicates little change in 1977 as compared with 1976, during the five years, 1973-1977, there were some significant variations in the regional shares. The most important change was in exports to Western Europe, which, as a region, is Saudi Arabia's largest customer. Its percentage share declined from 52.7 percent in 1973 to 39.6 percent in 1977. The share of the European Economic Community (EEC) declined from 43.2 percent in 1973 to 33.2 percent in 1977, and of other Western European countries from 9.5 percent in 1973 to 6.4 percent in 1977. Exports to the six largest of the nine EEC member countries showed two consistent patterns - the UK's share declined from 9.3 percent in 1973 to 4.3 percent in 1977, due, naturally, to the UK's growing North Sea oil production. The Netherlands' share doubled from 2.6 percent in 1973 to 5.3 percent in 1977.

The second most important change in regional shares during the five years under review was that of Other Asia, which is the Kingdom's second largest customer. Its share

TABLE II.2

DIRECTION OF OIL EXPORTS

(in millions)

	1976		1977		Percent of total
	U.S. $	Rls	U.S. $	Rls	
Grand Total	38,501.4	135,910	43,537.4	153,473	100.0
Crude	36,183.3	127,727	14,417.1	145,999	95.1
Refined	2,318.1	8,132	2,120.3	7,474	4.9
DISTRIBUTION OF CRUDE AND REFINED OIL					
Western Hemi. of which:	8,355.7	29,496	9,716.1	34,250	22.3
U.S.A.	1,816.5	6,412	4,158.7	14,660	9.6
Western Europe of which:	15,829.2*	55,877	17,261.2	60,847	39.6
EEC	13,012.3	45,933	14,451.5	50,934	33.2
Other	2,788.5	9,843	2,809.7	9,904	6.4
Middle East	1,108.8	3,914	1,582.5	5,578	3.6
Other Asia of which:	11,684.5	41,246	13,408.8	47,267	30.8
Japan	7,703.2	27,192	8,250.2	29,083	18.9
Oceania	483.9	1,708	614.7	2,167	1.4
Africa	356.4	1,258	253.8	895	0.6
Bunker fuel	682.8	2,410	700.3	2,469	1.6

*Includes exports of $28.4 million (Rls 101 million) to Eastern Europe.

SOURCE: Saudi Arabian Monetary Agency, 1978, Saudi Arabia.

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increased from 24.6 percent in 1973 to 30.8 percent in 1977 -- a gain of 6.2 percent, of which Japan accounted for 4.1 percent and Singapore 1.9 percent, doubling its share from 1.9 to 3.8 percent. It may be noted that Japan's percentage share declined in 1977 to 18.9 percent following consecutive increases in the previous three years from 14.8 percent in 1973 to 20 percent in 1976.

The third most important regional change was in the percentage share of the Western Hemisphere, whose imports of Saudi oil rank it as the third largest customer. Its share gained 9 percentage points during the five-year period, from 13.3 percent in 1973 to 22.3 percent in 1977. The rest of the regional picture shows Oceania's share gaining 0.6 percent, from 0.8 percent in 1973 to 1.4 percent in 1977, and Africa's share declining by 1.1 percent, from 1.7 percent in 1973 to 0.6 percent in 1977.

Imports

The total adjusted CIF value of Saudi Arabia's imports, together with their distribution by the three major sectors of the economy during the past five years, is given in Table II.3. The growth rate column of Table II.3 suggests that the Kingdom has apparently returned to normal growth rates in imports. The rate of 38.0 percent attained in 1977 is identical with the rate registered in 1973 while, during the intervening three years, imports grew at an almost constant high average rate of 80 percent per year. In terms of

percentage shares in total imports, the data show that, during the five-year period, the private sector accounted for an average share of 72 percent, the public sector 24 percent, and the oil sector the remaining 4 percent. The high share of private sector imports underlines the longstanding government policy of encouraging the private sector to play as active a role as possible in the economic life of the Kingdom.

TABLE II.3

IMPORTS CIF BY SECTOR

(Million Riyals)

Year	Oil Sector	Public Sector	Private Sector	Total	Percent Growth
1973	502	972	6,102	7,576	38.0
1974	668	3,680	9,142	13,490	78.1
1975	913	7,054	16,315	24,282	80.0
1976	1,093	11,823	31,071	43,987	81.2
1977	1,380	13,161	46,168	60,709	38.0

SOURCE: Total imports data are derived from IMF Direction of Trade adjusted for the time lag between shipment and arrival of goods. Oil and private sector imports are estimates from resident companies and commercial bank records, respectively, while the public sector's are residuals.

The commodity composition of private sector imports given in the next two tables, II.4 and II.5, show that total private sector imports paid for through commercial

banks rose by 24 percent in 1397 A. H. (which ended on 10 December 1977) to Rls 25.1 billion from Rls 20.2 billion in 1976. In spite of significant annual increases in foodstuff imports, there was a decline in the percentage share of foodstuffs, from 24.6 percent in 1973 to 12.1 percent in 1977, with a corresponding increase in the share of non-food items from 75.4 percent in 1973 to 87.9 percent in 1977. This trend, however, is consistent with the expectation that, as personal income rises, individuals tend to spend a

TABLE II.4

PRIVATE SECTOR IMPORTS PAID FOR THROUGH COMMERCIAL BANKS

(Million Riyals)

	1973	1974	1975	1976	1977
Grand total	4,121.9	7,616.2	13,280.0	20,216.9	25,266.1
Total foodstuffs	1,012.5	1,648.9	2,366.0	2,611.6	3,034.9
Total non-foods	3,109.4	5,967.3	10,914.0	17,605.3	22,031.2
DISTRIBUTION OF IMPORTS					
Textiles & clothing	400.8	557.0	1,042.6	1,478.8	1,943.6
Building materials	431.6	824.4	918.1	1,906.5	2,624.1
Motor vehicles	554.4	1,263.7	2,494.9	4,058.8	3,899.6
Machinery & appliances	744.5	1,446.0	2,980.5	4,514.9	5,991.7
All other goods	978.1	1.876.2	3,477.9	5,646.3	7,572.2

SOURCE: Saudi Arabian Monetary Agency, Annual Report (1978). Saudi Arabia.

TABLE II.5

PERCENTAGES: GROWTH RATES AND SHARES

Grand Total	32.5	100.0	84.8	100.0	74.4	100.0	52.2	100.0	24.0	100.0
Total foodstuffs	38.5	24.6	62.8	21.6	43.5	17.8	10.4	12.9	16.2	12.1
Total non-foods	30.7	75.4	91.9	78.4	82.9	82.2	61.3	87.1	25.1	87.9
				DISTRIBUTION						
Textiles & clothing	40.1	9.7	39.0	7.3	87.2	7.9	41.8	7.3	31.4	7.8
Building materials	82.5	10.5	91.0	10.8	11.4	6.9	107.7	9.4	37.6	10.5
Motor vehicles	29.8	13.4	127.9	16.6	97.4	18.8	62.7	20.1	-3.9	15.6
Machinery & Appliances	23.8	18.1	94.2	19.0	106.2	22.4	51.5	22.3	32.7	23.9
All other goods	18.1	23.7	91.3	24.6	85.4	26.1	62.4	27.9	34.1	30.2

SOURCE: Saudi Arabian Monetary Agency, Annual Report (1978), Saudi Arabia.

lesser proportion of their income on food.

Regarding other commodity groupings, there was no significant change in their percentage share in total imports during the five years under review, except for the "all other goods" category, the share of which increased by almost 7.0 percent from 23.7 percent in 1973 to 30.2 percent in 1977. Machinery and appliances led individual commodity groups with an average of 21.0 percent during the five-year period, followed by motor vehicles with an average of 17.0 percent, building materials with 10.0 percent and textiles and clothing with 8.0 percent.

There is no uniformity over the entire five-year period in growth rates of non-food commodity groupings. Beginning in 1974, a marked annual decline was experienced in the growth rate of motor vehicle imports from 127.9 percent (which was the highest rate of all groupings in 1974) to a negative 3.9 percent in 1977. Similarly, the "all other goods" category recorded declining annual growth rates from 91.8 percent in 1974 to 34.1 percent in 1977. Building material imports registered the highest growth for all groups in three of five years. A manifestation of this is the visible change in the skyline of practically every city in the Kingdom. Similarly, machinery and appliance imports recorded the highest growth rate of all groups in 1975, but second and third highest in 1976 and 1977, respectively. Lastly, textiles and clothing imports gained consistently, with an average growth rate of 48 percent per year.

TABLE II.6

IMPORTS FOB FROM INDUSTRIAL COUNTRIES

(Million U. S. Dollars)

	1973	1974	1975	1976	1977	Average 5-year % share
United States	442	835	1,502	3,575	3,575	23.5
Japan	389	676	1,350	1,892	2,364	18.4
Germany	126	287	566	1,192	1,713	9.1
Italy	78	135	320	659	1,075	5.2
United Kingdom	143	280	441	710	1,010	7.2
France	56	120	199	340	619	3.3
6-county subtotal	1,234	2,333	4,378	7,567	10,356	66.5
Other 9 industrial countries	193	377	552	1,121	1,499	9.8
Total 14 industrial countries	1,427	2,710	4,930	8,688	11,855	76.3
Rest of world	516	1,150	1,530	2,083	2,842	23.7
Unadjusted FOB total	1,943	3,860	6,460	10,771	14,697	100.0
Adjusted FOB total	1,861	3,570	6,003	10,384	14,352	—
Estimated freight and insurance	186	357	900	2,077	2,870	—
Total CIF in U. S. dollars	2,047	3,927	6,903	12,461	17,222	—
Total CIF in Riyals	7,576	13,490	24,282	43,987	60,709	—

SOURCE: IMF Direction of Trade, statistical tables and supporting data

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Table II.6, showing imports FOB from industrial countries, gives another picture of Saudi Arabia's total imports. The emphasis of the table is on the FOB value of imports from the six major industrial countries, which account, on the average, for two-thirds of Saudi imports. Also important is the total from the 14 industrialized nations, which together account, on the average, for over three-fourths of Saudi Arabia's yearly imports. The table further shows the two adjustments needed in the partner-country data to arrive at the CIF value of total imports referred to earlier. These adjustments take into account the time-lag between shipment and arrival of goods and an estimate of additional cost for freight and insurance to Saudi ports.

The FOB value of imports from the six major suppliers, namely, the U.S., Japan, Germany, Italy, the UK and France, rose from $1.2 billion in 1973 to $10.4 billion in 1977, at the average compounded growth rate of 72 percent per annum. The six-country share of total Saudi FOB imports increased by 7.0 percent from 63.5 percent in 1973 to 70.5 percent in 1977. The FOB value of imports from the remaining eight industrial countries rose from $193 million in 1973 to $1.5 billion in 1977, representing an annual growth of 67 percent. The percentage share of these eight industrial nations rose by only 0.3 percent over the five years, from 9.9 percent in 1973 to 10.2 percent in 1977. The FOB value of Saudi imports from the rest of the world rose at a

compounded annual rate of 53 percent, from $516 million in 1973 to $2.8 billion in 1977. However, since the rate of growth of imports from these countries was slower than that of the total from all countries, their share declined from 26.6 percent in 1973 to 19.3 percent in 1977.

Saudi imports from each of the six major suppliers generally registered sizable growth rates from 1973 to 1976, inclusive, but substantially lower growth rates in 1977. Notable exceptions were France, whose rate of growth in exports to the Kingdom rose in 1977 by 82 percent while growth rates of the other five declined and Japan, whose growth rate in exports declined in 1976 while those of the other five were rising. The US and Japan were able to sustain their lead as the first and second suppliers of the Kingdom's imports. US exports to Saudi Arabia rose from $442 million in 1973 to $3.6 billion in 1977, representing an annual compounded growth rate of 69 percent and an average percentage share of 23.5 percent, with a low of 21.6 percent in 1974 and a high of 25.7 percent in 1976. Japan's exports increased from $389 million in 1973 to $2.4 billion in 1977, representing, in general, the lowest growth rate (58 percent) among the six countries and a five-year average share of 18.4 percent, with a low of 16.1 percent in 1977 and a high of 20.9 percent in 1975.

Germany stands third among the Kingdom's suppliers with a five-year average share of 9.1 percent, a low of 6.5 percent in 1973 and a high of 11.7 percent in 1977, and shared

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with Italy the highest average annual growth rate of 95 percent among the six countries. The UK ranked fourth from 1973 to 1976 but lost the position to Italy in 1977. Over the five-year period, however, UK's cumulative export total was higher than Italy's, $2.6 billion against $2.3 billion, and it led in annual average share, 7.0 percent against 5.2 percent. Italy was in fourth place by virtue of sharing the highest growth rate with Germany, as mentioned above, and by more than doubling its percentage share from a low of 3.5 percent in 1974 to a high of 7.3 percent in 1977. France attained the sixth position among the largest exporters to Saudi Arabia and was the only country of the six which maintained a continually rising growth rate in each year from 1975-1977, including 1977 when the growth rates of the others declined. France is also the only country, apart from Germany, which increased its percentage share in each of the years under review, from 2.9 percent in 1973 to 4.2 percent in 1977, representing an annual average share of 3.3 percent.

Saudi Arabian Nomadism as a Culture

Although the majority of the Saudi population was nomadic during an earlier time, recent estimates place the present number at only 600,000. With economic development, the nomadic way of life is becoming increasingly rare. In fact, the nomads began settling in Saudi Arabia around the turn of the twentieth century, even before the discovery of oil.

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Alan George states:

> While the social and economic forces triggered by the development of the oil industry have been the major factors encouraging Bedouin settlement, the movement towards a more sedentary life preceded the oil boom, and can be traced to the earliest days of the Saudi State.[24]

The "Hijra," conceived by King Abdulaziz for the Ikhwan or Brethren, is considered the most extraordinary work in this regard. With the Brethren, he initiated the unification of the Kingdom into one state and managed to revive the Islamic religion. In order to show appreciation for their dedication and support of these two objectives, and to establish an environment of dignity and identity, the King gave orders to many of the nomads to create permanent homes or focal centers in their own land.

These foci were established near water sources and included a mosque and courthouse for the tribe's Shaikh or chief, who was appointed by the King. Teachers and judges were also appointed to serve these centers in order to provide Islamic education. As these centers grew and became established communities, additional services were provided.

With the discovery of oil and the advent of industrial production within the country, nomads by the thousands, anticipating good jobs, abandoned nomadic life for employment as unskilled laborers in oil fields. After

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[24]Alan George, "Bedouin Settlement in Saudi Arabia," Middle East International (London: Christopher Mayhew and others (Publishers) Ltd., No. 51 (September 1955): 27. Derived from M. H. Al-Fiar, op. cit.

experiencing regular jobs with predictable wages and the benefits of a settled life, the nomads were reluctant to move back to pastoralism.[25]

Other more spontaneous settlements have established homelands in northern Arabia where a water source is available or where service and jobs are available.

> For example, in the course of constructing the trans-Arabian Pipeline (Tapline) a road was constructed alongside the pipe, and water wells were drilled at the intermittent oil pumping stations. Nomads settled permanently around the new wells and the towns of Ar'ar, al-Qaysumah, and An Nuayriyah have developed from these Bedouin encampments, where only the desert existed before 1950.[26]

As a result of the broad economic development and growth of Saudi Arabia, and its subsequent urban expansion, many nomads have migrated from their rural areas and sought urban wage labor. After they experience the modern, urban way of life, they do not go back to the desert except for short visits.

In the mid-sixties, the government carried out a major settlement project at Wadi as-Sirhan to help the nomads after the severe drought and heavy losses among their herds. The government's second attempt at settlement is the large project at Haradh. It was constructed in order to settle more nomads and to introduce them to agricultural

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[25]Ibid., p. 28. Derived from M. H. Al-Fiar, op. cit.

[26]Ibid., p. 29. Derived from M. H. Al-Fiar, op. cit.

occupations.[27]

Nomadic Community Development

The spontaneous settlements are almost entirely successful, primarily due to the nomadic decision-making process. According to the rationale of the nomadic people, when a result falls short of fulfilling survival objectives, that particular effort is rejected and a new one substituted, or an alternate way of succeeding--e.g., a new system of production--is adopted. This revised plan of action is undertaken with the same rationale and maturity as the earlier attempt. For this reason, spontaneous nomadic settlements have had a heightened opportunity to succeed and have succeeded.

In contrast, planned nomadic settlements have experienced a mixture of success and failure. Most, however, have been at least partially successful. Examining the planned settlement in the Sahara, Capot-Rey confirms that:

> there is no reason why official settlement policies should fail where settlement has occurred spontaneously and successfully, as can be seen in certain quarters of the Warqla and El Golea palm groves of the Chaamba settlement of Metlili.[28]

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[27]The above section is derived from M. H. Al-Fiar, op. cit.

[28]Robert Capot-Rey, "Problems of Nomadism in the Sahara," International Labour Review, November 1964 Vol. 90, No. 5, P. 482. Derived from M. H. Al-Fiar, op. cit.

Settlement failures have almost invariably resulted from a discrepancy between the socio-economic calculations on the part of the planners and views of the settlers involved. The main question is: what effect do settlements have on the settlers, whether planned or spontaneous?

In the spontaneous way of settling, or in the carefully planned methods, change itself is not the issue. Change is accepted by those involved, especially in the agricultural sector. This can be demonstrated by Chatwin's argument that, "nomads and farmers are linked to a common past and share common aspirations."[29]

As the literature points out, nomads have not only migrated from natural impulses, these movements tend to be very directed and economically oriented. Due to the Beersheba experience, as nomads settle partially, or begin to cultivate, or when they confront some official orders,

> their wanderings are far more regular than formerly, not only because they are cultivating crops, but because they lease certain areas from the government, for both grazing and cultivation.[30]

Lattimore also concurs with this economic interpretation. When explaining the formidable changes through which nomads

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[29]Bruce Chatwin, "The Mechanics of Nomad Invasions," History Today (London: Bracken House, Vol 22, May 1972, p. 336. Dervied from M. H. Al-Fiar, op. cit.

[30]Mildred Berman, "Social Change Among the Beersheba Bedouin," Human Organization; (Lexington, Kentucky: The Society for Applied Anthropology, Vol. 26, No. 112, Spring/Summer, 1967) p. 73. Derived from M. H. Al-Fiar, op. cit.

have evolved since settlement in Mongolia, he says,

> I might add that in my opinion pastoral nomads, though most people think they are more "primitive" than farmers, master the machine more quickly than peasants do, because they know that maintenance is all-important.[31]

Their maintenance knowledge could be attributed to or inherited from their proficiency of handling live properties in unhospitable environments.

From a social point of view, Berman says,

> the rate of social change within the tribal structure during the past two or three decades has been rapid enough to warrant re-evaluation of the traditional image.[32]

He also says,

> Perhaps the most significant change among the Negev Bedouin has been the slow but continuing decline of the Sheikh's all-powerful status.[33]

Because when they settle they become involved in national rather than tribal institutions, Berman also notes that,

> many of the men have already adopted Western dress while working or attending school in town.[34]

The point is not changing habits, but rather it is the ability to adapt.[35]

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[31]Owen Lattimore, Nomads and Commissars, Mongolia Revisited (New York: Oxford University Press, 1962) p. 192. Derived from M. H. Al-Fiar, op. cit.

[32]Mildred Berman, Op. cit., p. 70. Derived from M. H. Al-Fiar, op. cit.

[33]Ibid., p. 72. Derived from M. H. Al-Fiar, op. cit.

[34]Ibid., p. 74. Derived from M. H. Al-Fiar, op. cit.

[35]The above is derived from M. H. Al-Fiar, op. cit.

Nomadic Social Costs and Benefits

The directive for settlement is primarily an opportunity for nomads to live better, allowing a higher standard of living. This is the basis for settlement, whether it is by their own choosing or through governmental planning. Nomads benefit from public services that would not be available to them in their wandering existence, and although this alternative to nomadic life does necessitate a degree of change in their economic and cultural patterns, it does not seem to pose a large problem for the settlers involved.

Documentation in the literature shows conclusive evidence that settlements change the nomadic economic situation positively. This improvement is augmented by the fact that the nomads are known for their adaptability. They are especially motivated to achieve higher profits from their new economic activities, as compared to the low or negative returns of pastoralization. In addition, severe droughts, overgrazing, degradation of pasture, and soil erosion subjected the nomads to an inability to provide for their own subsistence. In such a position, they were unable to contribute to gross national income and welfare. Thus, social-economic costs due to nomadic settlement are low and are exceeded by consequent social benefits. Furthermore, the pastures can be restored for future use in a more productive, profitable direction. Concerning the aggregate national economic requirements, Berman states that:

> A dynamic economy for any nation requires an enlightened population capable of performing a variety of skills. The Bedouin lack of interest in this direction acts as a serious obstacle to their material progress.[36]

Presumably, if the nomads engage in the agricultural sector, which is already suffering from the adverse effects of the rural migration to the cities, their contribution to the gross domestic product will become relatively significant, or at least higher than its former level, and agricultural development will accelerate.

In terms of cultural change, it is neither serious nor damaging. Alan George acknowledges that,

> Many writers have bewailed the demise of nomadism for the cultural loss which it represents, but it seems that ultimately the requirements of modern states and economies cannot be reconciled with the structures of nomadism.[37]

Awad observes that many nomadic tribes have settled and abandoned their wandering life but retain their tribal organization.[38] Moreover, in regard to Saudi Arabia, Lipsky has noted that the tribal structure is still intact among

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[36]Mildred Berman, "Social Change Among the Beersheba Bedouin," Human Organization (Lexington, Kentucky: The Society for Applied Anthropology, Vol. 26, No. 112, (Spring/ Summer, 1967) p. 75. Derived from M. H. Al-Fiar, op. cit.

[37]Alan George, "Bedouin Settlement in Saudi Arabia," Middle East International, op. cit., p. 30. Derived from M. H. Al-Fiar, op. cit.

[38]Mohamed Awad, "Nomadism in the Arab Lands the Middle East" Arid Zone Research, The Problems of Arid Zone, Proceedings of the Paris Symposium, UNESCO (Printed in France, Vol. 18, 1962), p. 334. Derived from M. H. Al-Fiar, op. cit.

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the settled communities.[39] For the region of the Middle East, Patai states that,

> The close interaction and interdependence of the nomadic and settled population groups in every corner of the Middle East is a very strong indication of the advisability of treating their cultures as mutually complementary elements of one single culture area.[40]

This means that the nomad will not be confronted by drastic cultural change when he settles. For the most part, nomads in Arabic and Islamic nations share the same culture with their settled counterparts. The basis of this culture is a rigid adherence to Islamic religious teachings, especially in a conservative country like Saudi Arabia.[41] The following are two of the Prophet's many traditions underlying Islamic social and cultural structure. The Prophet says:

> The faithful are to one another like parts of a building - each part strengthening the other.[42]

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[39]George A. Lipsky, Saudi Arabia, Its People, Its Society, Its Culture (New Haven, Conn: HRAF Press, 1959), P. 2. Derived from M. H. Al-Fiar, op. cit.

[40]Raphael Patai, "Nomadism: Middle Eastern and Central Asian," Southwestern Journal of Anthropology (Albuquerque: The University of New Mexico Press Vol. 7 1951), p. 414. Derived from M. H. Al-Fiar, op. cit.

[41]The above section is derived from M. H. Al-Fiar, op. cit.

[42]Al-Bukhari and Muslim, on the authority of Abū Mūsā. Cited from: Muhammad Asad; The Principles of State and Government In Islam (Los Angeles: The Near Eastern Center, University of California, 1961), p. 31. Derived from M. H. Al-Fiar, op. cit.

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> Every Muslim is brother to a Muslim, neither wronging him nor allowing him to be wronged. And if anyone helps his brother in need, God will help him in his own need; and if anyone removes a calamity from (another) Muslim, God will remove him from some of the calamities of the Day of Resurrection; and if anyone shields (another) Muslim from disgrace, God will shield him from disgrace on the Day of Resurrection.[43]

Conclusion

> The contribution of economics is to integrate and weigh all the factors, physical and cultural, and to present a total budget of assets and liabilities.[44]

Without exception, this study is trying to adhere to this principle.

It is clear that most scholars are following the same pattern in studying nomads or nomadism. The main subjects they discuss are the nomads' culture, economy, mobility, and suggestions for their development. However, none of these scholars has noted the failure of today's technology to improve the nomads' economic conditions and welfare. While technological innovation is desirable, it is at the expense of losing nomadism and erasing its existence from the world map. On the other side, if nomadism is to be retained,

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[43]Al-Bukhari and Muslim, on the authority of Abd Allah ibn' Umar., Ibid. Derived from M. H. Al-Fiar, op. cit.

[44]George B. Cressey, "Water in the Desert," Annals of the Association of American Geographers, Vol. 47, No. 2, (June, 1957), p. 124. Derived from M. H. Al-Fiar, op. cit.

especially for those who admire its romantic aspects, technology has to leave it alone and never advance in its direction. In this case, however, it is at the expense of nomads themselves, who will be left in their misery and backwardness.[45]

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[45]The above Section is derived from M. H. Al-Fiar, op. cit.

CHAPTER III

THE CONCEPT OF ABSORPTIVE CAPACITY

The notion of absorptive capacity refers to the limits that restrict the ability of an economy to absorb capital investment funds in an efficient manner. This being the case, it is often postulated that the observed low rates of investment in many developing countries are caused not by dearth of capital investment funds but by the inability of the developing economies to efficiently utilize these capital funds. Sayre P. Schatz asserts that:

> ...the belief that a capital shortage is the effective or operating impediment to endogenous private investment is mistaken, that it is an illusion created by a large false demand for capital, and that what really exists is not an immediate shortage of capital at all, but a shortage of viable projects.[1]

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[1]Sayre P. Schatz, "The Capital Shortage Illusion: Government Lending in Nigeria," Oxford Economic Papers, Vol. 17, No. 2, (July 1965).

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Definition of the Concept of Absorptive Capacity

Although references to absorptive capacity in economic literature date back at least to 1949,[2] the concept does not have a firm technical meaning like "supply," "demand," or "the propensity to import."[3] Even so, economists have attempted to reach an understanding of how to define absorptive capacity. Horvat defined it as follows:

> The potential effect of the optimum adjustment of the growth rates of factors is defined as the absorptive capacity of the economy. The easiest way to use this concept is to conceive the economy as a giant productive capacity capable of being expanded at a certain maximum rate. Any additional inputs (investment) would not produce additions to but reductions of output. Or, applying (with caution) the conventional terminology, marginal efficiency of investment will be zero or negative.[4]

It should be mentioned here that the reference to marginal efficiency is intended to apply to total capital

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[2]It was stated in the Fourth Annual Report of the World Bank that "Perhaps the most striking single lesson which the Bank has learned in the course of its operations is how limited is the capacity of the underdeveloped countries to absorb capital quickly for really productive purposes." See IBRD, Fourth Annual Report to the Board of Governors 1948-1949, p. 8.

[3]J. Adler, Absorptive Capacity, op. cit., p. 1.

[4]Branko Horvat, "The Optimum Rate of Investment," The Economic Journal, Vol. LXVIII No. 272, (December 1958); p. 748. Derived from K. A. Al-Eyd, "Oil Revenues, Absorptive Capacity, and Prospects for Accelerated Growth: A Case Study of Iraq" (Ph.D. Dissertation, Washington, D.C.: The George Washington University, 1978).

exclusively. In essence, it is entirely feasible to build, for example, a modern and profitable project (profit here means a positive financial rate of return on the particular investment) and still realize a negative social rate of return. This is true because "...external diseconomies with respect to the economy as a whole will outweigh the positive contribution of the additional factory."[5]

The United Nations Economic Commission for Asia and the Far East defined absorptive capacity as "...a limit to the amount of efficient investment physically possible, and although it can itself be increased through further investment, it does effectively limit the rate of development possible, particularly in the short run."[6] This definition does not specify the nature of the limit which renders investment beyond a certain level physically impossible. It can be assumed that the limit will be reached when input constraints become serious or when the rate of return suddenly drops to zero or becomes negative.

The most specific definition of absorptive capacity has been formulated by Adler. He defines absorptive capacity as "...that amount of investment or that rate of gross domestic investment expressed as a proportion of GNP, that can be

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[5]Ibid., p. 756. Derived from K. A. Al-Eyd, op. cit.

[6]United Nations, ECAFE, Programming Techniques of Economic Development, 1960. Reprinted in Meier, Leading Issues, op. cit., p. 170. Derived from K. A. Al-Eyd, op. cit.

made at an acceptable rate of return, with the supply of cooperant factors considered as given."[7]

Several points need to be made here. It is evident from the definitions cited above, particularly Adler's definition, that central to the concept of absorptive capacity is the idea of efficient utilization of capital. The basis for "acceptable rate of return" suggests that the rate of return which will be realized from installing an incremental unit of captial must at least equal the rate of return that could be realized by installing the same incremental unit of capital outside the country. In essence, the absorptive capacity of the economy is that amount of invested capital which sets the rate of return on capital precisely at the rate available outside the country.

Since the rate of return on marginal invested capital diminishes as increased incremental units of capital are installed, it is evident that the concept of absorptive capacity depends upon the concept of diminishing marginal productivity of capital. In other words, the concept of absorptive capacity evolves from the Law of Diminishing Returns. The standard example in economic literature is that of agricultural production. It is assumed that production of an agricultural output requires two factors: land and labor. Since land is fixed and labor is variable, it is assumed that, as increased labor is made available, there

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[7]J. Adler, Absorptive Capacity, op. cit., p. 5.

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will be a point reached after which the increments of output produced by the incremental units of labor begin to decrease. The Law of Diminishing Returns is valid for any two factors of production as long as it is assumed that one is fixed and the other is variable.

The analysis can be expanded to include any number of factors of production--hence the reference in the definition of absorptive capacity to "cooperant factors," i.e., to all factors of production other than capital. The definition of absorptive capacity considers the supply of cooperant factors as given. Accordingly, successive increments of investment capital are assumed to produce diminishing increments of output after the bottleneck point is reached. More clearly, the rate of return on invested capital is assumed to decrease until it reaches the "acceptable rate", which varies from one sector to another and from one country to another. It is an undetermined number but an acceptable one. It is imperative that additional investment be regarded as inefficient as the rate of return will be less than the "acceptable rate."

This interpretation appears quite restrictive in view of the rigidity attached to the supply of cooperant factors. Such an assumption is only valid within the context of a closed economy. Otherwise, it is perfectly reasonable to assume that factors of production can be augmented through importation. Furthermore, the constancy assumption suggests an immobility of factors within the same economy. In other

words, a specific cooperant factor in constant supply is one which is relatively or completely immobile. Finally, the constancy assumption firmly rejects the possiblity of substituting one factor of production for another.[8]

The ambiguity of the definitions of absorptive capacity is worthy of attention. An example is the concept of "acceptable rate of return," as stated by Adler, in which the rate of return is not specified. However, this can be interpreted to mean "social" rate of return as opposed to "financial" rate of return. We accept this interpretation because to consider otherwise would disregard the externalities associated with capital investment activities. More importantly, financial rates of return disregard investment in human capital, which is intrinsic to the process of economic development.[9]

W. Arthur Lewis wrote an article, entitled "Economic Development with Unlimited Supply of Labor," in which he argues that, in poor developing countries with high population and limited natural resources, labor is available in unlimited supply. For economic growth and development, in a closed economy, planners should utilize the unlimited labor force up to the point where its marginal productivity is approaching zero or even negative.

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[8]The above section is derived from K. A. Al-Eyd, op. cit.

[9]J. Adler, Absorptive Capacity, op. cit., p. 5.

Under an open economy assumption, he argues that the country in question should borrow capital and obtain technical aid from developed countries. Thus, poor countries with large populations and relatively unlimited supplies of labor force should operate with their marginal productivity of capital and technical aid at its maximum, while keeping the marginal productivity of their unlimited labor force supply approaching zero or even negative.

In Saudi Arabia, the case is completely reversed. The country has a limited population and, hence, a limited labor force and an abundance of capital. Under the closed economy assumption, the Saudis should make the marginal productivity of capital approach zero or even negative and should maximize the marginal productivity of their labor force.

In the case of an open economy, the Saudis should import more labor force from other countries and operate with their marginal productivity at its maximum, while keeping the marginal productivity of capital, which is available in a relatively unlimited supply, at its minimum.

Another alternative, in an open economy situation, is to invest the capital surplus that Saudi Arabia has in developed foreign countries up to the point where its marginal productivity yields the highest rate of return, equal to the rate of return on capital invested in Saudi Arabia.

Thus in terms of straightforward applications of classical economic theory, the two situations are essentially identical except for reversal of the roles of labor

force and capital. At this level of analysis, the policy prescriptions that follow are relatively uncomplicated. It is recognized, of course, that the real world is seldom this simple, and thus additional variables inherent in the economy and social structures of individual countries must be taken into consideration.[10]

Sectoral Absorptive Capacity

It is possible to examine the concept of absorptive capacity from a sectoral perspective. The same principles that hold for the economy as a whole apply to individual sectors. Generally, the various sectors of the economy have different absorptive capacities, as a result of the less than perfect mobility of the same cooperant factor among sectors or because different cooperant factors are required by different sectors.

Examination of the absorptive capacities of various sectors makes it possible to establish the limitations imposed by each sector on the other sectors. For example, among the bottlenecks that have limited absorptive capacity among most members of OPEC since the quadrupling of oil prices in 1974 has been the inadequacy of ports and transportation facilities. In terms of the present analysis, the transport sector constitutes a constraint on the absorptive

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[10]W. Arthur Lewis, "Economic Development with Unlimited Supply of Labor," Manchester School of Economic and Social Studies, Vol. XXII (May 1954).

capacity of other sectors. In other words, if the inadequacy of the transport sector limits the ability of another sector to distribute its product, then the value of the marginal product of the affected sector is decreased, regardless of the production conditions of the sector. Similarly, a sector may find it necessary to pay premium freight charges to insure the delivery of essential inputs; even though these high cost inputs would cause the absorptive capacity of the affected sector to have a lower growth rate than it would under normal circumstances.

The impact of each sector on the absorptive capacities of the other sectors is further illustrated by the fact that the high prices paid by other sectors for transport services would result in an increase in the absorptive capacity of the transport sector. Consequently, additional capital investment would be undertaken to expand the transport facilities. This has been the case in most OPEC countries since the increase in oil prices.[11]

Measurement of Absorptive Capacity

One method of measurement that readily suggests itself is productivity of capital. That is, absorptive capacity measured in terms of rate of return on capital investment. If we accept this approach, absorptive capacity becomes:

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[11]The above section is derived from, K. A. Al-Eyd, op. cit.

> ...a schedule relating an amount of capital to be invested to the expected rate of return. The lower the rate of the return on capital which the "investor" - the economic unit making an investment decision - is willing to accept as satisfactory, the higher the absorptive capacity.[12]

Figure III.1 illustrates this method of measurement. In this figure, investment (I) is measured along the horizontal axis, whereas the expected rate of return (r) is measured along the vertical axis. Curve (DD) relates investment to the rate of return in developed countries and curve (UU) relates investment to the rate of return in developing countries. The shapes of these two curves differ because of the different economic conditions prevailing in developed and developing countries.

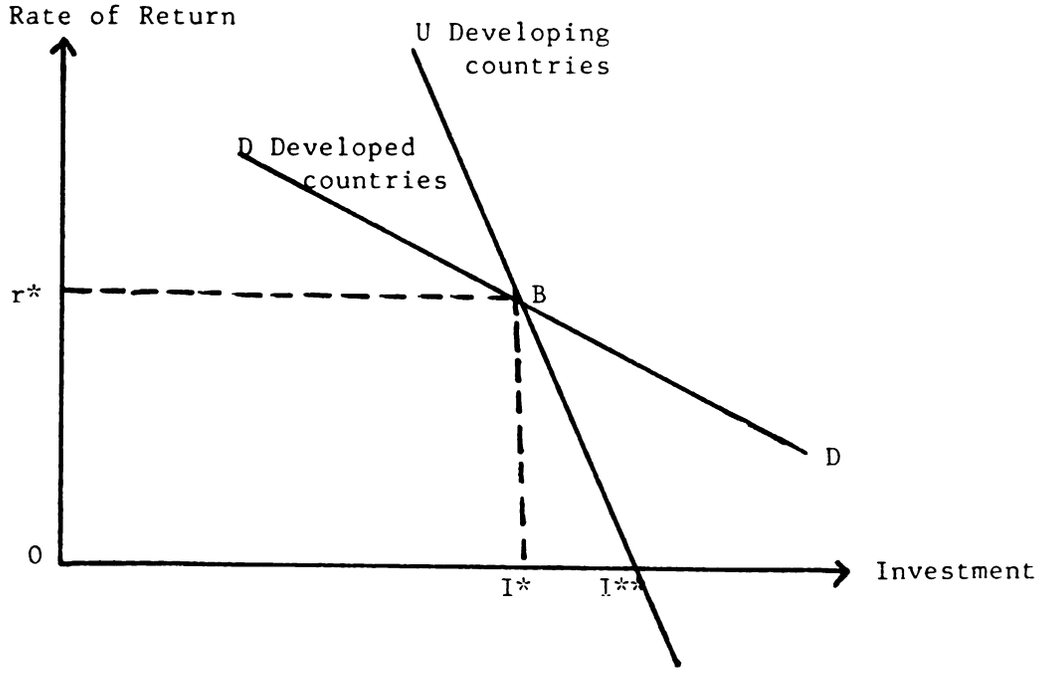

FIGURE III.1: Measurement of Absorptive Capacity.

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[12]J. Adler, Absorptive Capacity, op. cit., p. 2.

The two curves intersect at point (B). To the left of (B), the UU curve lies above the (DD) curve implying that investment up to I* would yield a higher rate of return in developing countries than in developed countries. This is so because:

> There is circumstantial and some direct empirical evidence that in less developed countries the return on existing stock of capital is high and that it is reasonable, therefore, to conclude that the expected rate of return on some additional investment also is high. The evidence is the larger share of profits, rents and interest receipts in the national product of many less developed countries and the high rates of interest charged by non-institutional lenders.[13]

Beyond point (B), however, the situation is reversed because curve (DD) declines more gently than curve (UU). As indicated earlier, the behavior of these curves is governed by the prevailing economic conditions in developed and developing countries. The steep slope of (UU) reflects a faster decline in the rate of return owing to absorptive capacity constraints. In contrast, in developed countries where absorptive capacity is not considered to be a limiting factor, the schedule of the rate of return on capital is presumed to decline rather gently.

The preceding analysis relates to an earlier observation, namely, that the absorptive capacity of the economy is that amount of invested capital that sets the

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[13]Ibid., pp. 2-4.

rate of return exactly at the rate available outside the country. In Figure III.1, the absorptive capacity is equal to (I*) yielding r*. Any investment beyond this point is inefficient, because it will yield a lower rate of return.

It is entirely possible to ignore the rate of return in developing countries. A country that possesses ample financial resources may deem it necessary, for social and political reasons, to expand domestic capital investment to the point where the rate of return on the last unit of installed capital is equal to zero. In this case, the ultimate absorptive capacity of the economy becomes equal to I**. Finally, one may conceive of the schedule relating capital investment to the rate of return in developing countries to possess a pronounced kink, i.e., to assume the shape depicted by (UBI*). The kink could occur, for example, upon the exhaustion of a factor of production. If the country is unable to import this factor, further capital investment becomes physically impossible. Furthermore, the cost of importing a factor in short supply could be so prohibitively high that the rate of return on capital investment would suddenly drop to zero or become negative. Under these circumstances the absorptive capacity of the economy would be equal to I*.

In practice, absorptive capacity has been measured indirectly. For example, Chenery and MacEwan suggest that, "The most convenient measure of this absorptive capacity limit is the rate of increase in investment which a country

can achieve on a sustained basis."[14] The most common rate of growth in capital investment observed by Chenery and MacEwan was between 15 and 20 percent per year.[15] Similarly, Adelman and Sparrow assumed an arbitrary rate of growth of 50 percent of actual investment in the base period.[16]

In addition to being comprehensible and unambiguous, this indirect method of measurement has the added advantage of focusing on the time dimension of absorptive capacity. It is useful to recognize that:

> The absorptive capacity of an economy depends on the time that is allowed for adjustments in the factors determining the limits. The more time is allowed to overcome the lack, or inadequate supply, of the cooperant factors, the greater the absorptive capacity becomes.[17]

It is likely that the passage of time will allow the process of economic development to increase the supply of cooperant factors in short supply and ameliorate

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[14]Chenery and MacEwan, "Optimal Patterns of Growth and Aid: The Case of Pakistan," P. 151. In Adelman, Irma and Thorebecke, Erik, eds. (Baltimore: The Johns Hopkins University Press, 1966). Derived from K. A. Al-Eyd, op. cit.

[15]Ibid. Derived from K. A. Al-Eyd, op. cit.

[16]Adelman and Sparrow, "Experiment With Linear and Piece-Wise Linear Dynamic Programming Model," p. 296. In Adelman, Irma and Thorebecke, Erick eds. (Baltimore: The Johns Hopkins University Press, 1966). Derived from K. A. Al-Eyd, op. cit.

[17]J. Adler, Absorptive Capacity, op. cit., p. 28.

intersectoral bottlenecks.[18]

This indirect method of measuring absorptive capacity hinges on the availability of investable funds. It is feasible to measure the absorptive capacity of the economy in this manner if it can be proven that the economy is not hampered by a savings-investment gap and an export-import gap. In the absence of this proof, it is not correct to measure the absorptive capacity of an economy on the basis of the observed rate of growth in capital investment.[19] In recognition of this essential condition, Chenery and MacEwan observed that:

> The availability of external capital permits an economy to grow at the limit corresponding to its ability to increase its capital stock rather than at the lower rate implied by its ability to increase domestic savings.[20]

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[18]Hollis B. Chenery and Alan M. Strout, "Foreign Assistance and Economic Development," The American Economic Review, LVI, (Sept. 1966), p. 680. There is no guarantee that time alone will necessarily lead to an expansion of the absorptive capacity of the economy. It all depends on the strategy of economic development. A strategy aimed at the development of human resources and easing sectoral bottlenecks will certainly contribute to the expansion of absorptive capacity. On the other hand, absorptive capacity may decline owing to deterioration in administrative efficiency. Derived from K. A. Al-Eyd, op. cit.

[19]The above section is derived from K. A. Al-Eyd, op. cit.

[20]Chenery and MacEwan, "Optimal Patterns of Growth and Aid: The Case of Pakistan," op. cit., p. 152. Derived from K. A. Al-Eyd, op. cit.

Limitations of Absorptive Capacity

In explaining the gradual nature of the economic development process, the World Bank listed many factors that limit the absorptive capacity of developing countries. These factors include a low level of education, frequent changes in government and strong vested interests opposed to any change.[21] It then concluded that:

> ...the principal limitation upon bank financing in the development field has not been lack of money but lack of well-prepared and well-planned projects ready for immediate execution.[22]

It is not possible to have a complete catalogue of limits that is applicable to each and every possible case. This is so because developing countries differ with respect to their natural resource endowment. Their limitations on absorptive capacity will always vary from one country to another and, therefore, manifest themselves in many ways. As Adler points out:

> The only way to come to grips with the practical limitation of absorptive capacity is to devise specific measures to appraise specific limitations.[23]

Be that as it may, it is possible to categorize the various limits on absorptive capacity according to the broad classes of cooperant factors that could conceivably be in

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[21]IBRD. Fourth Annual Report, op. cit., pp. 8-9. Derived from K. A. Al-Eyd, op. cit.

[22]Ibid., p. 9. Derived from K. A. Al-Eyd, op. cit.

[23]Adler, Absorptive Capacity, op. cit., p. 31.

short supply.[24] Bearing this in mind, what follows is a brief commentary on the most commonly observed limitations.[25]

Limited Knowledge

A decisive factor which hampers the ability of developing countries to present well conceived and easily executed projects is their limited knowledge about the natural resources they possess. Adequate information about minerals, water resources, soil, and other natural resource endowments and climatic conditions is essential for the preparation of economically feasible projects. In short, vital data and the technical know-how to utilize the resource base in all its forms is lacking or questionable.

Scarcity of Entrepreneurs

Scarcity of entrepreneurial talent derives from Professor Hirchman's notion of "ability to invest."[26] Thus, according to Albert Waterson:

> Such lack of "absorptive capacity," which essentially reflects an inability to invest in soundly conceived development programs and projects that can be carried out well and operated economically upon completion

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[24]Ibid., pp. 31-34. The remaining discussion in this part is based on Adler's list of limitations but derived from K. A. Al-Eyd, op. cit.

[25]The above section is derived from K. A. Al-Eyd, op. cit.

[26]Hirschman, The Strategy of Economic Development (New Haven: Yale University Press, 1958). Derived from K. A. Al-Eyd, op. cit.

> is a common characteristic of less developed countries.[27]

Evidently the availability of capital investment opportunities, such as the development of natural resources, is not by itself sufficient. There must exist a class of entrepreneurs ready and able to take advantage of these opportunities. According to proponents of the unbalanced growth doctrine, developing countries normally suffer from a scarcity of indigenous entrepreneurs, a fact that constitutes a limit on their absorptive capacity.

Scarcity of Skills

Professional engineers, financial experts, executives and skilled workers are all needed for the design, execution, operation and maintenance of projects. Yet, underdevelopment implies, among other things, scarcity of skills. This structural problem is recognized as one of the most restrictive limitations. Drawing on the Nigerian experience, Stolper states:

> Absorptive capacity is therefore limited by the structures of the economy and the fact that investment decisions must be made over time. There are, of course, other limiting factors. Executive personnel are scarce and lose their effectiveness when overworked. Lack of executive capacity is a further limitation on

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[27]Albert Waterson, Development Planning, Lessons of Experience (Baltimore: The Johns Hopkins University Press, 1965), p. 300. Derived from K. A. Al-Eyd, op. cit.

absorptive capacity."[28]

Lack of skilled management is thought to be the most serious bottleneck for publicly owned enterprises. The lack of efficient management is of particular importance in state enterprises, which, for political reasons, find it difficult to accept foreign management.[29]

Institutional Limitations

These are limitations which cannot be ameliorated at the project level and are weaknesses in the institutional structures of society. Examples include an inability to maintain order, uphold the laws and protect property, excessive bureaucratic controls, and cumbersome procedures in export and import licensing, permits to establish enterprises, foreign exchange allocation and repatriation of profits.

In general, institutional imitations of this type lower the real rate of return on domestic capital investment and thus restrict the absorptive capacity of the economy, hindering the growth of sectors of the economy.

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[28]Wolfgang F. Stopler, Planning Without Facts, Lessons in Resource Allocation from Nigeria's Development, (Cambridge, Mass.: Harvard University Press, 1966), p. 58. Derived from K. A. Al-Eyd, op. cit.

[29]J. Adler, Absorptive Capacity, op. cit., p. 32.

Cultural, Social and Political Limitations

Developing societies do not generally abide by the same set of cultural and social values followed in developed countries. Lack of interest in material wealth and the desire to cling to the simple life, rejection of the rigid discipline of factory life and reluctance to follow a specific schedule of work are examples of differences in outlook and attitude. Furthermore, religious beliefs, social customs and superstitions usually have a negative effect upon the economic developmental efforts of developing countries.[30]

Most damaging, of course, is the existence of vested interests opposed to any change. Political instability is also one of the factors responsible for the flight of indigenous capital and, most importantly, for the migration of professionals. The so-called "brain-drain" cannot help but constitute a limit on the absorptive capacity of most developing countries.[31]

The limitations on absorptive capacity, then, generally fall into two categories: those which are amenable to foreign technical assistance and those which are time dependent. For example, it is feasible with the help of foreign experts to survey the country's natural resources.

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[30]J. Adler, Absorptive Capacity, op. cit., p. 34.

[31]There are exceptional cases, such as India, where the migration of highly trained persons could be attributable to lack of employment opportunities in the home country.

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Foreign engineers, skilled workers and managers can design, construct and manage industries.

On the other hand, foreign assistance cannot be counted upon to change customs and attitudes or bring political stability. In the final analysis, expansion of absorptive capacity is an economic evolutionary process in which the strategy of economic development can play a decisive role. Comprehensive planning aimed at educating the general public and providing training targeted to the specific needs of the economy, and designed to solve acute bottlenecks, should eventually lead to an expansion of absorptive capacity. In contrast, haphazard planning or no planning at all will undoubtedly help to perpetuate the existing state of affairs.[32]

The Case of Saudi Arabia: Gross Domestic Capital Formation

Gross capital formation has risen rapidly over the first two years of the Second Development Plan, reflecting an acceleration of investment activity in the Kingdom. In value terms, it has more than tripled from SR 17.3 billion in 1975 to 59.9 billion in 1977. In percentage terms it has recorded a rate of growth of 56.0 percent in 1977 compared with growth rates of 114.8 percent in 1976 and 98.0 percent

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[32]The above section is derived from K. A. Al-Eyd, op. cit.

in 1975.[33]

Private sector investment registered the highest rate of growth, 97.6 percent in 1977, against a growth rate of 128 percent in 1976, while government sector investment grew by 78.2 percent in 1977 compared with 197.8 percent in the preceding year. The oil sector recorded a growth rate of 2.1 percent in 1977 compared with 20.2 percent in 1976. Inventories registered a substantial decline of 249 percent in 1977 compared with a small decline of 16.4 percent in 1976 and positive growth of 187.7 percent in 1975. The substantial decline in inventories is mainly attributed to normalization of inventory levels after reduction of port congestion.[34]

Further analysis of gross fixed capital formation (GFCF) by type of capital goods indicates that construction accounted for the highest rate of increase of 76.2 percent in 1977 (though this was well below the growth rate of 158.9 percent achieved in the preceding year), followed by machinery and equipment, which grew by 61.6 percent against a growth rate of 38.4 percent in the preceding year. Transport equipment increased by 54.5 percent in 1977 compared with 86.2 percent in 1976. Construction thus

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[33]Saudi Arabian Monetary Agency, 1978 Annual Report. (Riyadh, Saudi Arabia: Department of Research and Statistics).

[34]Ibid.

continued to dominate gross fixed capital formation, accounting for 86.2 percent of the total, while transport equipment and machinery accounted for 6.3 percent and 7.5 percent, respectively.[35]

The Second Development Plan Rates

With the end of fiscal year 1977/78, the Second Development Plan completed its third year. Table III.1 shows that, apart from the oil sector whose variable trends reflect external causes, the performance of all other sectors has been close to, or better than, the plan projections. The non-oil private sector sustained high rates of growth in the first three years of the Plan, mainly as a result of substantial expansion in the construction and transport, communication and storage sub-sectors. The agricultural sector has maintained a steady growth of 4.0 percent as a result of continued infrastructure expansion and agricultural extension services provided by the government. The growth rate of the manufacturing sector has markedly accelerated and may be expected to continue doing so, benefitting as it does from the facilities and incentives provided by the government. The government sector continues to play its role successfully as the prime mover of development efforts and has registered impressive growth rates, considerably higher than the plan targets. The fact that the

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[35]Ibid.

TABLE III.1

SECOND PLAN GROWTH RATES
(Annual Real Rates of Growth)

	Average Annual Planned Projections	1st Year Actuals 1975-76	2nd Year Actuals 1976-77	3rd Year Actuals 1977-78
Total GDP	10.2	2.6	17.0	7.3
Oil Sector	9.7	1.2	13.3	1.6
Non-oil Private sector	13.4	17.3	19.5	17.0
Agriculture	4.0	4.0	4.1	-
Manufacturing	14.0	7.2	13.2	-
Construction	14.0	30.0	34.0	-
Transport, Communication & Storage	15.0	24.5	24.3	-
Government sector	12.9	23.8	26.3	18.3

SOURCE: Second Development Plan for projections, and Central Department of Statistics, Ministry of Finance, for actuals. Ministry of Finance, Saudi Arabia, 1978.

rate of inflation has fallen substantially in spite of these high rates of growth is due to the realistic, non-inflationary, but intensely supply-and development-oriented budgetary policy of the government.

Analysis of Absorptive Capacity

For the purpose of this study, Saudi Arabia's absorptive capacity in a given period is defined as that level of gross, domestic, fixed capital formation which the country achieved during that period. Specifically, it is postulated that Saudi Arabia's observed levels of gross domestic investment were the highest the country could undertake, given its absorptive capacity. The reasons underlying this assumption will be dealt with further in this section.

If this is the case, it is possible to measure Saudi Arabia's absorptive capacity by ascertaining the rate of increase in gross domestic investment that the country achieved on a sustained basis. This method of measurement implies that the maximum level of gross domestic investment in any one period cannot exceed the level of gross domestic investment in the preceding period times an exogenously determined rate of increase. Symbolically, this relationship is expressed as:

$$I_t \leq I_{(t-1)} \cdot BI_{(t-1} \qquad \text{where:}$$

I_t is investment in period t; and BI is the exogenously determined rate of increase. The level of B is governed by the limits of absorptive capacity.

As indicated earlier, this method of measurement can be valid if it can be proven that the economy was not hampered by a savings-investment gap or an export-import gap. Therefore, it is necessary to show that the Saudi economy was not constrained by either of these. A clear understanding of the two gaps might be gained with the aid of the following Keynesian-type macro-economic model.

Let:

Y = gross domestic product

C = private consumption

I = gross investment

G = public consumption

X = total exports of goods and services

M = total imports of goods and services

S = gross total savings

Sd = gross domestic savings

Sp = gross private savings

T = total taxes

Gross domestic product may be expressed as an expenditure flow or as an allocation of income. Equation (3.1) and equation (3.2), respectively, depict these two expressions:

$$Y = C + I + G + X - M \quad (3.1)$$

$$Y = C + Sp + T. \quad (3.2)$$

Since the right-hand sides of equations (3.1) and (3.2) are

equal to Y, they must be equal to each other so that:

$$C + I + G + X - M = C + Sp + T. \quad (3.3)$$

It is necessary to point out that, according to the Keynesian definition of consumption, the C in equation (3.1) is the same as the C in equation (3.2). In both cases it represents the goods and services which are bought for consumption in the private sector during the period under consideration.[36]

> If more consumption goods are in fact produced or imported than are bought for consumption, there is an increase in stocks, which is treated as "investment in stocks" and so is considered as forming part of I. Similarly, if more consumption goods are bought for consumption than are produced or imported, stocks of consumption goods are run down and this is treated as "disinvestment in stocks" and is again considered as part of I.[37]

Based on the above interpretation, it is possible to cancel out the C's from equation (3.3), so that:

$$G + I + X - M = Sp + T. \quad (3.4)$$

Isolating I and rearranging we obtain

$$I = Sp + (T - G) + (M - X). \quad (3.5)$$

Since aggregate total savings are, by definition, equal to gross investment, equation (3.5) may be rewritten as:

$$S = I = Sp + (T - G) + (M - X) \quad (3.6)$$

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[36]The above section is derived from K. A. Al-Eyd, op. cit.

[37]Organization for Economic Cooperation and Development (OECD), Quantitative Models as an Aid to Development Assistance Policy (Paris: OECD, 1967), pp. 67-68. Derived from K. A. Al-Eyd, op. cit.

Equation (3.6) states that the level of aggregate gross total savings is equal to the sum of aggregate private savings (Sp), aggregate public savings (T - G), and aggregate foreign savings (M - X). Subtracting foreign savings from both sides of equation (3.6) gives two measures of aggregate gross domestic savings (Sd):

$$Sd = I - (M-X) = Sp + (T - G). \quad (3.7)$$

To avoid the common difficulties involved in estimating aggregate private savings and aggregate public savings, it is possible to calculate aggregate domestic savings indirectly by subtracting aggregate foreign savings from estimates of gross investment. Thus aggregate domestic savings can be estimated as follows:

$$Sd = I - (M - X). \quad (3.8)$$

Equation (3.8) describes the familiar case of most developing countries, where domestic savings fall short of investment and the balance is provided by foreign sources and expressed as import surplus ($M > X$). The reverse case occurs when the import surplus changes into an import shortage, i.e., where $X > M$. In other words, the usual savings-investment and export-import gaps are reversed.[38] To be precise, there will be an export-import gap in reverse. In this connection, we must point out that these

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[38]For a concise statement of the theory of the two gaps see Jaroslav Vanek, Estimating Foreign Resource Needs for Economic Development (New York: McGraw Hill Book Co., 1967), especially Chapter 6.

two gaps are one and the same.

In any actual situation, the savings-investment and export-import gap will necessarily be the same. For the gap, in each of these two views, is the excess of the amount of resources used over the amount of resources produced by the economy.

The accounting equality of the two gaps can be readily seen from a rearrangement of equation (3.8) so that:

$$I - Sd = M - X. \quad (3.9)$$

In the familiar case of most developing countries $I > Sd$ and $M > X$, i.e., both sides of equation (3.9) are positive. In this situation it is not correct to measure the absorptive capacity of the economy on the basis of the observed rate of increase in gross domestic investment unless it can be shown that capital inflows exceeded the magnitude of the gap on a consistent basis.[39]

Measuring Absorptive Capacity of the Economy

After this digression, the case of Saudi Arabia can be examined with confidence. The fact was brought out that, in the span of 13 years, Saudi Arabia experienced a current account deficit in only three years (Table III.2). These deficits were caused, not by an increase of imports, but rather by a decrease in exports due to external factors such

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[39]The above section is derived from K. A. Al-Eyd, op. cit.

TABLE III.2

ESTIMATE OF SAUDI ARABIA'S BALANCE OF PAYMENTS
(Millions of Riyals)

YEAR	CURRENT ACCOUNT SURPLUS (+) DEFICIT (-)
1965	+ 441
1966	+ 594
1967	+ 405
1968	- 549
1969	- 535
1970	- 283
1971	+ 4389
1972	+ 8616
1973	+ 9380
1974	+ 82443
1975	+ 50268
1976	+ 50315
1977	+ 43498
TOTAL	+ 249,548

SOURCE: Saudi Arabian Monetary Agency, 1398 (1978) Annual Report; Saudi Arabia, p. 156; 1397 (1977) Annual Report, Saudi Arabia, p. 140.

as wars in the Middle East or decisions by foreign companies operating in Saudi Arabia to reduce crude oil production and exports. Between 1965 and 1977 Saudi Arabia realized a cumulative current account surplus amounting to SR 249,548 million. The bulk of this surplus occurred in later years due to higher oil revenues, but this only demonstrates that, after more than a decade, the Saudi economy was still unable to surmount some of the limitations on its absorptive capacity.

The cumulative current account surplus is nothing but a savings-investment and export-import gap in reverse. In the absence of absorptive capacity limitations, Saudi Arabia would have been able to achieve higher gross domestic fixed capital formation than actually achieved during the period.

It is possible to look at the absorptive capacity limits of the Saudi economy from a different perspective. The following manifestations of absorptive capacity constraints were discussed earlier. To summarize:

1. Planned public sector investment expenditures consistently exceed actual expenditures.
2. Shortfalls in actual expenditures were due to delays in project execution because of shortages in skills and cumbersome government routine.
3. Planners neither tapped domestic private savings for economic development purposes nor encouraged private investment in a useful manner.

4. Planners neither tapped foreign savings nor encouraged foreign private capital inflows.
5. The inability to invest was not caused by a dearth of ready-to-go projects. Projects that were included in programs during the 1960's were not acted upon until the 1970's.

Having established that the Saudi economy has not been constrained by a lack of savings or foreign exchange, it is now possible to measure its absorptive capacity according to the proposed method, i.e., by estimating the rate of increase in investment. Data on Saudi Arabia's real gross domestic fixed capital formation were used to measure the absorptive capacity of the Saudi economy, i.e., the rate of increase in capital formation in both the public and private sectors. Two aspects require careful consideration before any calculations can be made. These are the method of estimation and the time span. As to method, it is possible to calculate a rate of growth in several ways. An annual average rate can be calculated by comparing the gross domestic fixed capital formation in 1977, for example, with the gross domestic fixed capital formation in 1971. Alternatively, it would be possible to calculate the rate of growth in every year and take the average (mean) as the representative rate of growth during the period in question. There are other ways. For example, a growth rate can be calculated by comparing the average gross domestic fixed capital formation during the period 1971-74 with the

average gross domestic fixed capital formation during the period 1974-1977.

However, all of the above methods cannot be considered efficient because they involve a comparison of two points in time and ignore economic developments during intervening years. It is entirely possible that Saudi Arabia had several recessions or booms during the period under investigation, but the above methods would have completely missed the impact of any such possible developments. Another source of bias is the state of the economy during the base year and the end year. If the economy were booming during the base year and depressed during the end year, then the rate of growth would be underestimated; and vice versa.[40]

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[40]The above section is derived from K. A. Al-Eyd, op. cit.

CHAPTER IV

ABSORPTIVE CAPACITY AND THE DOMESTIC INVESTMENT IN PLANNING

Alam Al Naft estimated Saudi Arabian foreign capital assets, mostly in the form of U. S. Treasury Bonds, private bonds, and time deposits in foreign banks, at roughly 75 billion.[1] (The exact distribution of the Saudi portfolio is a well-guarded secret.) Obviously, this form of capital investment, which involves risk, would not have been undertaken if domestic investment would have yielded the same rate of return as investment abroad.

The reasons for the low rate of return on domestic capital investment in Saudi Arabia are not difficult to comprehend once one recognizes the low degree of absorptive capacity that characterizes the non-oil sector of the economy. During the 1940's and 1950's, the economic wheel was not in active use for most areas of the country. Ramon Knauerhase wrote:

> Saudi Arabia had a pastoral economy based on the raising of goats, sheep and camels. The majority of the urban population lived in small villages built of mudbrick and

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[1] Alam Al Naft, May 10, 1979 (Beirut-Lebanon) (In Arabic).

> earned a living from subsistence agriculture.[2]

The Saudi economy at present is not as backward as it was, and the number of "wheels" in the streets makes driving an automobile in Saudi cities as comfortable as driving in the streets of New York or Chicago.

Aside from "conspicuous" consumption, the economy, in spite of government efforts, is still relatively backward. Until now, there have been no basic statistical data on the population of the country or on birth and death rates. The majority of labor force professionals, such as teachers, doctors, nurses and engineers, have been recruited from other countries.

In spite of the shortage or lack of a professional and skilled labor force in Saudi Arabia, the greatest obstacles confronting anyone who considers undertaking capital investment projects are a lack of data and insufficient public infrastructure. Of course, information is often not readily attained, but in Saudi Arabia sometimes it is non-existent. For example, there are no detailed data about rainfall or flooding (there are areas of the country where flooding is serious), temperatures, composition of soil, and levels of

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[2]Ramon Knauerhase, The Saudi Arabian Economy (New York: Praeger, 1975), p. 57. Derived from Ali D. Johany, "OPEC Is Not a Cartel: A Property Rights Explanation of the Rise in Crude Oil Prices" (Ph.D. Dissertation, California: University of California, Santa Barbara, June 1978).

humidity.[3]

An entrepreneur considering an investment project in most of the Western countries worries primarily about the costs of factors of production rather than their availability. Furthermore, he knows that with some effort he can obtain data on things like birth rates or the average quantity of rainfall.

In some developing countries, such as Saudi Arabia, some factors of production are either not available or are available only at high costs that would make the rate of return on capital investment less than that available by depositing capital assets in a foreign bank. Development economists have established a term to describe such a condition. As stated before, the term is "absorptive capacity."[4] Adler defines absorptive capacity as "that amount of investment... that can be made at an acceptable rate of return, with the supply of cooperant factors considered as given."[5] This definition does not specify the "acceptable rate of return", but one may conclude that an acceptable rate of return is the rate that exceeds or is equal to the domestic rate that Saudi Arabia can receive on its financial capital by investing it in the form of foreign

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[3]The above section is derived form Ali D. Johany, op. cit.

[4]J. H. Adler, Absorptive Capacity (Washington, D.C.: The Brookings Institution, 1965).

[5]Ibid., p. 8.

bonds or time deposits in foreign banks, with adjustment for risk.

To be certain, the government does invest for the purpose of augmenting the supply of "cooperant factors." Nevertheless, in the short run this augmentation is either physically impossible or it increases the costs of capital investment in a manner that greatly diminishes the rate of return on the entire investment project.

One may conclude, after researching and reflecting on the "absorptive capacity" concept, that it basically makes reference to the same phenomenon that describes the law of diminishing returns. In the words of George Stigler, "The discovery of this law, due to T. R. Malthus and Edward West in 1815, was one of the heroic advances in the history of economics."[6]

In terms of absorptive capacity, we may conclude that Saudi Arabia could not invest all of its financial capital assets within its economy because the supply of other "cooperant" factors could not be augmented as rapidly as the supply of financial capital. In essence, the marginal product of financial capital decreases faster than the marginal product of other factors due to abundant financial flows in comparison to other cooperant factors. However, that is precisely what the law of diminishing returns implies. This

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[6]G. S. Stigler, The Theory of Price (New York: Macmillan, 1966), p. 122. Derived from Ali D. Johany, op. cit.

economic law can be stated briefly:

Consider a general production function, for the entire economy, which specifies that the country's output is a function of the combination of inputs X_1 through X_n. As a result of scarcity, all inputs could not be augmented at the same rate forever. The marginal product of the factor that cannot be augmented will eventually rise. This fixed factor is called "cooperant" factor in the absorptive capacity literature.[7]

The reason for the above discussion of the law of diminishing returns is not to cloud a well-defined principle, but to emphasize what it is that limits Saudi Arabian domestic capital investment opportunities. The discussion also emphasizes what development economists refer to as absorptive capacity, which is in fact the law of diminishing returns. This is to say that Saudi Arabian capital expenditures on domestic investment cannot be utilized at the rate at which the country's financial resources are accelerating. This is due to the limited supply of other cooperant factors and their inability to accelerate as fast.

What makes the economic development experience of Saudi Arabia unique is the relative abundance of financial resources. With the exception of a few other OPEC members, one of the major characteristics of developing countries is

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[7]The above section is derived from Ali D. Johany, op. cit.

the low rate of capital formation. Consequently, many economists assumed that if capital formation could be greatly increased through domestic savings and foreign aid, economic backwardness would be defeated.[8] The Saudi economy, however, not only empirically confirms the law of diminishing returns, but also demonstrates that the availability of financial capital resources cannot transform a developing country into a developed country within a few years.

Having analyzed the theoretical principles responsible for the limited capital investment opportunities in Saudi Arabia, we turn to the published data. Table IV.1 gives the data on gross fixed capital formation for the years 1969 through 1976 in millions of Saudi Riyals (one U.S. $ = 3.50 SR). The data may not be entirely reliable, but it is all that is available.

Two general conclusions emerge from the table:

(1) On the average, about 75 percent of the expenditure on gross fixed capital formation is undertaken by the government.

(2) Construction accounts for approximately 80 percent of total expenditures on gross fixed capital formation.

It must be kept in mind that there are several other forms of investment that are not classified under the category of "gross fixed capital formation", such as investment

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[8]H. B. Chenery and A. Strout. "Foreign Assistance and Economic Development", American Economic Review 56 (September 1966): 676-733. Derived from Ali D. Johany, op. cit.

TABLE IV.1

EXPENDITURES ON GROSS FIXED CAPITAL FORMATION (GFCF)
IN MILLIONS OF SAUDI RIYALS (SR)

FISCAL YEAR	1969/70	1970/71	1971/72	1972/73	1973/74	1974/75	1975/76
Total GFCF	2,632	2,597	2,932	3,403	5,694	8,924	14,493
By Sector:							
Government	1,349	1,214	1,204	1,443	1,985	3,941	6,984
Non-Oil private Sector	941	1,056	1,150	1,289	1,669	2,351	3,850
Oil Sector	342	327	577	671	2,040	2,632	3,659
By Type:							
Construction	2,067	1,969	2,196	2,595	4,706	6,948	11,548
Transport Equipment	270	309	313	335	468	757	1,230
Machinery	295	319	423	473	520	1,219	1,715

SOURCE: National Accounts of Saudi Arabia, Ministry of Finance and National Economy, (1969-1977). Derived from Ali D. Johany, "OPEC Is Not a Cartel: A Property Rights Explanation of the Rise in Crude Oil Prices." (Ph.D. Dissertation, California: University of California, Santa Barbara, June 1978).

in human capital through expenditures on education and health services.

It is still a fact that the bulk of the capital investment expenditure, however it is defined, is undertaken by the government. Private domestic capital investment is a small fraction of total domestic capital investment expenditure and is being subsidized by the government on such a large scale that it cannot be used as a guide to investment opportunities. The average rate of return on private domestic capital investment is not known, and if it were, its economic significance has been diminished by the governmental subsidies.

In addition, no one knows what the rate of return is on government capital investment and there is no information about the prevailing interest rate. The term "interest rate" is taboo in Saudi Arabia. Paying or receiving interest for the use of money is considered "usury" and contrary to Islamic teaching.[9] The government does not literally enforce any particular law that relates to "interest", and private commercial banks pay an estimated 3 percent on time deposits. The government, however, does not mention the term in its official reports or explicitly use it as a criterion for its investment projects.

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[9]The above section is derived from Ali D. Johany, op. cit.

In reality, however, what guides private capital investment is the expected rate of return, just as anywhere else. This rate of return is generally called "the rate of profit," since making profits is not against Islamic laws. The important issue is what determines government capital investment expenditures.

The majority of domestic capital investment by the government is classified as "development" expenditure. The purpose of the development spending is to increase the supply of "cooperant" factors which are more scarce than capital liquid assets. This does not mean that government development investment projects should be initiated at any cost. While the absence of a formal concept of "interest rates" is certainly confusing, it does not change the economic reality that liquid capital is a scarce resource, however abundant, compared to other factors of production, and that its use has an implicit real price.

The economic policy-makers in Saudi Arabia are well aware of the inadequacy of cooperant factors, like roads, airports and harbor facilities, which not only hinder domestic capital investment opportunities but are also the main cause of the high rate of inflation. Consequently, investments in the construction and improvement of such facilities are accomplished as quickly as physically possible. Human investments in education and health services are also given top priority.

Because of the high rates of inflation that the country has been experiencing, development projects are not only planned on the basis of their rates of return but also according to their relative contribution to the country's general inflation rate. This is true because in Saudi Arabia "... government domestic spending is the main factor leading to monetary expansion while the sale of foreign exchange by the Saudi Arabian Monetary Agency (SAMA - the Saudi equivalent of a central bank) to the private sector is the main contractionary factor."[10] In essence, since government capital expenditures, including development expenditures, determine the growth of the money supply and given that the changes in the money supply directly affect the inflation rate, the contribution of any capital investment project to the inflation rate reduces the real rate of return on that project.

It became clear to the government that it could not increase its capital expenditures at the rate it did between 1974 and 1976 without causing the inflation rate--that was estimated to be around 6 percent in 1973--to reach an annual average (over the 1974-76 period) of 50 percent. In order to prevent this, total government expenditure between 1976 and 1977 in real terms virtually did not change. However, the growth rate in crude oil revenues over the same period

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[10]Saudi Arabian Monetary Agency, Annual Report 1977, p. 23. Derived from Ali D. Johany, op. cit.

was approximately 18 percent and the excess of financial assets over and above payments for imported goods and services and capital investment projects was invested mainly in foreign bonds and time deposits in foreign banks.

The previous discussion was necessary in order to demonstrate that investment expenditure in Saudi Arabia, which is primarily a government activity, is determined by the inflation rate as well as by some notion of rate of return. Furthermore, the contribution of a $1 million investment project to the general rate of inflation is greater than the contribution of an equal amount of expenditure on any other component of expenditure on Gross Domestic Product. The reason for this is that the bulk of the investment projects are implemented by foreign contractors who must bring with them all necessary labor. As a result, foreign company personnel compete with Saudi citizens for the inadequate supply of housing, health facilities, drinking water and other essential needs whose supply price elasticity is very limited in the short run.

Although the general inflation rate has been high, the price of goods and services that foreign residents could not bring with them increased by as much as four times the general inflation rate. For example, the monthly rent for a two-bedroom unfurnished apartment in 1974 was, on the average, between $150 and $200. The same apartment in 1977 could have been rented for somewhere between $500 and $800

per month.[11] The cost of other items such as health services, hotel rooms and restaurant meals have increased by an even greater rate. In 1977, the price of bottled drinking water was about thirteen times the price of an equal amount of gasoline![12]

An Overview of Cooperant Factors 1975-1979

The government expenditure budget, which was held constant at around Rls 111 billion for three consecutive years (1975/76, 1976/77, 1977/78), was raised to Rls 130 billion in 1978/79 when the fight against inflation had been largely won and the major bottlenecks had been cleared. Nevertheless, the moderate increase in 1978/79 indicates the government's continued concern over inflation and its desire to contain the expansion in aggregate demand within the limits of non-inflationary growth. This policy was necessitated by the fact that some bottlenecks still continue, particularly the manpower shortage which cannot be eliminated over a short period by influx from abroad without the risk of hurting the country's social harmony and upsetting its system of values.

1. The gap between actual and budgeted expenditures, which was appreciable a few years ago, has declined steadily with the increase in absorptive capacity of the government

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[11]Derived from Ali D. Johany, op. cit.

[12]The above section derived from Ali D. Johany, op. cit.

machinery and was estimated to have been nearly eliminated in the fiscal year 1977/78. Actual expenditure in 1977/78 was estimated to have matched the budgetary appropriations of Rls 111.4 billion; in the previous two years, actual expenditures amounted to Rls 106.9 billion (1976/77) and Rls 81.8 billion (1975/76) as compared with appropriations of Rls 110.9 billion in both years. The expansion in government expenditures of more than seventeen times the Rls 6.4 billion spent in 1970/71,[13] at the inception of the First Development Plan, implies a compounded growth rate of 50 percent per annum--a remarkable expansion in the capacity of the government machinery to implement its planned projects. Accordingly, the gap between budgeted and actual expenditures declined from 21 percent during the whole First Plan period to 10 percent during the first three completed years of the Second Plan. Total actual expenditure during the First Plan period amounted to Rls 78.2 billion against budgeted expenditures of Rls 99.1 billion, while the corresponding figures were Rls 300.1 billion and Rls 333.2 billion for the first three years of the Second Plan. It may be worth noting also that the gap between appropriations and actual expenditures declined, even though the budgeted expenditures in each of the three years of the Second Plan exceeded the total budgeted outlay during the

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[13]Saudi Arabian Monetary Agency, Annual Report 1978 (Research and Statistics Department, Riyadh, Saudi Arabia, p. 11.

entire five-year period of the First Plan.[14]

2. The counter-inflationary approach of government budgetary policy in recent years has exerted a healthy impact on private sector liquidity of the money supply, the rate of growth of which has substantially decelerated. The rate of growth in money supply declined from a high of 73.9 percent in fiscal year 1975/76 to 52.7 percent in 1976/77 and an estimated 38 percent in 1977/78. The primary reason for the fall in the growth rate was slower growth in all sources of increase in gross liquidity: government domestic spending, credit extended by specialized credit institutions, commercial bank credit to the private sector, and oil company outlays in Saudi Arabia through direct purchase of riyals from the Saudi Arabian Monetary Agency (SAMA). Even this slower growth in gross liquidity was increasingly offset by a rising private sector balance of payments deficit and commercial bank cash and deposits with SAMA. The residual represented increases in the money supply of Rls 5.0 billion, Rls 2.5 billion and Rls 3.7 billion, respectively, in the three years (1975/76, 1976/77, 1977/78). The decline in the rate of growth was primarily attributed to the government's realistic fiscal policy of tailoring its demand in accordance with the economy's absorptive capacity. In 1978/79 the rate of growth in gross liquidity was smaller because of the continued

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[14]Ibid. p. 12.

non-inflationary stance of fiscal policy and an expected higher private sector net balance of payments deficit.

3. Total new credit extended by all financial institutions amounted to Rls 20.6 billion in 1977/78 as against Rls 13.5 billion in the previous year. Of this total growth in new credit in 1977/78, that extended by commercial banks was Rls 2.8 billion and that disbursed by specialized credit institutions was Rls 17.8 billion. Thus commercial bank credit outstanding, which had declined temporarily by a relatively insignificant amount of Rls 94 million in 1976/77 picked up again, as was anticipated, and increased by 33 percent which was approximately commensurate with the growth in private sector supplies. It is expected that commercial bank credit will continue to rise as a result of the continued rapid expansion in private sector economic activity and a prospective decline in excess liquidity in the economy. Credit disbursed by the specialized institutions like the Real Estate Credit Bank, the Agricultural Financial Bank, and the General Industrial Development Bank, may also continue to be substantial in view of the considerable commitments already made by these institutions. These conform with the government's firm policy of providing incentives to the private sector for development in all sectors, particularly in the areas of industry, electricity, agriculture and housing.

4. Private sector real supplies, which consist of real non-oil GDP plus real private sector imports, are estimated to have risen by 31 percent in 1977/78, following growth of 31 percent in 1976/77 and 39 percent in 1975/76. However, although real supplies registered the same rate of growth in 1977/78 as in 1976/77 and a somewhat slower rate than in 1975/76, the rate of growth in private sector liquidity was substantially smaller, 44.5 percent in 1977/78 compared with 74 percent in 1975/1976 and 53 percent in 1976/1977. The result was a substantial decline in the inflationary gap (the imbalance between the rise in private sector aggregate demand and aggregate supplies) which was at its highest in 1974/75. This decline in the inflationary gap has had a salutary effect on prices, and the cost of living index has continued to register a lower rate of growth--4 percent in 1977/78 compared with the high of 35 percent in 1974/75 (Table IV.2.). It is worth noting also that the extent of the inflationary gap has never been fully reflected in the cost of living index, since the government's concern for public welfare has taken the form of subsidies on essential consumers' goods, rent controls and other regulatory measures. It is expected that the government's realistic non-inflationary fiscal program, combined with the expected further improvement in supplies and decline in the rate of growth of private sector liquidity, will reduce the inflationary gap still further. This, together with the government's efforts to promote competition and curb

monopolistic and oligopolistic practices, should have a salutary effect on prices and result in further decreasing the rise in the cost of living index.[15]

TABLE IV.2

SOME IMPORTANT ECONOMIC INDICATORS

		1974/75	1975/76	1976/77	1977/78
1.	Private sector liquidity of money supply	61	74	53	45
2.	Private sector real supplies	20	39	31	31
3.	Non-oil real GDP	17	19	22	17
4.	Private sector real imports	26	83	45	47
5.	Non-oil GDP deflator	25	52	30	18
6.	Cost of living index	35	32	11	4

SOURCE: Saudi Arabian Monetary Agency. Annual Report (1978). Ministry of National Economy and Finance, Kingdom of Saudi Arabia, p. 13.

5. In addition to the regulation of aggregate demand through counter-inflationary fiscal and monetary policies, the government has also taken a number of other relevant measures to reduce prices and to increase supplies. The subsidies introduced in 1973 on a number of essential food items have been continued. The subsidy program is, however,

[15]Ibid., p. 14.

reviewed periodically by a Ministerial Committee in the light of international prices and the supply position in the country. Moreover, to ensure the availability of adequate foodstuffs at all times, the government has awarded contracts for building warehouses in the main population centers of Riyad, Jeddah and Dammam and the rapidly develo ping industrial town of Yanbu'. These are expected to be completed in the near future. To meet the heavy construction demand for cement in the country, the government arranged the bulk import of 2.7 million tons of cement over the two years 1976/77 and 1977/78, part of which was transported by means of helicopters. This bulk import operation not only made cement available at a uniform fixed price but also helped to sustain the momentum of the construction industry, thereby substantially easing the housing shortage.

6. The Kingdom's cement industry has made considerable headway. Total annual production of the three operating plants at Jeddah, Riyad and Dammam has already reached 1.3 million tons. Production is expected to rise substantially in the near future, after the ongoing expansion of existing plants and the projected establishment of new ones have been completed.

7. Substantial expansion in the Kingdom's transportation and communications network has contributed to the removal or reduction of major bottlenecks and a smoother flow of goods and services. Total length of main and feeder

roads was estimated to have increased in 1977/78 by about 2,000 and 3,500 kilometers, respectively, to 18,000 and 16,500 kilometers. In addition to linking up the various regions to attain faster internal mobility, greater social cohesion and lower costs of distribution, the Kingdom has also developed a network of highways to link it with neighboring countries. Road links have already been established with Jordan, Kuwait, Qatar and the United Arab Emirates; those with Yemen and Iraq are under construction and a connector to Bahrain is being designed.[16]

8. The elimination of congestion at the main seaports of the Kingdom has led to an increased and smoother flow of imports, decline in the time lag between arrival and clearance of goods, and a relatively lower need for inventories. Total cargo unloaded at the ports of Jeddah, Damman, Yanbu' and Jizan rose by 67 percent in 1977 to 27.6 million tons. The average daily unloading capacity at the main ports of Jeddah and Dammam rose by 77 percent and 59 percent, respectively; their capacity will increase further still as ongoing expansion projects are completed. Work is also in progress on the expansion and improvement of al-Jubayl, Yanbu', Jizan and al-Khubar ports, and designs are being prepared for the development of ports at al-Wajh and al-Qunfudhah.

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[16]Ibid., p. 14.

9. Development and improvement of the Kingdom's airports is progressing smoothly. New terminal buildings were constructed for passengers at Jeddah and Dammam airports. A similar project at Riyad airport is scheduled for completion within the next 18 months from 1979. Implementation of the new Jeddah International Airport project was expected to be ready for inauguration in 1980. Contracts for studies and designs for new international airports at Riyad and Dhahran have already been awarded. Smaller airports have been built at Hayil, Badanah and Abha and the one at al-Qasim is expected to be completed in 1981. Improvements have been made at Tabuk, Tayif, Najran and al-Wajh airports, and new airports are being designed for Tayif, Turayf, al-Khafji and al-Qurayat.

10. A total of 171,000 automatic telephone lines are presently in operation in ten Saudi cities and a further 27,800 lines are being installed. In addition, a contract has been awarded for the installation, within the next three years, of 470,000 automatic telephone lines operating on electronic exchanges in 72 cities and towns in the Kingdom. With the completion of this project, the number of automatic telephone lines operating in the Kingdom will rise to 668,800.[17]

11. The telex system in the Kingdom has expanded to 5,916 lines and will expand further by 30 percent in 1981.

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[17]Ibid., p. 15.

The three main switching centers are located in Riyad, Jeddah and Dammam with access to 15 other towns and cities (Mecca, Madinah, Tayif, al-Khubar, Abha, Najran, Jizan, Buraydah, Unaizah, Hayil, Tabuk, al-Kharj, Jubayl, Rahimah and al-Khafji) via satellite exchanges.

12. The postal system in the Kingdom has improved substantially and plans are in progress to streamline and improve it still further to cope with an extremely rapid growth in the volume of mail. New machines for mail distribution are expected to arrive in 1981 to foster mail distribution in the country.

13. Of the three integrated grain silo projects involving grain silos, flour mills and millfeed plants, the Riyad project was inaugurated in November 1977. The total storage capacity of the steel silos is 20,000 tons, which will increase by 60,000 tons when two sets of concrete silos, now in an advanced stage of construction, are put into service. The capacity of the flour mills is 540 tons daily and that of the millfeed plant 300 tons daily. Support facilities have already been commissioned at Dammam port (to serve also the Dammam project) for discharging grain from ships and transporting it by rail to the project site. Work is now progressing on the Dammam and Jeddah projects; the Dammam project is identical to that of Riyad, while the Jeddah project is one-third larger. The completion of all three projects will ensure an adequate stockpile of grain sufficient to meet the national demand for six months,

thereby helping to stabilize retail grain prices in domestic markets.

14. To promote the establishment of industries, the government is providing a number of incentives and facilities to the private sector. These include: exemption from import duties on raw materials, equipment and spare parts; land for factory sites and for industrial housing at nominal rent; quota or tariff protection against competing imports; interest-free loans; preferential treatment of local products in government purchases; and assistance in manpower training. In addition, a number of government-sponsored institutions provide direct assistance in the establishment of industries. These include the Saudi Industrial Development Fund and the Public Investment Fund for provision of a part of the financial needs, the Industrial Studies and Development Centre for provision of guidance and for help in preparing feasibility studies, and the Industrial Estate Department of the Ministry of Industry and Electricity for provision of sites with auxiliary facilities. The private sector is responding favorably and industrial inertia is steadily declining. By the end of 1977, 1170 licenses had been issued by the government for the establishment of industries involving a total investment of Rls 17.1 billion.[18]

15. Master plans for the development of the infrastructures for hydrocarbon and mineral-based industrial

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[18]Ibid., p. 16.

complexes at Jubayl and Yanbu' have now been completed. SABIC, which was created in 1976 for the purpose of establishing petro-chemical and mineral-based industries, has been concluding arrangements with a number of international companies to set up large-scale petro-chemical, fertilizer, aluminum, steel and other industries.

16. Agriculture, which has been receiving significant attention in the country's development programs, has witnessed steady progress. The government intends to exploit the country's agricultural potential by developing virtually the entire quantity of arable land under cultivation. This requires the removal of major economic obstacles to agricultural development by building the necessary physical and social infrastructures and by providing adequate incentives and facilities. One of the major obstacles has been the scarcity of water; the government is approaching this basic problem by means of surveys to locate underground water resources and by building dams and reservoirs to conserve rain water. A contract was awarded in July 1977 for the construction of a dam in Wadi Najran, which when completed in about three years will have a storage capacity of 68 million cubic meters. This is in addition to the dam which was constructed in the Southern Region in 1971 and has already attained its full capacity of 71 million cubic meters. Work was completed in 1979 on the construction of an irrigation network, covering an area of 6,000 hectares in Jizan. The two dams, together with the irrigation network

and the agricultural extension services provided by the government, will enable the area to develop its full agricultural potential.[19]

17. The number of poultry farms in the Kingdom nearly doubled through government subsidies from 104 in 1971 to 206 in 1977, and annual production reached 23 million chickens and 379 million eggs. This growth in production brought about stability in retail prices of both chickens and eggs.

18. A total of more than 1.2 million male and female students were enrolled at all levels of education during the academic year 1977/78. It is worth noting that enrollment in post-primary, technical and higher education has been rising at a much faster rate than total enrollment. Moreover, all educational institutions in the Kingdom have witnessed major improvements and expansion in keeping with the government's stress on development of human resources.

19. Health services also constitute a major concern of the government as indicated by persistent efforts to improve and expand existing facilities. Five new hospitals were completed by the middle of 1979 in Jeddah, Madinah, Jizan, al-Hafuf and al-Khubar, and three more are under construction in Hayil, Najran and Tabuk.

20. The pressure on housing experienced during the last few years, has now eased because of rapid increase in suppplies, as a result of the encouragement and generous

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[19]Ibid., p. 17.

financial support provided by the government. Considerable progress has been made in housing projects undertaken by both the government and the private sector. More than 100,000 housing units had been constructed by the private sector by the end of 1976/77 compared with the Plan target of 42,000 units. Two government housing complexes involving 32 eighteen-story buildings in Jeddah and Dammam are under execution, while a similar project for Riyad is expected to be put out for tender in the near future. Contracts have also been awarded for the construction of 4,636 housing units in Riyad and Jeddah. Studies and designs have been completed for housing projects in Buraydah, Madinah, Mecca and the Southern Province; these are expected to be completed within three years.

Municipal services and public utilities such as water supply, sewage disposal, electricity and telephone services, street lighting, construction of roads, pavements and building of markets and slaughter houses have also witnessed considerable expansion and improvement. Nevertheless, in spite of the unusually rapid expansion in such services and utilities, shortages continue to be experienced because of the continued steep rise in demand. However, since urban and rural development enjoy high priority in government resource allocations, it is hoped that in the very near future these shortages will have been substantially eliminated.

21. Electricity generated in major cities of the Kingdom rose by 37.5 percent in 1977 to 3,819 million kwh. In 1970, total electricity generated was 700 million kwh; this indicates that total electricity generated doubled every three years and rose more than five-fold over the seven years 1970-1977. This high growth rate was made possible by the incentives and facilities, including interest-free loans, provided by the government. The rapid growth in electricity generation, notwithstanding, demand has outstripped supply and the electricity companies have been encouraged by the government to take all possible measures to expand generating capacity and transmission networks to cope with rapidly rising consumption.

22. Urban water supply, which remains a focus of government concern, has been increasing rapidly, following the drilling of wells and implementation of desalination projects. Although there has been a considerable increase in urban water supply, there are still shortages in some urban areas as a result of steep increase in demand. The question has, however, received, and continues to receive, maximum government attention combined with substantial budgetary appropriations, and it is hoped that in the near future shortages will be virtually eliminated.[20]

Given Saudi Arabia's limited domestic capital investment opportunities due to limited supply of cooperant

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[20]Ibid., p. 9.

factors in the economy, we can therefore postulate that what determines the Saudi "discount rate" or its market "rate of interest," and, in turn, determines the number of barrels of oil it will produce, is primarily the rate of return that the Saudis' can get on their foreign capital investment.[21] A Saudi Arabian official stated: "We can live on five or less million barrels in daily oil production to carry on our development programs in the entire Kingdom without any loss of continuity in development effort at the current price level of oil in the open market."[22]

Structure and Trends of Budget Revenues

The government of Saudi Arabia institutes the greater part of the Kingdom's economic activity. Oil revenues continuously finance most of this economic activity but continue to accrue at a faster rate than expenditures. Thus the trend, "has been toward budget surpluses and the building of reserve funds caused by the unusually rapid increase in oil reserves and shortfall in development expenditures." [23] Table IV.3 demonstrates that oil revenues are responsible for more than 90 percent of the total

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[21]Derived from Ali D. Johany, op.cit.

[22]Ibid.

[23]Richard F. Nyrop, Area Handbook for Saudi Arabia (Washington, D.C.: Foreign Area Studies of American University, 1977), p. 232. Derived from Donald M. Moliver, "Oil and Money in Saudi Arabia" (Ph.D. dissertation, Virginia: Virginia Polytechnic Institute and State University, December 1978).

TABLE IV.3

SAUDI ARABIA SUMMARY OF ACCOUNTS,
1969-1976 (SR BILLION)

	1969	1970	1971	1972	1973	1974	1975	1976
	Budgetary Estimates							
Revenues	5.535	5.966	6.380	10.782	13.200	22.810	98.247	110.935
Oil Revenues	4.242	4.848	5.536	9.956	12.203	21.266	94.432	102.298
Custom Revenues	.243	.242	.292	.313	.312	.330	.400	.375
Other Revenues	1.050	.876	.552	.513	.682	1.214	3.415	8.132
Expenditures	5.885	5.966	6.542	10.182	13.118	22.810	98.247	110.935
Current	3.325	3.284	3.946	5.146	6.400	8.547	19.346	36.556
Development	2.560	2.682	2.596	5.036	6.718	14.263	78.901	74.379

SOURCE: Said H. Hitti, and George T. Abed. "The Economy and Finances of Saudi Arabia," International Monetary Fund Staff Paper XXI (July 1974):283, Richard F. Nyrop, Area Handbook for Saudi Arabia (Wash. D.C.: Foreign Area Studies of American University, 1977), p. 233. Derived from Donald M. Moliver, "Oil and Money in Saudi Arabia" (Ph.D. dissertation, Virginia: Virginia Polytechnic Institute and State University, December 1978).

revenue for the 1969-76 period.

Revenue from other sources includes customs duties and a direct property tax--known as Zakat--of 2.5 percent of the assessed value of all properties owned by Saudi nationals and Saudi companies. Income tax was another source of revenue until it was revoked in 1975.

Total estimated revenue increased nearly fifteen times over the 1969-76 period, increasing in Saudi riyals (SR) from 5.53 billion to 110.93 billion. The largest increases took place between 1974 and 1975, as revenues rose from SR 22.81 billion to SR 98.25 billion. This growth was attributed to the relatively steep growth in oil income, amounting to 331 percent during the same period.[24]

The First Five-Year Development Plan (1970-75)

The Central Planning Organization was established in order to utilize crude oil revenues and stimulate the economic development and growth of Saudi Arabia. By August of 1970, the organization had implemented the First Five-Year Development Plan. In order to reduce Saudi Arabia's future dependence on crude oil production and exportation as its primary income source, the first plan set out to achieve the accelerated development of human resources through planned manpower and capital investments within the designated

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[24]Derived from D. M. Moliver, op. cit.

infrastructure. Subsequent to this, a diversified economic structure would evolve. Established as a budget was SR 32.30 billion, with 45 percent allocated to capital investment projects.[25]

Data in Table IV.4 reveal that the allocations for the government or public sector were, "the largest, reflecting the fact that this was in essence the budget for the five years in an economy that relied primarily on private investors for development; defense had 23 percent of total allocations and public administration, 19 percent."[26]

The plan called for comprehensive economic growth, (in real gross domestic product) to occur at 9.8 percent annually, slightly higher than the 9.1 percent expected for the oil sector.[27,28] It was the government's desire that the non-oil sector grow at a higher rate than the oil sector. "Projections for the agricultural sector indicate a 3.6 percent growth rate, much lower than manufacturing's anticipated 14.6 percent growth rate."[29]

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[25]Nyrop, Area Handbook for Saudi Arabia, op. cit., p. 240. Derived from D. M. Moliver, op. cit.

[26]Ibid. Derived from D. M. Moliver, op. cit.

[27]Ibid. Derived from D.M. Moliver, op. cit.

[28]Said H. Hitti and George T. Abed "The Economy and Finances of Saudi Arabia." International Monetary Fund Staff Paper XXI (July 1974), p. 283

[29]Nyrop, Area Handbook for Saudi Arabia, p. 240 and Hitti. "The Economy and Finances of Saudi Arabia." op. cit. Derived from D. M. Moliver, op. cit.

TABLE IV.4

SUMMARY OF PLANNED ALLOCATIONS
BY SECTOR FOR SAUDI ARABIA'S
FIRST FIVE-YEAR PLAN (1970-1975)
(IN SR MILLIONS)

SECTOR	RECURRENT	PROJECTS	TOTAL	PERCENT (%)
Administration	6794.6	922.8	7717.4	18.6
Defense	3980.0	5575.0	9555.0	23.1
Education & cultural affairs	6150.2	1227.5	7377.7	17.8
Health & social affairs	1612.9	308.2	1921.1	4.7
Utilities & urban development	1246.9	3325.4	4572.3	11.1
Transportation & communications	1767.3	5709.2	7476.5	18.1
Industry	321.8	776.7	1098.5	2.7
Agriculture	973.8	493.9	1467.7	3.6
Trade and Services	83.8	43.8	127.3	0.3
TOTAL	17523	14658	32135	100.0

SOURCE: Said J. Hitti, and George T. Abed. "The Economy and Finances of Saudi Arabia." International Monetary Fund Staff Paper XXI (July 1974), 286. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

TABLE IV.5

SAUDI ARABIAN PLANNED AND BUDGETED ALLOCATIONS FIRST FIVE-YEAR PLAN (1970-1975) (SR BILLIONS)

	CURRENT	CAPITAL	TOTAL
Planned (5 years)	29.931	18.382	41.313
Budgeted (3 years)	15.492	14.350	29.842
Actual (3 years)	14.057	10.689	24.746

SOURCE: Saudi Arabian Monetary Agency, Annual Report, 1973-74 (Riyadh: Research and Statistics Department). Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

Mining, transportation, and education were expected to achieve relatively high growth rates.

The data in Table IV.5 compare final allocations of the First Five-Year Plan with (1) subsequent budgetary allocations which were revised in response to increasing crude oil revenues; and (2) actual budget expenditures for the years in which specific data are available. By 1973, 72 percent of the financial requirements were budgeted, with current and capital development expenditures accounting for 68 percent and 78 percent of their respective shares.[30] The actual expenditures, however, at the end of the third year of the plan were 60 percent.[31]

[30]Hitti, "The Economy and Finances of Saudi Arabia," op. cit. pp. 286-287. Derived from D. M. Moliver, op. cit.

[31]Data regarding allocations for expenditures beyond 1973 are no longer published.

In terms of overall achievement, the plan was considered relatively successful since most of its objectives (with the exception of road building) were fulfilled. More importantly, Saudi Arabia gained invaluable experience concerning the planning, estimating, budgeting, financing, and implementation of development projects which proved useful in the Kingdom's Second Five-Year Plan (1975-1980).[32]

The Second Five-Year Development Plan (1975-1980)

In 1975 the Council of Ministers approved Saudi Arabia's Second Five-Year Development Plan, to be implemented during the period 1975-1980. This Plan's estimated total cost was SR 498 billion (U.S. $143 billion), or about nine times that of the First Development Plan, and consisted of three key elements.[33, 34]

1. Rapid development of human resources. Through preparatory training programs, the Kingdom hopes to increase its labor force from 1.6 million in 1975 to 2.38 million by 1980, partly by importing labor force from friendly countries.

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[32]The above section is derived from D. M. Moliver, op. cit.

[33]Development Plan (1395-1400), (1975-1980), reproduced by National Information Service, U. S. Department of Commerce PB 246, 572, Springfield, Virginia: NTIS 1976; and "Saudi Arabia: A MEED Special Report," Middle East Economic Digest, (December 1976), p. 2. Derived from D. M. Moliver, op. cit.

[34]Citibank, Investment Guide to Saudi Arabia (Riyadh, 1976), p. 17. Derived from D. M. Moliver, op. cit.

2. Diversification of the economic base through emphasis on increasing agricultural and industrial production. A broadening of this economic base will lay the foundations for future economic self-sufficiency. Substantial capital investments are to be made in industrial ventures based on natural gas and mineral resources. Individual and joint investments in other industries will be encouraged with special incentives, credit, and the provision of infrastructure and support services. Agricultural production will be stimulated through government research and extension services, credit and input subsidies and expansion of productive land.

3. Regional economic growth and development by the wide distribution of productive investments based on the distinctive physical and human resources of each region. These regional strategies are aimed at distributing the Kingdom's newly acquired wealth.[35]

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[35]Citibank, Investment Guide to Saudi Arabia, op. cit., p. 13. Derived from D. M. Moliver, op. cit.

Table IV.6 provides a breakdown of the Second Five-Year Plan, which envisions Saudi Arabia's gross domestic product in constant prices more than doubling, from nearly SR 148 billion in 1975 to SR 240 billion in 1980. This represents an annual real growth rate of 10.2 percent. The revenues from production and exportation of crude oil were estimated to grow at 9.7 percent annually, which implicitly reflects Saudi Arabia's projection of the world demand for Saudi Arabian oil in forthcoming years. The non-oil sector was estimated to increase at an annual rate of 13.3 percent (see Table IV.7), thereby increasing its relative share of gross domestic product from 11 percent in 1975 to nearly 15 percent by 1980. In contrast, the oil sector's contribution toward gross domestic product was expected to decline from 86.6 percent to 82.1 percent during the same period, reflecting a relatively small structural shift away from oil and into other productive sectors.

In terms of financial allocations for the Second Plan, infrastructure and productive investment are the largest, accounting for nearly SR 113 million and SR 92 million, respectively. (See Table IV.8 for financial allocations for the Second Five-Year Plan). These figures are followed by education (SR 80,123.9), defense (SR 78,156.5), aid, food subsidies and general reserve.[36]

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[36]Derived from D. M. Moliver, op. cit.

TABLE IV.6
GROSS DOMESTIC PRODUCT: 1974-1975 and 1979-1980 IN CONSTANT 1974-1975 PRICES ($ MILLION)

	ESTIMATED 1974-1975	AVERAGE ANNUAL GROWTH RATE (%)	PROJECTED 1979-1980
PRIVATE			
Agriculture	1,400.7	4.0	1,704.5
Crude petroleum and natural gas	120,543.2	10.0[a]	194,090.4
Other mining & quarrying	174.3	15.0	350.4
Petroleum refining	7,451.9	5.0[a]	9,510.9
Other manufacturing	896.4	14.0	1,762.2
Electicity, gas, water & sanitary services	331.1	15.0	666.4
Construction	4,337.2	15.0	8,723.8
Wholesale and retail trade, restaurants, & hotels	2,565.2	15.0	5,159.7
Transportation, communications, storage	3,616.9	15.0	7,307.0
Ownership of dwelling	1,627.2	60.0	2,177.7
Finance, insurance real estate, & other business services	890.1	15.0	1,790.3
Community, social & personal services	519.4	14.0	1,000.0
Less imputed bank svc. charge	(62.3)	-	(62.3)
Total Private Services	144,292.4	10.2	234,113.3
Public Administration	1,283.8	10.0	2,067.8
Education	1,021.0	13.8	1,948.8
Subtotal	2,599.6	12.1	4,529.4
Defense	1,019.6	15.0	2,050.7
Total Government	3,579.2	12.9	6,580.0
GROSS DOMESTIC PRODUCT (Excluding import duties)	147,872.2	10.2	240,095.0
Import duties	81.9	15.2	165.2
GDP (at market prices)	147,954.1	10.2	240,860.2
SUMMARY			
Private sector			
Oil	127,995.0	9.7	203,601.3
Non-Oil	16,297.1	13.4	30,513.0
Government Sector	3,579.5	12.9	6,580.4
Total Non-oil	19,876.9	13.3	37,093.4

[a]These rates are notational only (to fill in the GDP picture), since oil production policies are not part of the Department Plan but are determined by the Supreme Advisory Council for Production & Minerals.

SOURCE: Development Plan 1395-1400 (1975-1980), pp. 11-12. NOTE: Column totals may not add due to rounding. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

TABLE IV.7

GROSS DOMESTIC PRODUCT BY SELECTED SECTORS, IN CONSTANT 1974 - 1975 PRICES

	GDP ($million) 1975	RELATIVE SHARE (%) 1975	GDP ($million) 1980	RELATIVE SHARE (%) 1980
Oil	127,632.8	86.6	259,120.4	82.1
Private non-oil	16,251.2	11.0	47,049.8	14.9
Government	3,569.7	2.4	9,509.9	3.0
TOTAL	$42,129.5		$90,194.3	100.0

SOURCE: Quarterly Economic Review of Saudi Arabia, Annual Report for 1977 (London: The Economist Intelligence Unit, 1977), p. 18. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

TABLE IV.8

FINANCIAL ALLOCATIONS FOR THE SECOND FIVE-YEAR PLAN (1975-1980) (SR THOUSANDS)

SECTOR	ALLOCATIONS	%
Produtive investment	92,135.0	18.49
Education	80,123.9	16.08
Welfare	33,212.8	6.67
Infrastructure	112,994.6	22.68
Administration	38,179.2	7.66
Defense	78,156.5	15.69
Aid, food and general reserve	63,478.2	12.74
TOTAL	498,230.2	100.0

SOURCE: Quarterly Economic Review of Saudi Arabia, Annual Report for 1977 (London: The Economist Intelligence Unit, 1977), p. 18. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

The private sector, which is predicted to become increasingly more productive in the economic development of Saudi Arabia, is expected to make significant contributions in the areas of construction, mining, cement production, agriculture, and electric power generation. Data in Table IV.9 show the private sector breakdown of the Second Five-Year Plan which indicates how the composition and relative contributions of different areas within the private sector are expected to change between 1975 and 1980. The largest structural changes are expected to occur in agriculture (8.6 percent to 4.6 percent) and construction (26.6 percent to 33.3 percent).

Table IV.10 provides a summary of planned financial allocations by functions, revealing that the largest share of planned financial allocations were from the government and amounted to 23 percent of the total. These allocations were for the development of the economy's infrastructure. Resource development accounted for 19 percent. The total of these two categories represents the planned investment for economic development.[37]

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[37]The above section is derived from D. M. Moliver, op. cit.

TABLE IV.9

PRIVATE SECTOR BREAKDOWN
OF SECOND FIVE-YEAR PLAN
GROWTH RATE IN 1975 and 1976

Private Sector Breakdown	1975 (%)	1976 (%)
Agriculture	8.6	4.6
Other mining and quarrying	1.1	1.2
Other manufacturing	5.5	5.3
Electricity, gas and water	2.0	1.4
Construction	26.6	33.3
Wholesale and retail trade	15.7	15.7
Transportation & communication	22.2	22.1
Ownership of dwellings	10.0	7.4
Banking, insurance & real estate	5.5	6.1
Other services (private)	2.8	2.9
TOTAL	100.0	100.0

SOURCE: Quarterly Economic of Saudi Arabia, Annual Report for 1977 (London: The Economist Intelligence Unit, 1977), p. 18. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

TABLE IV.10

SUMMARY OF PLANNED FINANCIAL ALLOCATIONS BY FUNCTIONS
SECOND FIVE-YEAR DEVELOPMENT PLAN (1975-1980)
(IN BILLIONS OF SAUDI ARABIA RIYALS AT
1974 - 1975 CONSTANT PRICES)

FUNCTION	AMOUNT	PERCENT OF TOTAL
Economic Resource Development	91.7	19
Human Resource Development	79.8	16
Social Development	32.9	7
Development of Physical Infrastructure	112.4	23
TOTAL Private Sector	316.8	64[a]
Administration	37.8	8
Defense	77.7	16
Miscellaneous	63.0	13
TOTAL ($142 billion)	495.3	100%[a]

SOURCE: Development Plan 1395-1400 (1975-1980), p. 81. Derived from D. M. Moliver, "Oil and Money in Saudi Arabia," op. cit.

[a]Figures do not total to true percentage because of rounding.

Absorptive Capacity and Economic Progress Through the Development Plans

Comparing the two Saudi Arabian Five-Year Development Plans, the second was particularly ambitious as it reflected the Kingdom's increasing economic influence and prestige. At the time of its creation, fulfillment was considered virtually an article of faith. The Second Plan tends to have less financial constraints than the First Plan due to the enormous oil revenues the Saudis had amassed. However, Saudi Arabia has been faced with numerous constraints, many of which were unanticipated in the Second Plan, since they did not occur during the First Plan. Accordingly, the pace of economic growth and development is being hampered and the sinews of the economy strained.

At its core, the strain is manifested by the underdeveloped Saudi infrastructure. Port bottlenecks and relatively inelastic supplies of essential goods, particularly agricultural products, render it difficult for the economy to absorb goods and services at rates commensurate with deliveries and demand. Although this situation was mitigated substantially, in 1974-1975 port bottlenecks in the city of Jeddah averaged 90-100 days.[38] As these constraints were relaxed, the bottlenecks moved inward to the roads and transportation system. In Jeddah, at that time, there was

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[38]"The Relief at Jeddah," Middle East Economic Digest (February 25, 1977), and "Saudi Arabia: A MEED Special Report," Middle East Economic Digest (December 1976), p. 8 Derived from D. M. Moliver, op. cit.

only one outlet from the port. Cargo trucks fought their way into the mainstream of city traffic taking a back seat to passenger traffic. The number of private cars, buses, and trucks in use has more than quadrupled during the past few years, outstripping the growth of roads and highways and further complicating the inland bottlenecks.[39]

Inflation was also a constraint in the Saudi's constant drive for economic industrialization and diversification. The relatively large growth in the money supply at rates in excess of Saudi Arabia's absorptive capacity, coupled with the fact that "by early 1976 the clogged port, an acute housing shortage, zooming construction costs, and a growing manpower shortage were forcing prices up at an accelerating rate that some observers estimated as high as 50 percent in 1975."[40] As a consequence, more recent estimates project that nearly $300 billion will be needed to complete the Second Plan's objectives.[41]

The recruitment and relocation of the 500,000 man foreign labor force--which was expected to reach 812,000 or more by 1980--requires a massive infrastructural investment

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[39]Ibid. Derived from D. M. Moliver, op. cit.

[40]Nyrop, Area Handbook for Saudi Arabia, op. cit., p. 243. Derived from D. M. Moliver, op. cit.

[41]"The Saudi Arabian Riyal," Middle East Currency Reports (May 1977), and Quarterly Economic Review of Saudi Arabia, Annual Report for 1977 (London: The Economist Intelligence Unit, 1977). Derived from D. M. Moliver, op. cit.

designed to cater to the Western-style habits of such personnel. These expatrates are well paid, and most will return to their homelands after a year or two. However, "the difference in lifestyle and morality between the expatriates, even those from Moslem countries, and the Saudis, is likely to lead to tension as such contrasts have done throughout history".[42] Some highly esteemed Saudi religious leaders are apprehensive about the rapid influx of foreign workers who represent a potential danger to traditional Islamic values resulting in graft, fraud, exploitation, pollution, speculation, excessive consumption, and waste.[43] An example of Saudi Arabia's economic transformation has been the evolution of a middle class which has participated, to a relatively large extent, in graft and corruption.[44] As a consequence, the religious and social fabric of the Kingdom is under a potentially explosive strain, illustrating that the Development Plan entails substantial risk. In view of the narrow power base of the

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[42]"Saudi Arabia: A MEED, Special Report," Middle East Economic Digest (December 1976), p. 2. Derived from D. M. Moliver, op. cit.

[43]Robert Johns, et. al., "Saudi Arabian," Financial Times (Financial Times Survey), 12 January 1976, pp. I-IV. Derived from D. M. Moliver, op. cit.

[44]William A. Rugh, "Emergence of a New Middle Class in Saudi Arabia," Middle East Journal 27 (Winter 1973): 9-20. Derived from D. M. Moliver, op. cit.

ruling class and its vulnerability to political intrigue and assassination, the risks could prove too great.[45]

Revisions and Conclusions

The previously mentioned constraints and others have had a significant impact upon the Saudi Second Five-Year Development Plan. The Middle East Currency Reports had stated since April 1976 that the Plan (was) in the process of being surreptitiously abandoned.[46] Such suspicions were made more credible in 1977 by the Saudis' appointment of one of Britain's leading economic consulting firms, exclusively contracted to develop a comprehensive planning model for the economy.[47] The fact that no official report of the "abandonment" of the Second Plan has been made can be attributed to the power conflict between two opposing sides of the Royal Family--one of which favors "the continued pursuit of a policy of maximum growth, while the other preaches an early return to much lower levels of economic activity and the stricter enforcement of Islamic values."[48] Another view may be the embarrassment faced by the Saudis with

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[45]The above section is derived from D. M. Moliver, op. cit.

[46]"The Saudi Arabian Riyal," Middle East Currency Reports, (April 1976). Derived from D. M. Moliver, op. cit.

[47]Urwich, Ltd., A London-based consulting firm has purportedly been hired by the Saudis to rework the Second Five-Year Development Plan. "The Saudi Arabian Riyal," Middle East Currency Reports (April 1976). Derived from D. M. Moliver, op. cit.

[48]Ibid., p. 2. Derived from D. M. Moliver, op. cit.

respect to their increased anticipations concerning fulfillment of the Plan. It has been projected that "Saudi Arabia will have to reduce the Plan targets by more than half, stretching the original vision of national transformation from 5 to 20 years or more."[49]

Whatever the reason, a revealed preference approach indicates that a change in the Kingdom's plans are apparently underway. Recently, the rate of real economic growth has slowed to less than 5 percent annually, and the government has enacted a policy to restrict the inflow of foreign laborers. Projects such as the SR 24 billion telecommunications network have been cancelled, and other projects scaled down. All of these occurrences reflect a conscious change in the Kingdom's comprehensive economic development policy.[50,51,52]

Economic Development Policies Reviewed as Means to Expand Absorptive Capacity

The availability of oil revenues enabled Saudi Arabia to accelerate the implementation of its development projects

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[49]Ibid., pp. 2-3. Derived from D. M. Moliver, op. cit.

[50]International Monetary Fund, International Financial Statistics (April 1978), pp. 304-305. Derived from D. M. Moliver, op. cit.

[51]"The Saudi Arabian Riyal," Middle East Currency Reports (May 1977). Derived from D. M. Moliver, op. cit.

[52]The above section is derived from D. M. Moliver, op. cit.

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It is widely believed that Saudi Arabia will achieve rapid development in the course of the coming years. After dropping in 1974 due to initial bottlenecks, the implementation rate rose again, reaching a level of 85 percent in 1978. Further improvement is expected as a result of the extra efforts aimed at eliminating bottlenecks, particularly in the construction, transportation, and communication sectors, and at increasing the supply and improving the quality of semi-skilled and skilled labor.

1. Construction sector: The investment programs in the First and Second Development Plans deliberately concentrated on projects requiring modest to moderate amounts of construction materials. At the same time, particular emphasis was placed on accelerating the completion of brick, prefabricated construction material, concrete block and cement factories.

Projects included in the Second Comprehensive Development Plan, 1975-1980, were designed to completely eliminate these bottlenecks and secure adequate supplies of construction materials. For example, the plans called for increasing the amount of cement produced locally from 2.8 million tons in 1976 to 10 million tons in 1980.[53]

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[53]Ministry of Information, Saudi Second Development Plan (Saudi Arabian Government).

2. Transportation and communication sectors: Equally emphasized were projects designed to expand port, transport and storage facilities. Most of these projects have been completed and the rest will be completed very shortly. A tangible result of this effort is the resolution of the problem of port congestion in Jeddah and Dammam.

The Plan aimed at removing the transportation bottlenecks by expansion and improvement of the country's network. Specifically, it was intended that the capacity of the transportation sector be expanded by 10 percent annually. Port capacity and storage capacity would also be expanded to alleviate the bottleneck problems.

3. Manpower planning: Shortages of skilled labor and middle managers are recognized to be the most serious limitation on the absorptive capacity of the Saudi economy. Specific measures were taken to relieve the situation in the short run. In the medium and long run, the authorities intend to implement a plan designed to meet the country's manpower needs. The plan rests on the gradual reduction of the proportion of the labor force engaged in agriculture, increasing the participation of women in the labor force, and pursuing educational programs especially designed to increase the supply of skilled workers and professionals.

It should be pointed out that the government should have no difficulty reaching these goals. All schools and universities in Saudi Arabia are public and admission is controlled to insure the desired balance between the various

fields of learning.

4. Investment in human capital: Increasing the supply of skilled labor is an important objective. However, even more important is the objective of improving the quality of labor in general. This can be achieved only through improvement in the quality of life and higher standards of living. This is, of course, what development planning is all about.

Other related programs include rural electrification including the planned extension of electric power to at least 65 percent of rural residents by 1980; provision of potable water to at least 65 percent of rural residents by 1980 as against 13 percent in 1975; acceleration in the construction of sewage systems in major cities and the adoption of measures necessary for controlling and preventing pollution and protecting the environment. In general, the government is intent upon increasing social services, particularly for low income residents.

Investment in human capital, assuming other things unchanged, raises the earnings of workers because, in the long run, it leads to a reduction in the capital-output ratio. Reduction in the capital-output ratio means an increase in the marginal productivity of labor. If the economic principle that wages should be equal to the marginal product of labor is to be operative, then real earnings per worker should increase as a result of investment in human capital.

Social welfare programs take time for their impact to be realized. However, there are other ways of improving the quality of life that can have an immediate impact. One way is to raise the purchasing power of the people. In this connection the Saudi government acted promptly following the rise of oil prices. The increase in oil prices went into effect on January 1, 1974 and, after a few weeks, the government issued a series of decrees designed to immediately infuse oil revenues into the hands of the people. The government also established a Price Support and Stabilization Fund to accelerate the process of economic and social development, raise the standard of living and stabilize commodity prices in the market. The program was successful in controlling inflation during the difficult inflationary years of 1975-1978.

The Saudi Arabian government is determined to accelerate implementation of development projects. Furthermore, it should be pointed out that expenditures under the National Comprehensive Development Plan did not include other investment expenditures, such as those classified as current and included in the ordinary budget or those undertaken by autonomous government agencies, or investment expenditures undertaken by the private sector.

In terms of the absorptive capacity, the 1975-1980 Comprehensive Development Plan helped ease the following bottleneck sectors:

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Resources and Industry as Means to Expand Absorptive Capacity

1. Resources

Large investments were made in natural gas and mineral resources. Individual and joint investments in other industries were encouraged with special incentives, credit and the provision of infrastructure and support services.

While the emphasis remained in the Precambrian Shield, located in western Saudi Arabia, mineral exploration was extended to other areas gaining increasing importance as a result of basic ongoing geological studies. Two of the special studies related to uranium and the availability of water for the minerals industry. The Mining Code and other regulations and incentives were reviewed according to international practices to encourage private participation in exploration work, especially in such minerals as copper, lead, zinc and phosphates.

Oil production increased at a rate far exceeding targets set forth in the First Development Plan due to a vigorous program of expansion, including drilling new wells, installing new pipelines, and expanding related facilities. In 1974, Saudi Arabian crude oil production represented 15.3 percent of world output and 46.4 percent of Arab output. The country's petroleum resources are still in the early stages of very long-term development.

In addition to those previously mentioned as highlights, basic studies undertaken included: seismic

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exploration in all areas; field studies of reserves, production potentials, and production improvements; and special investigations of pipeline, treatment, and storage installations prior to improvement and expansion of these facilities. Sophisticated computer technology was used in many of the studies.

2. Industry

The basic long-term goal of manufacturing development is to diversify the economic base in order to achieve greater economic self-sufficiency, cost advantages from domestic manufacturing, and protection from external disruptions. Efforts in the Second Plan focused on hydrocarbon-based and other industries in which Saudi Arabia has a comparative economic advantage and appropriate regional manufacturing activities to increase employment opportunities and real incomes of a greater proportion of the Saudi population.

Petromin, the General Petroleum and Mineral Organization, retained primary responsibility for the development of hydrocarbon industries, while the Ministry of Commerce, the Ministry of Industry and Electricity, and the Industrial Studies and Development Center encouraged and supported other manufacturing.

Major 1975-1980 developments in the hydrocarbon industry included new refineries and expansion of existing facilities; construction of gas gathering and treatment facilities in the Eastern Region and design of petroleum and

gas pipelines to the central and western regions; and design and construction of major new plants to manufacture petrochemicals, fertilizers, and steel and aluminum intermediate and finished products. Major planned developments in non-hydrocarbon-based industries include a ten-fold expansion of cement production; plants to supply agricultural inputs and process agricultural output; and new and expanded plants to produce construction materials, household and commercial equipment, inputs to hydrocarbon industries, and other products.

In line with planned industrial development, construction capacity will have to expand. Saudi Arabia's construction plants and other resources are approaching the limits of their capacities. New construction will largely depend on effective utilization of foreign contractors and laborers, materials, and machinery and equipment.

4. Role of private enterprise

As stated in the Saudi Arabian Industrial Policy formulated in 1974:

- The government recognizes that the goals of industrial development can be realized most effectively if private enterprise bears the primary responsibility for industrial projects.
- The government will provide encouragement and financial incentives to industrial investors to enable well managed companies to realize reasonable returns from operations. Such incentives may include the following measures: equity

capital and loans, venture organization assistance, feasibility studies, operational assistance, tariff protection from imported products, industrial estate sites, training subsidies for Saudi manpower, and export assistance.
- The government welcomes foreign capital and skills and invites foreigners to contribute to industrial development, in collaboration with Saudi investors.

Agricultural Policies as Means to Expand Absorptive Capacity

Owing to increasing national income and population, the growth rate in food consumption is rather high, an estimated 5.2 percent annually between 1971 and 1980 for a selected number of agricultural commodities. Imports have grown much more rapidly than domestic production. Consequently, the Kingdom's self-sufficiency in food production has fallen significantly for most commodities. An exception may be seafood, for which a growing demand offers a unique opportunity to increase food production with a minimum input of labor because of the Red Sea and the Arabian Gulf as seafood sources.

The labor force in agriculture is assumed to have declined by about 0.9 percent annually, from 445,800 or 40.4 percent of the national labor force in 1970 to 426,100 or 28.0 percent of the labor force in 1975.[54] This decline is already reflected in abandoned farmland and partly

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[54]Ministry of Information, Outline of Second Five Year Development Plan, Saudi Arabia, p. 12.

depopulated villages, particularly in the southwestern region. Its main causes are low real income in agriculture and increasing opportunities for well-paid employment in other sectors.

A rapid increase in productivity in the agricultural sector will release part of the large agricultural labor force and thereby alleviate manpower shortages in other sectors:

Water

Water is the most binding constraint on Saudi agriculture. More than 75 percent of the Kingdom's usable land is rainfed, but nowhere does the rainfall exceed 400 to 500 mm, which may occur over short periods of time. Flood damage and loss of rain water are serious problems for irrigated farming. Water in some areas has high salt content, which rapidly creates salinity when draining and leaching are inadequate. Irrigation systems are generally inefficient, causing waste.

The extent to which agricultural production can be increased will be determined by: a) the success achieved in inceasing efficiency in the use of underground water, b) resource management and conservation, and c) the limits on total annual abstraction or depletion in view of the amount of water available and the social, economic and technical factors relating to its use.

Rapid development of agriculture in the Kingdom is

greatly impeded by physical and climatic adversities. Small, inefficient farms are dispersed over a large land area and subject to wide fluctuations in rainfall, limited supplies of low-quality irrigation water, a harsh summer climate and drying winds, and encroachment by sand dunes.[55]

Agricultural Credit

The Saudi Arabian Agricultural Bank is the principal institution providing credit to the agricultural sector. Three types of loans available are:

- Short-term seasonal loans for production inputs.
- Medium-term loans for farm machinery and similar assets.
- Long-term loans for land purchase and development.

Loans are made available for cold storage plants, establishment of milk collection centers, fisheries modernization and expansion, construction and operation of leather tanning plants, and agricultural cooperatives. The annual requirements for financing the Agricultural Bank, excluding provisions for subsidies already included in finance for agricultural production, are estimated in Table IV.11.

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[55]Ibid., pp. 12-13.

TABLE IV.11

FINANCE FOR AGRICULTURAL PRODUCTION

Budgeted	1974 -75	1975 -76	1976 -77	1977 -78	1978 -79	1979 -80	Plan Total
Recurrent	54.8	55.0	63.5	68.0	73.5	78.5	338.5
Loans finance*	41.0	86.6	90.4	83.0	76.9	90.8	427.7
Project	--	13.0	15.0	12.0	10.0	10.0	60.0
TOTAL	95.8	154.6	168.9	163.0	160.4	179.3	826.2

*Planned loan finance less forecast loan repayments.

SOURCE: Outline of Second Five-Year Development Plan, p. 13. Ministry of Information, The Kingdom of Saudi Arabia.

Water Supply Policies as Means to Expand Absorptive Capacity

Significant progress has been made in meeting immediate needs for improved water supplies. However, these needs will expand rapidly with rising population, increased urbanization and industrialization, and growth of irrigated agriculture. Groundwater meets the major portion of the Kingdom's combined agricultural, industrial and urban demand, while surface water satisfies a smaller share and limited amounts of water are supplied by desalination.

Hydrological studies have established the existence of further usable quantitites of groundwater, but more information is required before usage rates can be defined. Surface water is intermittent and primarily available in the

southwestern highlands and coastal areas. Brackish water is abundant in several areas of the country, and sea water is available for desalination in unlimited quantities. Pending a more complete analysis of the total water resource potential of the country, Saudi Arabia plans to continue developing groundwater resources to meet immediate urban, industrial and agricultural demands in locations distant from the seacoast. In locations on or near the coasts, concentration will be on accelerated development of the supply of desalinated sea water, which will also be provided to meet demand in selected inland areas.

Plans for the development of desalination systems included, in the Second Five-Year Plan, use of dual-purpose (electric power/desalination) plants, where studies showed the need for power as well as water, to reduce production costs of both electricity and water.

The total water resources program was budgeted at approximately SR 34,000 million of which SR 25,000 million is designated for the Saline Water Conversion Corporation.[56]

Electricity Policies as Means to Expand Absorptive Capacity

Under the late King Faisal, plans were begun emphasizing not only electricity expansion for industrial needs, but also electricity distribution to all villages and cities. The present electric system is heterogeneous,

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[56]Ibid., p. 14-15.

serving residential and commercial consumers with various voltages and both 50 and 60 Hz frequencies. Demands on electrical capacity and efficiency were expected to rapidly increase during the period of the Second Development Plan. The basic objective for electricity development, therefore, was to effectively meet the electric power demands of industry, agriculture, communities and households in rural and urban areas.

The planned integrated electricity system was to add 3,300 megawatts of generating capacity and 3,500 kilometers of transmission line to the present non-integrated system to serve 1.6 million more people. Much of the new generating capacity is in dual-purpose desalination plants. In addition to the evident economic and manpower advantages, and the greater number of people served by distribution from the extended transmission system, the integrated system provides higher levels of system performance and reliability. Flexibility in meeting industrial, residential and rural electricity load needs is attained by standardizing and interconnecting the electricity system.

Implementation of an integrated system requires the development of operating standards, interconnections that will reduce the present number of power stations, the orderly integration of demand centers, and full scale technical planning and program management. Various studies were undertaken for the establishment of a national body to develop, regulate and administer the integrated electricity

system.

Total investment in the electric power generating system, for the plan period was estimated at SR 7,928 million. After adjustments for Electric Service Department projects and the generating capacity of the Saline Water Conversion Corporation, the total net investment required was estimated to be SR 3,490 million.[57]

Transportation Policies as Means to Expand Absorptive Capacity

Physical infrastructure had to be developed if the economic and social objectives of the Plan were to be attained. Increasing emphasis also had to be placed on improving the efficiency and quality of service.

1. Roads

While traffic in recent years has increased by about 12 percent annually, growth rates of 15 percent and more were anticipated during the Plan period. The number of motor vehicles was expected to increase from 200,000 in 1976 to more than 500,000 by 1980.[58]

The primary goal for the Second Five-Year Development Plan was to complete the main road network. In addition, the Plan aimed at facilitating international communications and commerce by building all-weather roads to link the Kingdom's network with neighboring countries and to expand

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[57]Ibid., p. 16.

[58]Ibid., p. 18.

the rural roads and secondary roads programs.

The target was to link all major population centers and provide alternatives for the most-travelled routes. More than 13,000 kilometers of paved roads and 10,000 kilometers of rural roads were to be constructed and the maintenance program expanded.

2. Ports

The major ports of Jeddah and Dammam are the Kingdom's main entry points for the capital, intermediate, and consumer goods that must be imported in increasing quantities to support economic development. In recent years, the handling capabilities of both of these ports were often exceeded to such an extent that ship waiting time and penalty freight rates became excessive, development projects were delayed, and supplies of consumer goods were late in reaching markets.

The large increase in economic activity expected during the Second Plan necessitated an equally large increase in imports. By 1980, over 13 million tons of general cargo (exclusive of ores) were expected to be imported annually, in comparison with almost 3 million tons of general cargo handled in 1973-1974. The implementation of much of the Second Plan depended on the ability of the ports to cope with this large inflow of goods, if they could not implementation of the Plan as a whole would be severely

disrupted.[59] To cope with the expected increase, 20 new berths were to be constructed at Jeddah and 16 at Dammam. Further mechanization and use of pallets and containers were to increase the handling capacity of existing berths.

In addition, specialized industrial ports to serve the industrial complexes at Jubail and Yanbu' and additional berths at Jaizan were to be constructed. A further objective of port expansion was to support regional development by providing port facilities for small boats and fishing at the lesser ports.

3. Airports

Geographical factors make aviation a very important element in the Kingdom's transport network. At present, about 20 airports are served on a regular basis. Jeddah, Riyadh and Dhahran account for more than 90 percent of all activities. During the First Plan period, the Civil Aviation Department began a comprehensive program to improve airport facilities throughout the Kingdom. This program was expanded in the Second Plan to provide for a rapidly growing volume of air traffic.

The whole airways system was to be provided with the highest quality navigation and control equipment to ensure safe navigation. Other projects to be carried out included improved air traffic information services, installation in all airports of the necessary ground aids and the most

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[59]Ibid., p. 19.

efficient communication facilities, and expanded personnel training programs.

Part of the program also focused on expansion, reorganization and continued improvement of SAUDIA, the Kingdom's official airline. Wide-bodied L-1011 jets were introduced in 1975 and the route network was extended to include North America, the Far East and additional destinations in Europe and Africa.[60]

4. Railroads

The long-term function of the railroads in the transport system is under study and major decisions will be made when its role has been defined. Operations will be improved and rail and road transport will be integrated where feasible.

Telecommunications Policies as Means to Expand Absorptive Capacity

The high targets established for telecommunications had to be met if the industry was to meet the demand for service implied by the overall social and economic goals of the Second Plan, and also establish a foundation for the projected continuing growth in demand over the longer term. Though program targets were set during the First Plan, achievements were not uniform. Although revised programs met the First Plan target for the quantity of automatic telephones, installations did not include the replacement of all manual exchanges. In addition, two portable earth

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[60]Ibid., p. 20.

stations were installed, one at Riyadh and the second at Jeddah, but completion of the permanent stations was delayed.[61] Schedules for telegraph services, building construction, and training were also stretched out.

Long-range telecommunications facilities are very limited at present, and long distance communications are carried out almost exclusively over high frequency radio. Contracts for the installation of a major telecommunications network were to provide the capacities shown below with completion of Phase One, the backbone system linking Jeddah through Riyadh to Dammam. With the installation and operation of the two phases of the program, the cumulative total capacity of the overall network was to provide long distance telecommunications to over 90 percent of the Kingdom's population.

The basic objective of the telecommunications plan in the Second Five-Year Plan was to provide a system of local, intra-kingdom, and international telecommunication. Achievement of these goals required an upgrading of local telephone networks to provide at least 20 telephones per 100 residents in the larger cities and approximately 5 telephones per 100 in the smaller communities, and installation of 670,000 telephone lines, of which 490,000 were to be in service.[62]

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[61]Ibid., p. 21.

[62]Ibid., p. 21.

The intra-kingdom and international telecommunications network had to be completed and traffic and special services expanded.

Television and radio rely heavily on local high-powered transmitters in Riyadh, Jeddah and Dammam. The planned intra-kingdom system was to provide two-way TV and radio services through the Phase One network, with one-way TV and radio planned for Phase Two.

Early planning was required concerning the technical capabilities for transmitting full color TV service, with particular reference to the capability of coaxial systems to carry color TV under the environmental conditions that prevail in Saudi Arabia.[63]

Educational Policies as Means to Expand Absorptive Capacity

Education is a vital element for the success of Saudi Arabia's economic development. The Kingdom aims to provide basic education for all its citizens as well as higher education for all those who wish it.

1. Elementary Education

The number of elementary and intermediate schools constructed during the First Plan exceeded the targets set, and total enrollment was close to its goal. However, the number of instructors in every level and type of education was almost 14 percent below that planned for 1975.

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[63]Ibid., p. 21.

The Second Plan aimed at universal elementary education for boys, and for as many girls as could be reached through the girls' school system. The enrollment of boys in general elementary schools was forecast at 677,500 in 1980, for an increase of more than 275,000 over the First Development Plan, and the enrollment of girls was projected to grow by over 140,000 to 353,400 by the end of the Plan.

The Ministry of Education, therefore, planned extensive teacher training programs, during the Second Plan, and the establishment of 845 elementary schools and 224 intermediate schools, mainly in the rural areas. It was estimated that over 30,000 elementary teachers would graduate from training programs during the Plan period.[64]

A program of continued expansion at the post-elementary level was to assure opportunities for all students to continue their education through the secondary level. Planned developments for general higher education covered all qualified secondary-school graduates. Girls' education was a major target of the Second Five-Year Development Plan. With an enrollment goal set at more than 50 percent of elementary-school-age girls, the Ministry of Education planned to open an additional 707 elementary schools with a total enrollment in 1980 of about 350,000. It was expected that the number of intermediate schools would increase to 223 by the end of the Plan, permitting a large percentage of

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[64]Ibid., p. 22.

elementary school graduates to enroll in further education and subsequently in higher education.

2. Adult and Higher Education

To meet the needs of adults for continuing education, evening classes were to be expanded from an enrollment of 8,200 in 1975 to 19,300 in 1980. Enrollment in adult literacy classes would more than double for men and increase ten times for women during the plan period. Summer camps and mobile schools would also be provided. Existing universities continue to expand. The University of Riyadh was to initiate and complete construction work on a new campus in expectation of doubled enrollment in 1980. Twenty-five percent of the incoming students would be enrolled in the College of Education. The King Abdulaziz University planned to increase the size of its College of Education as well as the College of Engineering and Sciences.

In an effort to provide professional manpower for the Kingdom's petroleum and minerals industries, the University of Petroleum and Minerals at Dhaharan planned to increase the student body as well as expand the curricula with the introduction of majors in such fields as petroleum engineering.

Preparations are also underway for the modification of the educational structure so that it can effectively serve the future needs of the Kingdom. Further, modern evaluation systems were incorporated into the plans of all the

education agencies.[65]

Manpower Development Policies as Means to Expand Absorptive Capacity

Limited manpower, both in numbers and skills, is a potential major constraint on the country's development in both the public and private sector. Labor force growth greatly affected the implementation rate of development projects during the First Plan. As requirements for skilled workers increase, the need for continued expansion of the non-Saudi segment of the labor force also becomes more and more apparent.

Total employment is estimated to have increased at an annual rate of 6.6 percent during the First Plan and was expected to accelerate to 8.9 percent annually to reach 2.33 million by 1980 if the labor demands of the private and public sectors were to be met. Manpower needs in the private sector were to increase at about 7.9 percent annually during the Second Plan, while the increase must average about 15.9 percent annually in the public sector to achieve the development requirement.

There were four basic objectives for the manpower development program. First, labor productivity must be raised through education and training programs and the existing labor force upgraded through intensive in-service training programs. Priority must be given to moving Saudis into

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[65]Ibid., p. 22.

managerial and technical positions. The second objective was to increase Saudi participation in the labor force by creating better education and training opportunities while increasing rewards and providing better working conditions. Third, the labor force must be supplemented with non-Saudis of high quality with the appropriate skills required for diversified industrial development. Finally, a special manpower training organization was to be set up to assure efficient implementation of specific recruitment and training programs.

The government's vocational training system was to be expanded with an annual output target at all levels of skill of about 27,000 in 1980, including industrial inducements and on-the-job training programs, compared with about 4,000 at the beginning of the Plan. Other government agencies, such as the Institute of Public Administration were to provide a wide variety of specialized training programs.

The primary source of training for government administration, including industrial management and financing, is the Institute of Public Administration in Riyadh. Its programs were to reach over 3,300 in-service trainees and 1,100 pre-service trainees in 1980, about double the 1975-1976 number of participants.[66]

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[66]Ibid., p. 25.

Social Development and Housing Polices as Means to Expand Absorptive Capacity

The government has developed policies intended to raise the health and living standards of the people and to insure that all share in the growing prosperity of the Kingdom. No family is to be prevented--by large numbers, misfortune, or lack of opportunities for employment--from obtaining the basic necessities of life, and rural and nomadic communities are to receive health and welfare services comparable to those available to residents of urban communities.

The government aimed in the Second Plan to provide comprehensive preventive and curative health services in all regions of the Kingdom. The number of hospital beds was to increase to provide 2.5 beds per 1,000 population by 1980. The number of dispensaries was to nearly double from the 215 available in 1975-1976 and many other types of facilities were to be established or expanded, including a network of Mother and Child Care clinics.

About 5,300 technical assistants were to be graduated and the number of health institutes and nursing schools doubled. The Saudi Red Crescent Society, which offers emergency health services, expected to double the number of its ambulances and first-aid centers. The Kingdom would also pay particular attention to the Hajj Centers, opening new clinics and procuring a mobile hospital for religious pilgrims' use.

A new program of social security benefits and social affairs programs, including social welfare, rehabilitation, cooperatives and community development, was to be instituted. Greatly expanded youth welfare programs under the Second Plan reflected the government's belief in the importance of developing tomorrow's citizens and leaders. Cultural, athletic and social activities were planned. In addition, a number of public service and work camp projects were to be held. Major emphasis was to be given to the development of youth leaders and the provision of equipment and facilities for community development.[67]

As the direct by-product of rapid urban growth, and the shortage and rising costs of labor, land and materials for residential buildings, the housing situation in the Kingdom's cities generally grew worse during the period 1970-1975. Since demand in recent years for new and replacement housing has been approximately double the supply, overcrowding and shanty towns have resulted. The residential building industry has met with rapidly rising costs and/or actual shortages of land, labor, technology, capital and materials; and institutions to improve the flow of these resources to housing construction are lacking.

The government's primary aim for housing was to ensure that every household in the country has a decent, safe and sanitary dwelling. Because of technical constraints, it

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[67]Ibid., p. 26.

will be some years after the end of the Second Plan before this goal is achieved. Nevertheless, targets set for housing construction during the Second Plan period will go a long way toward improving the housing situation. The Second Five-Year Development Plan called for the private sector to construct 122,100 units with the assistance of the Real Estate Development Fund and for the public sector to construct 52,500 units for low-income families. Approximately 44,300 fully serviced building lots were to be developed for allocation to low-income households for systematic self-help housing construction. An additional 51,000 temporary housing units were to be constructed for the labor force required to implement major development projects.

A fundamental objective, without which none of the others could be achieved, was to develop the institutional capability and financial and legal structures needed to implement and support a continued housing development effort. A new housing organization, incorporating the present General Housing Department and linked to the Real Estate Development Fund, was to be created to implement the housing program.[68]

Financial Allocation for Expanding Policies of Absorptive Capacity

The increase in oil revenues permitted a development plan far larger than could possibly have been contemplated a

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[68]Ibid., p. 26.

few years ago. Public expenditures under the Second Development Plan were projected at about SR 498,000 million, almost nine times that of the First Plan. (See Tables IV.12 and IV.13).

An approximate quadruple increase in administrative allocations was planned to meet the requirements of the agencies concerned with planning and management information and to provide for an annual increase of 10 percent in other administrative costs.

External assistance, emergency funds, food subsidies, and general reserves accounted for 13 percent of total requirements, based on an annual increase of 10 percent. Substantial unallocated funds were included for anti-inflationary measures, regional agricultural development, and recently established corporations, companies and funds for which the financial needs were not yet determined.

Projects accounted for 75 percent of financial requirements for development. The allocations of public finance reflected only part of the total allocations of national resources to development. They did not include the following:

- Private sector investment in agricultural development apart from that financed by agricultural credit.
- Investment by the oil companies to expand oil production capacity.
- Investment by the private sector and joint-venture partners in industry, apart from that financed by

TABLE IV.12

TOTAL APPROPRIATIONS REQUIRED FOR THE SECOND PLAN ESTIMATED IN 1974-75 PRICES

	(SR MILLIONS)
Economic Resource Development	92,135.0
Human Resources Development	80,123.9
Social Development	33,212.8
Physical Infrastructure Development	112,944.6
SUBTOTAL	318,416.3
Adminstration	38,179.2
Defense	78,156.5
External Assistance, Emergency Funds, Food Subsidies and General Reserves	63,478.2
SUBTOTAL	179,813.9
TOTAL	498,230.2

SOURCE: Ministry of Information, Outline of Second Five-Year Development Plan, p. 6. Saudi Arabia.

TABLE IV.13

COMPARISON OF ESTIMATED FINANCIAL REQUIREMENTS OF FIRST AND SECOND PLANS

(SR MILLIONS)

	FIRST PLAN		SECOND PLAN	
	AMOUNT	%	AMOUNT	%
Economic Resource Development	6,033.3	10.7	92,135.0	18.5
Human Resource Development	10,198.7	18.1	80,123.9	16.1
Social Development	2,443.0	4.4	33,212.8	6.7
Physical Infrastructure Development	14,086.8	25.1	112,944.6	22.7
SUBTOTAL DEVELOPMENT	32,761.8	58.3	318,416.3	63.9
Administration	10,466.5	18.6	38,179.2	7.7
Defense	12,994.7	23.1	78,156.5	15.7
External Assistance Emergency Funds, Food Subsidies, & General Reserves	--	--	63,478.2	12.7
SUBTOTAL, OTHER	23,461.2	41.7	179,813.9	36.1
TOTAL PLAN	56,223.0	100.0	498,230.2	100.0

NOTE: First Plan values have been adjusted to 1974-75 prices (used uniformly for the Second Plan except for certain long-term projections that included inflation factors.)

SOURCE: Ministry of Information, Saudi Arabia. Outline of Second Five-Year Development Plan, p. 6.

industrial credit.

-Investment in private-sector housing not financed by the Real Estate Development Fund.[69]

To sum up in a few words, the Second Development Plan eased many bottleneck sectors of the economy. The Plan expanded the absorptive capacity of the country, for the concept of absorptive capacity is a short-to medium-run phenomenon. It can be expanded through planning to ease constraints on particular sectors of the economy and hence accelerate growth. In the final analysis, the concept will be of minor significance given appropriate planning, such as the Comprehensive Development Plans, to achieve higher rates of economic growth.

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[69]Ibid., p. 6.

CHAPTER V

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

Professor W. W. Rostow theorized that "take-off" into sustained economic growth could be initiated by a shock, e.g., a revolution, a war, or a sudden and sharp increase in export earnings. This theory tends to be relevant to the contemporary experience of the oil exporting countries, whose export earnings have increased drastically and who, therefore, ought to achieve self-sustaining growth.

Such an outcome as Rostow has theorized, however, is not assured. Experiences of other export economies suggest that it is entirely feasible for export earnings to be spent on luxury imports and other unproductive outlays. Consequently, a basic requirement of "take-off" is that export earnings be invested domestically. Although it is understood this must be done, the oil exporting countries, like other developing countries, apparently confront a particular constraint known as absorptive capacity.

Absorptive capacity is an ambiguous term in the sense that it does not have an established technical meaning. The concept generally has to do with the limited ability of developing countries to undertake profitable capital investment.

Investment in developing countries is assumed not to expand beyond certain levels which are determined by their absorptive capacities. This is so because developing countries traditionally lack cooperant factors necessary for expansion, such as entrepreneurial talent, skilled labor, and efficient management. They are also faced with the problems of antiquated customs, lack of political stability, and other social and institutional constraints which are known as the limits of absorptive capacity.

According to the concept of absorptive capacity, the oil exporting countries appear to be subject to traditional levels of growth in their domestic investment that fall short of their domestic savings. This study was designed to explore and test the impact of the quadruple increase in oil prices and revenues on absorptive capacity. Clearly, it would not be possible to undertake a collective study that includes every member of OPEC since these countries differ in many respects. The logical alternative was to concentrate on a single country.[1] Saudi Arabia, as the major exporter, was chosen.

The principal hypothesis investigated in this study was an expansion of the absorptive capacity of the Saudi Arabian economy. Implicitly, the prospects for accelerated

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[1]Derived from K. A. Al-Eyd, "Oil Revenues, Absorptive Capacity, and Prospects for Accelerated Growth: A Case Study of Iraq." (Ph.D. Dissertation, Washington D.C.: The George Washington University, 1978).

economic growth in Saudi Arabia were also under investigation. According to theories of absorptive capacity, such economic development did not appear likely. Intuitively, however, it seems possible. This rests on the empirical observation that the Saudi Arabian economy is heavily dependent upon oil. Therefore, any real increase in oil revenues is bound to have a positive impact on the whole economy, including the level of investment.

To establish this fact, it was necessary to relate the contribution of the oil sector in Saudi Arabia to gross domestic product, export earnings, public finance, and economic development. It was also necessary to examine the history of development planning in Saudi Arabia and the performance of the Saudi Arabian economy during the period preceding the increase in oil revenues. Accordingly, the early chapters of this study were devoted to these aspects, to diagnosing the limits restricting the absorptive capacity of the economy and to the bottleneck sectors, such as labor force shortages, inefficient management, lack of education, lack of transportation, and congested seaports and airports. In addition, lack of direct utilities such as water and electricity, and lack of indirect utilities such as telephones, telex, roads and highway systems contributed to the problem.

The fact that higher oil revenues caused an expansion in the absorptive capacity of the Saudi Arabian economy is encouraging. However, investment is not an end in itself.

Investment is undertaken becuse it is expected to lead to an expansion in production and therefore a higher per capita income and higher standards of living for all segments involved.

The most important question is, will Saudi Arabia be able to sustain these high rates of economic growth? The answer depends upon the ability of the economy to continue the expansion of its absorptive capacity and fully utilize present and future installed productive capacity. This outcome also depends upon the economy's ability in easing and finally eliminating physical and human bottlenecks. Elimination of physical bottlenecks is within reach in the short and medium runs, through planning. Development of human resources is a long-term project.

In recent years, Saudi Arabia exhibited ingenuity in mobilizing its domestic human resources and in benefitting from the skills and expertise of foreign labor. It will continue to do so until its long-term plan for human development is implemented. This plan is likely to succeed. First, it is being implemented under the direct supervision of the Central Planning Organization, whose powers reach into all aspects of national life. Second, it is complemented by intensive investment in human capital.

All of the above leads to the conclusion that the country has more than an even chance of continuing its march

along the path of accelerated growth. Only time will tell.[2]

Conclusions

The main conclusions of this study can be summarized as follows:

1. The increase in oil revenues had a positive impact on the absorptive capacity of the Saudi economy. Absorptive capacity was much expanded through proper development planning.
2. The impact of export earnings is mainly due to the positive income effect of the change in Saudi Arabia's terms of trade. It is also due to the fact that the availability of oil revenues made it possible for Saudi Arabia to augment its domestic factors of production through importation.
3. The expansion in absorptive capacity propelled Saudi Arabia into a higher orbit of economic growth. The country is expected to sustain its accelerated rate of growth provided that the new stream of oil revenues keeps flowing uninterrupted. These revenues are the principal source of expansion in investment, including investment in human capital.[3]

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[2]The above section is derived from K. A. Al-Eyd, op. cit.

[3]The above section is derived from K. A. Al-Eyd, op. cit.

Recommendations for Further Research

1. Saudi Arabia's only hope to improve its domestic absorptive capacity is through the comprehensive planning approach and by utilizing the concept of five-year general development plans. Without such a scheme it will be difficult to expand the absorptive capacity of Saudi Arabia, for past experience has shown that the comprehensive planning approach is the best way to develop the country and get the needed results for improvement and economic growth. Through the huge inflow of petro-dollars, it is possible to carry out expensive development plans to develop the country. In other words, it is within the capacity of Saudi Arabia to improve its domestic absorptive capacity by channelling the petro-dollars to development purposes within the country in order to expand its absorptive capacity through development programs.
2. Absorptive capacity still needs further research in terms of the concept itself and on the unanswered questions that arose as a result of this study:
   (A) On the concept itself: The concept of absorptive capacity turns on the scarcity of factors of production other than capital, i.e., it is factor-supply oriented. However, this study has shown that, in the case of Saudi Arabia, a

sufficient increase in aggregate demand was the decisive factor. This suggests the need for further consideration of the functional relationship between aggregate demand and absorptive capacity.

(B) Unanswered questions that arose as a result of this study: Change in Saudi Arabia's terms of trade was the underlying cause of the drastic increase in its real income and, therefore, the expansion in its absorptive capacity. This raises a question concerning the appropriate policy to be followed by developed countries vis-a-vis developing countries. Should they offer aid, or should they adopt policy measures specifically designed to maintain and preferably improve the terms of trade of the developing countries? The issue has been a subject of discussion in various international forums. Further research in this area would help to ascertain the advantages and disadvantages of either approach.[4]

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[4]The above is derived from K. A. Al-Eyd, op. cit.

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