TRADE AND DIVERSIFICATION: THE CASE OF SAUDI ARABIA

BY

ZENAB SAAD GABBANI

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Zenab Saad Gabbani, M.A.

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Abstract

This study sets out to investigate the causal relationship between concentration and exports in the Saudi economy, to explain the pattern of diversification over time in relation to planning periods, to examine the effectiveness of the diversification policy in achieving growth, and to consider the implications of the GCC groupings on the diversification argument. In the course of this investigation, the theoretical foundations of trade policy and economic integration are discussed and the economic features of Saudi Arabia and the GCC countries.

The Saudi Government has sought to diversify the economy, and these efforts have been reinforced by greater regional integration with the GCC member countries. Yet, attempts at diversification do not appear to have produced substantial effects on the pattern of production and trade.

The study employed the Gini-Hirschman coefficient to measure concentration and has related values of these coefficients to measures of fluctuations in total earnings. In addition, the study applied a proportionate contribution statistics model, which is based on the Markowitz-type model, to investigate more directly the extent to which instability in total export earnings of Saudi Arabia is related to

concentration. For this purpose, the work focused on Saudi GDP, exports and markets for a period of 26 years from 1970 to 1994.

The general conclusion of this study was that there is ample theoretical and practical justification for diversification policies in terms of commodity and geographic markets. When the concentration and instability measures were applied to the Saudi economy, the following were indicated: (a) while the thrust of policy is based on a widening of the composition of export products and market zones to achieve a fall in export instability, it is found instead that the level of instability has been falling in the more recent part when Gini-Hirschman coefficients indicated increasing levels of commodity concentration and decreasing levels of geographic concentration; (b) according to the results from the proportionate contribution statistic, Saudi oil exports and traditional markets contributed disproportionately to total earning instability; and, (c) the GCC market is more stable than other markets, although there are several impediments that delayed the establishment of customs union among member countries.

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Chapter One

Introduction

1.1 Argument of the Research

For over a quarter of a century, Saudi development plans have focused on the establishment of a strong infrastructural base, particularly in the areas of telecommunications and transport facilities, on the development of human resources and on the diversification of the economic base. The overall aim was to create a powerful economic foundation with diversified resources. Attempts to achieve diversification have been the central focus of the Kingdom's long-term development strategy, which postulates a reduced dependence on the exploitation of depletable crude oil resources as the main source of national income. This necessitates the establishment of other strong economic sectors, such as petrochemicals and the manufacturing and agricultural sectors as sources of income and economic growth.

Against this background, this study considers Saudi diversification of its productive base and of the market zones for its oil and natural gas and their by-products. This is necessary in order to confront the forthcoming task of the world's new economic and political order. Clearly, the unification of the European economic market in 1992, the increasing regionalism among nations and the emergence of the World Trade Organisation (WTO) pose a serious challenge to the economy of Saudi Arabia as it seeks to acquire improved levels of competitiveness, industrialisation and specialisation. Quite apparently, the Saudi economy is suffering from the bounded nature of its market, the fluctuations of its productive structure and the weakness of forward and backward economic linkages, as well as the reliance of

most of the Saudi economy on oil and petrochemical exports to highly developed traditional markets, namely, Japan, EU and the USA.

The Kingdom's comparative advantage, derived from the availability of oil and natural gas, has given these natural substances a strategic position at the national level as the major source of Government revenues and income. The growth in export earnings has permitted increases in fixed capital formation in Saudi Arabia and has facilitated the procurement of materials and equipment needed for economic development. Nonetheless, the commodity and geographic concentration of exports on a few key products and markets exposes Saudi Arabia to factors such as global economic fluctuations, hegemonic power, fluctuations in earnings, instability in the world economic order, and the influence of monetary and fiscal policies implemented by the industrial countries (e.g. Massell: 1970, pp. 622). There is a great susceptibility to policies aimed at fostering energy conservation in oil-importing countries, which limit the quantities of oil and its by-products being imported. This resulted in fluctuations in Saudi exports with consequent effects to the Saudi economy.

In principle, Saudi Arabia, in seeking to pursue economic growth and prosperity, could consider two major alternative paths. First, the Kingdom could look "inward" to widen its industrial base and to enhance the quality of labour and managerial skills. This would establish a base for the production of competitive import-substitution goods and later export products.

Secondly, the Kingdom could adopt a more "outward-looking" policy stance which focuses on developing market strategies and economic opportunities with other nations, especially those of the GCC and EU and by joining the WTO. The

consistent philosophy of moving to unrestricted trade within the Single Market of the EU has been adopted by the GCC countries. The GCC General Agreement explicitly specifies diversification as an important policy objective. In essence, Saudi Arabia and the other GCC economies are encouraged by the agreement to explore the possibilities of diversifying their economies through establishing a customs union to promote their industrial sectors and thus, to reduce dependence on export revenues.

Saudi Arabia produces a markedly different set of products from those produced elsewhere, e.g. in the EU, and this is reflected in its different trade (export and import) composition. The Kingdom and, indeed, the other similar GCC members represent a substantial market for EU countries' exports. The EU represents one of the largest trade partners for GCC member countries especially in respect of GCC imports. About 31 percent of GCC imports are from the EU, while their exports to EU are around 14 percent (GCC Economic Data book: 1996, pp. 116).

In global terms, increasing attention to diversification emerged during the 1950s and 1960s as many of the developing countries attained their independence. Many countries put in place export diversification policies as part of their strategies to attain their development and growth objectives. At an academic level, although numerous, early empirical cross-sectional studies could claim no clear causal relationship between concentration and export fluctuations to justify the adoption of diversification as a viable policy objective. However, subsequent studies (Love: 1979b, 1986; and Glezakos: 1973) concentrated on individual country experiences, and time series studies suggested a reasonable causal relationship between

concentration and export fluctuations. Consequently, diversification seems to be defensible as a possible policy option.

1.2 Statement of the Problem

Diversification has been a central policy issue for most developing countries since they achieved their independence. Diversification can be achieved either through (a) import substitution industrialisation which marked the first phase (1940s-1970s) of trade policy, or (b) neutral export orientation industrialisation, which marked the second phase (1970s-1980s) of trade strategy; and, or (c) more- export orientation industrialisation, which determined the beginning of the third phase (1980s to the present).

During and after the Great Depression and the Second World War, deliberate efforts were made to encourage industrialisation via Import-Substituting-Industrialisation (ISI) policies to attain self-sufficiency and economic independence, seeking to reduce drains of foreign exchange reserves and hence to achieve industrialisation. The Prebisch–Singer (1950) hypothesis of secular decline encouraged the establishment of ISI regimes by highlighting the movement of the commodity terms of trade against primary products. Nurkse's view (1962) of "export pessimism" also reaffirmed the argument that the causes of the alleged decline in the terms of trade of the LDCs lie outside their control. ISI regimes were, to a great extent, a reflection of the view that developing countries have only limited potential for obtaining economic growth through the expansion of exports. Indeed, many developing countries believed that trade was harmful to them, rather than a possible engine of growth. According to the ISI strategy, full employment of relatively abundant local resources can only be maintained by home replacement of

an existing import market. This line of argument provides the justification for: first, protecting domestic infant industries until they were sufficiently mature to survive international competition; and secondly, for implementing appreciation in their exchange rate.

As the ISI approach failed in practice to inspire export diversification and to achieve its objectives of attaining sustainable industrialisation and employment creation, there was a shift in the policy level and in the academic field, to outward-orientated industrialisation strategy. Such outward-orientated strategy was inspired by the success during the 1980s of the Newly Industrialised Countries of East Asia (NIC), which accomplished dynamic gains from trade by apparently undertaking policies to promote exports. Since the incentive structure was based on average incentives for both exports and imports, this phase permitted government intervention to protect some sectors of the economy without exhibiting on average a bias against exports.

As many countries adopting neutral and semi-neutral incentive schemes failed to perform well economically, there was a general appeal from international organisations such as the World Bank (1987) to move the attention towards a strong or ultra export orientation industrialisation policies. Whatever the degree of export promotion strategy, the common feature of export-promotion strategies is that they are market-orientated. Reliance is placed on pricing incentives and "getting prices right" rather than on quantitative controls. An outward-looking strategy is accompanied by "realistic" exchange rates; and it is geared to the international market and the earning of foreign exchange.

In the academic literature, much of the debate on diversification policies has revolved around attempts to establish as to whether there is a causal relationship between concentration and the pattern of export earnings, and more specifically, fluctuations in export earnings which are thought to be damaging to domestic economies. Except for the work of Love (1979a, 1982, 1983, 1984, 1992) and Massell (1964, 1970), most of the studies in this area provided inconclusive outcomes, which suggested that there was not sufficient evidence to justify diversification as part of development policy (i.e. Macbean: 1966; Maizels: 1968; Kenen and Voivodas: 1972). However, the 1980s and the 1990s have witnessed a shift from cross-sectional to time series studies (Love: 1986; Glezakos: 1973), the results of which tended to suggest a reasonable causal relationship between concentration and export fluctuations.

1.3 Focus and Importance of the Research

By applying established methods to circumstances and data where those methods have not been applied previously, this thesis hopefully will contribute to an understanding of the issue of diversification in the Saudi context. Furthermore, it is intended that this thesis will be helpful to those considering the diversification in a policy context.

Despite efforts by the Saudi Government to implement a diversification strategy, evidence indicates increases in the dependence on oil even after six development plans over the period 1970-1995. Statistics reveal that dependence on oil has increased in the late eighties and early 1990s in contradiction of the main thrust of policy (SAMA Annual Reports: 1998, p. 134; 1997, pp. 100). This thesis attempts to examine the progress towards diversification, knowing that a substantial

period of time has elapsed since the Saudi Government shifted to its diversification strategy and then agreed to participate in the GCC.

1.4 Research Objectives

The objectives of the study can be summarised as follows:

(i) to investigate the causal relationship between concentration and exports in the Saudi economy.

(ii) to examine the extent of diversification in relation to planning periods in order to explain the pattern of diversification over time.

(iii) to consider to what extent the diversification policy is effective as a viable policy option for solving the problem of concentration and export fluctuations and, thus, can be effective in achieving growth and economic affluence.

(iv) To consider the implications of the GCC groupings on the diversification argument.

(v) to make appropriate recommendations to policymakers concerning effective ways to diversify their economies.

1.5 Definitions of concentration and export fluctuations

In brief, the term concentration is defined in terms of the shares of traditional exports to total exports. The conventional wisdom is that the proportions of traditional export, often comprising only of one or few products, tend to remain high, i.e. a country may be seen as "putting all its eggs in one basket or in very few baskets". Commodity concentration, with only a limited set of other similar traditional exports, runs the risk that these products will exhibit high covariances in export earnings and eventually these movements will be reflected in the country's total export earnings. Analogously, concentration can take the form of geographic

concentration, where a country sells its products to a limited set of markets so that any fluctuations in demand in those markets will be reflected in the country's export earnings.

While concentration is regularly defined in these terms and, as shall be seen later, is typically measured by the Gini-Hirschman index, there is no common "universally-accepted" definition of export fluctuations in the literature, and therefore, no "standard" measures are available. However, there is a general agreement on the treatment of export fluctuations in terms of deviation from trend values. Ways in which this is translated into a useable measure are discussed later.

1.6 Research Limitations

In doing research on the Saudi economy, several major difficulties are encountered. The foremost is the common problem of finding complete and recent statistical data. Largely, the national statistical institutions can explain the problem of the low level of efficiency. This problem imposes limitations on the areas of research. Data availability requires that research areas be limited to topics covering exports, imports, Government expenditure and revenues and investments, while consistent and reliable data are not available for variables such as employment. Secondly, there is a problem in obtaining clear and complete data, free of discrepancies concerning the relationship of the Saudi economy with its counterpart GCC economies. There is a lack of publications containing simple and straightforward descriptive explanations of the GCC development strategies as well as the functions of those national and regional GCC institutions responsible for the preparation and implementation of these strategies. This lack of publications impedes and delays examination of internal and external GCC economic relations.

Thirdly, due to the fact that the petrochemical sector has only been established recently in the Kingdom, there is insufficient information and data to provide the means to drive an applied study in this area of research. The lack of sufficient data concerning the Saudi petrochemical sector limits the scope of the research in the context of the non-oil sector. It is intended that this study, although modest, will be a step forward toward a better understanding of the problem concerning this area of study which is of vital importance to Saudi Arabia.

1.7 Formulation of the Hypothesis

In agreement with the literature review in chapter Two and chapter Six of this thesis, and in harmony with the conceptual definitions presented in section 1.5, and later in chapter six in section 6.2, a number of research hypotheses concerning the relationship between Saudi export concentration and economic stability will be examined. The hypotheses are formulated to apply established methods to circumstances and data, where those methods have not been applied previously. Furthermore, the hypotheses attempt to test and evaluate the progress towards diversification, knowing that a considerable period of time has passed since the Saudi Government shifted to its diversification strategy and then agreed to participate in the GCC. These hypotheses are as follows:

1. Although there have been substantial efforts by Governments to develop the manufacturing base, primarily through development of downstream petrochemical activity and these efforts have been reinforced, at least potentially, by efforts at greater regional integration through the GCC, the Saudi economy remains heavily dependent in terms of output and trade on the oil producing sector.

2. Attempts at diversification do not appear to have produced as yet substantial effects on the pattern of production and trade.

It is obvious that the above stated hypotheses are related to the research objectives discussed earlier in section 1.4. Consequently, these research hypotheses will be tested using the measures of concentration and export fluctuations, discussed in ample length in chapter six, and which will be the main concern of chapter Seven.

1.8 Outline of the Research

To access the main objectives of the research, the scope and inquiry is divided into eight chapters, including the introduction as **Chapter One.**

Chapter Two centres on the importance of industrialisation and the ways in which it may be achieved in Saudi Arabia and the Gulf region. The main emphasis is on investigating the scope of industrialisation and its basic theoretical background. Furthermore, the chapter involves a review of the conventional approach to economic integration schemes. Since integration is based primarily on the theory of customs unions, both static and dynamic effects are included in the analysis.

Chapter Three briefly examines the main characteristics, including the structure of exports and industrial development, of the Saudi economy. As Saudi Arabia is the country of interest in this inquiry, the main focus is on analysing the strategy of diversification from a Saudi perspective, as emphasised in the various development plans. A brief analysis of various sectors and their behaviour over time is advanced, accompanied with diagrams which allow an overview of the reaction of these sectors in relation to diversification policies.

Chapter Four is devoted primarily to GCC economies. This chapter discusses the scope of interdependence and development between the GCC Countries. The

purpose is to analyse the industrial and trade structures, to explore the similarities and differences, and to observe existing patterns of integration. Objectives and policies for development of a trade union are also set out. Furthermore, the emphasis is to focus on the obstacles and problems of economic interrelation within the GCC group to determine "appropriate" methods of cooperation.

Chapter Five is divided into two sections: section one defines the petrochemical industry and analyses its structure, stages of production, major characteristics and principal markets. Section two considers the potential importance of the petrochemical industry to the Saudi economy, the inter-linkages created within the economy, the main problems facing the industry and the relevant policies and strategies implemented towards the industry.

Chapter Six is concerned with describing the research design and the methodology used in collecting and analysing data on the relationship between the forms of concentration and export fluctuations in Saudi Arabia. This chapter bridges the gap between the theoretical framework and the empirical findings. It also outlines the methods of analysis that are used in measuring concentration and export fluctuations in the Saudi economy.

Chapter Seven analyses the findings of the study according to measures that have been developed in chapter six concerning concentration and instability issues.

Chapter Eight draws the main conclusions of the study. The chapter also discusses the implications of the findings from the study and suggests areas for future research.

Chapter Two

Review of Literature

Chapter one gave a broad perspective on the main direction of the research, a statement of the research issue, a statement of objectives and a sense of the significance of the research. Furthermore, it gave a broad overview of the chapters of this research. This chapter focuses on the importance of industrialisation in the Gulf region, particularly in Saudi Arabia, and on the ways in which industrialisation may be achieved. Built on customs union theory, this chapter will review how regional grouping may operate as a system to help create markets for the GCC countries.

2.1 THE NEED FOR INDUSTRIALISATION

Industrialisation is a means through which developing countries hope to achieve higher levels of economic growth. Several reasons are put forward to justify why less developed countries (LDCs) strive to industrialise (Sodersten and Reed: 1994, pp. 404-405). First, LDCs are convinced that, by following the same industrialisation path as developed countries, they will attain their goal of economic growth. Secondly, the urgency to embark on industrialisation is due to the inelasticities of demand for primary products and the attendant and well-realised implications for primary exports and the balance of trade. Thirdly, there is a perception that a more comprehensive economic base may lead to greater stability in macro-economic variables such as national income and foreign exchange earnings. Fourthly, industrialisation may raise productivity and eventually an increased utilisation of resources. Fifthly, achieving industrialisation may decrease the

country's reliance on other countries. Finally, industrial processes involve more technological advances than primary products and may contribute more positively to the dynamism of the domestic economy.

Evidence from the experience of the industrial economies show a close correlation between development and industrial expansion. Conceptually, industrialisation is a process of transforming the structure of the economy through time from a low income and productivity economy to a more efficient industrial one with higher per capita income (Meier: 1995, pp. 327). Such transformation involves the changing of output shares and the reallocation of the labour force and other factor inputs within the economy.

According to Meier (1995, pp. 333), structural transformation results from the movement towards specialisation and market participation. The rapidity of this process depends largely on the rate of capital formation. Pack and Westphal (1986, pp. 90) argue that indigenous technological dynamism (factor-neutral or factor saving) and the relative rates of increase and use of the factor inputs - not simple factor accumulation and allocation- are core and necessary for successful industrialisation. Meier (1995, pp. 366) further holds that national technological dynamism is a complex interaction of three factors: enterprise, markets, and a variety of institutions that are subject to policy intervention in support of industrialisation.

Technology is a major element in the industrialisation process. It generates spillovers as it benefits other activities in the form of technological dispersion (Grossman and Helpman: 1993, pp. 16). LDC governments should therefore select the "appropriate" technology to avoid economic distortion and inefficiency at a macro level (Meier: 1995, pp. 369). Meier argues that a haphazard application of

technology will lead to a concentration of resources, saving and expenditure on human resources and infrastructure on a small part of the economy. Subsequently, some modifications and appropriate selection mechanisms are required before applying the technology adopted from advanced countries.

The concept of the "big push" is a dominant influence in the debate on industrialisation and is frequently regarded as signalling a path to development (Meier, 1995, pp. 344). During the 1980s the thrust of the debate shifted to a view that industrialisation cannot be sustained in developing countries by relying on import substitution policies. Rather, it was argued, it should be carried out through export-led policies. This shift reflects the view that industrialisation under strong inward orientation leads to serious inefficiency and retards economic development (Salvatore and Hatcher: 1991, pp. 13).

Much of the attraction of industrialisation is that it generates employment, enhances skills, helps achieve higher levels of per capita income and overcomes domestic demand constraints (Pack and Westphal: 1986, pp. 91) and (Meier: 1995, pp. 333). Industrialisation creates new job opportunities. Furthermore, it accelerates the acquisition and mastery of new skills and new technology, leading to higher productivity and higher remunerations.

Complementarity among different industries provides a set of arguments in favour of large-scale planned industrialisation. Meier (1995, pp. 344) argues that achieving complementarity between industries creates additional new markets. In essence, the complementarities of demand patterns will increase the motives to invest by reducing the uncertainty of acquiring markets, and, thereby, reduce the domestic demand constraint (Meier: 1995, pp. 345).

Pack and Westphal (1986) and Meier (1995) point out that industrialisation presumes some form of functional and selective intervention by governments to provide necessary infrastructure, to promote market efficiency and to foster a stable macroeconomic environment. If industrialisation of the developing countries were left entirely to the customary motive of the private sector, they would contend the process of industrialisation, the rate of investment and, as a result, national income levels would be negatively affected. Selective intervention by the State is necessary to guarantee a sufficient amount of investment, possibly by including new and strategic industries that would help transform external economies into internal profits. Functional intervention by the government is also necessary to overcome market failures and to neutrally strengthen market forces.

The nature of the intervention needed may vary according to the stage of development and national objectives, and according to the ability of the government to undertake effective intervention (Meier: 1995, pp. 343-365). Though a minimum quantum of investment is necessary, but not a sufficient condition for success, investment through a "big push" is often seen as being required to overcome domestic market constraints. A sufficiently "big" quantum of investment requires the existence of efficient institutions and a correspondingly large amount of savings. This saving is difficult to achieve in low-income, less developed countries but is accessible in the Gulf countries.

Allyn Young (Meier: 1995, pp. 344) emphasised that increasing returns accrue to the firm by: (i) growth of the firm's size; (ii) growth of the industry; and (iii) growth of the industrial system. The range of increasing returns becomes wider when specialisation and better use of resources help overcome indivisibilities

generating pecuniary external economies. Social overhead capital is a major ingredient in creating a climate for investment opportunities in other industries, though often with relatively long gestation periods. Industrialisation creates indirect effects through inter-linkages among industries which help to attain development. Meier (1995, pp. 347) explains the joint linkages effect through the cumulative nature of development, with forward and backward linkages leading to complementarities among industries.

2.2 Ways in which Industrialisation is achieved

A country's size, its natural endowment, the skills of its people, the stability of its government and institutions and their ability to promote change, and the fiscal, monetary, and exchange rate policies are important factors that influence a country's ability to industrialise (World Development Report: 1987, pp. 1). Trade plays a crucial role in industrialisation even during the early stages of industrial development.

During the European Mercantilist era (1500-1750), economic activities were based on zero-sum game principles. The Mercantilists argued for the need to maintain a positive trade balance to increase wealth and well-being through subsidising exports and through the imposition of taxes, quotas and high tariffs on imports of consumption goods. Mercantilists demanded taxes on imports for two reasons: first, they considered it as a way of creating jobs and income; and, secondly, because of their perception of imports as a way of losing precious specie (Lindert: 1991, pp. 18 and 41). However, the Mercantilist view of holding gold and precious metal to acquire wealth was altered by the price-specie-flow argument of David Hume (1752). One of Adam Smith's (1776) important insights was that the

productive capacity of a nation determines its wealth and not the holding of precious metals, and he developed the concept of absolute advantage (Appleyard and Field: 1995, pp. 24-26).

According to Smith, a case of absolute advantage is created when countries are absolutely (in terms of their use of resources, especially labour) "better" than others at making particular goods. Smith also recognised that certain advantages could be acquired through the accumulation, transfer and adaptation of skills and technology that were consistent with the natural endowment of the country (Appleyard and Field: 1995, pp. 26).

Ricardo (1817), through his principle of comparative advantage, gave further impetus to the case for free trade. His principle of comparative advantage was based on the premise that, given the immobility of factors of production, there can be gains from trade even though the country does not have absolute advantage(s) in Smith's terms. Comparative advantage exists whenever there are differences in relative productivity as seen in circumstances where the opportunity costs of producing commodities differ between countries. The differences in relative productivity across countries allow for mutually profitable trade (Meier: 1995, pp. 455).

The Ricardian principle was then refined and generalised to adapt to modern conditions by including increasing marginal costs as well as other factors of production besides labour and explicit demand considerations. The Swedish economist Bertil Ohlin in 1930 developed and publicised his theory of factor proportions in the production of different products in different countries. The subsequent Heckscher-Ohlin (H-O) analysis was based on the assumption that trade takes place between countries when the country uses its relatively abundant factors

more intensively to produce exports with lower prices and exchange them for the products that use its scarce factors more intensively (Lindert: 1991, pp. 34-42). The H-O theory explains some inter-industry trade patterns. It implies that countries such as Saudi Arabia and other Gulf Countries, with a relatively abundant natural resource (oil), have cost advantages in oil-intensive products and hence a potential for gainful trade. Meier (1995, pp. 455) argues that as long as different relative factor endowments exist in countries, there will be a motive for international trade because of differences in costs of production and, consequently, in prices.

Contemporary trade theories which accentuate the effect of increasing returns, product differentiation and imperfect competition indicate that LDCs can make use of the concept of dynamic comparative advantage and proceed up the ladder of comparative advantage. Thus they can emerge as exporters of manufacturers in areas where developed countries lose comparative advantage. The "catching-up" process describes the sequence a country goes through from being an importer of manufactured goods and an exporter of primary goods to becoming an exporter of manufactures as domestic costs reach the international competitive cost starting point.

Changes in comparative advantage depend on the level of technological progress, the duration of imitation lags, and the product cycle (Meier: 1995, pp. 456). Meier states that since changes in comparative advantage are dependent on changes in countries' factor endowments, LDCs may be confined to exporting older products rather than high-technology products. Moreover, differences in products give rise to intra-industry trade, which accounts for 60 percent of world trade.

With respect to trade policy, a large number of researchers have found a strong relationship between a country's trade policy regime and its dynamic performance. The World Bank (1987) and Syrquin and Chenery (1989), for example, reported that countries with an outward orientation tend to achieve higher productivity growth rates than those with inward orientation. This finding of a positive association between outward orientation and growth rates is corroborated by the more detailed case studies of individual countries reported in, for example, Kuznets (1988), although not all authors (see Singer: 1988 and Sheehey: 1990) accept the outward- orientation view so fully.

The aim of the following section is to examine and to appraise the main arguments related to the relationship between trade and economic growth that influence LDC's trade and industrialisation policies and to set the ground for the study. The literature has classified the conflicting perspectives on the relationship between trade and economic growth and on the process through which industrialisation is achieved through the "trade via import substitution" and the "trade via export promotion" perspectives.

2.2.1 Import Substituting Industrialisation (ISI)

In the early post-war years most development economists and policy makers in developing countries supported the "export pessimism" arguments and the associated inward-orientated strategy, which is often referred to as the import-substitution strategy. The export pessimism view then retreated in the mid-1960s and especially in the mid-1970s, and many countries switched toward more pro-trade and export-orientated policies.

In the 1980s, against a background in which export promotion arguments were being extensively promoted, arguments about import-orientated policies returned in a different form. Although the focus of the first wave of "export pessimism" was on the inauspicious potential for primary product exports, the "new" export pessimism was doubtful about the prospects for exports of manufacturers from additional Newly Industrial Countries (NICs) (Meier: 1995, pp. 490).

Industrialisation via import substitution in most developing countries or, as defined by Meier (1995, pp.355), "industrialisation from the top downward" through the production of intermediate and capital goods is based mainly on the existence of effective demand for the imported consumer products. The aim of the import substitution policy is to develop an economically independent industrial sector biased against exports, and dealing with the problems of balance of payment deficits by improving the country's term of trade (*TOT*). In theory, advocates of the import substitution process establish their argument on the premise that while primary export earnings of LDCs could grow only slowly, if at all, economic growth would lead to rapidly rising demand for import-type goods. Domestic manufacture of import-type goods usually involves overt protection. Following the infant industry argument, government intervenes by introducing protective regimes with measures such as tariffs and direct controls on imports to expedite the growth of domestic manufacturing (Meier: 1995, pp. 470).

High levels of protection to switch demand to products produced domestically, typically discourages exports due to the increased costs of domestic inputs, relative to the prices received by exporters. This rise in the relative cost of domestic inputs may occur through domestic inflation or an appreciation of the

exchange rate following the imposition of barriers to imports (World Development Report: 1987, pp. 78). Essentially, protection puts a tax on exports through the explicit or implicit taxation of export activities (Meier: 1995, pp. 470).

Several arguments may be used to advocate the benefits of an import substitution strategy. Such a strategy may create employment in the industrial sector and raise national skill levels. Secondly, import substitution may possibly cause gains to terms-of-trade and increase the incomes of entrepreneurs and workers in the industrial sector at the expense of expansion in the agricultural sector. Thirdly, substitution of imports allows planners to economise on market information based on the demand for import figures, as long as the industry is protected (Lindert: 1991, pp. 267-268).

Meier (1995, pp. 472) summarised the characteristics of inward-oriented development strategies as: (1) its requirement of permanent protection whereas the infant industry argument entails only temporary protection until industries mature internationally, although there is substantial variation in the rates of protection among industrial activities. (2) the predominance of sellers' markets that do not contribute to the users' needs, nor improve the productivity of firms. Furthermore, ISI leads to higher cost since it does not capture economies of scale. (3) the uncertainty in time and fluctuations in the exchange rates in the capitalist countries. (4) in general, countries adopting the import substitution strategy tend to de-emphasise the role of prices.

The export pessimism approach has several variants, with substantial differences among them, including: (1) the Prebisch-Singer (1959) version of secular decline in terms of trade, the Prebisch-Singer thesis holding that producers of

primary goods in LDCs face a secular deterioration in their term of trade; (2) the lag in demand for exports of LDCs relative to their domestic factor supplies due to low income elasticities of demand for primary goods and the emergence of synthetic substitutes for natural resources (Nurkse: 1959), this version of export pessimism being characterised by Bhagawati (1990, pp. 12) as "elasticity" pessimism; (3) the decline in the rate of economic growth in more developed countries that makes it more difficult for the developed market economies to absorb all the increase in exports (Lewis: 1980); and, (4) tariff and non-tariff trade barriers being imposed on exports of LDCs (Prebisch: 1959; Lewis: 1980), is perhaps the major cause of export pessimism today.

The Prebisch-Singer thesis postulates that the term of trade (*TOT*) of developing countries deteriorate due to the decrease in prices of periphery export goods in relation to the prices of their imported goods. The reasons for that deterioration as stated by Prebisch (1959, pp. 261) are: disparities in income elasticity of demand for periphery exports and imports; differences in labour market structure in the periphery and centre; protection in the developed countries; and the technological gap between the periphery and the centre. Proponents argue that technological advancement in developed countries affects the periphery negatively. It may increases the price of imports if qualitatively improved technology carries a higher premium on price, tends to decrease factors' remuneration and decreases the prices of their exports even though there is an increase in the supply of its exports in absolute terms (which transfers benefits from the periphery to the centre). Accordingly, Prebisch (1959, pp. 253) proposed industrialisation through import-

substitution as the means to rectify the effects of disparities in foreign trade elasticities.

Prebisch (1959) considers protection as an instrument to help developing countries maintain their process of industrialisation in order to attain higher growth rates. Furthermore, Prebisch argues that developing countries should adopt protective measures, through government intervention, in the market mechanism to correct the effect of disparity in income elasticity without pressuring the developed countries to consider reciprocity in protection policy. This will also reduce the transfer of the increment in real income to the developed countries.

Nurkse (1959) presented a different argument. While Nurkse recognised the role of trade as a potential engine of growth, he attributed a poor country's export lag to the lag in the rate of growth of external demand in relation to the rate of growth of domestic factor supplies. The solution, according to Nurkse (1959, pp. 35) lies in industrialisation.

Still another argument that enhances the interests of economists in the contribution of international trade to economic development is that of Lewis (1980). Lewis doubts the effectiveness of trade relations between LDCs and MDCs. He supports his argument by observing the statistical relationship between world trade in primary products and the rate of growth of output in the MDCs. For Lewis, intra-trade is the only solution for LDCs to attain self-sustaining growth to rectify deterioration in the balance of payments. He further recommends that LDCs should establish custom unions among themselves, giving preferential treatment to imports from other LDCs. Hence, they may be able to help each other maintain agrarian

change and make use of multinational cooperation, as well as sustain home demand in the face of stagnant world trade in primary products.

Prebisch (1959) and Lewis (1980) present yet another set of arguments in the form of complaints against developed countries for their protection and tariff and non-tariff barriers against the exports of developing countries. Prebisch argues that the centre tends to keep the periphery away from liberalisation and industrialisation, even during the former years of their great prosperity. Lewis (1980, pp. 564), on the other hand, argues that MDCs have been discriminating against LDCs by increasing barriers and maintaining the system of preference among themselves.

The import-substitution strategy has its merits in terms of labour training, the development of entrepreneurship, the spread of technology, and the promotion of infant industry. By contrast, this policy may also foster inefficiency and inequality in income, reduce saving, discriminate against agriculture, and may lead to under-utilisation of existing capacity, to the adoption of inadequate technology and to overcapitalisation of industry. Furthermore, an import-substitution policy, rather than improving the terms of trade for developing countries, tends to slow down the advancement of primary exports and to create inefficient manufacturing activities.

The foregoing factors, as well as the decline in the net import saving which extends the need for foreign materials, equipment and technology, lessen the flow of foreign exchange essential to foster development in the developing countries (Meier: 1995, pp. 471-474).

2.2.2 Industrialisation via Export-Promotion Strategy

From an export-promotion perspective, industrialisation may be defined as the production and export of both traditional and non-traditional products. Moreover, export promotion may be defined according to the incentive-related concept adopted by Bhagwati (1990). Meier (1995) points out that export promotion means equality between the effective exchange rate for the country's imports (EER_m), and its effective exchange rate for exports (EER_x). These effective exchange rates measure the incentive to import-substitute and to export respectively. The export promotion case involves a neutral or bias-free incentive condition, whereas an increase in EER_x relative to EER_m is defined as an ultra-export promotion strategy, indicating a net incentive bias in favour of exports as compared to import-substitutes.

The pursuit of either export promotion or the ultra-export promotion strategy does not prevent import substitution in selected sectors. The term EER_m is defined as the number of units of domestic currency that may be paid for a dollar's worth of imports, taking into account all the charges and other measures that affect the import price. Similarly, the term EER_x denotes the number of units of domestic currency that can be obtained for a dollar's worth of exports, including any measures that affect the prices of exports.

There are distinct advantages to be obtained from the implementation of the export-promotion strategy. Relaxing a country's foreign exchange constraint is a necessary condition of adopting such a policy, and there are several indirect effects and active considerations in favour of export-promotion strategy: (a) The domestic

resource cost of saving a unit of foreign exchange tends to be higher than the domestic resource cost of earning a unit of foreign exchange through export. This means that the value of exports that may be produced with a given use of scarce factors is greater than the value of imports that could be replaced. (b) As long as the process of industrialisation relies mainly on exogenous world demand conditions, it may provide a chance to exploit economies of scale, learning effects, and the competitive gains in terms of x-efficiency that result in the lowering of cost curves for the firm and the industry. (c) The export-promotion strategy may attract direct private foreign investment. Also, it tends to have more linkages to agriculture when it involves the processing of primary products. It also upgrades labour skills when it involves the production of labour-intensive manufactures. (d) Export-promotion promotes other sources of foreign capital to the country that support exports, because with a rise in export revenues, the ratio of debt service to export revenues decreases. (e) It contributes more to the objective of greater employment and to improvement in the distribution of income. Furthermore, it may reduce the cost of employment in terms of the complementary use of scarce capital and imported inputs. (f) Export-promotion can indirectly aid employment creation in the urban industrial sector by avoiding an agricultural bottleneck that can otherwise handicap urban industrial employment.

A central issue in export promotion arguments is that they ascribe poor LDC export performance primarily to internal factors and internal policy deficiencies. Kravis (1970) criticises Nurkse's (1959) trade growth analysis and his misplaced faith in the role of trade during the 19th century. Kravis (1970) attributes "good" growth rates to favourable internal factors and he regards trade as a "handmaiden"

rather than as an "engine" of growth. He maintains that external demand is not a necessary or a sufficient condition for growth and trade is one among many factors that affects growth. Kravis (1970), after investigating market conditions for LDC during the 1950s and 1960s, attributes poor performance to lower shares in world trade in terms of total world exports and in terms of world exports of primary products, and specifically to three factors. These are: pervasive pessimism about trade, competition from substitutes or production of like commodities, and failure to consider new export industries.

While developing countries as a group were not successful in international markets, Kravis observed differences in performance among the developing countries. Evidence indicates that countries with higher export ratio to GDP tend to experience higher growth rates, to be more competitive, and to have a more diversified export base. Through trade, LDCs achieve dynamic gains such as overcoming the diseconomies of being small countries. In addition, they realise dynamic efficiency in their mobilisation and allocation of resources in the form of a) utilisation of plant capacity; b) the realisation of economies of scale; c) a declining incremental capital-output ratio; d) the gains of x-efficiency; e) higher saving ratios; f) the transfer of factors to activities with higher marginal productivities; and g) the overcoming of organisational dualism (Meier: 1995, pp. 362).

Kravis (1970) argues, however, that tariff and other trade restrictions lead to the creation of high costs of imported inputs in agriculture, depress agricultural and industrial exports, turn the internal terms of trade against agriculture reducing the wherewithal to increase agricultural production, increase the propensity to import with attendant strains on the balance of payments, and lead to the emergence of

industries that depend for their profits on protection and government decisions rather than by cutting their costs. Such factors neglect and negate comparative advantage and the potential for developing new export industries.

Proponents of export promotion policy such as Bhagwati (1990, pp. 19) do not deny the role of government intervention in a country adopting an export promotion regime. Instead, Bhagwati considers it of value in making the export promotion strategy work successfully, through establishing the necessary confidence to reap the advantageous benefit of such a strategy. Although Bhagwati agrees that a *laissez-faire* policy would help satisfy the requirement that $EER_x = EER_m$, it is not a necessary condition for that outcome.

In the 1980s many empirical studies (see, e.g. Feder: 1983; World Bank: 1978) were conducted to study the relation between export promotion strategy and economic performance, and more specifically between export performance and growth performance. The hypothesis of the causal relationship between export promotion strategy and growth is widely accepted by agencies such as the World Bank, which has sponsored liberalising trade policy reforms in developing countries in the last decade.

Advocates of export promotion theory assert that there is a significant relationship between export performance and growth. Such evidence, they contend, indicates superiority of export promotion strategies over import substitution strategy and the importance of access to international markets in providing a means of permitting more rapid growth. Krueger (1980) affirms that countries adopting an export-orientated trade tend to experience more rapid growth in their traditional

exports as well as in their non-traditional exports than countries adopting on import-substitution strategy.

Krueger (1980) proposes three factors to explain differences in growth performance. These are: first, technological-economic factors which include such phenomena as minimum efficient size of plant, increasing returns to scale, indivisibilities in the production process and the necessity for competition; second, excesses in the ways in which import substitution strategies are administered; and third, the belief that polices adopted in pursuit of an export promotion strategy are generally far closer to an optimum, both in the sense of equality between the international marginal rate of transformation and the domestic marginal rate of transformation and with respect to the domestic market, than are those adopted under import substitution.

The World Development Report (World Bank: 1987, pp. 8) similarly prefers the export promotion strategy to the import substitution strategy. The Report examined forty-one economies and concluded that outward-orientated economies provide incentives to industrialise smoothly and tend to perform better than inward-oriented economies. While recognising that the shift toward outward-orientated strategy entails some costs such as temporary unemployment that necessitate certain forms of trade policy reform, the Report (1987, pp. 9, 109-112) suggests replacing quantitative restrictions with tariffs to afford links between domestic prices and foreign prices. Reforming tariffs means imposing reductions in the variation in rates of protection alongside reductions in its overall level.

Despite the extensive literature in support of the outward-orientated growth strategy, Sheehey (1990,1992) and Singer (1988) challenge the efficacy of the

empirical studies supporting the benefits of an export-promotion strategy on the basis of a positive relationship between exports and economic growth. Sheehey criticises the work as biased by a built-in correlation between exports and GDP. Meanwhile, Singer (1988) criticises the way in which the export orientation strategy is defined and how countries are categorised into four groups. Singer questions the claim that an export promotion strategy is the only reason for the success in the economic performance of South Korea. Singer also argues that South Korea is a single case and it is dangerous to give generalised policy advice from any one particular case. Singer (1988, pp. 235) further criticises the World Bank Report authors for not treating income levels as a separate factor in their analysis, nor for considering the risks of export and import instability to which outward-oriented countries with lower income are exposed.

Nevertheless, these criticisms notwithstanding, the 1980s did witness a shift towards outward-orientated strategies. Consistently with that shift and also with Nurkse's recommendation that countries should seek to foster trade among regional groupings, the next section examines the theory of customs unions.

2.3 The Theory of Customs Union

Trade blocks and economic integration are composed of several degrees and stages. Five categories ranging from a "free trade area" to "total economic integration" are distinguishable. These are: a free trade area, a customs union, a common market, an economic union and complete integration.

The least intricate form of integration is a free trade area. In a free trade area, members remove trade barriers in connection with commodity movements

among themselves while keeping their separate national barriers against trade with the outside world. In this case, member countries must maintain customs administration on the borders to keep outside products from entering the high-barrier countries cheaply by way of their low-barrier partner. The disadvantage of the free trade area stems from the possibility of commodity movement from outside the region into the area with the lowest tariffs which reduces the impact of the protectionistic effects of the higher tariffs imposed by other member countries.

In a customs union members remove all barriers to trade among themselves and adopt a common set of external barriers, thereby eliminating the need for customs inspection at internal borders. Nevertheless, a uniform external tariff will cause a shift in the cost of production and pattern of trade within the region. Although customs unions are designed to encourage trade through the elimination of all barriers to trade across the board, the creation of non-tariff barriers and subsidies reduces their influence and the corresponding benefits. Since 1981 the Gulf countries have been seeking to form a customs union among themselves, and began by establishing a free trade area.

A common market is similar to a customs union in that it involves removing tariff barriers among partner countries but differs in that it also allows full freedom of factor flows among partners. This stage of integration involves the encouragement of specialisation and cooperation in productive sectors beside trade promotion between the participants, and, thus, needs a high level of policy coordination.

A more developed stage of economic integration is represented in the economic union. This stage exceeds the scope of the common market stage through the partial adoption of unified and multilateral economic policies.

Total economic integration or a "unified market" is the highest stage of economic integration. It involves unification of monetary, fiscal, social and welfare policies as well as policies toward trade and factor migration.

The above-mentioned stages of economic integration and trade blocks need not necessarily follow in order, but can overlap and bypass each other without precise delineation. However, it is essential to distinguish between the types of integration and trade blocks and the different stages because a confusion of forms and stages might lead to improper analysis of the results of regional development.

The initial theory of integration was based wholly upon the theory of a customs union and the second best theory (Lipsey and Lancaster: 1956-7). The theory of customs union is not concerned with the Pareto-optimum condition because of the existence of tariffs. It is, therefore, a particular case of the theory of second best.

The main objectives of establishment of a customs union among LDCs are to reduce trade dependency of this group on DCs, to pursue industrialisation with protected markets on a rational basis, to exploit advantages of economies of scale, to improve the terms of trade, and to create the appropriate climate to encourage investment among participants.

It was always argued, before Viner's contribution, that a customs union or, more generally, any reduction in tariffs would necessarily lead to a significant

improvement in world productive efficiency and welfare, and that this would be a step towards a more ideal situation (i.e., free trade). Viner (1950) challenged the assumption that any customs union, being a step further in the direction of free trade, would increase the sum total of economic welfare in the world economy. Nevertheless, as Viner (1950) points out, a customs union, because it combines elements of freer trade with elements of increased protection, can have both beneficial and detrimental effects.

Viner's (1950) pioneering distinction was between trade creation and trade diversion. Trade creation involves a shift in intra-union trade from high-cost production in one partner to imports from a lower-cost producer in another member of the union. Trade diversion, on the other hand, results from a shift in intra-union trade from the lower-cost external producer to a higher-cost partner. Viner notes that trade creation has favourable effects, while trade diversion has adverse effects on economic welfare.

There are two identified types of effects that occur with the establishment of an economic integration scheme: static effects and dynamic effects. The former refers to the welfare gains and losses from the reallocation of production and consumption patterns under the classical assumptions. The latter refers to the various ways that economic integration affects the rate of growth of GNP of the participating countries. The traditional theory of customs union is usually associated with the attempts made to determine, through the static effects, the impact of customs union on world efficiency in the allocation of resources. For LDC's, the main emphasis has been on dynamic effects for evaluating the desirability of economic integration.

Lipsey (1957, 1960, 1980) and Gehrels (1956) extend, modify and demonstrate the deficiencies of Viner's analysis. They base their analysis on the static gains from the formation of a customs union. Lipsey and Gehrels independently criticise Viner and the context of the traditional theory of economic integration for not including the consumption effects that result from the formation of a customs union. Both reject Viner's implicit assumption that products are consumed in some fixed proportion that is invariant with respect to relative prices. Both demonstrate that trade diversion may be welfare-increasing when inter-commodity substitutions are taken into consideration. They concluded that the establishment of a customs union would lead to a neutral effect, or will increase or decrease the welfare on both the production and consumption sides.

Yu and Scully (1975), using a mathematical framework within the conventional three-country-two-commodity customs union model, introduce further modification. Yu and Scully demonstrate that trade diversion may still be welfare-improving in the presence of a domestic distortion. Besides, trade creation may be inferior to trade diversion in the presence of an inter-industry wage differential. In addition, Scully and Yu (1974) examined the effects of capital movements within a customs union on welfare and concluded that trade diversion may also be superior to trade creation in the presence of international investment.

Moreover, Akkihal (1973) argued that the literature of customs union theory did not provide an adequate analysis of the "locational effects" which is defined by Akkihal (1973, pp. 42) as 'the change in economic distance between the production point and the consumption point that results from customs union formation'. The closer the production point to the consumption point, the more efficient are the

locational effects. However, once the locational effect is recognised, trade creation need not necessarily have a beneficial effect on economic welfare (Akkihal: 1973, pp. 54).

El-Agraa and Jones (1981, pp. 3) criticise the ostensible simplicity of the concepts of Viner's trade creation and trade diversion as misleading. El-Agraa and Jones claim that Viner was not successful in providing a complete theoretical framework for his analysis. El-Agraa, (1981, pp. 103-117) conducting his analysis under macro conditions, with foreign repercussions and constant prices and coefficients, concluded that trade is beneficial to the customs union partner, and detrimental to the other partner and the outside world. However, the extent of the gains and losses is equal to an insignificant portion of the diverted trade.

However, there is a general agreement that it is almost impossible to derive an *a priori* judgement regarding the net effect of customs union on trade flows (Balassa: 1989, pp. 109). By and large, within the framework of the static effects, the simple conclusion is still that as long as the net trade creation effects exceeds the net diversion effects (assumed negative), economic integration, specially in the form of a customs union, can be the second best arrangement. In general, in order to determine the static effects of trade creation and trade diversion, it is important to know the level of pre-union and post-union tariff rates among the members, the elasticities of demand for the imports on which duties are reduced, and the elasticities of supply of exports from the members and foreign sources (Meier: 1995, pp. 508).

During the 1950s the theoretical literature of economic integration was confined almost exclusively to customs unions among industrial economies. Since

the 1960s increasing attention has been devoted to the problem of economic integration among LDC's where economic integration is considered as an approach to economic development rather than as solely a tariff issue.

Conventional second-generation approaches, guided by Cooper-Massell (1965) and Johnson (1965), argue that the basic customs unions theory with its free trade orientation, with few exceptions, fails to explain what motivates a tariff. These approaches assert the need for an economic theory of protectionism whose development would allow a comparison of non-preferential tariff policy with the customs union as an alternative protectionist rather than a liberalising mechanism. The main possible reason for the formation of customs union, according to this approach, is the desire of member countries to use tariff policies to realise unattainable objectives through individual actions. However, this new approach represents an extension to the theory of customs union, not a replacement of that theory. It tries to address the question of what motivates countries to establish a customs union to obtain higher real income when non-preferential tariff policy could always do the same job (Krauss: 1972, pp. 417).

Cooper and Massell (1965a, pp. 745) answer the above concern by splitting the effect of a customs union into two components: (a) a non-preferential reduction that contributes to all an increase in the consumer welfare; (b) a re-imposition of tariffs only on imports from third countries, (leading to trade diversion). Cooper and Massell argue that a customs union can be beneficial if the tariff reduction effect outweighs the pure trade diversion effect. However, positive and negative effects are not enough in themselves to justify governments in establishing a customs union. According to Cooper and Massell, this depends on the bargaining power that small

countries, who have no power over their terms of trade in the absence of a common external tariff on imports from non-member countries, could have after forming the customs union. Such bargaining power enables small countries to trade on more advantageous terms and to maintain a protected domestic market by sacrificing less in income than is possible through non-preferential protection (Cooper-Massell: 1965a, pp. 747).

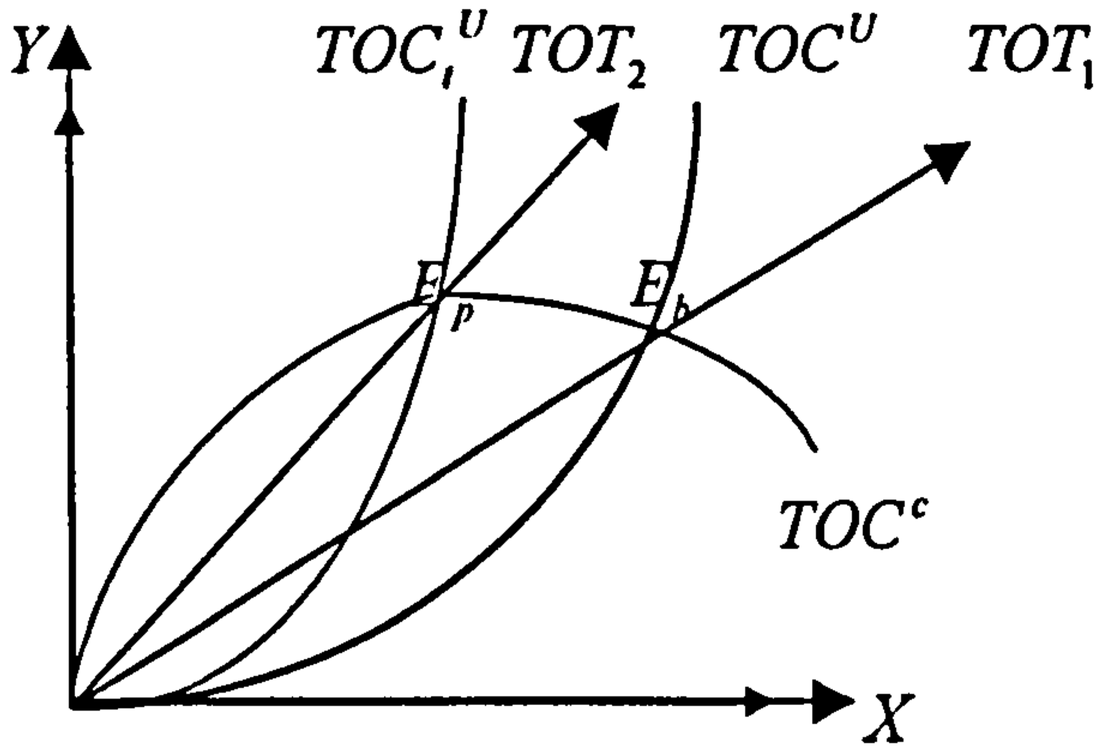
In this context, the formation of a customs union on a protectionistic basis may represent the most efficient method for attaining some realised objectives, such as the improvement of the terms of trade, the achievement of long term dynamic gains in the form of increased influence of economies of scale, externalities and spread of competition or economic stabilisation (Hatim: 1981, pp. 38). Consequently, as a result of the operation of the dynamic factors, the enlargement of the market through integration will raise the efficiency to a greater extent if the initial size of the market was small.

In order to illustrate the improvement in terms of trade for countries joining the union, this analysis will adopt Heller's (1973, pp. 191-192) aggregate excess trade offer (TOC), shown in Figure 3.1, which summarises the union members' willingness to exchange a combination of Y and X goods with the rest of the world. It is assumed that country C, which represents the rest of the world, can export only commodity Y. TOC^U represents the quantities of goods X that the union members are willing to exchange with other countries at different terms of trade, while the curve TOC^c represents the trade offer of the rest of the world. The intersection point E_b demonstrates the trade equilibrium in a situation where the union member countries did not introduce a common external tariff.

The introduction of an external union tariff, as a result of monopolistic or monopsonistic power, shifts the excess offer curve of the union members to TOC_I^U, which establishes the TOT_2. It can be concluded that the new position, where the union reaches a higher indifference curve, is more favourable to the union members, despite the fact that trade has been diverted.

Figure 2.1

Welfare Effects of the Term of Trade



Source: Heller, H. R. (1973), *International Trade: Theory and Empirical Evidence*, Figure 10-4, pp.192

As Meier (1995, pp. 508) argues, the formation of a union might result in an improvement or at least the forestalling of a deterioration in the region's term of trade. The latter takes place if there is a reduction in the supply of exports from the union or the demand by members of the union is reduced for imports from outside or the bargaining power of the members in trade negotiation is strengthened.

To reach an efficient scale of output, it is beneficial if markets are sufficiently wide, because, by pooling markets through the removal of internal trade barriers, a union might provide a sufficiently wide export market to make economies of scale realisable. Within a union, secondary industry can become more efficient as specialisation occurs in the member country that acquires a comparative advantage

(Meier: 1995, pp. 508). According to the concept of the "cost reduction effect" of economies of scale, developed by Corden (1972), there might be an increase in welfare due to a reduction in the average cost per unit of domestic production when such output expands into the formation of a custom union. At the same time, Corden (1972) developed the concept of the "trade suppression effect".

According to Corden, the trade suppression effect reflects a decrease in economic welfare, due to the replacement of imports from their most efficient source, by less efficient domestic producers. Hence, depending upon the circumstances and the particular form of integration envisaged, economic integration may have undesirable side effects, which might outweigh any beneficial effects accruing from the creation of a mass market.

The achievement of dynamic consequences in the form of a more competitive structure might be beneficial to the member countries. Clearly, the degree of competitiveness of the industry may affect the productive efficiency and may raise the growth rate of productive resources, in addition to the initial production reallocation effects resulting from integration (Meier: 1995, pp. 508-509). Meier relates this to the stronger incentives of the union member countries to adopt new methods of production, to replace obsolete equipment more rapidly, and to innovate more rapidly with more and better investment in manufacturing.

External economies, as a consequence of the establishment of a union, may accelerate the rate of growth of the members' economies due to the enlargement of the market. External economies, as defined by Kreinen (1974, pp. 193) 'include the enlarged pool of technological and managerial skills, economies of specialisation,

inter-industry transmission of innovation, and better use of discoveries and basic research'.

It is noteworthy that technological advance may not speed up as a result of the formation of a union. However, if growth does accelerate, real income will increase within the union. Furthermore, this will have a beneficial impact on the outside world by lessening the degree of any trade diversion that results from the formation of the union in the short-run (Kreinen: 1974). The extension of the market, as a consequence of the union's formation, may also lead to direct private foreign investment in manufacturing.

Another dynamic effect attributed to the formation of the union is a more optimistic attitude created in businessmen, raising their expectations for future growth. This attitude helps counterbalance the risks and uncertainty in foreign transaction, thus influencing the expansion of trade and investment.

2.4 Conclusion

The research so far depicts the importance of export-orientated industrialisation policies as an alternative development strategy for developing countries. Such policies contribute to economic growth in various ways. Exports of manufactured goods permit the exploitation of economies of scale and tend to raise the national income of a country by raising the availability of foreign exchange and by improving resource allocation through specialisation. In addition, the familiarity with foreign markets can provide inducement for technological change and improvement in product quality.

In order to assess the potential for any integration scheme, both static and dynamic gains should be considered. The emphasis placed on each should be determined according to the objectives, structures, and the types of the economies involved.

GCC objectives in economic integration are to accelerate industrial developments, to foster economic growth and to form a bargaining power against the rest of the world, especially against the EU countries. Consequently, a mixture of the traditional theory of customs union and various economic theories should be employed to emphasise some of the integration problems involved and to provide some appropriate solutions.

A major objective of this study is, therefore, to try to identify how this can be accomplished and to what extent the traditional theory can prove useful with regard to GCC countries and specifically to Saudi Arabia.

Chapter Three

The SAUDI ECONOMY

Saudi Arabia has invested much of its oil revenues in massive industrial development programs aimed at diversifying the structure of its economy. Industrialisation was conceived mainly as a means of reducing the country's heavy dependence on oil as the main source of income. The focus of this chapter is on the strategy of diversification from a Saudi perspective. In addition, this chapter examines the structure of the Saudi economy, the structure of exports and industrial development within the Saudi economy.

To pursue the objective of diversification, the Saudi Government in the 1980s established a complex infrastructure of export-promotion industries, often in the form of joint ventures, to exploit the Kingdom's potential advantages in this field. The Government has also sought to provide the private sector with opportunities of setting up a number of import-substitution industries to supply both consumption and development needs and, thereby, to reduce dependence on external economies.

3.1 THE HISTORY OF THE SAUDI ECONOMY

Historically, economic activities in the Arabian Peninsula were confined to primitive agricultural and pastoral modes, as well as on the production of simple tools by craftsmen who lived in small towns concentrated around sources of water. Until the recent large-scale development of oil resources, pilgrimage to the country was the main source of foreign currency. But the lack of security hampered movement of people and goods. Hence, the traditional economy was shaped by unpredictable fluctuations in the social and political situation, which limited the size of the market and restricted production to basic subsistence commodities (Johany:

1982, pp. 1). In 1933 an oil concession was granted to Standard Oil of California. Oil was discovered in commercial amounts in 1938, but it was not until the end of the Second World War that oil production became significant (Ali: 1976, pp. 7, 8). In the 1960s producing countries grouped to form the Organisation of Petroleum Exporting Countries (OPEC). OPEC was initially formed to maintain a balance in the relationship between the oil companies and oil producing countries. However, in the early 1970s the scales began to tilt in favour of the producers, and this process reached its culmination in the so-called 'oil shock' events of 1973-1974.

Through OPEC, producing countries were able to take full national control of their oil resources, including the control of transportation, refining, and distribution. Prior to 1973, despite the influx of oil revenues, only relatively modest beginnings of economic development were accomplished. By October 1973 the oil embargo raised oil prices fourfold resulting in the generation of substantial revenues for large-scale development (Blair: 1978, pp. 280).

The oil shock was followed by a world recession in 1974-1975 that necessitated structural adjustment. Accordingly, the Kingdom adopted an import-substitution development strategy to lay down the basis for industrialisation in the country. This was followed by export-led policies for export performance and for economic growth in the face of oil depletion and external shocks. The purpose of these government policies was to make effective use of the Kingdom's enormous revenues. These policies were expressed in a series of Five-Year Development Plans that began in early 1970. The focus of these plans was, and still is, to change the main emphasis of the economy away from heavy dependence on crude oil exports as a major source of national income.

The First Development Plan (1970-1975) was very modest in scope. It emphasised the provision of adequate physical infrastructure, improvement of government services, and the development of human resources through education facilities and health. On the other hand, the Second and the Third Development plans, (1975-1980) and (1980-1985) respectively, were designated as promoting major industrial development to achieve economic diversification. This goal was to be achieved through the establishment of the two new industrial cites of Yanbu and Al-Jubail. The industrial activities in the two cities, based on hydrocarbon activities, emphasise the use of energy-and of capital-intensive methods of industrialisation.

The years 1985-1990 signalled the beginning of the Fourth Development Plan, which reinforced the diversification theme of the previous Plans. Greater emphasis, however, was placed on the restructuring of the Saudi economy by allowing the private sector to play a leading role. Furthermore, the Plan called for achieving economic and social integration between the Arab Gulf Co-operation Council (GCC) countries (Fourth Plan, pp. 41).

While the four previous Plans laid down the premises and infrastructure for economic development, the Fifth and Sixth Development Plans, (1990-1995) and (1995-2000), respectively were intended to:

(1) rationalise government expenditure and increase the involvement of the private sector;

(2) adopt the necessary measures for addressing the constraints, which impede the development and employment of human resources;

(3) adopt appropriate means to achieve steady expansion in infrastructure facilities in line with increased demand resulting from the growth of population and settlements;

(4) improve the quality, effectiveness and competitiveness of factor inputs and, thereby, of all goods and services produced;

(5) achieve balanced regional development; and,

(6) strengthen and expand international linkages.

In essence, Saudi Arabia has maintained a dynamic approach to industrial development throughout its Development Plans. The focus of the industrial policy has been to promote the growth of manufacturing and agricultural industries expecting that the development of these industries would increase national income, raise the standard of living and level of employment and diversify the economy (SCH: 1994, pp. 23).

Furthermore, the government realised that the objectives of industrial development might be attained more effectively if the business community bore the responsibility of implementing industrial projects. Private involvement in expanding domestic activities will eventually lead, it is argued, to price competition, thus serving the interests of local consumers. However, business involvement in the process of industrial development is felt to require government protection. Accordingly, the government has designed its industrial development policies to safeguard the private sector's financial investment during the stages of preparation, establishment, and operation of industrial projects. This assurance is further backed by the government in the form of financial incentives in terms of long-term industrial

loans to induce private involvement in projects of prospective benefit to the national economy.

Even with government financial support, the private sector has reserved the right to select, utilise and manage the economic resources, including the employment of the expatriate industrial workers insofar as this does not conflict with the national interest. The private sector was also encouraged to attract foreign capital as well as foreign expertise and foreign participation in the industrial development projects in cooperation with Saudi businessmen (SCH: 1994, pp. 23). In fact, Saudi public policy supports the participation of foreign capital and expertise to cooperate with local investors. The government encourages such collaboration to benefit from technical know-how and market opportunities and to overcome work-force shortages.

3.2 THE STRUCTURE OF THE SAUDI ECONOMY

Presently the Saudi economy operates under a free-market-orientated regime in that there are no controls over imports, exports, currency exchange, product pricing, and there is a liberal tax system. Coupled with these features, the Government provides loans, subsidised interest rates and exemptions from duties to activities, in whatever sectors, which represent efforts at import substitutions. In effect, while nominal tariffs and other trade restrictions are negligible, there is a positive effective rate of protection to local producers. In this regard, therefore, the Government adopts an interventionist policy stance. Nonetheless, the continuing main characteristic of the Saudi economic system is the domination of a single-commodity as the main source of income. Within the market-orientated policy framework, the public sector plays a crucial role in initiating policies and

development plans in order to ensure efficient allocation and utilisation of oil revenues. Since 1973 oil revenues have provided a financial surplus which has permitted the development of a range of industrial and service-orientated projects, necessary to achieve a balanced development path in terms of economic growth in both the industrial and agricultural sectors.

The purpose of this parallel emphasis on industrial and agricultural development is to encourage the private sector to participate in socio-economic development programs as a means of diversifying the economy and to rationalise government expenditure. Rationalising government expenditure also means that the Government intends to introduce private financing into some government-financed activities, such as Saudi Airlines and telecommunications, through privatisation. This intention to introduce a greater degree of private financing was set out in the Sixth-Development Plan.

3.2.1 The Composition of Output

In order to examine the changes that have taken place over time in the composition split of Saudi output, particularly since the 1970s, it is instructive to compare the provisional estimates of 1992 GDP by major economic activities with estimates for earlier years. Table 3.1 contains data on the composition of Saudi output for selected years over the period 1971-1992.

Table 3.1

Gross Domestic Product by Major Economic Activities

(At Constant 1970 Prices: Million SR)

	First Plan		Second Plan		Third Plan		Fourth Plan			Fifth Plan		
	1971	1973	1977	1979	1981	1983	1985	1987	1989	1990	1991	1992
Oil sector	14014	20239	21513	23869	22383	13033	9286	11524	13629	16671	20618	22031
% Share in GDP	62	65	52	49	42	27	21	25	27	30	34	35
Non-Oil Sector	8607	10928	20128	25184	31503	34962	35650	35305	36538	38894	39666	39886
% Share in GDP	38	35	48	51	58	73	79	75	73	70	65	64
Agriculture, Forestry, fishing	1050	1130	1359	1639	1839	2286	3193	4275	5068	5422	5494	5399
% Share in GDP	5	4	3	3	3	5	7	9	10	10	9	9
% Share in Non-Oil Sector	12	10	7	7	6	7	9	12	14	14	14	14
Manufacturing (+refining)	1847	807	2691	3126	3698	4578	5454	6166	6555	6917	8485	8909
% Share in GDP	8	3	6	6	7	10	12	13	13	12	14	14
% Share in Non-Oil Sector	21	7	13	12	12	13	15	17	18	18	21	22
Electricity, Gas &Water	329	444	546	868	1396	1977	979	1093	1218	1279	1317	1366
% Share in GDP	1	1	1	2	3	4	2	2	2	2	2	2
% Share in Non-Oil Sector	4	4	3	3	4	6	3	3	3	3	3	3
Construction	1053	1669	4582	5128	6225	5329	4259	3627	3428	3428	3532	3595
% Share in GDP	5	5	11	10	12	11	9	8	7	6	6	6
% Share in Non-Oil Sector	12	15	23	20	20	15	12	10	9	9	9	9
Wholesale, Retail trade, Restaurant &Hotels	1146	1586	3555	5349	7289	8368	8417	7956	7798	7954	8049	8146
% Share of GDP	5	5	9	11	14	17	19	17	16	14	13	13
% Share in Non-Oil Sector	13	15	18	21	23	24	24	23	21	20	20	20
Transport, Storage & Communication	1544	2144	2367	3118	3659	4426	4522	4293	4358	4511	4525	4589
% share of GDP	7	7	6	6	7	9	10	9	9	8	7	7
% Share in Non-Oil Sector	18	20	12	12	12	13	13	12	12	12	11	12
Other	1638	3148	5028	5956	7397	7998	8853	7895	8113	9383	8942	8628
% Share of GDP	7	10	12	12	14	17	20	17	16	17	15	14
% Share of Non-Oil Sector	19	29	25	24	23	23	25	22	22	24	23	22
GDP *	22621	31167	41641	49053	53886	47995	44963	46829	50167	55565	60962	62663

* Excluding Import Duties.
Source: SAMA, Annual Reports, 1970-1998, e.g. 1998, Table (2), pp. 271-272.

The table represents real GDP at constant 1970 prices by different economic activities. The GDP accounts show the susceptibility of the Saudi economy to changes in the oil sector. Over the period 1971-1992 the share of the oil sector fluctuated between 62 percent and 35 percent of GDP and, as is clear from Table 3.1, changes in oil revenues and changes in GDP were closely synchronised. Table 3.1 also demonstrates that the share of the non-oil sector in GDP has grown over the

period, reflecting diversification and change in the structural configuration of the economy. Non-oil activities accounted for less than 50 percent of GDP on average during the 1970s but for over two-third in the 1980s and early 1990s.

As a reaction to the oil embargoes and the subsequent price hikes, Saudi GDP increased enormously during the 1970s. However, in the period 1983-87 GDP registered a decline due to the decline in the oil sector performance. By contrast, the GDP shares of the non-oil sector registered an increase for the same period.

According to the Saudi Arabian Monetary Agency (SAMA), real GDP, in 1992 accounts, showed a creditable growth rate of 2.7 percent in the oil and non-oil sector despite the Gulf War (SAMA: 1998, pp. 59). This rise is attributed to the prevalent positive performance of certain sectors, mainly, the manufacturing and agriculture sectors.

The share of the agricultural sector in the real non-oil GDP grew to 14 percent in '92 as compared to 9 percent in '85, 7 percent in '77 and 12 percent in '71. The fell in the agricultural sector's share in non-oil GDP in the early years of the First Development Plan was a natural outcome of the lack of development and industrialisation. This sector responded to application of highly evolved production techniques and government support to achieve concurrently both agricultural and industrial development. The Government, through a system of loans and subsidised interest rates conserved the income of investors engaged in agricultural activity and enhanced the Kingdom's self-sufficiency in some high value-added products, primarily wheat (SAMA, 1991, pp. 75).

Major changes were also taking place in the manufacturing sector that includes refining, petrochemicals and other non-oil manufacturing products. As

percent of non-oil GDP, the share of the manufacturing sector increased to 22 percent in '92 as compared to 15, 13 and 21 percent in '85, '77 and '71 respectively. However, the emphasis on the construction of downstream facilities during the years of the Fourth Plan negatively affected the manufacturing output, through a "crowding-out" effect. In the public utilities sector, the share of electricity, gas and water output in the non-oil sector grew only to 3.4 percent in '92 as compared to 3 percent in '85, 3.2 percent in '77 and 4 percent in '71. The utilities sector grew at high rates at the beginning of the Development Plans due to the growth in energy-intensive production methods, new consumption patterns, and subsidised user tariffs (Fifth Plan: pp. 87).

The construction sector's share in the non-oil sector in 1992 remained the same as in 1991 that is 9 percent, while in 1985, 1977 and 1971 was 12, 23 and 12 percent respectively. The shrinkage in the output of the construction sector was the result of the completion of major downstream projects and reductions in profit margins as a consequence of competition between contractors (Fifth Plan: pp. 88).

As percent of non-oil GDP, the share of the wholesale and retail trade, restaurants and hotels sector was 20 percent in '92 as compared to 24 percent, 18 and 13 percent in '85, '77 and '71 respectively, in line with the increase in demand in other sectors. The transport, storage and communications sector share in non-oil GDP remained at 12 percent level in 1992 as in '77. The growth in the transport and communication sector was a result of development and defence-related procurements as well as increased Government expenditure in support services and public utilities (SAMA: 1992, pp. 81).

Table 3.2 presents aggregate and sectoral GDP details of the size and structure at constant 1970 prices over the same period as given in Table 3.1. These data indicate a number of major characteristics. First, the influence of the oil sector is again highlighted. In those years when earnings from the oil sector rose, GDP also increased, while in 1983 and 1985 when oil revenues declined GDP also decreased.

Table 3.2

Gross Domestic Product by Sectors

(At Constant 1970 Prices: Million SR)

	1971	1973	1977	1979	1981	1983	1985	1987	1989	1990	1991	1992
GDP*	22621	31167	41641	49053	53886	47995	44963	46829	50167	55565	60284	61917
Oil Sector	14014	20239	21513	23869	22383	13033	9286	11524	13629	16671	20618	22031
% Share in GDP	62	65	52	49	42	27	21	25	27	30	34	36
Non-Oil Sector	8607	10928	20128	25184	31503	34962	35650	35305	36538	38894	39666	39886
% Share in GDP	38	35	48	51	58	73	79	75	73	70	66	64
a)Non-oil Private	6127	7754	13588	16876	21280	25001	26993	26280	27283	28310	28864	29335
% Share in GDP	27	25	33	34	39	52	60	56	54	51	48	47
b)Non-oil Government	2480	3174	6540	8308	10223	9961	8657	9025	9255	10584	10802	10551
% Share in GDP	11	10	16	17	19	21	19	19	18	19	18	17

* Excluding Import Duties.
GDP and its Components are measured at Producers' Values.
Source: SAMA, Annual Reports, 1970-1998, e.g. 1998, Table (10.1), pp. 168; and 1997, Table (9.1), pp.132.

Secondly, there has been steady growth in the non-oil sector, the only year of output contraction of the 12 years shown being 1987. Throughout the 1980s and the 1990s the non-oil sector recorded higher shares in GDP than the oil sector. Indeed, in the first 3 years of the 1990s the average share of the non-oil sector in GDP was twice that of the oil sector.

Thirdly, Table 3.2 shows the involvement of the private and the Government sectors in non-oil GDP. The share of the private sector tended to rise to a peak of 60 percent of GDP in 1985 before declining to an average of less than 50 percent in the

1990s. Government's share in GDP through the non-oil sector varied between 16 percent and 21 percent over the period from 1977 to 1992.

3.2.2 Saudi Exports

In the Saudi economy, exports act as the main determinant of change in the national economy. In 1974, on the post-oil crisis, exports represented about 91 percent of Saudi's GDP whereas in 1992 exports represented about 40 percent of Saudi's GDP. The Kingdom is the world's leading oil exporter and the eighteenth major importer of goods and services from all over the world in 1994 (IMF: 1995, pp. 5). In addition, the Kingdom is growing fast due to the use of the foreign currency reserves generated from trade to finance purchases of both investment and consumption goods from overseas. Its position as the world's major oil exporter has linked the Saudi economy close to the international economy.

Most imports into the Kingdom are free of tariff and other barriers, emphasising the Kingdom's relative commitment to the principle of free trade as discussed earlier in section 3.2. This has made the Kingdom one of the few countries with a low level of tariffs, while many other countries, such as those of the European Union continue to operate impediments to trade which militate against the Kingdom's exports. The Kingdom levies only 12 percent on import duties, 30 percent on tobacco and 20 percent on some import substitution manufacturers' duties (SCH: 1994, pp. 26-27).

Saudi Arabia is faced with a current account deficit that has persisted since the mid 1980s, when the Kingdom's oil export revenues fell in response to falling international oil prices. The Gulf War and its aftermath, when total external liabilities and debt increased to $17,089 million, exacerbated the situation. This level

of debt represents around 14 percent of 1993 GDP with an associated annual debt service requirement of $1,400 million (Arab Banking Corporation: 1994, pp. 110). This situation has required the implementation of an explicit foreign trade strategy.

The thrust of the foreign trade policy is directed towards the attainment of an adequate balance in the net financial and merchandise trade flows consistent with the development objectives envisaged. Furthermore, Saudi Arabia has committed itself to pursuing an oil policy that guarantees that oil remains a marketable source of energy throughout the life span of the Kingdom's reserves. Table 3.3 outlines the development of exports and imports during the period from 1969-1993.

Table 3. 3

Total Values of Exports and Imports 1969 – 1993

(Values in Current Prices: Million SR)

YEARS	EXPORTS *			IMPORTS**			GDP
	Values	% GROWTH	% SHARE in GDP	VALUES	% GROWTH	% SHARE in GDP	
1969	9496	4	55	3378	31	20	17152
1970	10907	15	48	3197	-5	14	22581
1971	17303	59	62	3668	15	13	27857
1972	22761	32	57	4708	28	12	40087
1973	33309	46	33	7310	55	7	100414
1974	126223	279	91	10149	39	7	139224
1975	104412	-17	64	14823	46	9	163893
1976	135154	29	66	30691	107	15	203942
1977	153209	13	68	51662	68	23	223818
1978	138242	-10	56	69180	34	28	247622
1979	213184	54	56	82223	19	21	383589
1980	362886	70	70	100349	22	19	517994
1981	405481	12	76	119298	19	22	530243
1982	271090	-33	65	139335	17	33	420062
1983	158444	-42	46	135417	-3	39	347424
1984	129214	-18	37	118737	-12	34	351397
1985	92349	-29	30	85564	-28	28	310031
1986	74677	-19	28	70780	-17	26	267846
1987	86880	16	32	75313	6	28	272000
1988	91288	5	33	81607	8	29	276909
1989	106295	16	35	79278	-3	26	304083
1990	166339	56	43	90282	14	23	384993
1991	178624	7	42	108924	21	26	435037
1992	188325	5	42	124606	14	28	452298
1993	158770	-16	37	105616	-15	24	434565

* F. O. B including re-exports
** CIF
Source: The Statistical Indicator 1993, pp. 61; and SAMA, Annual Report, 1998, pp. 283.

It is obvious from Table 3.3 that during the 1970s and the early 1980s the trade pattern was for exports as the export shares in Saudi GDP increases till it reaches its highest level in 1981. During 1982-1986 the value of exports decrease substantially denoting a decline in the value of oil exports, before it tends to rise again in the late 1980s to 1990s. During the 1990s, oil exports witnessed a sizeable increase following the negative changes during the years from 1983 until 1986. The increase reflects a temporary rise in oil prices during the Gulf crisis and the

Kingdom's decision to expand oil production to stabilise the international market. The rate of increase then declined during the years '91 and '90 and reached only 7 percent and 5 percent respectively in these years due to the return of the "normal" condition of the Saudi economy after the Gulf War. In 1993 total Saudi exports declined by 16 percent from the level of 1992. The decrease in the growth rate was attributable to the decreases in oil prices, which reduced oil export revenues.

3.2.3 The Composition of Exports

Recognising the importance of international trade to the Saudi economy, the Kingdom has set in place policies to:

1. enhance the base of export-promotion industries, and expand manufactured exports and to achieve the development of petrochemical industries through the development of downstream industries to retain value added from forward linkages and to augment exports;
2. ensure accessibility to foreign markets through foreign trade agreements based on mutual interests and reciprocal treatment; and
3. broaden the scope of import-substitution industries to enlarge horizontal and vertical expansion of the manufacture sector, and to improve competitiveness and increase productivity of national products (Fifth Plan, pp. 110).

These policies are aimed at diversifying the commodity and geographic composition of exports.

(a) Commodity Composition of Saudi Exports

The data available in Table 3.4 indicated the importance of oil exports to the Saudi economy. It is obvious that the pattern is for crude and refined oil as its share in total exports rose during the 1970s-1983 period to more than 90 percent before it

fell down during the 1987-1989 period to the levels of 85 percent before rising again in the 1990s. As for the share of non-oil exports in total exports the table shows fluctuations in its levels as it declines from 30 percent in 1971 to 4 percent in 1983 and then rises to 15 percent before it tends to decline again in the 1990s.

Table 3. 4

Composition of Saudi Exports

(Values in Current Prices: Million S. R)

	1971	1973	1977	1979	1981	1983	1985	1987	1989	1990	1991	1992
Crude Oil	10682	26829	136676	181020	345393	139252	71814	55171	70624	123281	139830	148312
Refined oil	1366	2082	6996	10996	17673	13199	13702	21330	19612	27002	23660	25931
Total Oil Exports	12048	28911	143672	192016	363066	152451	85516	76501	90236	150283	163490	174243
% Share in T. Export	70	87	94	90	90	96	93	88	85	90	91	93
Total Non-Oil Exports *	5255	4398	9537	21168	42415	5993	6833	10379	16056	16053	15311	14082
% Share in T. Export	30	13	6	10	10	4	7	12	15	10	9	7
Total Export	17303	33309	153209	213184	405481	158444	92349	86880	106292	166336	178801	188325

* Includes Re-exports

Source: SAMA, Annual Reports, 1990, Table (19.a), pp. 198; and 1992 , Table (5.1; 5.2), pp. 66-67.

In 1990 oil exports represented about 90 percent of total Saudi exports. The rise in the value of oil exports in 1992 was due to the temporary rise in oil prices and production. The increase in oil export value continued till '92 where oil exports experienced a slight decline of less than 1 percent. This slowdown in oil exports value reflects the world recession which affected the consumption and prices of oil. Table 3.5 shows the Kingdom's non-oil exports, where petrochemicals as percent of non-oil exports in 1992 recorded an increase in share to 41 percent, while non oil export annual growth rate decreased by a further 3 percent from 1991.

Table 3. 5

Saudi Arabia Non-Oil Exports *

(Values in Current Prices: Million S. R)

	1989	1990	1991	1992	1993	1994
Petrochemicals	5689	5684	5580	5762	5819	7878
% Share in Non-Oil Exports	35	35	36	41	41	47
Construction Material	1427	1655	1461	1212	1002	1151
% Share in Non-Oil Exports	9	10	10	9	7	7
Animal, Food and Agricultural Manufacturers	1584	1345	1709	1700	1656	1430
% Share in Non-Oil Exports	10	8	11	12	12	9
Other Products	7356	7369	6561	5408	5658	6302
% Share in Non-Oil Exports	46	46	43	38	40	38
Total Non-Oil Exports	16056	16053	15311	14082	14135	16761
Percentage Annual Growth Rate	3	0	-5	-8	0	19

* Includes Re-exports

Source: SAMA, Annual Report, 1992, Table (5-2), pp. 61; 1993, Table (5.2), pp.67; and 1997, Table (7.2), pp.101.

The rise in petrochemicals' share reflects a noticeable improvement in the performance of the petrochemical industry. According to SABIC (1995, pp. 1) the increased role of petrochemicals in non-oil exports indicates access to new trading opportunities and emphasises new dimensions of competitiveness resulting from the increasing quality of the industry.

(b) Geographic Composition of Exports

Examination of the Kingdom's direction of trade figures, as set out in Table 3.6, shows wide and increasing geographic diversification of exports as the volume of the Kingdoms' trade has increased throughout the years. The Kingdom broadened trade relations with the world economy in respect to non-oil exports to more than 68 nations, and especially to the GCC countries, apart from its participation in the oil market. Table 3.6 shows that despite the formation of the Gulf integration grouping, the intra-trade within the GCC member countries remains at low levels i.e. below 10 percent. Their share in total exports increased till it reached 8 percent in the late

1980s before it declined to 6 percent in 1992, of which the share of Bahrain was 3 percent. The United States was the largest importer of Saudi products in the year '92, with a share of 22 percent of all exports, comprising mainly of intermediate products such as plastic and fertilisers. The other major importers were Western European economies and Japan with a total share of 38 percent of which Japan's share accounted for 16 percent.

Saudi Arabia enlarged vertical and horizontal linkages through non-oil exports, established joint venture investments in petrochemical and other sectors and technology transfer through the Peace Shield and Al-Yamamah offset programs.

Table 3. 6

Direction of Saudi Arabian Exports

(Values in Current Prices: Million S. R)

	1985**	1986**	1987*	1988**	1989**	1990**	1991**	1992**
GCC	5191	4851	5926	6134	8314	11066	12020	11363
% Share in Total Export	5	7	7	7	8	7	7	6
Other Arab League	4897	2480	2129	3663	3139	6528	5197	3539
% Share in Total Export	5	3	3	4	3	4	3	2
Islamic Non-Arab	6865	2417	2846	2848	3191	5916	10117	12027
% Share in Total Export	7	3	3	3	3	4	6	6
Asian*	44635	23446	33068	30816	35839	60420	60246	67862
% Share in Total Export	45	32	39	34	34	36	34	36
African*	439	403	386	731	771	1741	1816	2076
% Share in Total Export	0	1	0	1	1	1	1	1
Oceanic	1433	758	1064	1505	1554	1600	2282	2027
% Share in Total Export	1	1	1	2	1	1	1	1
North America	5576	12658	16866	20262	27750	41496	42408	41742
% Share in Total Export	6	17	20	22	26	25	24	22
South America	4416	3012	3395	3567	2477	5551	4981	5394
% share in Total Export	4	4	4	4	2	3	3	3
West Europe	23839	23969	18692	21309	22651	30617	38045	41492
% Share in Total Export	24	32	22	23	21	18	21	22
East Europe	72	152	50	162	327	1197	1249	564
% Share in Total Export	0	0	0	0	0	1	1	0
Not Defined	2173	231	178	291	228	207	262	239
% Share in Total Export	2	0	0	0	0	0	0	0
Total Exports	99536	74377	84600	91288	106241	166339	178914	188325

* Excluding Re-export.

** Including Re-export.

* Non-Islamic, Non-Arab.

Source: Central Department of Statistics (Foreign Trade), Export Statistics 1992, Table (6).
SAMA, Annual Report, 1990, Table (22 b), pp. 208.

3.2.4 Saudi Imports

Table 3.7 presents data on Saudi import values and the composition of imports over a period of 19 years from 1973-1992. The figures reveal considerable fluctuations in import values. During the 1970s and early 1980s there were increases in Saudi imports, as a consequence of the expanding Saudi economy induced by a rapid rise in government expenditure and personal income, as well as of a sharp increase in import prices. The position was then reversed in the mid-1980s,

due to the slowdown in international economic activities and the consequent decrease in Saudi GDP. In addition, the slowdown in the rate of imports indicated an approach to a more 'normal' import propensity. In the 1990s global inflation, as well as an increase in investment demanded by the private sector, continued to affect the Saudi economy through rising import prices.

From 1970 to 1987 machinery and equipment parts occupied the dominant place in imports. Transport equipment ranked second, metals and others came next. However, owing to an increase in the costs of imports, especially cars, transport equipment became the single most important category of imports.

Table 3. 7

Composition of Imports

(Values in Current Prices: Million S. R)

	1973	1977	1979	1981	1983	1985	1987	1989	1990	1991	1992
Live animals & Animal Products	441	1465	2840	4874	4975	3911	4326	4392	4838	5613	3770
Vegetables & Products	661	1647	3906	7144	6588	5036	4720	4499	3737	3653	6484
Animal & vegetable fats & oil	58	224	386	407	426	390	347	212	403	490	551
Food, Beverage, Tobacco & Products	526	2029	3379	4854	4597	3558	3507	3461	3639	4446	2419
Mineral Products	113	1827	2249	3063	3475	1419	839	727	760	844	916
Chemical & Allied Industrial Products	399	1739	2667	4121	5081	4801	5838	5274	7232	8065	8397
Artificial Resins, Plastics, Cellulose											
Esters, Rubber & Rubber Products	162	1171	2094	2911	3501	2915	3057	2943	3518	4213	3967
Leather & Products	25	201	307	409	504	391	409	374	358	435	437
Wood, Charcoal, &Products	146	2138	2332	2650	2799	1142	927	1088	1249	1564	2040
Paper & Products	113	566	940	1353	1600	1204	1379	1349	1736	1879	1939
Textiles & Products	696	3496	4996	7294	9056	7524	8566	7754	7947	9169	9838
Foot wear, Umbrella's & others	51	242	395	674	920	785	933	975	895	1194	1048
Stone or ceramic Products	76	1460	2680	3515	4160	2637	1921	1666	1677	1846	2313
Pearls & Precious Stones	79	1906	1304	3478	4205	3293	2135	3848	6213	5531	5910
Metals & others	772	7650	12730	17443	19101	10277	6308	6476	7830	9931	11179
Machinery & Equipment Parts	1512	13961	22552	30323	36120	17841	14415	14557	14777	21115	26285
Transport Equipment	1023	6607	10992	17242	19087	12105	10190	14640	18471	22868	29910
Equipment*	230	1714	2903	4313	5279	3472	3067	2927	2836	3072	3422
Others	344	1619	2571	3230	3943	2496	2129	2059	2123	2996	3710
Total Imports	7197	51662	82223	119298	135417	85564	75313	79219	90139	108924	124537

* Optical, Photography, Medical, Surgical Instruments, Musical Instruments, Sound Records, Reproducers and Parts thereof.

Source: Saudi Arabia Monetary Agency (SAMA), Annual Reports, 1970-1998, e.g. 1998, Table (2), pp.284-285.

Table 3.8 shows the geographic distribution of Saudi imports from various regions during the period 1973-1992. The table demonstrates that the EEC registered the highest share among non-Gulf regions. The share of Saudi imports from the EEC reached its highest level during 1990 due to the Gulf war. Asian countries represent the second major region supplying the Saudi economy, although their share has declined over time as a result of the appreciation of the Japanese Yen and the rise in competition among suppliers in the Saudi market. North America is third in importance, the U.S.A being the main single trade partner of Saudi Arabia.

In the early 1990s Saudi Arabia has benefited from the depreciation of the U.S Dollar and has increased its import share from the States.

Saudi import policy seeks to establish diversified market sources and opportunities with other countries in order to reduce dependency and reliance on major countries. Subsequently, imports from Islamic non-Arab countries increased from 2.6 in 1985 to almost 4 percent in 1992. The share of the Gulf countries decreased from its level of 1985, because of the invasion of Kuwait and the slowdown in its economic activity.

Table 3.8

Import Values by Regions

(Values in Current Prices: Million S. R)

	1985	1987	1989	1990	1991	1992
GCC	1808.0	1365.0	1875.0	1636.0	1527.0	2128.0
% Share in total Import	2.1	1.8	2.4	1.8	1.4	1.7
Other Arab League	1738.0	1617.0	2159.0	2579.0	2908.0	3085.0
% Share in total Import	2.0	2.1	2.7	2.9	2.7	2.5
Islamic Non-Arab	2237.0	2504.0	2747.0	3130.0	4055.0	4505.0
% Share in total Import	2.6	3.3	3.5	3.5	3.7	3.6
Asian**	26206.0	24432.0	21870.0	24154.0	26679.0	30388.0
% Share in total Import	30.6	32.4	27.6	26.8	24.5	24.4
African**	208.0	236.0	249.0	296.0	277.0	234.0
% Share in total Import	0.2	0.3	0.3	0.3	0.3	0.2
North America	14884.0	12115.0	15215.0	15796.0	23037.0	29130.0
% Share in total Import	17.4	16.1	19.2	17.5	21.1	23.4
South America	1478.0	1135.0	1295.0	1461.0	2156.0	1999.0
% Share in total Import	1.7	1.5	1.6	1.6	2.0	1.6
Western Europe	34261.0	29735.0	31539.0	38569.0	45462.0	50660.0
% Share in total Import	40.0	39.5	39.8	42.7	41.7	40.7
Eastern Europe	725.0	623.0	1046.0	998.0	1096.0	822.0
% Share in total Import	0.8	0.8	1.3	1.1	1.0	0.7
Australia & Oceania	1678.0	1219.0	917.0	1405.0	1385.0	1229.0
% Share in total Import	2.0	1.6	1.2	1.6	1.3	1.0
Others	341.0	331.0	307.0	258.0	342.0	357.0
% Share in total Import	0.4	0.4	0.4	0.3	0.3	0.3
Total Imports	85564.0	75313.0	79219.0	90282.0	108924.0	124537.0

* Cif

** Non-Arab, Non-Islamic

Source: Saudi Arabian Monetary Agency, Annual Report 1992, Table (4), pp. 207.

3.3 Saudi Arabia and the GCC

Cooperating Gulf States share certain characteristics such as heritage, language, history, the presence of petroleum resources, small population, surplus capital and the goal of fostering economic growth and development. GCC population is approximately 20 million with an average U.S $9 thousand annual per capita income. UAE has the highest per capita income among GCC members followed by Bahrain and then Saudi Arabia.

In 1981 GCC countries reported peak levels GDP due to the increases in the oil price. The following years witnessed declines in the GCC's Gross Domestic product. In the 1990s GCC countries' GDP increased sharply as a result of increases in oil production and prices.

In 1992 the GCCs' oil production accounted for almost 49 percent of total OPEC oil production, and about 19 percent of world production (GCC Economic Bulletin: 1993, pp. 29). The oil sector was, and will likely be the most prominent sector in GCC countries for a long period of time, and oil revenues will be the major source of income and the principal stimulus for development projects. Subsequently, economic development in these countries is subject to oil sector fluctuations.

Table 3. 9

GCC Gross Domestic Product and Oil Exports

(At Current Prices: Billion Dollars)

Year	GDP	Oil Exports	% Share
1980	187	150	80
1981	225	156	69
1982	192	110	57
1983	175	78	45
1984	169	70	41
1985	155	59	38
1986	128	38	30
1987	136	45	33
1988	137	42	31
1989	153	55	36
1990	178	75	42
1991	184	71	39
1992	199	80	40

Source: GCC Economic Data Book, 1996, pp. 104
GCC, Economic Bulletin, 1993, e.g. 1993, Table (6), pp.27,
GOIC, Gulf Statistical Profile, 1995, Table (2.1), pp. 60 and Table (4.1.7), pp. 155.
Al-Towajry, A., (1994), pp. 159.

Saudi Arabia plays a significant role in global politics, economics, and social and religious spheres, and is especially important within the context of the GCC countries. Accordingly, the Saudi government has taken the initiative to develop and deepen economic and trade integration and linkages, as the GCC steadily moves towards a full common market. This process of integration will open new horizons for the future of socio-economic development of the GCC member countries. Furthermore, it will enlarge the region's internal markets and establish conditions to exploit the economies of large-scale production, thus penetrating international markets.

Saudi Arabia has sought to promote closer integration with GCC members through encouraging the growth of non-oil exports. The country has encouraged national and foreign capital investment through joint venture agreements that grant

the Saudi and/or GCC partner at least 25 percent of the equity holding. Also, it has increased capital flows and technology transfer into the Kingdom as a result of the off-set programs. In 1991, for the first time since the establishment of the Council, Saudi Arabia achieved a surplus of SR. 392 (million) in its non-oil trade with GCC countries, as shown in Table 3.10.

Table 3. 10

Saudi Non-Oil Trade with the GCC *

(Values in Current Prices: Million SR)

	1989		1990		1991		1992	
	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to	Imports from	Exports to
UAE	1575	851	1938	1221	2666	1033	3524	1243
Bahrain	577	434	589	458	603	559	746	620
Kuwait	809	1078	540	741	116	2111	462	1619
Qatar	346	420	288	454	268	241	469	357
Oman	113	122	153	217	106	207	142	191
Total	3420	2905	3508	3091	3759	4151	5343	4030

* Including Re-exports.
Source: SAMA, Annual Reports, 1991 and 1992.

In 1992 the substantial balance was more than reversed due to the increase in the Kingdom's non-oil imports from GCC members, up by 42 percent over the 1991 levels, and particularly to a decrease in the Kingdom's non-oil exports to Kuwait.

With respect to the Kingdom's non-oil imports from GCC member countries, United Arab Emirates (UAE), according to the 1992 figures have maintained its position as the largest exporter to the Kingdom among GCC members with a share of 66 percent. Bahrain occupies the second position among the GCC exporting countries to the Kingdom. Qatar maintained the third position with a share of 9 percent.

As to the Kingdom's exports to GCC members during 1992, Kuwait maintained its first position with a share of 40 percent of total Saudi non-oil exports

to GCC countries. UAE occupies the second position. Bahrain and Qatar occupy the third and fourth positions respectively.

3.4 Saudi Arabia and the Issue of Diversification

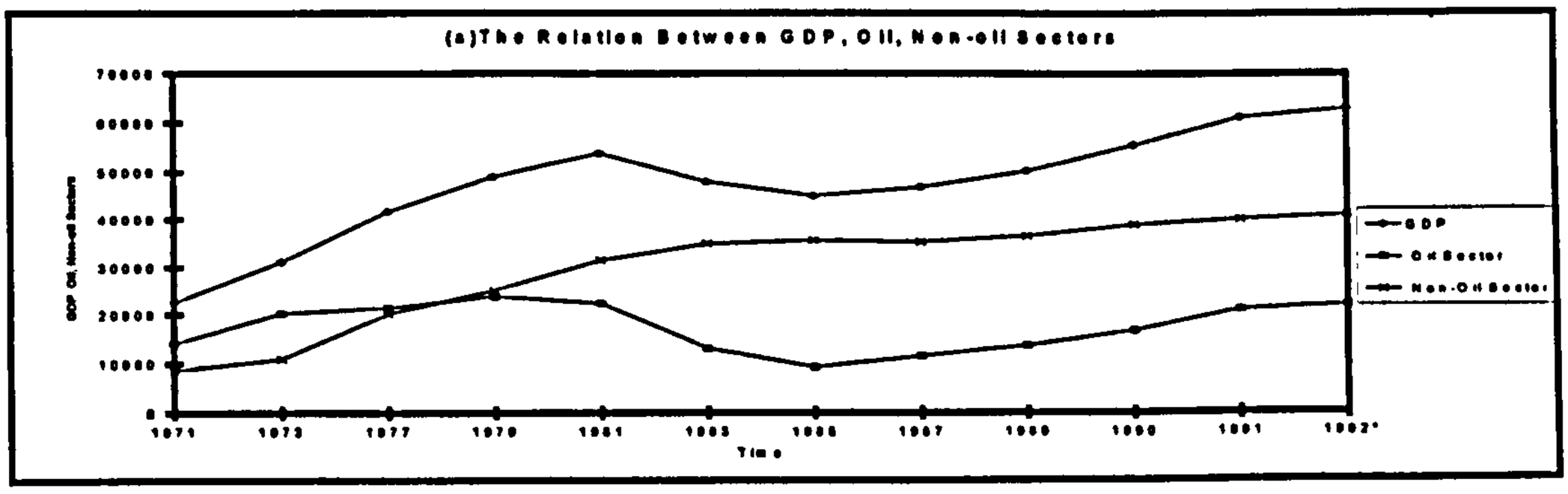
3.4.1 Diversification in a Saudi Contest

Saudi Arabia has set up an industrial base to reduce its dependence on oil as the main source of income. Indeed, the primary focus of both the Fifth and Sixth Development Plans was to attain geographic and product diversification. The Kingdom, by exploiting its potential comparative advantage in the oil sector and gas, marked a new phase of sophistication in the industry's development. By establishing export-orientated gas-based industries in collaboration with joint-venture enterprises, the Kingdom benefited from technology know-how, experienced personnel, and the accessibility to overseas markets. In addition, the Kingdom has provided the private sector with the appropriate climate to establish a number of industries, supplying the basic consumer and development needs of the economy.

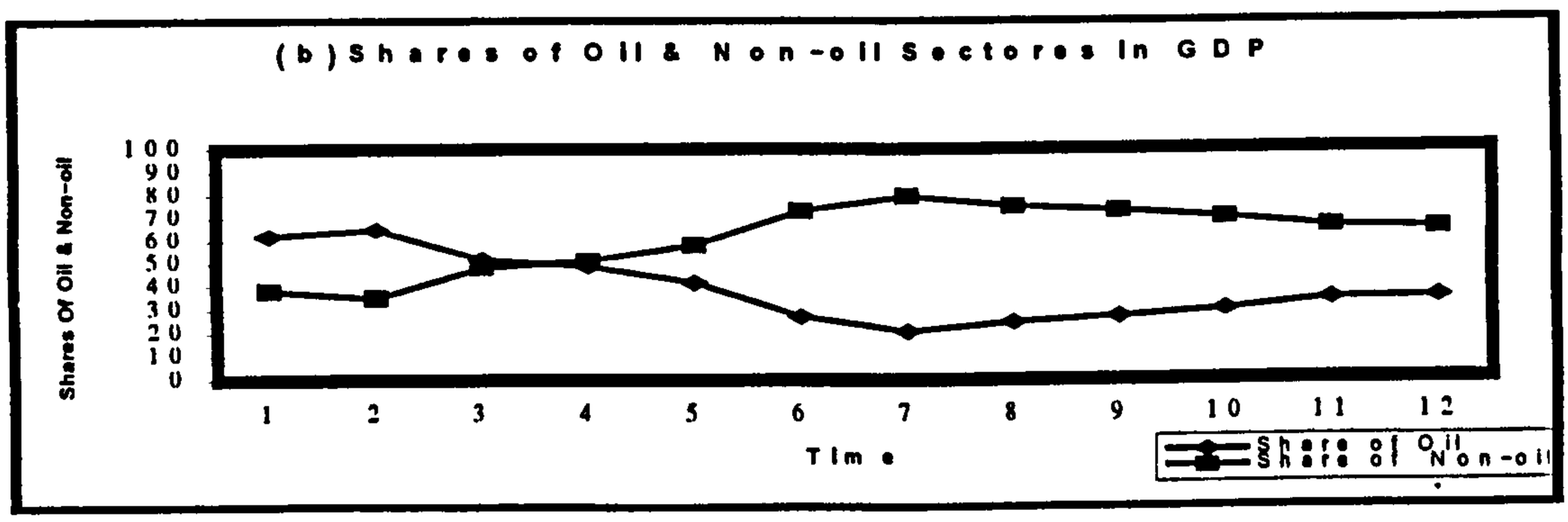
Figure 3.1 represents the relationships between the Saudi macro variables through time. This set of graphs is based on variables defined in nominal price terms, other than Figure 3.1 (a) which is defined in constant terms. The macro variables show the openness of the Saudi economy towards external markets and its vulnerability to international policies and business cycles. Furthermore, the Figure outlines the structural transformation undergone by the Saudi economy through time since the implementation of the Development Plans. From Figure 3.1 the following features are worthy to note:

Figure 3.1

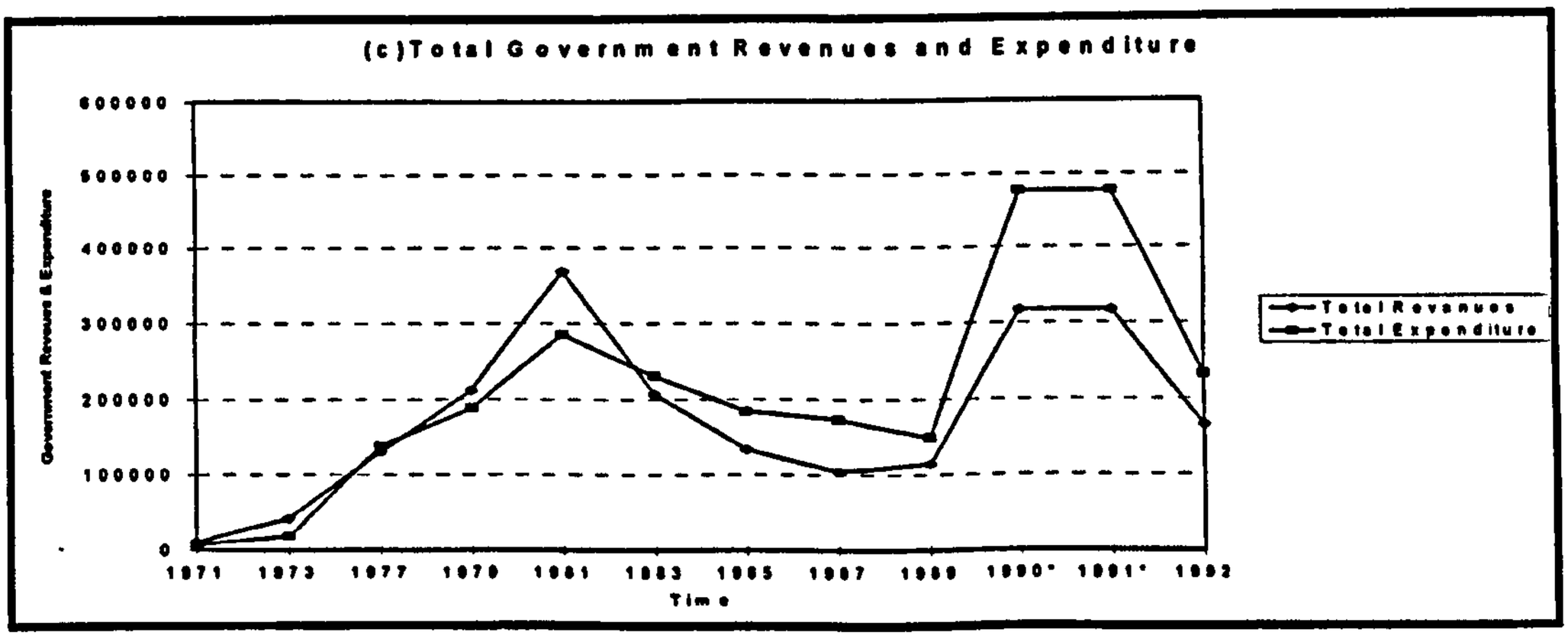
Profile of the Saudi Structural Relationships



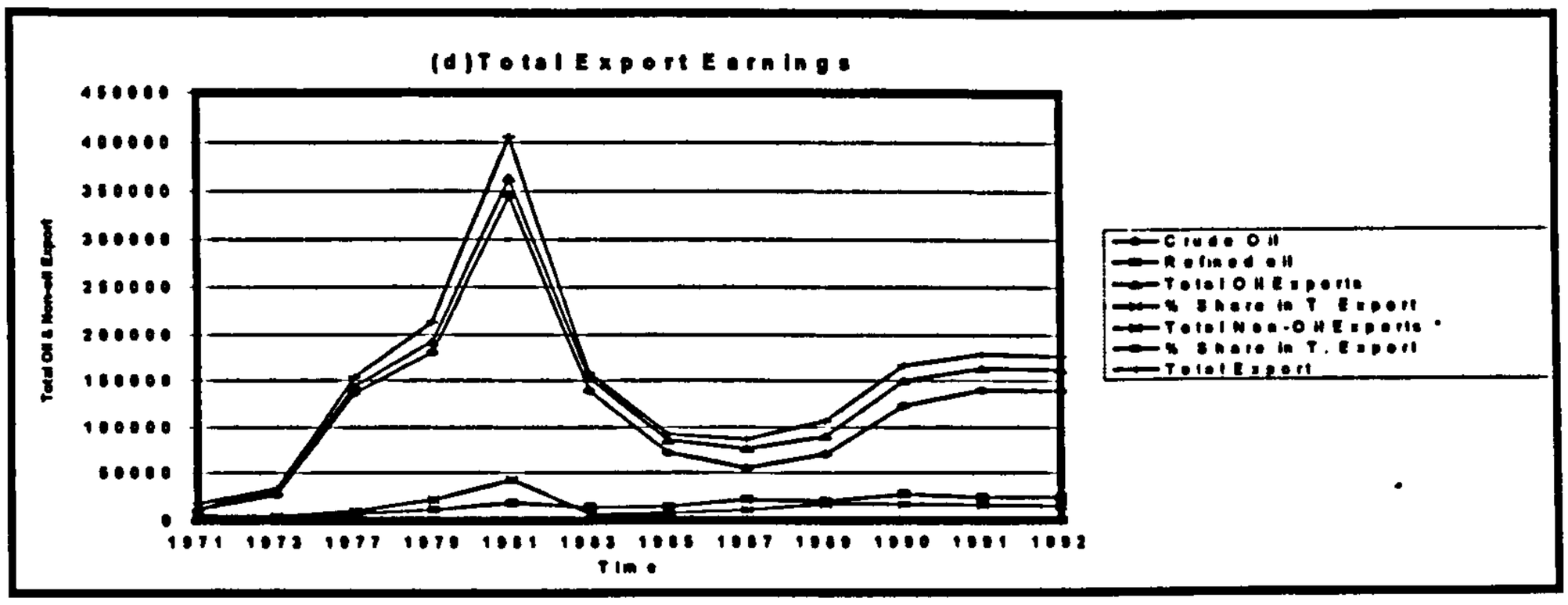
(a) The relation between GDP, oil and non-oil sectors



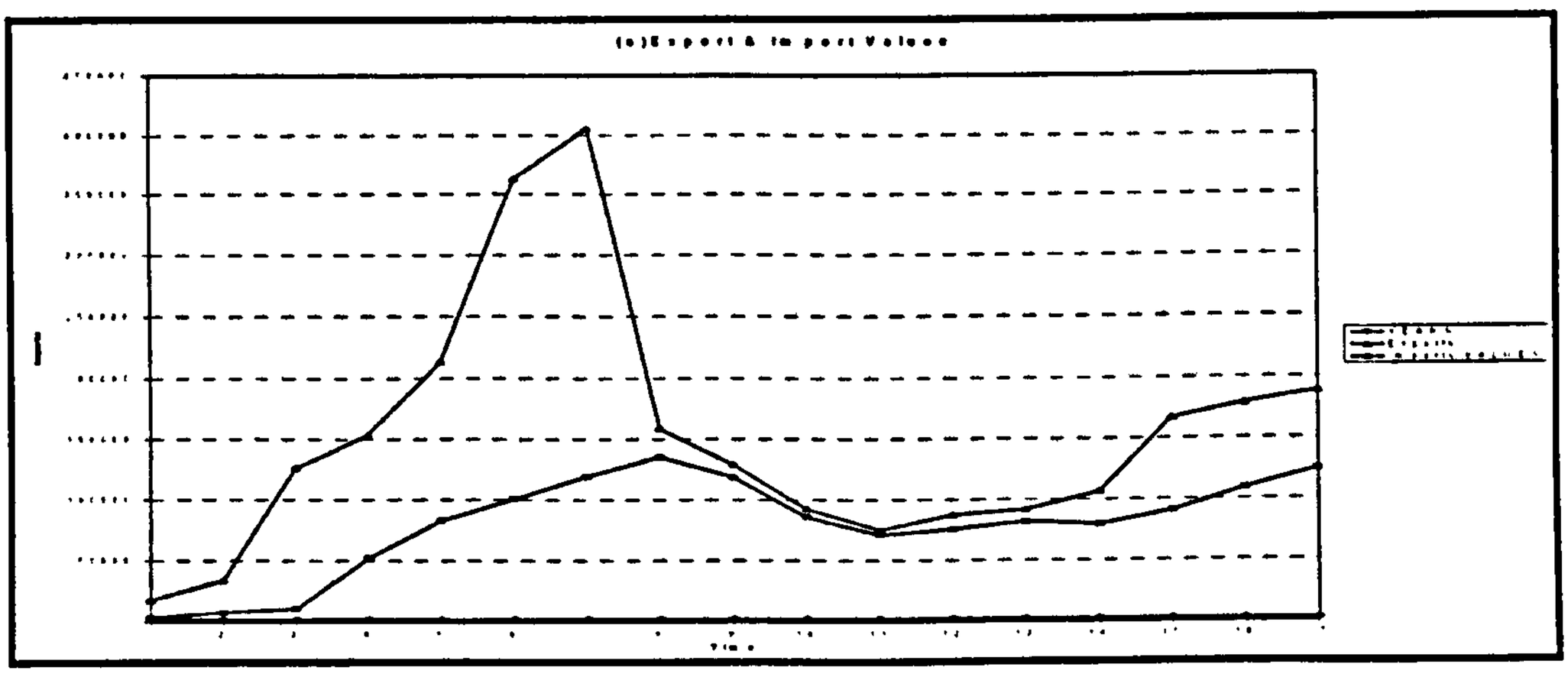
(b) Shares of oil and non-oil sectors in GDP



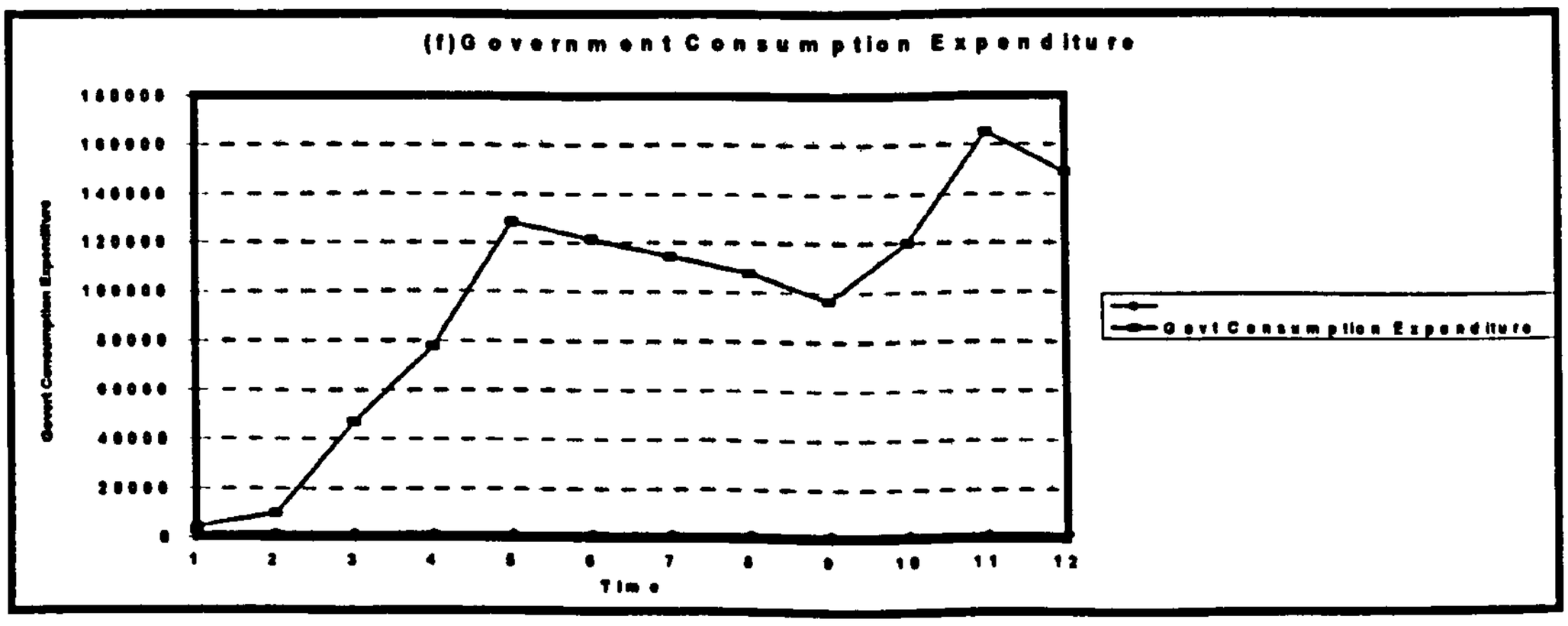
(c) Total Government revenues and expenditure



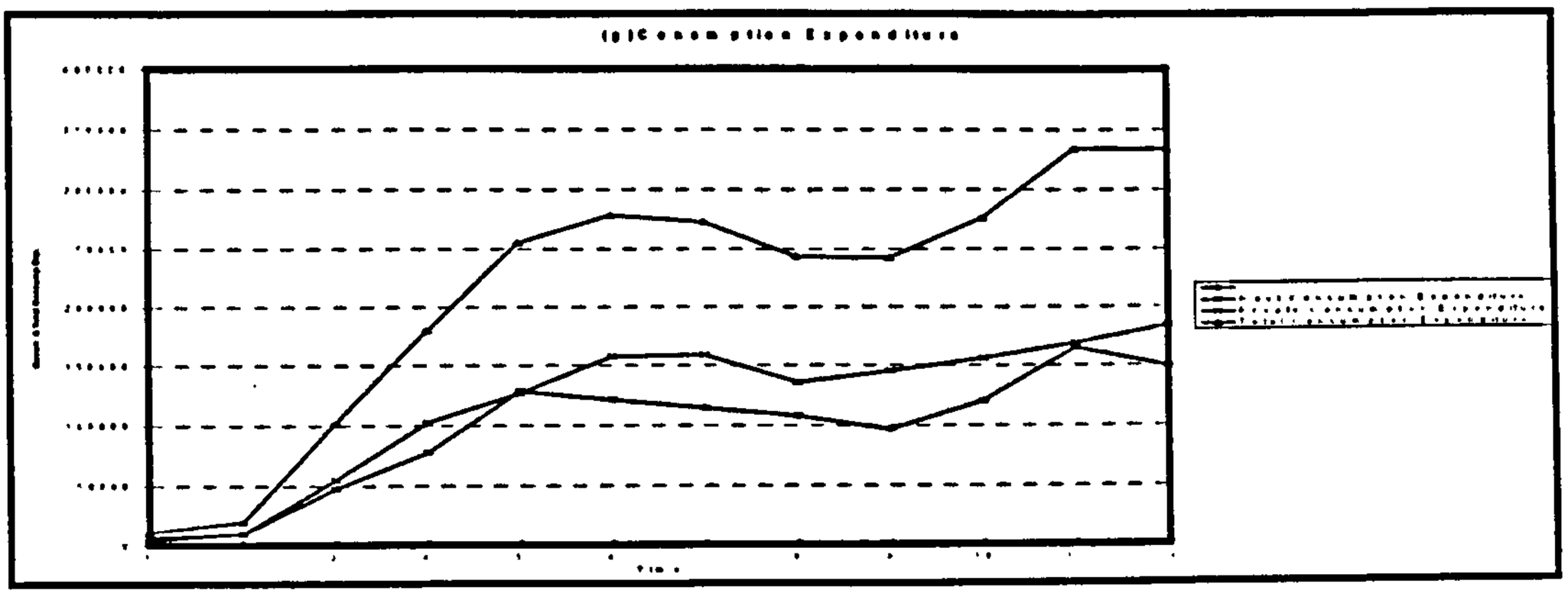
(d) Total export earnings



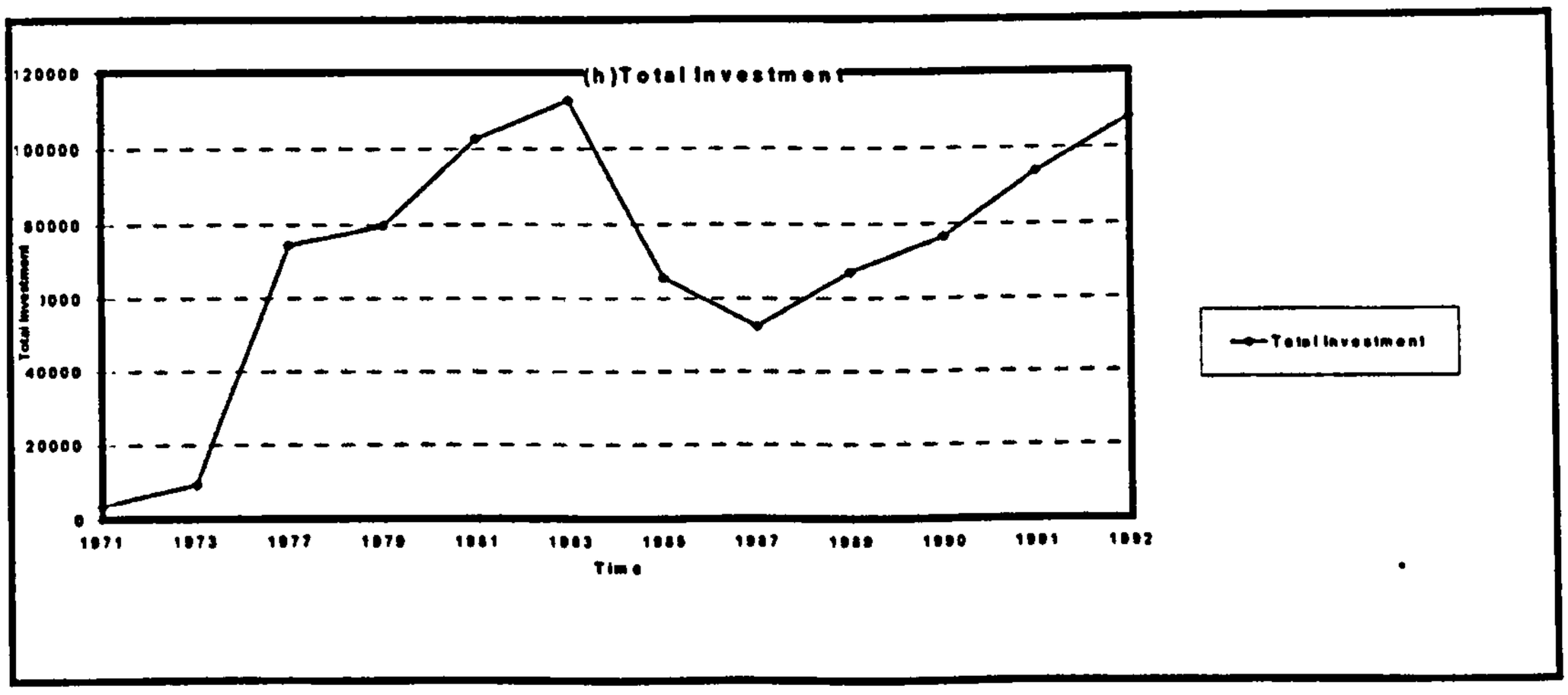
(e) Exports and imports values



(f) Government consumption expenditure



(g) Consumption expenditure



(h) Total investment

Source: SAMA, Annual Report, 1970-1997, different tables.

- First, in diagram (a) the period 1981-1987 represents a period of decline in the economic performance of the Saudi economy due to the world-wide recession and a decline in the oil prices and revenues. Since 1987, there is a trend towards an increase in real GDP as a result of oil and non-oil activities, despite variations in the rates of GDP growth. These fluctuations are a product of large price swings in the volatile oil sector.

- Secondly, as shown in diagram (d), the time pattern of total export earnings is closely related to that of oil exports, although there is a slight improvement in the performance of non-oil exports. This shows the dominance and the reliance of the Saudi economy on the oil sector as a main source of income.

Nonetheless, non-oil activities increased in importance, as indicated in diagram (b), with changes in the underlying output of domestic activities, especially in the petrochemical industry. The share of manufactures increased markedly and contributed to increased resilience, higher investment, and more rapid growth during recent years.

- Thirdly, despite the increasing role played by the Saudi Government since the discovery of oil, during the 1980s the Government reduced its expenditure and consumption, as appears in diagram (c) and (f), in line with declining revenues. The decline in Government expenditure and consumption and, at the same time, the increase in total investment in general, shown in diagram (h), and private investment expenditure in particular (except for the years 1983-1987) conforms to the trend towards structural transformation within the Saudi economy as development has proceeded. Change in the Saudi structure is largely due to the widening in the industrial base and the implementation of an export -led strategy. This complies

with Engel's Law where an increase in income and productivity leads to changes in the demand function from consumption goods to investment products. During the early 1990s Government consumption expenditure, shown in diagram (f), increased because of the Gulf War, but this situation was readjusted as soon as the war was over.

- Fourthly, since the 1980s development plans have laid more emphasis on the role played by the private sector, the late 1980s witnessed a rise in private sector involvement in the economy, which compensated for the decline in Government revenues and expenditure. However, during the Gulf War the private sector increased its consumption expenditure and decreased its investment expenditure but, in the post war years, confidence was soon regained and investment expenditure increased again.

- Fifthly, the natural resource effect on Saudi GDP shares is reflected in the make up of exports. The changing composition of exports reflects an underlying shift towards manufacturing at relatively low wage costs, the abundance of oil, and rising investments. This has made Saudi Arabia highly competitive in the production of petrochemicals and other manufactured goods.

The fluctuations in Saudi oil earnings and government revenue since 1982 have tended to precipitate certain internal structural changes and to improve the environment for the establishment of a more diversified economy. The key to further competitive diversification of the Saudi productive base lies in greater non-oil export efforts, complemented by a more geographic diversification in terms of market.

3.4.2 Arguments for Diversification

There are several arguments underlying the rational for the use of diversification measures as a means to attain economic development and growth

objectives. One of these is that countries tend to diversify to loosen connections between export earnings from a major product or set of products and important macro variables such as investment, government expenditure, consumption and imports. Secondly, "new" products may generate greater levels of employment than traditional products. Thirdly, "new" products may also generate externalities in terms of technology and management techniques. Fourthly, it has been argued that diversification generates linkage effects: a) in the use of domestic raw materials and other products as inputs into the production process (backward linkages); b) in supplying inputs to other sectors(forward linkages). Fifthly, the foregoing changes may generate increased tax revenues for government through higher (income, company and sales tax revenues), and increasing demand for other products through the income created.

3. 4.3 Implications for Diversification

The Government in its development plans recognised the need for diversification as early as the 1970s, being prompted by the fact that the economy, which was oil driven since the 1960s would in the 21st century need new engines of growth by emphasising more on industry and agriculture. The new engine of growth is to be developed by the private sector, with the Government playing a catalytic role by providing the appropriate environment for investment opportunities in order to make the two merge (Six Development Plan: 1995, pp. 96). As seen in section 3.4.2 there are several reasons assessing the diversification strategy for Saudi Arabia, such as:

- reducing dependence on oil and gas exports, and the need for new engines of growth;

- the fluctuations in oil export revenues and the need for more stable earnings;
- the need for more stable government revenues to finance its development plans;
- the need for higher domestic earnings and higher rate of employment; and,
- Externality effect (spillover effects).

In this respect, the diversification strategy can be defended as a policy that can be used to overcome the long-run decline in commodity terms of trade hypothesised by Prebisch (1950) and Singer (1950). As such, this policy can be valid for Saudi Arabia through developing the comparative advantage of the oil sector by exporting manufacturers and petrochemicals to reduce the dependence on oil and gas. The extension of the export sector to include agricultural and petrochemical manufacturers can develop new sources of income to the Kingdom, which will, in the long run, be sources to ease up the fluctuations in export earnings as it will enhance the Kingdom's terms of trade.

Export diversification can also be perceived as a way for developing countries to attain economic growth and economic development objectives. Export diversification aims at stabilising export earnings, and as a result providing the environment for the accomplishment of economic planning, . investment, industrialisation and employment creation. Furthermore, diversification policy may entitle the developing countries with the opportunity of benefiting from the externality effect (spillover effect) through the enlargement of product and market horizons. Saudi Arabia has invested an immense amount of its oil revenues in

building a wide base of export promotion industrialisation as well as an import substitution industrialisation, although the emphasis is on the former due to the inherited comparative advantage. The export promotion industrialisation was mainly in the form of petrochemicals, fertilisers, plastics and metals including copper fabrication. These industries were started in the early 1980s with over 1710 Saudi national employees in SABIC's projects and over 300 employees at headquarters' administration and marketing operations. By the end of 1997 Saudi nationals increased by six fold to reach 10,000 employees, working at Jubail, Jeddah, Dammam, in the Riyadh-based headquarters, marketing and R&D operations in Riyadh and in overseas operations (SABIC: 1997, pp. 14). The establishment of SABIC's industries recorded a remarkable achievement in the other sectors of the economy, e.g. the success in the agriculture sector due to the SABIC's high grade "SANAPIK" fertilisers, which have helped to boost the Kingdom's farm output dramatically.

Despite the above achievements, it is however difficult to form a final judgement considering the implications and prospects for diversification. The implications of the diversification arguments, discussed in the previous section, are:

- first, a resource boom may well be an anti-diversification factor if it results in Dutch disease following a loss of export competitiveness due to exchange rate appreciation. In this case, the resource boom might have two effects on the domestic economy. First, the spending effect of a resource boom on the economy as a result of an increase in the demand for non-tradables that result in the rise of their relative price. This fact will make the non-tradables more expensive and less competitive than the internationally

determined price of traded products. The second factor is the resource movement effect, which is due to the high rewards to factors of production in the non-traded and booming sectors of the economy. As a result, labour moves from the lagging manufacturing, agriculture and import competing food production sectors to the oil and petrochemical sectors, leading to both de-industrialisation and de-agriculturalisation.

- Secondly, governments in many LDC's suffer from a "develop quick-diversify" syndrome that entails diversification into capital intensive projects. Given the lack of capital and skilled manpower in such economies, diversification in capital-intensive projects necessitates the employment of expatriates resulting in a costly exercise in supporting expatriate labour due to internationally-determined wages.

- Thirdly, structural diversification may necessitate the engagement of the firms in costly R&D.

- Finally, diversification entails a cost to the economy as it may involve a move away from a country's specialisation to the production of commodities where a country has less comparative advantage.

The above stated problems are anti-diversification factors. Besides, governments in many developing countries try to distribute the windfall in capital intensive projects to harvest in manufactures as soon as possible. Generally, these economies, such as Saudi Arabia, lack the raw materials and capital equipment, managerial experience, skilled labour, and the capability of absorbing high technology, besides, the experience for marketing these new unfamiliar products.

This makes it ambiguous to implement any diversification policy in such countries. The Kingdom, in order to avoid the above-mentioned obstacles to diversification, adopted a number of monetary and fiscal policies such as maintaining fixed exchange rates, engaging in multi-nationals, reducing and rationalising Government spending, encouraging the participation of the private sector and inducing sufficient liquidity that match the actual need.

Therefore, policymakers should not be pessimistic about the prospects for diversification policies and economic growth in resource-based economies, although it may be difficult to implement diversification policies in such economies. There are several studies (see, e.g. Davis: 1995; Hill: 1991) indicating that the implementation of diversification programmes in mineral-based economies produce more gains than in non-mineral based economies in terms of a social and economic indicator, as long as countries are applying appropriate monetary and fiscal policies. Furthermore, Love (1979b, pp. 239) indicates that there is an "optimal" point where costs from diversification are minimised and benefits maximised and where the country can achieve minimum export instability. Moreover, as Mullor-Sebastian (1988, pp. 234) suggests, in the short-run, LDCs may diversify into products in which they have a comparative advantage, while in the long run where they already have established international markets, they should diversify into growth products.

3.6 Conclusion

In conclusion, it can be noted that despite all the efforts made by the Kingdom to diversify its economy, oil is still the dominant sector and any fluctuation in the oil market is reflected directly on the economy. Besides, exports are not

becoming more diversified over time in commodity terms, although as it will be seen later, some diversification of markets has occurred.

Chapter Four

The GCC Economy

In Chapter Two it was argued that economic integration is potentially an important factor for promoting economic development among LDC's. Integration helps in overcoming the restrictions imposed by market size, promoting efficiency through specialisation, expanding trade horizons and, most important, opening new dimensions in industrialisation prospects in both the region and its constituent countries. Economic integration, as an element of development, is based upon the presumption that countries which share regional identity and similar political or economic aspirations, may be more capable of promoting development rapidly and with bearable costs collectively, rather than through individual nationalistic courses.

The Gulf Cooperation Council (GCC) is composed of six countries located on the Arabian Peninsula. They form a loose confederation whose main goals are to foster regional security and economic integration. GCC countries occupy a total geographical area of 2663.05 thousand sq. km, with a combined population in 1993 of about 24074 thousand, per capita income of GDP $8468, and manufacturing GDP of $18118 million (about 8 percent of GDP) (GOIC: 1995, pp. 43).

In terms of broad economic features, GCC countries share similar characteristics. They all have relatively heavy dependence on oil and oil-derivative exports, relatively small indigenous populations, large expatriate labour forces, and burgeoning non-oil sectors supported by recent massive investments in utilities, roads, ports, hospitals, universities, housing, and commercial buildings.

Notwithstanding the socio-economic and political complexities of GCC countries, the focus here is primarily on the main economic features. The purpose of this focus is twofold: to analyse the industrial and trade structures in order to explore similarities and differences; and to observe existing patterns of integration with a view to determining 'appropriate' methods of cooperation in the light of observed industrial and trade features.

4.1 GCC Economies: A BACKDROP

The GCC economies are best described as comprising a mixture of characteristics of advanced and less advanced economies. Their similarities with advanced industrial nations stem from having high levels of per capita income, convertible national currencies, unrestricted flows of foreign exchange, well-developed capital infrastructure, long life expectancies and sizeable foreign aid programs. In contrast, the GCC countries share certain characteristics with developing countries. These include low levels of both labour and capital productivity, limited degrees of indigenous technological advance, rudimentary industrial and managerial techniques, lack of experience in methods of penetrating foreign markets, underdeveloped capital markets and a conspicuous dichotomy in the labour market and also among industrial establishments. Of the latter, it is obvious that the overall performance of large oil-related industrial companies is much superior to that of the traditional small and medium-sized industrial establishments. Medium and small GCC industrial companies constitute the bulk of the manufacturing sector in terms of employment and number of business companies.

Table 4.1 represents selected aggregates of major socio-economic indicators for individual GCC economies.

Table 4.1

Major Socio-Economic Indicators of GCC, 1993

	BAHRAIN	KUWAIT	OMAN	QATAR	K. S .A	U.A.E	TOTAL GCC
AREA (1000KM	0.7	17.82	309.5	11.43	2,240	83.6	2,663.05
POPULATION(000)	,538	1,433	2,018	,559	17,436	2,090	24,074
LIFE EXPEC. AT BIRTH (YEARS)	72	75	70	72	70	74	72*
GDP AT CURRENT PRICES(M.$)	4532	22453	11495	7193	122781	35405	203859
PER CAPITA INCOME GDP ($)	8424	15669	5696	12863	7042	16844	8468
GOVERN. FINAL CONSUMPTION (M$)	1238	7218	4221	2569	37287	6374	58907
OIL SECTOR							
OIL RESERVES (M BARRELS)	100	96500	4700	2445	261203	98100	463048
OIL PRODUCTION (M.BARRELS)	15	686	285	142	2937	788	4854
OIL REVENUES (M.$)	924	8030	3528	N/A	32497	8247	N/A
TRADE SECTOR (M. $)							
IMPORT	4225	6889	4114	1882	28202	19520	64832
EXPORT	6376	8962	4813	3012	42358	20423	85944
PUBLIC FINANCE (M.$)							
TOTAL REVENUES	1494	9006	4466	2985	45166	10492	73609
TOTAL EXPENDITURE	1662	13065	5661	3651	52290	14878	91207
CURRENT EXPENDITURE	1362	8775	4393	3137	N/A	10479	N/A
DEVELOPMENT EXPENDITURE	300	4290	1268	514	N/A	4399	N/A

N.A Figures are negligible.
* Average life expectancy at birth for GCC countries.
Source: IMF, Direction of Trade Statistics Yearbook, 1995.
World Bank, World Development Report: 1995, Table (1), pp. 162-163.
GOIC, Gulf Statistical Profile, 1995, Various Tables.

Several important points arise from the data in this table:

First, of the GCC population of around 25 million people in a geographic area of 2663 square kilometres, the majority live in Saudi Arabia, which has a population of roughly 18 million, or 72 per cent of the GCC in total. Bahrain, by contrast, has the smallest population, 0.53 million and the smallest land area of 700 km^2.

Secondly, the average GCC per capita income for 1993 of about $ 8500 involves a range from about $ 6000 to $ 17000. According to the criteria of the level of per capita income, Gulf countries could be classified as developed nations. However, the high per capita income is not attributed to high productivity, sophisticated technological ability, high quality administrative and organisational capabilities, or

diversified economies such as to wealth generated from oil revenues. The combined oil revenue of the GCC countries amounted to $53226 million in1993.

Thirdly, in view of the high levels of per capita income mentioned above, reliance on population data alone will underestimate the actual market size in the case of the GCC counties. Therefore, the GCC's total import bill, which reached $·65 billion in 1993, has to be taken into consideration to determine the actual market size. The total import bill constitutes consumer's purchasing power as well as production-induced demand for external supplies of raw materials, intermediate goods and spare parts, the volume of demand for which can be approximated from imports of raw materials, fuels, chemical products and capital goods.

Fourthly, Gulf Co-operating Countries rely heavily on oil revenues as a "motor of growth". In 1993 GCC countries produced about 54 percent of total OPEC production and 21 percent of world oil production. They also possessed 46 percent of total world reserves (GCC Economic Report: 1994, pp.29). The high degree of dependency on oil as an export and on international markets for marketing their exports and supplying their consumption and development needs makes the structure of the GCC economies heavily linked to industrial economies and, thus, subject to external pressures.

Finally, Table 4.1 indicates that in 1993 actual GCC investment expenditures on general development projects by the Government reached $16 billion (not including Saudi Arabia). This was despite budgetary deficits and the massive investments already made to construct and modernise social overhead capital since the early 1970s.

In the 1970s the GCC countries witnessed considerable changes in their economies. These changes were due to the massive fluctuations in oil prices and in global economic activity. GCC countries pursued mixed economic systems, with the Government playing a substantial role in the development process through participation and promotion of large, local projects and provision of the basic infrastructure and social services. The GCC states were striving to increase their economic potential to maximise their rate of economic growth in the long run, to create alternatives, and to lessen the dependency on oil as a source of revenue and employment.

Table 4.2 presents the distribution of the shares of GDP by economic activities for the GCC countries during the period 1972 - 1993. This distribution shows that, despite the efforts of the GCC Governments in their search for alternative sources of income, oil retains the dominant role in their economies with shares ranging from 38 (1988) to 75 (1974) percent. The non-oil sector is developing and maintaining an upward trend, although it is on a modest scale compared to the size of the oil sector. Furthermore, the growth in the GCC population and production base helped in increasing private consumption and investment spending in non-oil activities.

TABLE 4.2

Percentage Distribution of GDP in GCC Countries by Economic Activity (%)

	1972	1974	1976	1978	1980	1982	1984	1986	1988	1990	1991	1992	1993
AGRICULTURE, FORESTRY& HUNTING	6.27	1.99	2.24	2.57	1.81	2.61	2.4	3.4	4	4.1	3.9	3.7	3.6
MINING & QUARRY	52.8	75.1	62.7	54.9	62.3	52.1	40.1	38.4	40	42.6	43.3	44.1	44.9
MANUFACTURING	6.37	4.37	4.71	5.85	4.84	5.44	7.1	6.5	7.2	6.7	6	6.3	6.3
ELECTRICITY, GAS & WATER	0.95	0.37	0.31	0.4	0.32	0.31	-0.4	-0.1	-0.1	0.4	0.4	0.4	0.3
CONSTRUCTION	4.26	2.87	8.42	11.4	8.72	11	10.8	9.1	7.9	7.1	3	2.9	2.9
WHOLESALE& RET, TRADE, REST.&HOTELS	5.86	3.6	5.29	6.45	5.57	7.04	8.8	9	7.9	7	7.5	7.2	7
TRANSPORT, STORAGE& COMMUNICATION	4.75	2.61	2.95	5.05	3.67	3.69	5.7	5.8	5.6	5.2	4.9	4.9	4.8
FINANCIAL INSTITUTIONS& INSURANCE	3.01	1.75	2.56	2.59	2.17	4.35	4.6	4.8	4.4	4.9	5.2	5	5
REAL ESTATE &BUSINESS SERVICES	0.95	0.51	1.97	2.27	1.99	2.11	4.3	3.9	3.5	2.9	2.9	2.9	2.9
PRODUCERS OF GOVERNMENT SERVICES	5.86	3.77	4.5	4.91	4.25	8.39	14.6	17	16.3	16.5	20.1	19.7	19.4
OTHER SERVICES	6.96	2.75	3.32	4.85	4.16	2.98	2.1	2.5	2.5	1.9	2.1	2.4	2.2
GDP AT FACTOR COST	98.1	99.6	99	99.7	99.9	99.9	99	99.1	98.4	98.7	98.5	98.6	98.7
IMPORT DUTIES	1.93	0.36	1	0.3	0.15	0.1	1	0.9	1.6	1.3	1.5	1.4	1.3
GDP IN PURCHASER'S VALUE	100	100	100	100	100	100	100	100	100	100	100	100	100

- Data from 1972-1982 % are at Current prices (Iraq Shares are included).
- Data from 1984-1993 % are at Constant 1985 Prices.

Source: GOIC, Gulf Statistical Profile, 1995, Table (2.9), pp. 84- 88.
GOIC, Directory of Socio -Economic Data for the Arabian Gulf Countries, 1986, Table (25), pp.69- 74.

In essence, GCC countries, as asserted in their development plans, view diversification through industrial development as a possible and desirable option toward achieving a self-sustaining and growing economy. Industrialisation policy in the GCC is geared partly toward developmental projects that produce to meet local market needs, with the surplus over local demand being exported to foreign markets. Although some of the GCC countries have embarked upon a certain amount of import substitution, this has been primarily on small scale, light manufacturing. More efforts are directed toward developing oil-related industries and prospects in the export promotion industries.

GCC countries face a very limited resource base and small-sized domestic markets, which severely limit their possibilities of achieving economies of scale unless they can obtain access to a broader regional market or world outlets. In addition, the GCC population is estimated in 1996 to be around 25 million, of which

nationals accounted for about 64 percent of the total population (GCC Economic Data Book: 1996, pp. 8). A major portion of the population in the GCC countries is non-indigenous, coming primarily from neighbouring Arab countries and South East Asia. However, there has been a marked shift in the labour market recently as a large number of nationals began to enter the market looking for job opportunities. The national Governments have adopted "nationalisation" policies aimed at encouraging and smoothing the substitution of national for foreign labour.

4.2 The Economy of the GCC Countries

4.2.1 The Structure of Output & Industry

The industrial process in the GCC region owes its start to the "traditional" path of industrialisation through import-substitution but was gradually superseded by a greater degree of export-promotion. The shift to export promotion occurred in both the oil sector, as evidenced by the market diversification and expansion in its downstream activities, and in such non-traditional activities such as production of aluminium, iron, steel, cement-based products and processed food items. Recently, the manufacturing sector can be characterised as having an adequate foundation in a broad array of traditional activities, such as agriculture, fisheries and boat building, among others. Furthermore, it has the necessary prerequisites in place to further expand export-orientated projects in both gas and oil-related activities such as automotive parts, tyres, light bulbs, air conditioners (Al-Fayez: 1993, p. 1).

GCCs' economic performance, growth experience and structure of output, as shown in Tables 4.3 and 4.4 below, exhibit several relevant features:

First, Saudi Arabia experienced the highest growth rate of GDP of 9 percent during the period 1970-1980. In fact, this growth rate was more than double the combined

average of the middle income countries, such as Venezuela, Argentina, Puerto Rico, South Africa, Hungary and Uruguay over this period. However, during the period 1980-1993 the Saudi GDP growth rate was 0.4 percent, mostly because of the poor performance of the oil industry during the period 1980-1993 as compared to the period 1970-1980.

Oman, by contrast, achieved 7.6 percent growth rate in its GDP in the later period due to the implementation of the Government's oil strategy, accompanied by a fiscal policy which availed Oman of the opportunity to effectively allocate and develop its resources and transform its economy without causing macro-economic instability. Bahrain, Qatar and U. A. E, on the other hand, have more or less maintained the rate of growth of their GDP although the period coincided with world-wide recession accompanied by a decline in oil revenues. Kuwait registered a negative growth rate in its GDP during the period 1970-1980 due to the negative performance in its industrial sector, mainly in the oil industry.

Table 4.3

Economic Performance Indicator

	BAHRAIN	KUWAIT	OMAN	QATAR	K. S. A	U. A. E
AVERAGE ANNUAL GROWTH RATE IN NOMINAL TERMS						
A. GDP						
1970-1980	0.4*	-0.2	6.2	0.4*	9	0.6*
1980-1993	0*	0*	7.6	0*	0.4	0.3
B. AGRICULTURE						
1970-1980	0.5*	7.5	0.2*	0.2*	5.7	0.4*
1980-1993	0*	0.2*	6.9	0*	0.2*	9.7
C. INDUSTRY						
1970-1980	0.4*	-2.4	0.6*	0.5*	8.6	0.6*
1980-1993	0*	0.2*	9.2	0*	0*	-1.5
D. MANUFACTURING						
1970-1980	0.8*	0.4*	0.8*	0.3*	6.9	0.6*
1980-1993	0*	0.2*	17.2	0.1*	0.1*	2.7
E. SERVICES						
1970-1980	0.4*	3.9	0.5*	0.4*	9.7	0.5*
1980-1993	0.1*	0.1*	6.2	0.1*	0.1*	3.6

* Calculated from GOIC, Gulf Statistical profile, 1995, Table (2.2) for the period 1984-1993, pp. 61- 65.

* Also from GOIC, Directory of Socio-Economic Data for the Arabian Gulf Countries, 1986, Table (24), for the period 1972-1984, pp. 63- 68.

Source: World Bank, World Development Report, 1995, Table (2), pp.164- 165.

Second, despite GCC efforts as emphasised in their development plans, to increase the role of agriculture in their economies, the share of agriculture in 1993 GDP was at the most 7 percent. The average annual growth rate of agriculture ranged between 0.2 percent in Oman and Qatar and 7.5 percent in Kuwait during the period 1970-1980, and between 0 percent in Bahrain and Qatar and 9.7 percent in U. A. E during the period 1980-1993. The low share of the agricultural sector to GDP, in all the six GCC countries, is due to constraints resulting from shortages of water resources, climate limitation and the low productivity of the production technology.

Third, Oman had the fastest average annual growth rate in the manufacturing sector of 17.2 percent during the period 1980-1993. U.A.E also had an increase in its average annual growth rate in the manufacturing sector over the previous period, whereas, Bahrain, Kuwait, Qatar and Saudi Arabia experienced negative average

annual growth rates in the manufacturing sectors during the period 1980-1993 against 1970-80.

Fourth, Table 4.4 highlights the dominance of the oil industry as the major component of the industrial sector in all the six GCC countries despite their awareness of the likelihood of the declining future of oil and its proceeds. The Table also shows the variation in the GCC manufacturing industry levels, with Bahrain and Qatar experiencing the largest manufacturing shares in their GDP among the GCC countries. Kuwait, Oman, Qatar and U.A.E economies are heavily dependent on the services sector, whereas in the case of Saudi Arabia agriculture and manufacturing occupy smaller shares of its GDP than the service sector.

Table 4.4

Structure of GCC's GDP by Country (% Distribution)

	BAHRAIN	KUWAIT	OMAN	QATAR	K. S. A	U. A. E
Distribution of GDP (%)						
A. AGRICULTURE						
1972	1	0	12	2	4	2
1993	1	0	3	1	7	2
B. Mining, Quarr. .& Fuel						
1972	66	62	54	51	60	64
1993	17	44	38	32	35	40
C. MANUFACTURING						
1972	5	4	0	4	7	3
1993	16	9	5	11	9	8
D. SERVICES						
1972	28	34	34	43	29	31
1993	67	47	54	56	49	50

Source: GOIC, Gulf Statistical Profile, 1995, Table (2.2), for the period 1993, pp. 65.
GOIC, Directory of Socio-Economic Data for the Arabian Gulf Countries, 1986, Table (24) for the period 1972, pp. 70.
World Bank, World Development Report, 1995, Table (3), pp. 166- 167.

Until recently, industrialisation in the GCC region was demand-led. The construction boom and the massive influx of foreign workers since the early seventies had shaped the structure and the pattern of growth of the production

sectors. Non-oil manufacturing was dominated by the production of non-durable consumer products and construction materials. Concomitantly, the area underwent a substantial capacity growth in the oil and gas sector, particularly in petroleum refining, fertilisers and petrochemicals.

Reviewing the industrial development background and strategy of each GCC country leads to the following observations:

(1) Bahrain, although it has a small oil base, was the first among the other GCC countries to embark on industrialisation. Aside from oil-based industries, including refineries, petrochemicals and fertiliser industries, the basic metal industries (aluminium) are the major components of its manufacturing output. However, due to insufficient natural resources, especially gas, the government development strategy is geared to transforming Bahrain to an international and regional financial centre, communication and service centre. This is aided by the availability of infrastructure facilities such as a modern telecommunication network, a good banking system and the provision of adequate power supply and natural gas (Altorkistani: 1992, pp. 15).

(2) Kuwait's development course involves pushing diversification through industrial development as a means of ultimately achieving a self-sustaining and growing economy. The Government's industrial development policy has largely been directed at providing the private sector with appropriate incentives such as low interest rates on loans, equity participation, subsidies, and tariff protection and tax exemption. Refineries, fertilisers and petrochemicals constitute the bulk of Kuwait's large scale manufacturing sector. A metal pipes project, a cement plant, a

prefabricated building plant and flour mills form the major part of the industrial base in Kuwait.

(3) Oman enjoyed a high industrial growth rate of 9.6 percent on average in real terms over the years1980-1991 (17.2 percent during 1980-93, see Table 4.3, pp. 85) (The Economist: 1995, pp. 27). This growth was the net outcome of an increase in the outputs of agriculture and fisheries, manufacturing, natural gas and the dwelling ownership and service sectors. However, compared to other GCC countries such as Saudi Arabia and Kuwait, Oman's reserves of oil and natural gas are not substantial, and its oil exploitation and utilisation occurred only in the 1970s. These limitations, together with the shortage of a skilled national labour force and the small size of the domestic market, constitute a constraint on the development of large-scale industries such as petrochemicals and fertilisers in Oman. Government provided the private sector with incentives to ensure equity participation in large-scale projects such as Oman Flourmills Co., Oman Cement Plant, and Oman Chrome Company and copper mining projects. In addition, the private sector is involved in small-scale industries such as a soft drinks factory, a date factory, equipment and automobile maintenance, and a fish factory.

(4) The industrial sector in Qatar is dominated by various relatively large-scale industrial projects based on utilising its natural resources, particularly oil and natural gas. These industries are oil and gas, natural gas and liquification, petrochemicals and fertilisers, and iron smelting, each of which is capital-energy-intensive (Al-Tourkistani: 1992, pp. 27). In addition, there are small-scale industries such as the Qatar Flourmill, Cement, and Fishing Company. These industries are basically geared toward the domestic market.

(5) Saudi Arabia possesses the largest known oil reserves in the world outside the former and current centrally planned economies, estimated in 1994 to be around 261 billion barrels. Furthermore, Saudi Arabia possesses a large quantity of natural gas reserves of around 186 thousand billion cubic feet / year (GCC, Economic Report: 1995, pp. 29, 31). These vast resources of oil and natural gas have enabled the Government to embark upon heavy hydrocarbon-based production and refining, gas gathering and treatment, and petrochemicals and fertilisers. Petrochemicals and fertilisers, agriculture and food processing, textiles and clothing, machinery and transport among others are the components of its manufacturing industry.

(6) GCC economies also have a number of small and medium-scale plants, e.g. in soft drinks, dairy products, building materials, flour mills, paper bag plants, steel pipes, asbestos, car tyres, cables, and electric wire. These small and medium-scale plants have typically been set up by the private sector with government incentives in the form of concessional loans, subsidies, and protection. One feature of the development of small and medium industries is that activities are often duplicated. The establishment of four cement plants above the domestic-market absorptive capacity in U.A.E, for example, illustrates the costly uncoordinated industrial growth and associated waste of valuable resources (Ali: 1980).

The relative homogeneity of GCC economies is reflected in the similarities in the pattern and structure of their industrial development. In general, the industrial sectors in the GCC countries are little developed, little diversified and insufficiently specialised (Ali: 1980, pp. 496). The structure of the industrial sector reveals the domination of primary oil and gas-based industries. However, the reliance on a

single economic activity has meant a serious structural imbalance in the GCC economies.

Industrial expansion is constrained not only by the smallness of the domestic market, inefficient distribution channels and lack of innovation, but also by the lack of managerial skills and entrepreneurship. The lack of these factors leads to three main patterns of industrial developments in the GCC countries; small-scale, light, import-substitution industries undertaken by the private sector, devoted mostly to internal markets; large-scale, capital-intensive, export-orientated industrial projects undertaken by the public sector; and finally, joint sector industries. The last are usually initiated by the Government which sells part of its stock to the public to encourage private sector participation in industrial activities and to encourage the application of 'commercial' criteria to judging the performance of the projects (Ali: 1980, pp. 503).

4.2.2 The Trade Structure

International trade is vital for an economy to support its internal needs and to fulfil the complex and inter-related interests of the political entities that comprise today's world. The weight of dependence on trade is greater in small, less developed countries because through international trade not only are commodities transferred but services, capital, labour, information and technology are also channelled.

International trade can be a corrective instrument for resource misallocation and inefficiencies. Through trade there are specialisation benefits with additional resources being drawn into activities of comparative advantage. There are also efficiency improvements, which result from the realisation of economies of scale. However, despite the possible benefits from trade, the excessive structural

dependence of many less developed economies on industrialised nations' markets makes them more vulnerable to fluctuations in world trade patterns, political intervention and tariff changes.

GCC countries are exceptionally dependent on international trade both for supplies of consumer requirements and of developmental inputs as also for sales of their major product, namely oil. GCC countries also depend on international markets as a source of human resources, both unskilled labour and technical expertise; about 56 percent of the total population in the GCC countries are expatriates (GCC Economic Data Book: 1996, pp. 8).

The dependence of GCC economies on international markets is evident in the high average propensities to export and to import and in the ratio of the sum of the exports and imports over GDP (Overall Trade Indicator) as shown in Tables 4.5, 4.6, and 4.7, respectively.

Table 4.5

Average Propensity to Export for the GCC Countries (1982-1993)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Including oil												
Bahrain	0.82	0.65	0.81	0.78	0.7	0.76	0.7	0.76	0.93	0.83	0.8	0.81
Kuwait	0.55	0.54	0.57	0.49	0.4	0.37	0.38	0.47	0.38	0.93	0.39	0.47
Oman	0.58	0.54	0.5	0.5	0.39	0.49	0.44	0.48	0.52	0.48	0.48	0.46
Qatar	0.59	0.52	0.49	0.5	0.54	0.38	0.37	0.42	0.49	0.47	0.49	0.44
K. S. A	0.52	0.38	0.35	0.29	0.28	0.32	0.32	0.34	0.42	0.4	0.41	0.35
U. A. E	0.54	0.54	0.5	0.48	0.44	0.47	0.47	0.52	0.58	0.58	0.69	0.67
Excluding oil*												
Bahrain	0.06	0.08	0.06	0.05	0.09	0.1	0.12	0.13	0.14	0.14	0.14	0.19
Kuwait	0.02	0.02	0.02	0.02	0.02	0.01	0.02	0.02	0.01	0	0	0.01
Oman	0	0	0.01	0.01	0.01	0.01	0.02	0.02	0.02	0.02	0.02	0.03
Qatar	N/A	N/A	N/A	N/A	N/A	N/A	N/A	0.07	0.08	0.07	0.07	0.07
K. S. A	N/A	N/A	0.01	0.01	0.02	0.03	0.05	0.04	0.03	0.03	0.03	0.03
U. A. E	0.01	0.02	0.02	0.01	0.02	0.03	0.03	0.03	0.03	0.04	0.04	0.04

Source: Calculated from GOIC, Gulf Statistical Profile, 1995, Tables (2.1) and (3.1), pp. 60 and 121.
* Calculated from The GCC Economic Data Book, 1996, Tables (2.1) and (2.3.iv), pp. 104 and 116.

Table 4.6

Average propensity to Import for the GCC Countries (1992-1993)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Bahrain	0.99	0.85	0.88	0.84	0.76	0.86	0.75	0.85	0.92	0.98	0.98	0.84
Kuwait	0.38	0.35	0.32	0.28	0.32	0.25	0.3	0.26	0.18	0.32	0.39	0.31
Oman	0.35	0.31	0.31	0.32	0.33	0.23	0.29	0.27	0.25	0.31	0.33	0.36
Qatar	0.26	0.22	0.17	0.19	0.22	0.21	0.21	0.2	0.23	0.25	0.26	0.26
K. S. A	0.34	0.36	0.31	0.27	0.26	0.27	0.29	0.25	0.23	0.25	0.27	0.23
U. A. E	0.31	0.3	0.25	0.24	0.3	0.3	0.36	0.36	0.34	0.41	0.5	0.56

Source: Calculated from GOIC, Gulf Statistical Profile, 1995,Tables (2.1) and (3.3), pp. 60 and 123.
Also, calculated from The GCC Economic Data Book, 1996, Tables (2.1) and (2.3.vi), pp. 104 and 116.

Table 4.7

"Over All Trade Indicator" for the GCC Countries (1982-1993)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Bahrain	1.6	1.33	1.68	1.62	1.46	1.63	1.45	1.61	1.85	1.81	1.78	1.66
Kuwait	0.96	0.89	0.88	0.77	0.72	0.62	0.67	0.73	0.57	0.14	0.78	0.78
Oman	0.94	0.85	0.81	0.81	0.72	0.72	0.73	0.75	0.76	0.79	0.81	0.82
Qatar	0.85	0.74	0.66	0.69	0.76	0.58	0.58	0.63	0.73	0.72	0.75	0.7
K. S. A	0.78	0.71	0.67	0.57	0.54	0.59	0.61	0.6	0.65	0.65	0.69	0.57
U. A. E	0.84	0.85	0.75	0.73	0.75	0.77	0.82	0.89	0.92	0.99	1.19	1.22

Source: Calculated from GOIC, Gulf Statistical Profile, 1995, Tables (2.1), pp. 60; Table (3.1), pp. 121; and Table (3.3), pp.123.
Also, calculated from GOIC, Directory of Socio- Economic Data for the Arabian Gulf Countries, 1986, Tables (9), pp. 19; Table (17), pp. 44; and Table (26), pp. 75.

The above tables illustrate the following:

1- There are considerable differences in trade participation in the GCC countries.

Table 4.5 indicates that the average propensity to export for Bahrain ranges between .65 and .93, whereas the ratio is lower for Kuwait and Saudi Arabia. However, if crude oil export is excluded from the average propensity to export, the figures drop sharply to as low as 0.03 in the case of Oman and a high of .19 in the case of Bahrain in 1993. This reflects the dependence of the GCC economy on this primary product, and the undiversified production structure of these economies.

2- Table 4.6 shows that Bahrain exhibits a high propensity to import which ranges between .75 and .99. This is largely due to its high *entrepôt* trade ratio. Other high-income countries such as Kuwait, Saudi Arabia and U. A. E have lower ratios than Bahrain. However, in 1992 because of the Gulf War and its aftermath the average propensity to import increased for most of the GCC countries.

3- Table 4.7 indicates the "overall trade indicator" which reflects the openness of the economy: the higher this indicator, the more vulnerable the country is to the fluctuations and uncertainties of the world market. It is clear from Table 4.7 that Bahrain and U. A. E have very high IOT ratios of between .73 and 1.85. Saudi

Arabia registered an IOT ratio of .57 in 1993, which was lower than that recorded for several years.

Table 4.8 shows the value of exports in GCC countries during the period 1982-1993. There are three different phases that are discernible:

1. The period 1982-1986 was one of world-wide recession and low oil prices, the effects of which are seen in the negative overall export performance of the GCC countries. The figures indicate an average decrease of 77 percent for exports of GCC countries as a whole within this period.

2. 1986-1990 was a period of rapid recovery and expansion in exports. The GCC countries registered more than 65 percent average annual export during this period.

3. The period 1990-1993 was one of zero growth in exports due to the Gulf War and the low profile of Kuwait exports, which amounted to only $694 million. During that period, Bahrain, Oman, Qatar, Saudi Arabia and U. A. E registered increases in their export values. The upsurge in their export values was a result of the massive oil production to compensate for the decrease in world oil supply, due to the international embargo on Iraq's oil production and the burning out of Kuwait's oil wells, as well as the need to finance the high bill of the Gulf war.

Table 4.8

Value of Exports in GCC Countries (Million US $)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Bahrain	3789	3038	3139	2897	2344	2387	2418	2716	3836	5389	5712	6376
Kuwait	10447	10782	12310	9680	7381	10304	8307	11031	8142	694	4485	8962
Oman	2683	2771	3932	4356	2923	3223	4031	4363	4584	5139	5111	4813
Qatar	4432	3605	4615	3313	2069	1994	2084	2504	3265	3172	3588	3012
K. S. A	75839	52253	36306	26739	20184	22602	23737	28383	44417	47816	50287	42358
U. A. E	16837	18251	18342	17499	12387	14158	13258	16476	21672	23106	21874	20423

Source: IMF, Direction of Trade Statistics Yearbook 1992-1996.
GCC, Economic Bulletin, 1985-1995.

Table 4.9 outlines the value of imports to the GCC countries for the period 1982-1993. The figures reflect a decline in the average annual rate of growth of imports for the entire GCC countries by 3 percent in the 1982-1993 period. This decline is attributed to world-wide recession during the period 1980-1986 when the decrease in the average annual growth rate in imports reached 32 percent. Nonetheless, the 1990s experienced an increase in import values in GCC countries as shown in Table 4.9.

Table 4.9

Value of Imports in GCC Countries (Million US $)

	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Bahrain	3614	3464	3524	3107	2403	2714	2714	3134	3711	4228	4511	4225
Kuwait	8369	7441	6919	6470	5885	5608	6266	6396	4066	3494	7282	6889
Oman	2683	2771	2748	3153	2561	1959	2201	2258	2726	3194	3769	4114
Qatar	1947	1456	1161	1136	1099	1134	1273	1338	1696	1722	2014	1882
K. S. A	40653	39127	33213	23474	19112	20110	21784	21153	24081	29074	33273	28202
U. A. E	9440	7803	5726	6744	6431	6901	8526	9559	11472	13765	17414	19520

Source: IMF, Direction of Trade Statistics Yearbook, 1992-1996.
GCC, Economic Bulletin, 1985-1995.

The profile of the trade performance of the GCC countries during the period 1982-1993, as presented in Tables 4.8 and 4.9 and by linking it to Table 4.10, reflects that imports as well as exports coincide with the fluctuations in the external oil market. The fluctuations in oil earnings, due to the instability of oil production and price levels, played a crucial role in constraining or facilitating the GCC countries' ability to import. The dependency on one primary product for export is further emphasised in Table 4.10, which illustrates the share of oil exports to total export. The ratio reaches almost more than 90 percent as in the cases of Kuwait and Saudi Arabia, thus reflecting the limited diversified production structure typical in GCC countries.

Table 4.10

Oil Exports as a Percentage of Total Exports in GCC Countries

	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993
Bahrain	88.2	88.1	83	82.8	75.9	75.2	78.2	77.6	75.2	66.1
Kuwait	89.7	89.3	88.1	83.6	82.3	90.9	92.3	97.9	95.2	95.1
Oman	91.8	93	89.8	91.5	88.6	89.2	91.7	87.5	84.1	81
Qatar	83.5	85	84.7	76.1	66.4	80.5	81.5	82.5	85.7	83
K. S. A	96.6	94	89.5	88.1	82.9	84.9	90.4	91.4	92.5	91.1
U. A. E	87.7	88.8	84	80.6	77.4	79	82.4	78.4	76.2	76.2

Source: GOIC, Gulf Statistical Profile, 1995,Table (3.2), pp. 122.

Data in Table 4.11 illustrate the percentage composition of non-oil GCC export by SITC for the years 1984 and 1993. It is evident that the share of manufactured exports in Bahrain, U. A. E and Qatar has increased substantially between these years compared to those of other GCC countries.

The year 1993 is not a reliable basis to judge the non-oil export activities of the Kuwaiti economy because of the Iraqi invasion in 1991 and its consequences. Oman based its non-oil exports on machinery and transport equipment and also increased its food and beverage shares. Saudi Arabia, on the other hand, based its non-oil exports on chemicals. Although there was a sharp decrease in the share of chemicals in Qatar's exports, Qatar still leads other GCC countries in chemical exports in terms of export shares.

Table 4.11

Percentage Distribution of Non-Oil Exports in GCC by SITC for the Years 1984, 1993

	Food & Beverage	Crude Materials	Chemicals	Mach. & Transports	Manufacturers	Others
Bahrain						
1984	0.22	0.1	0.17	1.65	9.85	0.11
1993	1.19	1.27	2.39	2.71	26.24	0.08
Kuwait						
1984	1.01	0.34	1.88	3.46	3.6	0.02
1993	0.27	0.37	0.97	2.07	1.27	1.1
Oman						
1984	1.1	0.11	0.06	5.19	0.67	1.1
1993	4.68	0.26	0.53	10.57	2.68	0.32
Qatar						
1984	0	0	16.47	0	0	0
1993	0.24	0.13	8.95	0	6.49	1.17
K. S. A						
1984	0.23	0.17	1.18	1.45	0.41	0
1993	1.06	0.42	5.22	0.95	1.26	0
U. A. E						
1984	1.61	0.3	0.53	3.39	5.89	0.65
1993	2.64	1.43	0.86	6.9	11.57	0.39

Source: GOIC, Gulf Statistical Profile, 1995, Table (3.5), pp.129.

Table 4.12 compares the import composition of GCC countries for the years 1984 and 1993. Manufactured goods, machinery and equipment represent the highest shares of imports of GCC countries, except for Bahrain where oil imports represent the single biggest share. Furthermore, the table illustrates the decline in food and beverage import shares of GCC countries which may be attributed to development and industrialisation policies as well as to the small size of the markets, limited absorptive capacity and restricted ability to re-export, although the trend differs for Bahrain and Oman.

Table 4.12

Percentage Distribution of Imports in GCC Countries by SITC Section for the Years 1984, 1993

	Food & Beverage	Crude Materials	Min. Fuel, oil	Chemicals	Mach. &Transport	Manufactures	Others
Bahrain							
1984	7.51	1.28	48.09	4.55	21.47	16.92	0.18
1993	9.31	1.88	37.36	9.33	20.55	21.15	0.42
Kuwait							
1984	16.98	1.75	0.57	4.74	38.76	36.92	0.28
1993	14.66	1.65	0.45	6.21	42.49	33.78	0.75
Oman							
1984	14.57	1.86	1.59	3.77	41.37	31.89	4.95
1993	18.42	1.9	3.06	5.44	23.65	43.15	4.38
Qatar							
1984	20.96	4.1	0.86	5.83	35.3	32.17	0.79
1993	16.86	3.62	0.7	5.48	44.79	28.31	0.24
K. S. A							
1984	15.04	1.92	0.62	5.11	38.02	38.35	0.94
1993	13.17	2.09	0.25	9.26	37.36	31.06	6.81
U. A. E							
1984	15.06	2.36	7.84	5.63	32.33	36.14	0.62
1993	10.96	5.9	2.03	5.96	40.21	33.86	1.08

Source: GOIC, Gulf Statistical Profile, 1995, Table (3.7), pp.135.

Table 4.13 reflects the direction of trade of the GCC countries with their trade partners by main countries and groups over the period 1984-1993. From the table it is obvious that most of the GCC trade is conducted with developed countries such as USA, Japan, and the EEC. The developed countries account for between 60-70 percent of total exports and 50-60 percent of total imports. The table indicates increasing trade flows from South and East Asia and China. Nevertheless, the table indicates that intra-GCC trade accounts for only small portions of total GCC trade: less than 10 percent of exports and at most 7 percent of imports.

Table 4. 13

Direction of Trade of GCC Countries by Main Countries and Groups for the Years 1984-1993 (Percentage Distribution %)

	GCC	Other Arab	EEC	Japan	USA	China	SE. Asia*	Rest World
1984								
Exports	6.1	1.8	35.8	19.5	14.5	0.8	8.1	13.4
Imports	4.7	3.5	20	30.4	5.6	0.1	14.4	21.3
1985								
Exports	7.7	1.9	34.2	19.7	13.2	1	8.2	14.2
Imports	4.9	4	21.6	28.9	4.5	0.1	11.6	24.5
1986								
Exports	7.2	1.9	34.8	16.9	13.6	1.3	9.5	14.8
Imports	6.5	3.2	20.2	24.9	9	0.2	12.3	23.3
1987								
Exports	7.6	2.4	33	16.9	12.2	1.7	11.1	15.1
Imports	5.9	2.6	16.5	24.3	10.2	0.2	13.2	27
1988								
Exports	7.4	2.7	31.2	15.4	13.2	2.1	11.6	16.4
Imports	6.1	3.2	15.7	23.6	11.8	0.6	14	25
1989								
Exports	8.4	2.7	31.1	14.1	14.1	2.1	11	16.5
Imports	7.1	3	14.7	22.7	13.7	0.3	13.3	25.3
1990								
Exports	9.4	2.4	32.1	14.1	13.1	2.4	9.8	16.8
Imports	5.8	3.3	14.2	25.3	14.2	0.2	14.7	22.4
1991								
Exports	8.4	1.8	30.5	13.1	16.3	1.9	11.9	16.1
Imports	5.7	2.4	14.1	25.1	13.5	0.7	16	22.4
1992								
Exports	8.1	1.6	31.7	14.2	16.6	2.8	10.6	14.4
Imports	5.2	1.3	14.9	24.4	12.2	0.7	18	23.4
1993								
Exports	7.6	1.6	32	12.9	15.3	2.1	14	14.5
Imports	5.6	1.4	14.3	22.8	11.3	0.8	18.2	25.7

* Refers to Hong Kong, South Korea, Singapore, Philippines, Thailand, Taiwan, Indonesia and Malaysia.
Source: GOIC, Gulf Statistical Profile, 1995, Table (3.9), pp.139.

Table 4.14 presents the intra-regional trade between the GCC countries. The Table also allows comparison of intra-trade between the GCC countries against trade outside the region. Table 4.15, on the other hand, shows the composition of intra-GCC trade of national commodities. From Table 4.14, it is clear that the share of intra-GCC trade in world trade is very limited affirming the reliance of the GCC

trade on world markets for supply and sales. The share of the GCC exports accounts for about 16 percent on the average while the average GCC imports accounts for 6 percent of the total world trade.

The relative importance of the regional market is almost the same for each of the GCC countries with the exception of Bahrain and Oman. Bahrain depends on the regional market, particularly on Saudi Arabia for the supply of oil and industrial products, while Oman relies on U.A.E for its industrial imports.

GCC countries depend for their intra-imports of agriculture products on Oman and Saudi Arabia. However, large portions of intra-regional GCC trade are re-exported commodities, with the exception of a few agricultural products and locally produced manufactures. The low intra-trade profile of the GCC countries is due to the relative similarities in their factor endowments, trade and industrial structures.

Table 4.14

GCC Intra-Trade for the Years 1984-1993 (Million US $)

		Bahrain		Kuwait		Oman		Qatar		K. S. A		U. A. E		GCC		World		%	%
		Imp.	Exp.	Imp	Exp	Imp.	Exp.	Imp.	Exp	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.	Imp.	Exp.
Bahrain	1984	0	0	8	15	8	0	2	0	63	1395	384	42	465	1452	N/A	N/A	####	####
	1985	0	0	13	6	14	0	2	0	117	1166	238	41	384	1213	N/A	N/A	####	####
	1986	0	0	14	3	11	41	2	3	64	879	130	23	220	949	1391	2082	16	46
	1987	0	0	18	3	14	39	2	3	63	1141	116	35	212	1221	1444	2484	15	49
	1988	0	0	37	11	7	47	6	3	115	980	79	25	224	1066	1507	2381	15	45
	1989	0	0	41	16	13	53	10	3	128	1276	96	52	287	1400	1711	3068	17	46
	1990	0	0	17	13	24	42	16	4	107	1753	133	53	297	1865	1925	3845	15	49
	1991	0	0	0	1	19	38	23	3	104	1453	146	59	292	1554	1947	3675	15	42
	1992	0	0	93	12	28	41	26	8	131	1598	161	65	439	1724	1993	3906	22	44
	1993	0	0	61	19	30	46	27	8	139	1774	171	72	428	1919	2314	3614	18	53
Kuwait	1984	4	13	0	0	4	0	4	34	134	95	53	57	199	199	N/A	N/A	####	####
	1985	4	12	0	0	7	0	5	27	143	81	36	57	194	176	N/A	N/A	####	####
	1986	3	10	0	0	5	45	4	32	110	111	16	55	137	253	7365	5435	2	5
	1987	9	10	0	0	7	27	5	33	113	163	32	94	166	327	10394	5028	2	7
	1988	12	30	0	0	6	79	7	54	108	206	41	140	174	509	8187	5664	2	9

	1989	17	11	0	0	10	91	9	46	134	293	42	90	212	531	11054	5869	2	9
	1990	111	15	0	0	8	46	7	29	77	199	39	58	242	347	8172	3480	3	10
	1991	0	0	0	0	1	0	1	0	5	664	0	0	7	664	760	4691	1	14
	1992	0	0	0	0	4	0	0	0	43	0	0	0	47	0	4931	6183	1	0
	1993	0	0	0	0	5	0	0	0	0	0	0	0	5	0	9855	6264	0	0
Oman	1984	4	13	1	10	0	0	0	0	7	8	5	8	17	39	N/A	N/A	####	####
	1985	3	12	1	9	0	0	0	0	9	13	8	8	21	42	N/A	N/A	####	####
	1986	2	10	1	4	0	0	0	8	9	14	7	407	19	443	3094	2389	1	19
	1987	2	10	2	4	0	0	0	4	13	22	6	348	23	388	3565	1946	1	20
	1988	3	6	6	6	0	0	0	3	17	21	10	420	36	456	3603	2283	1	20
	1989	6	11	9	9	0	0	0	9	27	39	2	497	44	565	4044	2270	1	25
	1990	4	4	51	7	0	0	4	10	35	76	8	565	102	662	5905	2537	2	26
	1991	4	18	0	0	0	0	5	13	27	62	8	735	44	828	5561	3125	1	26
	1992	4	25	8	6	0	0	6	9	35	68	9	957	62	1065	5514	3749	1	28
	1993	4	27	12	13	0	0	5	9	33	70	8	986	62	1105	5188	4037	1	27
Qatar	1984	4	26	34	14	6	0	0	0	69	22	30	131	143	193	N/A	N/A	####	####
	1985	4	24	25	13	25	0	0	0	62	31	40	129	155	197	N/A	N/A	####	####
	1986	3	20	35	4	9	37	0	0	68	36	46	31	161	127	2216	1020	7	12
	1987	6	20	36	4	4	36	0	0	58	33	50	31	154	124	2119	1045	7	12
	1988	4	7	59	6	3	45	0	0	94	44	47	36	207	138	2219	1151	9	12
	1989	7	23	50	8	10	59	0	0	72	114	97	53	236	257	2668	1354	9	19
	1990	4	68	32	6	10	43	0	0	52	123	129	46	227	286	3488	1465	7	20
	1991	2	21	0	1	14	5	0	0	56	75	129	67	201	169	3391	1674	6	10
	1992	7	23	12	8	9	5	0	0	99	83	142	73	269	192	3855	1727	7	11
	1993	8	25	22	11	9	5	0	0	94	85	135	75	268	201	3198	1652	8	12
K. S. A	1984	1661	90	45	337	6	0	0	52	0	0	62	270	1774	749	N/A	N/A	####	####
	1985	1485	81	58	294	8	0	0	41	0	0	129	267	1680	683	N/A	N/A	####	####
	1986	1132	68	100	100	15	142	0	62	0	0	188	127	1435	499	27430	20804	5	2
	1987	1287	68	166	102	21	185	30	53	0	0	183	108	1687	516	30446	23079	6	2
	1988	1129	114	225	98	29	188	38	86	0	0	219	119	1640	605	30991	23610	5	3
	1989	1329	78	284	122	46	398	38	66	0	0	298	127	1995	791	36361	23336	5	3
	1990	1887	108	219	70	58	336	69	47	0	0	415	151	2648	712	50653	24922	5	3
	1991	1598	95	731	5	84	24	70	51	0	0	909	196	3392	371	57367	31831	6	1
	1992	1758	119	319	93	75	32	77	90	0	0	1000	237	3229	571	57422	34878	6	2
	1993	2021	137	347	112	71	30	73	86	0	0	950	226	3462	591	50543	32661	7	2
U. A. E	1984	37	598	62	109	489	0	33	14	164	73	0	0	785	794	N/A	N/A	####	####
	1985	33	538	28	95	665	0	30	11	169	143	0	0	925	787	N/A	N/A	####	####
	1986	25	455	61	15	448	117	34	42	139	271	0	0	707	899	10855	8144	7	11
	1987	38	455	103	2	382	144	34	46	119	223	0	0	676	870	12089	9330	6	9
	1988	51	70	154	37	462	187	39	43	131	293	0	0	838	630	11940	11153	7	6
	1989	57	518	99	38	547	213	58	88	140	499	0	0	901	1356	15578	13614	6	10
	1990	59	25	64	35	622	214	50	117	166	804	0	0	961	1195	21230	14415	5	8
	1991	53	28	0	0	808	214	73	117	215	827	0	0	1149	1186	2258	1555	5	8

															4	6		
	1992	58	31	215	92	1053	235	81	129	261	909	0	0	1668	1396	21259	18062	8	8
	1993	67	33	121	97	1000	242	76	133	248	937	0	0	1512	1442	19634	20374	8	7
GCC	1984	1709	740	150	485	513	0	39	100	437	1593	535	508	3383	3426				
	1985	1529	666	125	417	719	0	37	79	499	1433	451	502	3359	3097				
	1986	1166	562	211	125	487	382	40	147	389	1310	387	643	2679	3169				
	1987	1342	563	325	115	428	431	70	139	365	1582	387	616	2917	3446				
	1988	1199	227	481	159	507	546	90	188	466	1543	396	740	3139	3404				
	1989	1416	641	483	193	626	814	115	212	501	2221	535	819	3676	4900				
	1990	2065	220	383	131	722	681	146	207	437	2955	724	873	4477	5067				
	1991	1657	162	731	7	926	281	172	185	407	3081	1192	1057	5085	4773				
	1992	1827	198	647	211	1169	313	190	236	569	2658	1312	1332	5714	4948				
	1993	2100	222	563	252	1115	323	181	236	514	2866	1264	1359	5737	5258				

Source: IMF, Direction of Trade Statistics, Yearbook, 1992-1996.
GCC, Gulf Statistical Profile, 1995, Table (3.10), pp. 138.

Table 4.15

GCC Intra-Trade of Local (national) Commodities (Million US $)

	Agricultural &Animal		Industrial		Natural		Total	
	Exports	Imports	Exports	Imports	Exports	Imports	Exports	Imports
1985	53.29	73.51	553.24	613.91	60.72	32.34	667.25	719.76
1986	71.49	92.11	531.91	573.05	22.33	15.02	625.73	680.18
1987	122.18	92.68	734.96	768.76	158.68	17.65	1015.82	879.09
1988	127.02	111.15	1042.78	1182.48	1095.78	28.05	2265.58	1321.68
1989	182.04	138.16	1653.76	1346.46	1216.35	30.3	3052.15	1514.92
1990	195.65	129.51	1731.74	1159.48	1641.41	33.34	3568.8	1322.23
1991	368.7	174.56	1697.99	1159.48	1403.28	31.82	3469.97	1365.86
1992	386.45	257.65	1654.98	1929.13	1666.06	62.12	3707.49	2248.9
1993	417.23	261.45	2359.54	1901.97	1272.22	281.32	4048.99	2444.74

Source: GCC, Economic Bulletin, 1995, Tables (3.2 - 3.13).

In general, GCC countries show great dependence on the world market, especially on industrialised countries, both for the supply of diversified imports and for the sale of oil. The financing of GCC development plans is subject to volatility as a consequence of fluctuations from oil and natural gas. As a result of their limited agricultural and industrial bases, GCC countries are highly dependent upon imports to meet the rising internal demand especially for capital goods. Regional intra-trade occupies only a minor place in the total trade of the GCC countries, reflecting the

limited integration of their economies and the similarities in their economic structures.

4.3 GCC Objectives and Policies

In the light of the similarities in the political, economical and social structures in GCC countries, regional integration and co-operation become an important strategy. GCC countries have established a number of agreements in different socio-economic fields. The GCC Economic Agreement is the most obvious sign of cooperation. The agreement consists of seven parts and 28 articles that outline major elements to coordinate: development policies; trade relation policies; industrialisation policies, (especially oil industry policies); joint projects policies; agricultural policies; monetary and banking policies; national and regional aid policies; EEC's and GCC's relationship; science and technology policies; and human resource development policies.

GCC development policies and objectives place considerable emphasis on diversification. The GCC intend to diversify their industrial base and incomes sources, to develop promising natural resources, to consider water as a basic factor and main determinant of efficiency in government projects. In addition, the GCC States strategy is to develop and expand (both horizontally and vertically) the petrochemical industries as well as the production of gas and petroleum derivatives, through the private sector or joint venture companies whenever economic feasibility is proven (Rajab: 1988, pp. 332).

In a broader context, the LDCs' objective in economic integration is to accelerate industrial development and to foster economic growth. Conceptually,

GCC member countries have to consider two alternative paths to foster the extension of their markets and design their development plans to reach higher growth rates.

The first path is the "inward looking" approach that involves an implementation of policies designed to encourage indigenous developmental forces by way of building manufacturers, developing internal technologies and utilising the country's resource endowment efficiently. In essence, GCC economies could explore the possibilities of diversifying their economies to reduce dependence on revenues from exports by forming a customs union collectively.

Arguably, GCC member countries cannot develop by national efforts alone since these countries are too small to sustain industrialisation individually. Collaborating on a series of measures that members of countries hope will enhance their prospects in terms of their relationships with third parties, given that similarities in economic structure and trade pattern suggest that the intra-member gains from cooperation are likely to be limited. Subsequently, the "outward look" has to be taken into consideration, especially since GCC are outward-orientated countries due to their natural endowments of oil. The export promotion approach, an alternative, will also assist GCC countries attain development growth by focusing on market strategies and economic opportunities with the outside world, especially with EEC countries.

The most obvious characteristics of the Gulf countries are the domination of the oil and natural gas sector. From the 1970s, oil and natural gas became the primary source of income, which eliminated poverty, increased social services, and increased capital accumulation and saving levels. But the Gulf countries are still considered to be developing countries. Their economies are dominated by a single

primary product, limited in absorptive capacity, increasingly open to developed countries which make them vulnerable to fluctuations that make investment more risky due to uncertainties of political intervention and tariff changes. Another major aspect that characterises the GCC economies is the large degree of duplication in their developmental projects, as GCC countries implement (independently) similar development strategies and economic policies to reduce their dependency on oil. The application of such policies results in similar rather than complementary industries, and this poses an obstacle to the likely success of any form of integration.

Although the GCC countries are free-trade orientated economies, they are characterised by the central role of government in their economic activities. GCC governments play a crucial role in utilising oil revenues, building up the infrastructure, improving the quality of social services, and providing the private sector with a favourable investment climate to accelerate socio-economic development. However, this government participation in economic activities is declining due to the completion of most of the infrastructure projects and the decline in oil revenues as a result of lower prices than in earlier periods. Further common features of the GCC countries are the increasing influence of the multinational cooperation, in spite of nationalisation efforts conducted and achieved within these countries; the limited role of the agricultural sector, and the small size of their indigenous labour force.

In the light of these common characteristics and problems, GCC countries are consolidating their efforts and coordinating their strategies through the strengthening of trade, agriculture, industry (especially the oil industry), finance and other socio-economic cooperation, unity and integration. GCC countries are adopting identical

systems in various fields such as financial and economic affairs; trade, customs and transportation; educational affairs; social and health affairs; tourism and information affairs; administrative and legal affairs. In addition, GCC member countries are promoting research and development in agriculture, forestry, industry, and encouraging the establishment of joint-venture projects with the participation of the private sector (Rajab: 1988, pp. 575-576).

Developmental policies imply that all development projects and programs perform within the framework of a long-term unified strategy. As Rajab indicates, the "Development Policies and Objective Document" strategy states that each country of the union has to diversify their incomes, develop promising natural resources, consider water as a basic factor and main determinant of efficiency in government projects, expand (both horizontally and vertically) the petrochemical industries as well as the production of gas and petroleum derivatives, through the private sector or joint-ventures companies, whenever economic feasibility is proven (Rajab: 1988, pp. 332).

The main emphases in trade policies (the formation of a customs union among the GCC member countries) are to form an economic entity able to sustain and bolster economic development, to enlarge the market and to enjoy economies of scale. Also, the GCC trade policies aim to increase investment in capital goods, to distribute geographically investment projects among the GCC countries according to comparative advantage and resource endowment criteria. Furthermore, the GCC trade policies consider the significance of gaining bargaining power in their trade negotiations with the rest of the world, and forming a customs union among themselves as a major step towards full integration (Rajab: 1988, pp. 341). In 1986,

the GCC countries signed an agreement unifying the customs union procedures and endorsing the following two measures (Rajab: 1988, pp. 344):

(1) the authorisation of a unified external tariff on foreign imported goods; and,

(2) the declaration of a system to return the tariff collected on re-exports between the GCC countries.

In order to promote trade between the GCC member countries, "The General Economic Agreement" was initiated to exempt animals, agricultural, industrial and natural products domestically produced from tariffs. The Economic Agreement levied a 4 percent minimum and a 20 percent maximum external tariff on foreign products. Governments of the GCC countries exempt all imported raw materials, intermediate goods, spare parts and machinery from import duties.

Adopting the import-substitution approach guarantees the continuity of the GCCs' customs union and industrialisation process to establish a productive base availing them the opportunity to compete and trade. Unfortunately, the availability of the petrochemical industry in the region, which is dependent on external markets, does not supply local markets with a large variety of products to trade with. The domestic markets of the GCCs, as of most LDCs, are small. Meanwhile, the chances for successful and efficient import substitution in the national framework are limited by the size of domestic markets.

GCC industrial policy aims at: first, coordinating industrial activities, implementing policies for industrial development and widening the industrial productive base on a complementary basis; secondly, unifying legal and industrial systems and directing local productive systems to fulfil its needs; thirdly, distributing

industries between member countries according to viability and comparative advantage; and, in addition, the policy seeks to promote the establishment of basic and complementary industries within the GCC countries (Rajab: 1988, pp. 287).

In 1985 the GCC General Council approved the "General Strategy of Industrial Development" which emphasises the objectives, industrial priorities, and methods of implementing the industrial strategy (Rajab: 1988, pp. 393). The objectives of the industrial strategy highlight the process of industrial development in all member countries. The priority is on industries which concentrate on activities that utilise and develop natural resources and that satisfy the needs of local markets, including food industries. There is increasing emphasis on developing small and medium industries to establish a productive base that could allow the member countries to compete and trade.

As to the implementation of the industrial strategy, there are two major principles. Firstly, the GCC Governments support private sector investments in feasible and worthwhile industries. Secondly, GCC Governments participate in establishing industrial projects, while providing the private sector with the opportunity to participate in the ownership and management of these industries through flotation of shares and involvement in running the industries.

4.4 Conclusion

In theory very similar countries have problems in obtaining gains from integration, but it is the common problem that brings them together in the GCC. For the GCC to produce increased intra-regional trade that require a lot of efforts on the part of the governments to ensure that: (a) they are not competing in terms of what

they produce; and (b) cooperation is made easier if countries wish to specialise in different product i.e. petrochemicals.

Forming a customs union among them affords an additional source of static and dynamic gains if GCC countries can foster diversification, reduce duplication in their industrial projects and increase efficiency in resource allocation and, thus, attain higher growth rate in the long-run.

Paradoxically, the same elements that can be used to rationalise cooperation and integration among the GCC countries can create reasons for conflicts of interests. The similarities in economic structure, competition in extra-regional trade, desire for rapid industrialisation, besides the fear of limiting national options and freedom of actions may create obstacles to integration. This necessitates adopting harmonisation in various sectors of production, such as agriculture, science and technology, infrastructure and petrochemicals, and in their development plans and policies in a way that increases development creation and decreases development diversion.

The main concern of the GCC industrial strategy is to promote regional industrialisation on a balanced complementary basis, to increase the participation of manufacturing industry in GDP, to increase the participation of domestic labour force, and to overcome the differences in the growth rate of GCC countries. Most importantly, it advocates the development of regional natural resources and increases its industrial efficient use.

Evidently, the trend nowadays is towards grouping, both economically and politically, as a viable alternative to achieve self-subsistence and rapid growth. This is also true for the GCC countries, although, the GCC countries experience low level of intra-trade, competitive similarities in their economies, and low level of their tariff

structure which offer very little scope for more efficient resource allocation in terms of traditional theory of customs union theory. However, different conclusions are reached, in terms of the static effect approach, for the intra-industry specialisation that is welfare effects may result in an increased satisfaction of consumer wants. As to the dynamic effect approach, intra-industry specialisation may lead to technological progress, exploitation of economies of scale and an increase in GDP levels, among others. As seen, the factors that provides rationale for intra-industry specialisation may lead to obstacles for cooperation among the GCC countries. Finding a solution to these thorny problems spurs policy harmonisation among GCC countries in terms of their developmental plans and in terms of their sectoral policies.

Chapter Five

Petrochemical Industry

Since the early 1970s, a multi-pronged industrialisation program has been regarded as a necessary strategy by the Gulf countries as they seek to foster development. The programme has been aimed at specifically and efficiently utilising and enhancing the value-added of the abundant supplies of low-cost hydrocarbon- and mineral-based natural resources. Moreover, despite the constraint in growth in the petrochemicals sector due to the slowdown in global economic activities and to saturation, maturity and excess capacity problems in major end-use markets, the industry represents a keystone in the diversification efforts of the GCC countries. Given the substantial oil reserves and natural resources in Saudi Arabia, and because the Kingdom has the largest petrochemical and downstream industries in the Gulf region, attention here is devoted mostly to the Saudi petrochemical industry. However, it is worth noting that this discussion could also apply to other GCC member countries, as a consequence of the similarity of their economic and industrial structures to those of Saudi Arabia.

The accessibility of major raw materials, feedstock and capital has supported the establishment of an export-orientated petrochemical industry as a leading ingredient in the Kingdom's industrialisation strategy. Saudi Arabia has seen a surge in its petrochemical manufacturing capability with new projects and sound profitability benefiting from low cost of raw materials, location, and environmental aspects. Recognising its industrial objectives and its comparative advantage in energy-intensive industries, the Kingdom established the Saudi Basic Industries Corporation (SABIC) in 1976 as a Government corporation, in association with

private enterprises. SABIC's main objectives were to develop and create an industrial base that could stimulate a system of linkages throughout the economy, to promote diversification in exports and to act as a catalyst for private sector investment in downstream activities. Most of the SABIC projects are located in the two purpose-built industrial cities, Jubail on the Arabian Gulf and Yanbu on the Red Sea.

Most of SABIC's industries were established as joint venture partnerships in tandem with leading companies of the U.S, Far East and Europe. SABIC selected its foreign partners according to their markets and marketing skills. By adopting a joint-venture strategy with international companies, SABIC succeeded in achieving its objectives in acquiring experience, training its personnel, obtaining advanced technology and penetrating the world-wide market.

Against this background, this chapter will consider the petrochemical industry. The focus of section one is on major characteristics and principal markets of the petrochemical industry. The main emphasis in section two is on the potential importance of the petrochemical industry to the Saudi economy, the inter-linkages created within the economy, the main problems facing the industry, and the relevant policies implemented towards the industry. The Appendix to this chapter analyses the structure and stages of production of the petrochemicals industry.

5.1.1 General Characteristics of the Petrochemical Industry

Petrochemicals play a central role in world trade, representing about 12 percent of the aggregate circulated goods in international markets (Lahalih: 1993, pp. 3). It is important, therefore, to develop a better understanding of the major features

that characterise the industries which process and use petrochemicals. Among the main characteristics of the petrochemicals industries are:

(i) the industry has a high degree of capital intensity, that is, the industry requires extensive capital investment and advanced infrastructure;

(ii) it imposes a high demand for skilled labour including scientists and technicians;

(iii) its products pass through three production stages, basic, secondary, and final;

(iv) there is a strong relation between consumption of manufactured petrochemicals and income levels. As income increases, the proportion spent on petrochemicals rises and the increase in consumption is greater, the higher is the initial income level, i.e. petrochemicals are characterised by a high-income elasticity of demand;

(v) the petrochemical industry has both forward and backward linkages. Backward linkages with the manufacturing industries help promote diversification of the industrial base. Forward linkages relate to the use of oil and natural gas as a feed stock for primary, secondary, and final products;

(vi) petrochemicals replace products based on scarce natural resources at competing prices and qualities (e.g. synthetic rubber can replace the natural product);

(vii) although plentiful, the primary products are based on few derivatives from oil and natural gas, e.g. methane, ethylene, propylene and the aromatics;

(viii) the industry requires a high degree of technology, research and development to continue its efficiency, to reformulate current products and to develop new products in response to changing demand in the marketplace. Leading

petrochemical companies spend about 5-8 percent of their total sales on technology and research development (Al-Jaraalla and Abu-Shiback: 1992, pp. 15);

(ix) raw materials account for a high portion of total production costs. They represent about 75-80 percent of the total production cost of most petrochemical industries either being used as a feed stock or as a fuel (Al-Azel: 1988, pp. 6);

(x) the existence of substantial economies of scale which necessitate the availability of large secure markets to permit production at low cost; and,

(xi) its industries require high technology, which is typically available only in industrial countries.

The foregoing factors indicate that the petrochemical industry can help countries foster economic growth, especially as it enhances the value added to the industrial sector. For instance, a barrel of oil worth $12 can produce general plastic products valued at some $ 84, and this value will be raised even more substantially when the oil is used to produce polyester films or chemical fertilisers (Spenies: 1979, pp. 93). Additionally, the petrochemical industry may make an important contribution to stimulating the nation's research and development effort, accelerating technological development and providing opportunities for professional employment in engineering, physics and related fields.

For an economy such as Saudi Arabia the success of industrialisation hinges largely on the domestic capacity to build technological capability. Technology is predominantly imported and the capability to absorb and diffuse technology in forms appropriate to domestic circumstances is central to ensuring sustainability and

competitiveness of domestic activities (Bell and Pavitt 1992; Enos and Park 1988; and Huq and Islam 1992).

5.1.2 Petrochemical's Principal Markets

There are four main requisites for establishing a petrochemical industry; first, a high degree of capital and energy intensity; secondly, a high level of technological and research development; thirdly, a highly skilled labour force; and, finally, the need for a sufficiently large market to absorb the supply of various petrochemical products.

Petrochemicals can be divided into two groups in terms of their market characteristics:

A. Commodity petrochemicals: This group consists of most primary petrochemicals and some secondary and end-use petrochemicals. It has general trade qualifications that are rarely changed, no advanced research and technology is needed and its market is stable. Typically, markets are guaranteed and involve long-term contracts that allow for variation in prices.

B. Performance petrochemicals: This group consists of secondary and final petrochemicals. It requires certain qualifications for production, and the nature of the processing depends on the next stage in the production chain or on demand. It requires extensive research and technology development in order to improve the performance of the existing products and to discover new ones.

The main characteristic of the international petrochemical market is that it is oligopolistic. In essence, despite the improvements in petrochemical processes, the abundance of feedstock materials and the potential of the industry, only a small number of "traditional producers" dominate the industry. Petrochemical producers,

by increasing concentration and integration of their production processes, usually take certain actions to prevent new producers from entering the market. Such preventive measures include adapting the announced price system for some products without declaring the basis of pricing, dividing the market among themselves according to investment and trade speciality, engaging in long-term contracts between producers and users, establishing joint utilities for distribution, and avoiding the transfer of technology to new producers.

The market also operates under a general system of preference (GSP). The GSP with respect to petrochemicals benefits some developing countries in Latin America and the Far East because of their relation with the industrial nations as the most favoured nations. The favoured nations are supported or encouraged by industrial countries through buying contracts, barter exchange for disposing of surplus products, and/or joint-venture investments in petrochemical projects near the distribution centres or energy sources. The result of this support emerges in the competitive position of the favoured producers in Latin America and the Far East over new petrochemical producers in other developing countries.

Traditional producers, namely the U.S.A, W. Europe, and the Asia-Pacific region including Japan, dominate the existing production capacity and consumption of petrochemicals. Collectively, these traditional producers account for 79 percent of world-wide petrochemical production (United Nations: 1996, pp. 43). Their control over the petrochemical market is a consequence of access to know-how and technology, to highly skilled labour, and to huge domestic markets (with down-stream industries). The capacity to produce and consume petrochemical feedstock and finished products in the major industrial centres far surpasses that in the

developing countries. In effect, the consumption and production of petrochemicals in the traditional countries represent the demand and supply sides of the petrochemical market.

Traditional producers produce ethylene, aromatic and derivatives, and tend to be mainly involved in the stages from secondary petrochemicals through to end-uses. Mitsubishi in Japan and Dow, Exxon, Mobil, Union Carbide and Du Pont in the U.S.A are major companies, accounting for about 40 percent of the production and marketing of ethylene. These companies also control about 60 percent of ethylene production and marketing in five major W. European countries namely, France, Netherlands, Germany, Italy and United Kingdom (Al-Khoudiary: 1986, pp. 120). In terms of the total world market, companies in the U.S.A, Europe, and the Asia-Pacific region including Japan dominate, with 91 percent of ethylene production, 95 percent of propylene, 86 percent of methanol, and 64 percent of ammonia (United Nations: 1996, pp. 43, 50). Global polyethylene production of about 39 million tonnes in 1995 was allocated between high-density polyethylene (HDPE), low-density polyethylene (LDPE) and linear low-density polyethylene (LLDPE). As such, 90 percent of HDPE, 89 percent of LDPE and 85 percent of LLDPE are located in those markets (United Nations: 1996, pp. 44, 45 and 49). Furthermore, most of the world-wide capacity for the production of propylene oxide (PO) and its by-product polyester fibres is located in these countries due to the availability of major production inputs such as ethylene oxide and derivatives.

Since the 1970s, the petrochemical industry has undergone changes in its production structure due to the two oil price shocks, the slowdown in general

economic performance, the surplus capacity and the emergence of new producers, especially in oil and gas-rich countries.

The oil price shocks of 1973 and 1979 increased the cost of petrochemical feedstock, the major cost source in the petrochemical industry. This increased cost and the additional installed capacity were a consequence of the optimistic projection for olefins market. There has also been a saturation and over capacity in most end-use products, a result of entry into market of a large number of technology imitators. The consequences of the excess capacity in the petrochemical sector were: first, a change in competitive position in favour of the United States and the oil and gas producing countries which use liquid petroleum gases (LPG) and liquid condensates as the base for their petrochemical industry; and secondly, a major shift in the industry's location pattern towards the regions with large oil and gas reserves.

Many of the petrochemical producers opted to rationalise and restructure their petrochemical industry and build new portfolios with which to move forward as world-wide competitors. The major petrochemical companies curtailed their production either by closure of ageing and unprofitable projects and by down-sizing their production through investing in upstream operation through participating in acquisition and merger activities or undertaking joint ventures with domestic oil companies or oil producing companies (Fayad and Motamen: 1986, pp. 55). In addition, the traditional producers engaged in downstream operations, which required complex production technology and sophisticated marketing skills while they relegated to their partners in the oil producing countries a portion of their commodity-grade requirement. By participating in the high-performance chemical sector, the traditional producers tend to gain stable profits and competitiveness (Chemical Week: 1997, pp. 21-25).

During the 1990s the demand for primary and secondary petrochemical products in the traditional producing countries increased and is expected to increase further in the future. For instance, annual demand is expected to increase in the next few years in Europe by over 2 percent, in the United States by 3 percent and in other areas by 6 percent, with the Asia-Pacific region taking the lead (United Nations: 1996, pp. 43).

Developing countries lag behind the industrial countries in the production and marketing of petrochemicals. Primary petrochemicals, especially ethylene and its derivatives, and methanol and its derivatives are the most important of the petrochemical activities in developing countries. The ethylene productive capacity in South America, Africa and the Middle Eastern countries amounted to about 10 percent of world production of primary petrochemicals and about 10-15 percent of production of basic polymers (United Nations: 1996). The leading developing countries which produce and market mainly primary petrochemicals are: South Korea, Singapore, Thailand and the Philippines in East Asia; Brazil, Mexico and Argentina in Latin America; and Saudi Arabia, Algeria, Libya, and Egypt in the Arabian region. Since the 1970s these countries, backed by advantageous feedstock costs, became major producers of commodity petrochemicals.

For the GCC as a group, actual production capacity reported in 1995 of ethylene was about 3 million tons/year, which represents about 4 percent of world capacity and is expected to reach 6 percent in 2000; for methanol the figure was about 3 million tons/year which is about 9 percent of the world capacity (Al-Sa'doun: 1997.b, pp. 41). For ethanol, GCC productive capacity was 300 thousand tons which is about 2 percent of world production, and for ethylene glycol was 650

thousand tons, about 7 percent of the world capacity (Oil &Gas Directory: 1994, pp. 378).

The GCC has experienced limited progress in the production of butadiene, propylene, and aromatic and black carbon for several reasons. Firstly, supplies of ethane gas have been in demand for other uses, e.g. as a feed stock for the petrochemical industry, in the generation of electricity and to desalinate seawater. Secondly, technology limitation in the developing countries and the industrial strategies of the traditional companies hinder the transfer of advanced technologies to developing countries. This factor, besides others, such as the absorptive capacity of the developing countries, limits the supply of the missing links in the petrochemical industry. Accordingly, developing countries rely on the industrial economies for the supply of performance petrochemicals to support their manufacturing industrial projects. This affects the balance of trade and gives industrial countries substantial control over the consumption and the distribution of primary petrochemicals and end-use goods.

5.2 The Role of the Petrochemical Industry in the Saudi Economy

The GCC petrochemical industry is a feedstock-driven industry, in the sense that this industry has been established to benefit from the natural gas, which was previously flared off and which could not be exported easily in its natural form. The GCC countries possess 45 percent of the world's oil reserves (GCC Economic Databook: 1996, pp. 31). They also possess around 15 percent of the world's natural gas reserves. Yet their share of total world production of natural gas and oil for the petrochemical industry hardly reaches 5 percent (Abdulla: 1997, pp. 10, 12).

The GCC states have pursued a diverse approach in exploiting their hydrocarbon resources. The utilisation of this feedstock facilitated the development of a wide range of processing industries. Pre-war Saudi Arabia and Kuwait processed about 20 and 36 percent respectively of their crude oil production into refining products. The rest of the GCC states have refining capacity for no more than 10 percent of their production (GCC Economic Data Book: 1996, pp. 35). On the other hand, the Kingdom has opted to process its gas into ethylene and derivatives to develop a petrochemical sector, while U.A. E. has preferred to liquify its natural gas. As for the rest of the GCC gas producing countries, Qatar has not exploited the huge potential of its natural gas fields; Bahrain's relatively small fields mainly serve local industry and utilities; and Oman is focusing on liquefaction. To illustrate the impact of different process approaches, it may be pointed out that Japan pays $165 per ton for liquid gases imported from GCC, $181 per ton for urea, and $600 per ton for plastics (GCC Economic Data Book: 1996, pp. 34-36). The value-added per ton generated from petrochemical products is much higher than utilising gas in other sources of production. Yet, the establishment of such industries, i.e. petrochemicals and basic metal industries, requires large-scale investment, associated with extensive risks and uncertainty. Thus, the Governments in the GCC countries have taken the initiative, established these industries and have developed the necessary infrastructure and institutional foundation required to influence private sector investment in such industries.

As stated earlier, the prime focus in this section is on the Saudi experience, due to its position as the major petrochemical producer among the GCC countries. Saudi Arabia accounts for 94 percent of total GCC investment in petrochemicals (Al-

Sa'doun: 1997, pp. 30) and has an increasing share of petrochemicals in its non-oil manufacturing exports, where chemicals and plastics alone account for 23 percent of Saudi Arabia's manufactured exports (GCC Economic Data Book: 1996, pp. 36).

Petrochemicals seem to represent a viable source in acting as a major force for diversifying the Kingdom's industrial base by exploiting its potential for growth in value-added within the hydrocarbon industry. Accordingly, the Third Development Plan (1980-1985) emphasised the role of the petrochemical industry to the Saudi economy.

The petrochemical industry is concentrated in a few large-scale plants located in the two industrial cities, Jubail and Yanbu. SABIC is the Kingdom's industrial conglomerate producing more than 22 million metric tons per year of petrochemicals and chemicals, fertilisers, plastic resins, steel and industrial gases (SABIC Annual Report: 1995, pp. 8). The specialisation of SABIC in such projects introduces new technologies, creates skills, enhances employment opportunities in the country and provides industrial linkages. SABIC's ultimate goal is to market its industrial production domestically and abroad, to maximise the utilisation of its vast resources, to maintain quality and to gain competitiveness. To accomplish its objectives, SABIC established most of its projects under joint venture agreements with major international companies, Shell, Mobil, Dow, Exxon, Celanese and Texas Eastern from U.S; Mitsubishi from Japan; and Lucky Goldstar from Korea. SABIC provides the location, feedstock, capital and financial facilities for these companies, while the joint venture partners supply the technology, expertise to train Saudi personnel and building and operation of the plants. In addition, the joint venture arrangements

ensure marketing and secure smooth entry for the Saudi Arabian products into world-wide markets.

The forthcoming sections will provide a brief outline of SABIC's petrochemical ventures, the inter-linkages developed by SABIC's activities and finally, the strategies adopted to overcome the barriers and obstacles that hinder the exploitation of the potential of the industry.

5.2.1 SABIC's Petrochemical Ventures

In the 21 years since its creation in 1976, SABIC has established 16 complexes operated by its affiliates, of which 13 produce petrochemicals and fertilisers, two are in steel-making and one produces industrial gases. SABIC is also a participant in three Gulf region industrial partnerships, based in Bahrain. These companies are GARMO (Gulf Aluminium Rolling Mill Co.), GPIC (Gulf Petrochemical Industries Co.) and ALBA (Aluminium Bahrain). Since petrochemicals are the focal point of this work the emphasis here is on presenting a brief background on SABIC's petrochemical ventures.

1- Al-RAZI (Saudi Methanol Company)

Established in Al-Jubail in 1979, Al-RAZI launched a 640,000-mt/year of chemical grade methanol production in 1983. Al-RAZI is a 50:50 percent joint venture with a consortium of Japanese companies led by Mitsubishi Gas Chemical Company. In view of rising local and world demand for methanol in 1988, the company built a second plant Al-RAZI II with a capacity of about 600,000-mt/year. The company's effective capacity from the two plants increased by 17 percent to1.4 million ton/year (Arab Oil & Gas Directory: 1994, pp. 380). Meanwhile, a third world-scale methanol plant (Al-RAZI III) with a capacity of 850,000- mt/year came

on stream in early 1998 (SABIC News: 1998, pp. 6). Construction of Al-RAZI IV, also with 850,000 mt/y capacity, is under way and due to come on stream in 1999, increasing SABIC's total methanol production capacity in the Kingdom (including IBN-SINA) to nearly four million mt/y by the turn of the century (SABIC News: 1998, pp. 3).

2- SADAF (Saudi Petrochemical Company)

SADAF is a 50:50 percent joint venture between SABIC and Pecten Arabian Company, a subsidiary of Shell Oil Company of U.S. SADAF, established in 1980 in Al-Jubilee, was the largest of SABIC's first generation projects. Since 1988 SADAF's annual output has exceeded design capacity, averaging 760,000-mt/y of ethylene, 560,000-mt/y of ethylene dichloride, 360,000-mt/y of styrene, 300,000-mt/y crude industrial ethanol and 450,000-mt/y of caustic soda. (Arab Oil & Gas Directory: 1994, pp. 380). SADAF's program to expand production capacities is continuing with several projects which came on stream in 1997. By establishing a 700,000 mt/y MTBE/ETBE plant, which came on stream in early 1998, the world's first plant capable of producing both products alternately, SABIC's total productive capacity of these environmentally acceptable gasoline oxygenates products reached to 2.7 million mt/ y (SABIC: 1994, pp. 18). SADAF's aim for establishing the MTBE/ETBE plant was to expand its current capacity of chloro-alkali and ethylene dichloride by 50 percent, ethylene capacity by 25 percent which in turn will increase its ability in introducing membrane caustic and MTBE. SADAF, jointly with PETROKEMYA, is developing a new 500,000 mt/y styrene plant that will be located at the SADAF complex and operated by SADAF. This plant will boost SADAF styrene output to 950,000 mt/y (SABIC:1997, pp. 17).

3- IBN- SINA (National Methanol Company)

IBN- SINA was established in Al-Jubail in 1981. This is a 50:50 percent partnership between SABIC with CTE Petrochemical Company, a joint venture between two U.S owned companies, Hoechst-Celanese Chemical Group and Panhandle Eastern Energy, producing chemical grade methanol and MTBE. IBN-SINA started its production ahead of schedule 1984 with a 650,000-mt/y productive capacity of methanol. In 1994 the plant produced around 900,00-mt/y of chemical grade methanol. Moreover, the plant brought 700,000-mt/y of MTBE on stream at its complex, all of which is exported (Arab Oil & Gas Directory: 1994, pp. 380). In 1994 SABIC Marketing became the sole marketer of IBN-SINA's production of methanol and MTBE due to the transfer of Celanese- Hoechst's marketing entitlement to SABIC.

4- YANPET (Saudi- Yanbu Petrochemical Company)

This is a 50:50 joint venture with Mobil Oil Corporation of U.S, established in1980 in Yanbu to produce ethylene, polyethylene and ethylene glycol. YANPET's existing ethylene cracker uses ethane as feedstock. In 1986 its production reached 560,000-mt/y for ethylene, 430,000-mt/y for polyethylene (all grades) and 250,000-mt/y for ethylene glycol (SABIC: 1988, pp. 19). In 1997 YANPET constructed a second world scale ethylene cracker and three plants to produce polyethylene, polypropylene and ethylene glycol (SABIC News: 1998, pp. 3). The expansion, which will come on stream in the year 2000, will result in an increase in the Kingdom's productive capacity of ethylene to more than 1.6 million mt/y, with an output to also include 250,000mt/y of propylene and 116,000mt/y of pyrolysis

gasoline, and about 2 million mt/y of derivative products (SABIC News: 1997, pp. 18).

5- PETROKEMYA (Arabian Petrochemical Company)

PETROKEMYA, established in Al-Jubail in 1981, is a fully owned affiliate of SABIC after the withdrawal of Dow Chemical from the venture in 1982. The company built an ethylene cracker with a production capacity of 650,000-mt/y in1986. In 1987 PETROKEMYA brought on stream 50,000-mt/y of butene-1, a co-monomer used in the manufacture of polyethylene. A second 50,000-mt/y butene-1 unit was installed and began production at the PETROKEMYA complex in 1995. This helped boost output of SABIC's LADEN linear low-density polyethylene at three other SABIC affiliates: KEMYA, SHARQ and YANPET. PETROKEMYA also brought a polystyrene plant on stream at its complex with a productive capacity of 100,000-mt/y of polystyrene of different grades, using styrene feedstock from SADAF. PETROKEMYA expanded the polystyrene plant in 1992 to increase its productive capacity of polystyrene by 65,000-mt/y of general-purpose polystyrene and 50,000-mt/y of high impact polystyrene (Arab Oil & Gas Directory: 1994, pp. 381-382). A major expansion project at PETROKEMYA to debottleneck and to increase the productive capacity of ethylene to 700,000-mt/y was completed in 1996. The expansion of the production of ethylene cracker boosts the production of propylene to 400,000-mt/y, of butadiene to 130,000-mt/y and for benzene to 115,000-mt/y (SABIC: 1995, pp. 16-17). In mid-1997, PETROKEMYA signed a contract for the construction of Olefins-III project, to come on stream in 2000, based on propane and ethane cracking. The project involves the construction of an 800,000 mt/y capacity of flexible feedstock of ethylene plant that will increase the company's

total ethylene output to more than 2.2 million mt/y. The Olefins-III project will also include capacity to produce propylene and benzene. PETROKEMYA supplies ethylene to SHARQ, propylene to IBN-ZAHR and benzene to SADAF (SABIC News: 1998, pp. 5).

6- KEMYA (Al-Jubail Petrochemical Company)

KEMYA is a 50:50 joint venture with Exxon Company of U.S, established in 1980 in Al-Jubail. KEMYA uses ethylene feedstock supplied by SADAF to produce polyethylene, which entered commercial production at the beginning of 1986. KEMYA is planning to raise polyethylene production capacity to 700,000-mt/y expandable to 1 million-mt/y (Arab Oil & Gas: 1994, pp. 381). Currently in 1998, KEMYA is debottlenecking its production of LLDPE (linear low-density polyethylene) plant to increase capacity by nearly 40 percent to reach 850,000 mt/y. A major expansion project of KEMYA, to come on stream in the year 2000, to produce 700,000 mt/y of ethylene, 200,000 mt/y of propylene, a 234,000 mt/y in addition to its linear low and high density polyethylene plant, plus the addition of a 215,000mt/y low density polyethylene unit (SABIC News: 1998, pp. 5).

7- SHARQ (Eastern Petrochemical Company)

SHARQ is a 50:50 percent joint venture with a consortium of Japanese companies led by Mitsubishi Corporation. The company established its complex in Al-Jubail in 1980 and was brought into commercial production in 1985 with the capacity to produce ethylene glycol and LLDPE. In 1987 the plant raised its production of ethylene glycol and LLDPE by 10 percent to reach 450,000-mt/y and 220,000-mt/y respectively. A major two-stage expansion of the SHARQ complex in 1991 entailed the installation of a 330,000-mt/y ethylene glycol and 140,000-mt/y

LLDPE (Arab Oil & Gas Directory: 1994, pp. 382). In late 1996, SHARQ announced it would build a third world-scale ethylene glycol plant of nearly 500,000 mt/y capacity, expected to come on stream in the year 2000, that will bring SHARQ's total capacity of three types of ethylene glycol (mono-, di-, and tri-ethylene glycol) to more than 1.3 million mt/y (SABIC: 1997, pp. 20). However, in 1997, SHARQ's two existing LLDPE plants, with combined design capacity of 400,000 mt/y, are being debottlenecked to boost total capacity by another 300,000 mt/y.

8- IBN-HAYYAN (National Plastic Company)

The company was established in 1984 in Al-Jubail under a joint venture agreement 85: 15 percent between SABIC and South Korean Lucky Group. The plant was designed to produce 300,000-mt/y of VCM and 200,000-mt/y of PVC. By1991 the plant had raised its production of PVC by 50 percent. In 1995 new 24,000-mt/y PVC emulsion resin plant at IBN-HAYYAN started production. The new LADEN PVC powder resins are converted into PVC pastes for producing different varieties of downstream plastic products such as coated fabrics, wallpaper, floor tiles and book wrapping. IBN- HAYYAN increased its productive capacity for VCM by 30 percent to reach 390,000-mt/y (SABIC: 1995, pp. 17). In 1987, in line with its partial privatisation plan, IBN-HAYYAN sold 10 percent of its share to the National Industrialisation Company (NIC) and 3.5 percent to two Saudi plastic producing companies (SABIC: 1995, pp. 26). In 1996, IBN-HAYYAN took a 51 percent stake in TAYF (IBN-HAYYAN Plastic Products Company), a downstream national joint venture based at Al-Jubail. TAYF will include five plants to come on stream in 1999. TAYF's plants will initially produce seven products, all based on

PVC, to include: synthetic leather, wall and floor covering, artificial wood, book binding material and calendered soft and rigid film (SABIC: 1997, pp. 21).

9- IBN-ZAHR (Saudi- European petrochemical Company)

The company was established in Al- Jubail in 1985 with an agreement granting SABIC 70 percent of its share and the rest distributed equally between Neste Oy of Finland, Ecofuel of Italy and Arab Petroleum Investment Corp. (APICORP). The company brought a 500,000-mt/y MTBE on stream in 1988. In 1993 a second 700,000-mt/y MTBE plant came on stream, shortly after a 200,000-mt/y polypropylene plant started up (Arab Oil & Gas Directory: 1994, pp. 383). A 100,000-mt/y capacity expansion of MTBE in 1995 raised IBN-ZAHR's productive capacity to 1.3 million mt/y of MTBE (SABIC: 1995, pp. 18). Following debottlenecking, in 1998, the MTBE II plant resumed its production in full capacity of 320,000 mt/y (SABIC News: 1998, pp. 6). In late 1997, the company announced a second polypropylene plant to be established at its Al-Jubail complex, with 300,000 mt/y capacity to come on stream in 2001 (SABIC: 1997, pp. 18). IBN-ZAHR receives methanol feedstock by pipeline from the AL-RAZI and IBN-ZAHR plants, butane from Aramco's NGL plant and ethylene and polyethylene from the PETROKEMYA plant (Arab Oil &Gas: 1994, pp. 383).

10- IBN-RUSD (Arabian Industrial Fibres Company)

IBN-RUSD a second-generation petrochemical plant established in 1993 in Yanbu with a capacity to produce, in the first phase, 140,000-mt/y of four types of polyester materials, which are staple fibre, filament yarn, PET (polyethylene terephthalate) and carpet fibres. In 1997/1998 IBN-RUSHD's second phase inaugurated production of 350,000-mt/y PTA (purified terephthalatic acid) and

730,000 mt/y aromatics including 350,000 mt/y of benzene, 300,000 mt/y of paraxylene, 45,000 mt/y of orthoxylene and 35,000 mt/y of metaxylene. Phase three, which started in 1998, is an aromatic complex with a capacity to manufacture 350,000 mt/y of benzene, 330,000 mt/y of paraxylene and 45,000 mt/y of orthoxylene (SABIC: 1997, pp. 23). Polyester polymer is manufactured by the poly-condensation of ethylene glycol with PTA. Accordingly, IBN- RUSD is receiving ethylene glycol feedstock from YANPET plant while importing PTA feedstock until its production of PTA comes on steam (SABIC news: 1993, pp. 9).

5.2.2 Forward and Backward Linkages with the Rest of the Economy

The petrochemical industry plays a crucial role in stimulating upstream and downstream industries within the oil industry and throughout the economy.

The idea of linkages, made prominent by Hirschman, relies on the premises of the 'key' sectors in the economy. These key sectors are those that expose the greatest amount of inter-linkages with other sectors. Consequently, the primary objective is to put emphasis on these sectors in the development plans, as they act as a leading chain to stimulate the growth and development of sectors interdependently.

Interdependence can take the form of output-input characteristics that consist of either (a) "backward linkages," the use by a given sector of inputs produced by other sectors; or (b) "forward linkages," the role of a given sector in supplying inputs to other sectors (Clements and Rossi: 1991, pp. 166). In addition, the interdependence can refer to consumption and fiscal linkages when the idea is applied to export-led growth based on staple exports (Hirschman: 1977).

The thrust of the Saudi policy is to promote non-oil sector inter-linkages in order to advance diversification and to increase the value added from forward and

backward integration created by the export sector. The petrochemical industry, as a state enterprise, is intended to operate as a catalyst in generating linkage potentials through stimulating the participation of the private sector, generating steady export earnings, encouraging diversification and developing human resources.

The adoption of free market principles, along with the supply of abundant cost advantage feedstock, infrastructure and production facilities, granted the private sector the opportunity to engage in joint ventures and large capital-intensive investment such as petrochemicals. The Government imposes certain financial qualifications and regulatory measures to control the participation of the private sector in the economy to guarantee maximum utilisation of resources, e.g. size of capital invested, level of technology needed and level of employment (SCH: 1994, pp. 23)

By the mid-1980's, the private sector launched its first PVC pipes and polyurethane plant. Since then, the private sector has produced a wide range of products, including solvents, butadiene, formaldehyde, polyester resins, polystyrene, latex and titanium dioxide among others. There are more projects underway for the production of MTBE, propylene and polypropylene (Arab Oil & Gas: 1994, pp. 383). Recently, the private sector took the opportunity to participate in downstream industry to produce a host of consumer products such as wallpaper, tiles, synthetic leather and book wrapping, using the polyester fibre feedstock supplied by IBN-RUSD. SABIC's long-term plan involves gradually privatising its operations. This was evident in the transfer of 13 percent of SABIC's holdings in SHARQ to NIC and two of Saudi's plastic companies. The privatisation strategy, reconfirmed in the

Government's Sixth Development plan will increase the involvement of the private sector in the petrochemical industry.

The processing of oil and natural gas through 13 petrochemical and fertiliser companies and the exposure to highly qualified technologies and experiences yielded a series of value-added products. SABIC's products and infrastructure facilities have led the way for the establishment of downstream industries that contributed to the achievement of other sectors including agriculture, construction, transportation and consumer goods. Yet, the petrochemical industry has made only modest progress in developing the potential of forward and vertical integration.

In 1995 SABIC's net profit increased substantially by 45 percent from SR 4.32 billion in 1994 to SR 6.28 billion in 1995 (SABIC: 1995, pp. 8). Although less than the 1995 levels, in 1997 SABIC reported a net profit of SR 4.5 billion which is a 2.27 percent gain over the profit of SR 4.4 billion earned in 1996 (SABIC: 1997, pp. 9). Although the contribution of the petrochemical industry to the economy is still moderate, the share of the petrochemical industry in non-oil exports increased substantially from 36 percent in 1991 to 47 percent in1994 (SAMA: 1996, p. 67). The increase in petrochemical earnings provides the Government with diverse sources of income other than oil revenues. Besides, the taxation levied on the profit shares and the equity capital generated by the foreign partners is an additional source of income from petrochemicals (Tuncalp and Al-Ibrahim: 1991, pp. 298).

As to the employment sector, although the long-run objectives of SABIC embrace the development of human resources, the industry is characterised by low labour absorption. As a capital-intensive corporation, the company requires certain levels of employment of skilled engineering graduates and high level management.

However, the existence of more labour-intensive process industries that transform the output of SABIC into consumer end-use products would provide greater employment opportunities.

SABIC's engagement in joint venture activities with leading international companies has generated technology spillover for the economy. The partner is chosen on the basis of his willingness to provide advanced technology and training to develop Saudi manpower. SABIC, with its vision of the future and its goal of becoming a technological leader, has established an R&D state-of-the-art industrial complex, the largest in the Middle East area. The complex instantly seeks and evaluates the most relevant technologies offshore through a program called "cross national development". The strategy of this program is to establish SABIC R&D operations outside Saudi Arabia through the creation of SABIC satellite research centres in the U.S, Europe and Southeast Asia. The R&D complex is already working and planning to generate increased cooperation with overseas and local universities and research centres and provides direct local technical support to the customers of SABIC Marketing (SABIC: 1995, pp. 23). This operation is intended to result in an improvement in the quality and efficiency of products, to enhance competitiveness, and to maximise utilisation of resources and the development of new technologies. To date, six of SABIC's subsidiaries have been awarded International Standards Organisation (ISO) 9002 quality assurance certificate for the quality control systems used on their production lines. They are KEMYA, PETROKEMYA, IBN-HAYYAN, SADAF, SHARQ and SABIC Marketing Limited (SML).

5.2.3 Policies and Strategies for the Petrochemical Industry

There is a set of policies and strategies designed to maximise the potential of the industry. These include Government industrial policies toward the industry in terms of location, facilities, technologies, Saudisation, privatisation, restructuring and marketing strategies.

In general, the industrial policy of Saudi Arabia is to maximise the utilisation of its natural resources. This policy has been carried out through the establishment of downstream complexes, e.g. refinery and petrochemicals, processing natural gas, building energy-intensive industries such as metallurgy and developing subsidiary industries to the oil sector (Stevens: 1982, pp. 39)

With the goal of economic development and diversification, the Government established SABIC to be located in two industrial cities, Yanbu and Al- Jubil, as already mentioned. The Government has chosen these cities to be the major centres of SABIC's operations, due to their proximity in the petrochemical industry. Al-Jubail is located near the eastern metropolitan area, has an excellent harbour and has access to large amounts of water that heavy industries require for cooling. Yanbu is located on the Red Sea and is the terminal of the east-west crude oil and natural gas pipeline. By locating most of SABIC's projects in these cities, the company eliminates the cost of transporting the raw material to the industry and, hence, spurs cost advantages to the units produced. Furthermore, the strategic geographic location of Saudi Arabia between Asia and Africa and close to Europe and the Middle East and beyond to America and Australia increases its potential in penetrating diversified market zones.

The Government is responsible for creating all the necessary conditions to accomplish its planned objectives. The Kingdom provides the industrial cities with established infrastructure, allows long-term leasing at a nominal rent, provides customs duty and company tax exemptions, grants industrial free interest loans and provides preferential treatment to locally manufactured goods. Furthermore, the Government provides import protections, incentives for marketing export-oriented products and imposes great priority to industries that train and develop the capabilities of manpower (SCH: 1994, pp. 24-25).

Since its foundation, SABIC used natural gas and ethane as a main feedstock of its industry. The implementation of this technology made SABIC and its partners world price beaters (MEED: 1994, pp. 12). The following reasons justified SABIC's intention: (a) ethane and methane are cheaper than naphtha; (b) they are more price stable; and (c) ethane output has hardly any market but petrochemicals so the company is not obliged to market a bulk of the output. However, because of the availability of LPG and the strategy to expand and widen the petrochemical productive base, SABIC commissioned a naphtha-based plant to produce ethylene, propylene, butanes and aromatics, essential for the production of propylene. SABIC, represented by its affiliate IBN-RUSD, used Universal Oil Products (UOP) Cyclar technology to establish its flexible cracker complex which came on stream in 1998. The use of the Cyclar technology will make SABIC the largest facility in the world using liquefied petroleum gas as a feedstock (MEED: 1994, pp. 12). Nevertheless, the introduction of this new polymer technology might raise the prospect of more instability because it gives producers the ability to switch easily from one grade to another (Milmo: 1996, pp. sr16).

In congruity with the Government's development plan, SABIC leads the Saudisation efforts by providing training programs to prepare Saudi nationals to be highly specialised and motivated for managing, operating and maintaining the assigned jobs. SABIC's expansion projects provide more employment opportunities for Saudi technical and mechanical graduates. PETOKEMYA, for instance, conducts two-year training programs for English language, and technical training including technical language and an on-job-training program for its new employees to familiarise them with all the aspects of their jobs. In 1997 SABIC's Saudi nationals accounted for 70 percent of the 14,200 employees (SABIC: 1997, pp. 14).

To reduce administrative costs and to improve efficiency, performance and competitiveness in international markets, SABIC has merged the management and operation functions of some of its affiliates. In 1993 PETROKEMYA and IBN-HAYYAN completed integrating their processes. In 1994 SABIC witnessed the alliance and merger of three of its fertiliser producing affiliates, SAFCO, IBN-AL-BAYTAR and SAMAD. The stated action was an extension of existing cooperation and integration between SAMAD and IBN-AL-BAYTAR. Likewise, during 1994 SABIC Services Ltd. launched a corporate program to enhance efficiency and achieve economies of scale that involves the reorganisation of support service functions. SABIC Terminal Services Company (Sab Tank) venture is a product of the consolidation program of SABIC Services Ltd. It is a 75: 25 joint venture with Paktank Terminals B.V of Holland. The formation of Sab Tank guarantee more cost effective control of SABIC's support facilities at the port (SABIC: 1995, pp. 9)

SABIC was established as an export-orientated industry, that means most of its output is to be directed towards international markets as a step towards the

diversification of national income. To assist in achieving its goal efficiently, SABIC established three subsidiaries to handle the marketing of its products. These ventures are: SABIC Marketing Ltd. that is responsible for marketing and sales locally and abroad; SABIC Marketing Services Ltd. which provides technical services to SABIC Marketing; and Saudi Arabian Fertiliser CO. which handles the fertiliser's export of related industries. SABIC Marketing Ltd. has established a large international marketing network in the U.S, Europe and Asia to increase its marketing potential (Arab Oil and Gas: 1994, pp. 377). SABIC also holds a 20 percent share in the National Shipping CO. of Saudi Arabia to maintain reliability of delivery (SABIC: 1995, pp. 19). In the 1980's SABIC was faced with some problems in marketing its petrochemicals to industrialised countries. Saudi petrochemicals is faced with fierce competition especially from the European countries, which claim that SABIC is dumping subsidised products in their markets and causing a 30 percent decrease in their polyethylene prices. Accordingly, they levied high import duties of 12 percent to 13.5 percent. Furthermore, in 1989 and 1990, despite all the effort of the Kingdom to persuade the EU to consider decreasing if not abolishing the tariffs, the EU imposed more deterrents to the entry of Saudi petrochemicals. By the end of 1991 the EU adopted a more positive attitude towards the GCC, and both parties agreed upon phasing out the trade barriers over periods of 8 to 12 years. At the same time, the EU reduced the list of sensitive items to 12 products, and finally they urged the GCC states to take quick action towards forming a customs union (Arab Oil & Gas: 1994, pp. 378). SABIC is marketing its products to 75 countries and looking forward to penetrating the emerging markets of China, the Indian subcontinent and South Africa.

Since the foundation of the GCC there has been no direct cooperation between the Council members in relation to the petrochemical industry, except in minimal forms. SABIC marketing venture is responsible for marketing 50 percent of the output of Gulf Petrochemical Industry Company (GPIC) in Bahrain and 5 percent of the output of Qatar Petrochemical Company (QAPCO). Besides, GPIC is a joint venture with equal partnership for the petrochemical industries company of Kuwait, Bahrain and SABIC, and, also, a Bahrain-based company holds a share of 5 percent of IBN-RUSHD. The Gulf petrochemical companies, instead of integrating through merger and acquisition to benefit from each other's facilities and potentials, are still fragmented. Expediting a customs union and full integration procedures among the GCC states might provide a flexible atmosphere towards coordination and cooperation in order to create the potentials of dynamic effects of customs union. In principle, from forming a customs union, the GCC states can enjoy economies of scale in producing bulk petrochemicals and through their collective abundant reserves of oil and gas could develop a better bargaining position. They can, also, by establishing joint ventures with leader companies, acquire the latest technology which could give them the flexibility in production and an ability to adapt to market place. The GCC countries, by forming a customs union, could penetrate new market opportunities by consolidating their strategies and unifying their decisions and tariffs.

5. 3 Conclusion

Saudi Arabia took a major step towards diversifying its industry and income through the establishment of the petrochemical industry. The petrochemical industry seemed to be a viable and sound investment to increase the value-added of the hydrocarbon resources and hence, to increase the share of the manufacturing sector

in the Kingdom's GDP. Despite the world-wide problems encountered in marketing the petrochemical industry, Saudi Arabia experienced an upward swing in its profits and production capacity. The Kingdom conducted a set of policies and strategies including restructuring, adapting to new technologies in production, expanding its global marketing network facilities and establishing an R&D centre among others. Accordingly, the economy can benefit from the inter-linkages generated from the petrochemical industry.

The Kingdom is looking forward to the formation of the customs union process with the GCC states to gain bargaining power among their competitors, to profit from the large-scale production and the spillover effects of the industry, to consolidate their efforts to maximise the exploitation of their potential reserves and to benefit from the existing facilities in each other's country.

Appendix to Chapter Five

5.A Petrochemical Products: Their Structure, Uses and Stages of Production

This Appendix focuses on petrochemical products, their uses, and stages of production. The issues addressed in this section may be divided into two sub-sections. Section 1 defines what petrochemical products are and explains the increasing dependence on oil and natural gas as a feed stock for petrochemicals. It is important to begin by establishing a working definition: petrochemicals, as explained more fully below, are products that are either of a commodity or of a performance nature.

There are various types of petrochemicals, and section 2 will look at these types, their uses, and their relation to oil and natural gas. Petrochemicals are processed differently, producing assorted by-products with varying economic consequences. The various types of petrochemicals reflect their production stages, economic cost and, subsequently, their importance as viable energy sources.

5.A.1 Petrochemical Products

'Petrochemical' is a scientific term, used to describe products or chemical compounds extracted from oil and natural gas derivatives. Extraction is achieved by cracking, a process of breaking crude oil down into various components. This process not only improves the quality of gasoline and the amount produced from each barrel of feed stock, but also increases the output of alkaline through sequential chemical processing. This means that most petrochemicals are organic chemicals; that is, they contain compounds of carbon and hydrogen elements, or simply hydrocarbons (Berger and Anderson: 1978, pp. 250). Stobaugh (1988, pp. 5) also defined the petrochemical industry as the process that starts with transforming

petroleum raw materials into primary and intermediate petrochemical "building blocks", ending with processing the latter into final petrochemical products, such as plastics, rubber, and bulk fertilisers. Finally, petrochemical products might be transformed into various consumer products i.e. toys, steering wheels, clothes and paints.

Petrochemicals represent about 64 percent of total world production of chemicals. This ratio is on the increase because of the organic nature of petrochemicals, and their suitability for the production of consumer goods. In essence, various household goods, farming products, and industrial materials are by-products of these petrochemical industries (Al-Khouli: 1992, pp. 448).

In the early 1950s only 50 percent of petrochemicals were derived from oil extracts. The rest were from coal, wood, and agricultural materials. More recently, however, this percentage increased to about 90 percent for the following reasons (Al-Azel: 1988, pp. 4):

1. The abundance of gas and oil stocks at the same time as the emergence of increasing scarcity of traditional resources such as wood and agricultural materials.

2. Growing global demand for petrochemical products for use as raw materials and for final consumption, even although the 1973 oil crisis was the driving force behind an increasing demand for alternative technologies based on non-depletable resources. The early 1980s witnessed a drastic reduction in the production of petrochemicals as a result of economic recessions, the growing incidence of over-capacity and high oil prices. As a result, many petrochemical projects were affected, except plastic resins' production (and consumption) which increased substantially world-wide. The increase in the production of plastic resin materials since the 1970s

played a major role in the development of various end-use products with cost advantage over other materials: for example, these plastics have succeeded in substituting for conventional materials such as steel and glass and are expected to continue doing so in the future. This success is attributed to the following reasons:

(i) the lightness, mouldability, strength and undetectable nature of these plastic materials allow their application in different economic sectors such as agriculture, construction, and aviation and military products; and

(ii) the increasing demand for simple manufactured plastic goods which have low production costs as a result of cheap raw materials and technological advances in production processes.

3. Increases in production capacity and the low costs of products derived from oil & natural gas provided a cost advantage over production from other sources such as coal.

4. The discovery of oil in large quantities and the scientific and technological developments since Second World War yielded new products such as synthetic rubber, fibres, nitrogenous fertilisers, plastic resins and petro-protein. These synthetic products have similar or more beneficial characteristics than the traditional natural products

5.A.2 Kinds and Uses of Petrochemicals and Their Relation with Oil and Natural Gas

Petrochemicals are classified into three major divisions according to their production stages, series and end use. These divisions are primary (basic) petrochemicals, intermediate (secondary) petrochemicals and final (end-use) petrochemicals. Figure 5.A.1 summarises the relationship between the different

kinds of petrochemical products. It also shows the different stages of transforming the petrochemical products throughout the three different stages of the manufacturing process until reaching the final stage of producing consumer products. The petrochemical industry is characterised by numerous kinds of products and their end uses, the complexity of production, the alternative routes of production processes to final products and the flexibility in the choice of feedstock.

Figure 5.A.1

The Petrochemical Production Stages

Feedstock	Primary	Intermediates	Final	Consumer Products
Petroleum	Ethylene	Ethylene Dichloride	Plastic Materials	Fabricated Plastic Prod.
Naphtha	Propylene	VCM	Synthetic Rubbers	Rubber Products
Gas Oil	Butadiene	Ethylene Oxide	Synthetic Fibres	Textile Mill Products
Crude Oil	Acetylene	Formaldehyde	Surfactants	Cleaning Preparation
Ethane	Benzene	Propylene Oxide	Phosphate Fertilisers	Mixed Fertilisers
Propane	Toluene	Styrene	Pesticides	Drugs
Butane	Xylenes	Ethylbenzene	Solvents	Coating
LPG	Naphthalene	Acrylonitrile	Additives	Explosives
Methane	Isoprene	Ethylene Glycol		Packaging
Natural	Ammonia	Polyethylene		construction
Gas	Methanol	P.V.C	Nitrogen Fertilisers	Foodstuffs

Source: OECD (1985), *"Petrochemical Industry,"* pp.17.

5.A.2.1 Primary Petrochemicals

Primary petrochemicals are the most important group in terms of their share in the aggregate petrochemical output both at the world level and in the Gulf area. These primary products, or as they may be called "first generation products," are the main feed-stock to secondary and final products. They are manufactured from many alternative new materials and feed-stocks mainly natural gas, distillate petrol, and refinery off gas, gas oil and natural gas and NGL. In the United States, natural gas and its condensates are the main feedstock of its petrochemical industry whereas the industry in Europe and Japan is based on naphtha from oil refining. For the Gulf

region natural gas and ethane are the major feedstock for the petrochemical industry. In 1994 the GCC petrochemical industry consumed about 6 percent of its natural gas production as feedstock materials (Al-Sa'doun: 1997b, pp. 27).

The primary petrochemicals are ethane, propane, butane, benzene and methane, from which hundreds of chemicals are produced. For instance, ammonia and methanol are produced from methane gas; ethylene, propylene and butadiene from ethane, propane and butane, respectively; benzene, toluene and xylenes are from distillate aromatic petrol. In general, these primary petrochemicals can be classified into three main categories; 1) The Paraffin group, which includes methane, ethane, propane and butane; 2) The Olefin group, which includes ethylene, propylene and butadiene; and 3) The Aromatics, this group includes benzene, toluene, xylenes and xylenes isomers. The primary petrochemicals can be processed by steam cracking of naphtha for the olefins, catalytic reforming for the aromatics and steam reforming for synthesising ammonia and methanol.

With its voluminous international production, ammonia occupies the premier position among basic petrochemicals. A by-product of cracking, ammonia is synthesised from the hydrocarbons in natural gas and crude oil. It is used in the manufacture of fertilisers, as well as in synthetic fibres, plastics, explosives and rayon. Ethylene is the second most important chemical in the production of intermediate and final products. Ethylene, "the backbone" of the petrochemical industry is the largest globally produced commodity. In 1995 its world-wide production capacity reached 80 million tonnes (United Nation: 1996, pp.·43). Ethane and propane can be obtained by liquefying natural gas as feed stock. The first stage in the manufacturing process is the cracking stage. Here, ethane and propane are

subjected to high temperature in the absence of air to break down its hydrocarbon molecules into lower molecular weight. Then they pass through a special plant to be compressed and finally purified from gases (Al-Geelany: 1982, pp. 59). Ethylene is an essential prolific olefin component that is mainly used to produce synthetic organic chemical and plastics. Polyethylene plastic, polyvinyl-chloride (PVC), rubber, and ethylene glycol are among the many ethylene by-products that can be used as anti-freeze and to synthesise dacron.

Propylene, on the other hand, ranks third in importance among primary petrochemicals. It is a by-product from either the process of gasoline manufacturing or from ethylene cracking. Propylene can be produced alone from propane gas by cracking in the mix with a stream of other chemical grade materials. The most important propylene derivatives are films, fibres, plastics and some detergents.

Butadiene is the most important of the alkadienes (diolefins) for the manufacture of synthetic rubber from polybutadiene and styrene. Butadiene is produced by the dehydrogenation process and can be manufactured from other chemicals such as butylene or obtained from hydrocarbon cracking as a co-product of ethylene. The processing steps are compression, cooling, and absorption (Al-Geelany: 1982, pp. 59).

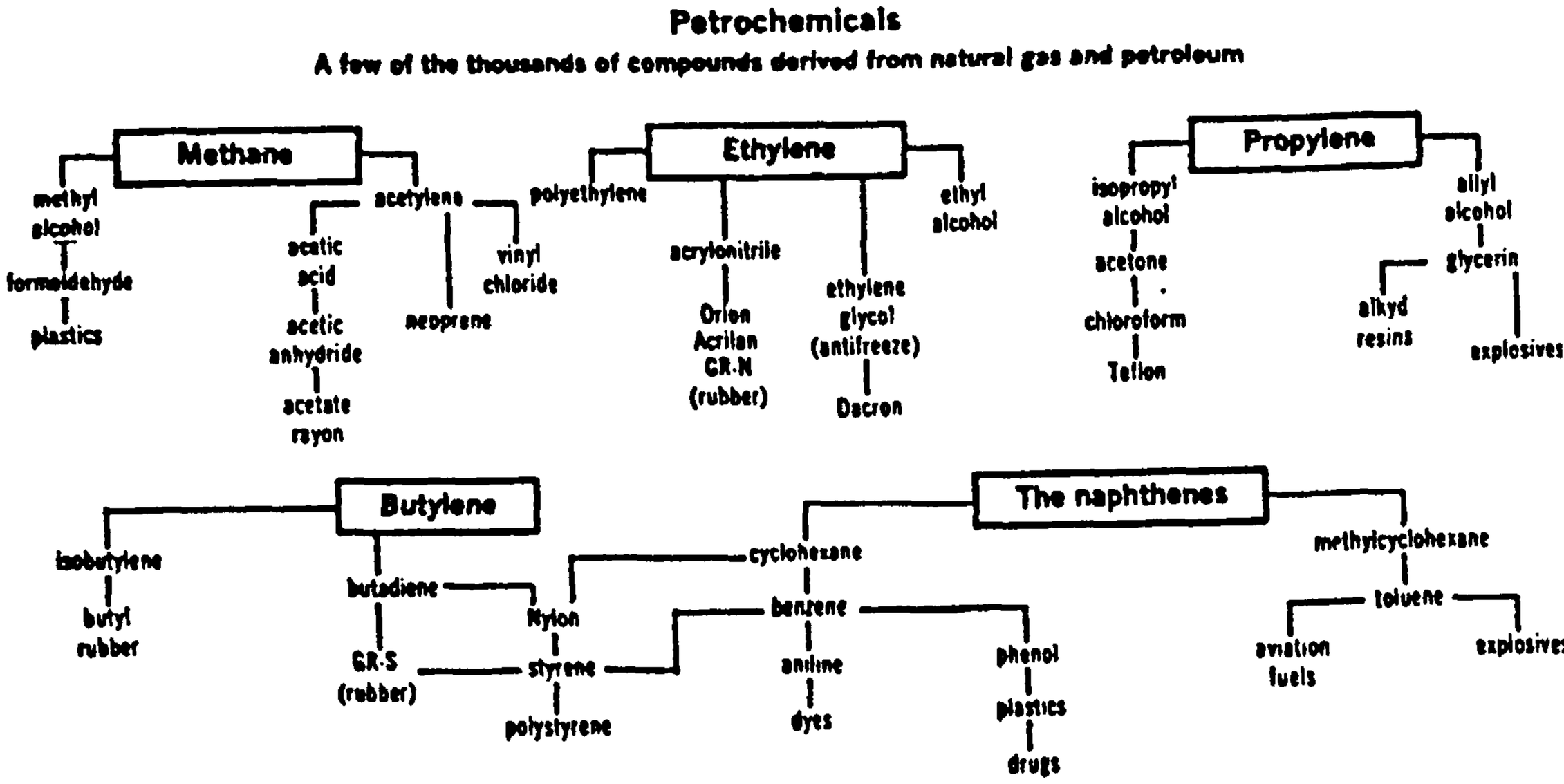
Benzene is either derived from oil refining or from natural gas liquids. Benzene is one of the unsaturated-chained hydrocarbons used to manufacture dyes, plastics, drugs and styrene. It is also used as a solvent for gums and fats and in car benzene to improve its quality by raising the octane level.

Figure 5.A.2 and Figure 5.A.3 present numerous petrochemical products made from oil and natural gas feedstock. The two figures summarise the

interdependent and complex structure of petrochemical products, where different products can be produced from different feedstock, encouraging the development of various by-products and end-use markets.

Figure 5.A.2

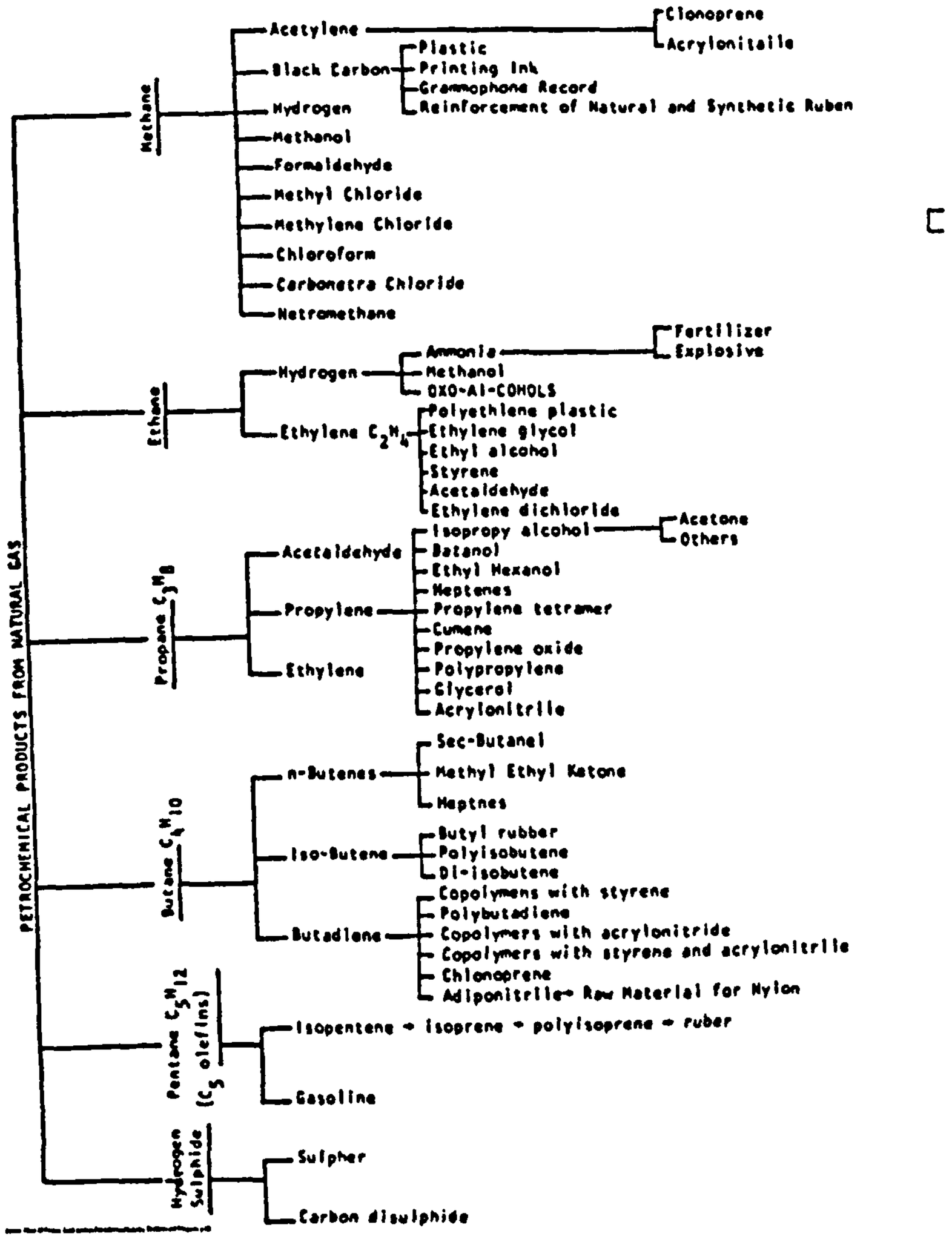
Basic Products Made from Petrochemicals



Source: Burger, B. and Anderson, K. (1978), *Modern Petroleum, A Basic Primer of the Industry*, pp. 235

Figure 5.A.3

Petrochemical Products from Natural Gas



Source: Al-Geelani, G. (1982), *Saudi Arabian Petrochemical Industry, Problems and Prospects*, pp. 61

5.A.2.2 Intermediate Petrochemicals

It is obvious from the name that intermediate petrochemicals represent a connecting chain between basic and final petrochemicals. These petrochemicals are numerous and vary according to the manufacturing stages and conditions. Important types of these petrochemicals are the polymerises such as:

- Ethylene oxide used in the production of polyester, purification of gases and detergents.
- Vinyl chloride used in the manufacturing of plastic.
- Acetylene used in plastic production, dyes and rubber.
- Styrene used in producing rubber and polystyrene.
- Acrylonitrile used in fibres and plastic.

5.A.2.3 Final Petrochemicals

These represent the third and final category in the petrochemical industry. Usually, final petrochemicals are produced either directly from primary petrochemicals, or indirectly through an intermediate petrochemical production process. Final petrochemicals exist in the form of final consumption products or industrial products that can be used as inputs for manufacturing industries. In other words, final petrochemicals represent the consumption base for petrochemicals. In general, closer integration between petrochemical and manufacturing industries will tend to improve the quality and quantity of products and lead to the production of new goods from compound materials. Such integration is then likely to enhance a country's capacity to supply national and international markets with products at competitive prices, and, in addition, to open up new opportunities for the private-sector to invest.

Because final products are numerous and abundant, they are usually categorised into four main headings:

a. Plastic products which include furniture, isolation materials and other plastic products. Plastic products are the most usable products and represent half of the manufactured petrochemicals.

b. Composed fibres, which include polyester, nylon, acrylic and cellulose fibres.

c. Synthetic rubber, which is used in the production of tyres and fabricated rubber products such as belting, hose and footwear.

d. Fertilisers, detergents, paint, insecticide and others.

Chapter Six

Models, Method and Measurement of Diversification and Fluctuations

In principle, commodity and geographic diversification are thought to be important factors contributing to reducing vulnerability arising from "putting all one's eggs in a single basket". Diversification may permit variability of earnings from one subset of exports to be wholly or largely offset by earnings variability from another subset. Then, for example, a country will tend to face less uncertainty in terms of its ability to finance a given, or higher level of imports (Derosa: 1992, pp. 573).

There is a continuing debate concerning concentration of exports and, in turn, the effect of concentration on the growth process. With both intuition and conventional wisdom suggesting that commodity and/or geographic concentration are important factors contributing to the fluctuations in export earnings, diversification has held widespread appeal as a policy option. Attempting to achieve higher stability of export earnings through the adoption of diversification policy measures raises a fundamental question in a Saudi context: To what extent can diversification be a viable policy?

This chapter is concerned basically with describing the research design and the methodology used in collecting and analysing data on the relationship between the forms of concentration and export fluctuations for Saudi Arabia. The chapter is divided into two sections: section one deals with models of concentration and fluctuations and with definitions of concentration and export fluctuations. This

section also describes the methodology that guided the present investigation. Section two deals with the methods of data analysis that are used here in measuring concentration, in stability and growth.

6.1 Models of Concentration and Fluctuations

This section is concerned with a model which has been developed to investigate the relationship between concentration and export fluctuations, and which have a bearing on the likely efficacy of the diversification policy. This model is based on the portfolio selection approach developed by Markowitz (1959), which highlights the relationship between return and risk (i.e. export growth and fluctuations in the present context).

6.1.1 Portfolio Approach to Export Concentration and Fluctuations

In this section, a model of Saudi trade diversification will be developed following the Markowitz model of portfolio analysis. While Katrak's (1973) earlier portfolio model defines fluctuations of exports in terms of annual percentage deviation from trend, Love's (1979a) model defines export fluctuation in terms of the means and variance of export earnings which, as is seen from a discussion later in this chapter, is closer to the conventional approach to defining fluctuations. The model, adapted to incorporate Saudi features, is directed at investigating the impact of Saudi trade diversification in reducing export-earning fluctuations. The model is based on certain assumptions:

(1) The Kingdom exports two commodities: one is oil, commodity P, which accounts for most of total export earnings; and the other is non-oil manufactured goods, i.e. petrochemicals, commodity R.

(2) Earnings are symmetrically dispersed about their expected value of the two commodities, and the variance measures the dispersion. The means of expected earnings from commodities P and R are denoted by $\overline{P}$ and $\overline{R}$ respectively and V_p and V_R denote the corresponding variances.

Saudi diversification may be brought about in two ways: some part of the resources employed in the production of commodity P may be transferred to the production of commodity R, or net additions to resources or resources diverted from production for domestic consumption may be applied to producing commodity R rather than commodity P. These changes involve a reduction in commodity P's share in total export earnings. The shares of commodities P and R in total export earnings are denoted by x and y respectively. The mean and the variance of expected total export proceeds, denoted by $\overline{M}$ and V respectively, are:

(1) $\overline{M} = x\overline{P} + y\overline{R}$

(2) $V = x^2V_P + y^2V_R + 2xy\,\mathrm{cov}(PR)$

where $\mathrm{cov}(PR)$ is the covariance of the expected earnings from P and R. Since $x+y=1$, equation (1) can be written as:

$$\overline{M} = x\overline{P} + (1-x)\overline{R}$$

while equation (2) can be written as:

(4) $V = x^2V_P + (1-x)^2V_R + 2x(1-x)\,\mathrm{cov}(PR)$

Using equation (3) and (4), one can investigate the effects of diversification on $\overline{M}$ and on V. Differentiating equation (3) with respect to x gives:

$$(5)\ \frac{\partial\overline{M}}{\partial x} = \overline{P} - \overline{R}$$

The effect of diversification on $\overline{M}$ clearly depends on the relationship between $\overline{P}$ and $\overline{R}$. If $\overline{P}\rangle\overline{R}$ then from equation (5) a reduction in x will lower $\overline{M}$. This will continue until exports of commodity P are eliminated, at which point $\overline{M} = \overline{R}$.

Multiplying out and differentiating (4) with respect to x gives:

$$(6)\ \frac{\partial V}{\partial x} = 2xV_P + 2xV_R - 2V_R + 2\mathrm{cov}(PR) - 4x\,\mathrm{cov}(PR)$$

Equation (6) does not clearly identify the influence of diversification on V, since three of the terms are positive while the remaining two are negative. The outcome depends on x, V_p, V_R and $\mathrm{cov}(PR)$.

In this respect, Love (1979a) adopted Katrak's (1973, p. 560) neutral assumption that the two goods have the same variance (i.e. $V_p = V_R$) in order to examine the effects of diversification *per se*. Then equation (6) becomes:

$$(7)\ \frac{\partial V}{\partial x} = 2[(2x-1)(V_P - \mathrm{cov}(PR))]$$

But by definition:

$$(8)\ \mathrm{cov}(PR) = r\sigma_P\sigma_R$$

where r is the correlation coefficient between expected earnings from commodities P and R, $\sigma_P = \sqrt{V_P}$ and $\sigma_R = \sqrt{V_R}$.

Since by assumption $V_p = V_R$ then:

$$(9)\ \mathrm{cov}(PR) = r\,V_p$$

Substituting in equation (7) gives:

$$(10)\ \frac{\partial V}{\partial x} = 2[(2x-1)(V_P - rV_P)]$$

V will be at a minimum when $x = 0.5$, except in the extreme case where r=1. So, diversification will reduce V at any point where $x = 0.5$, while it raises V for higher values of x.

The influence of r on the relationship between minimum V and V_p, including the case where $r = 1$, may be examined by referring back to equation (4) which, given $V_p = V_R$ and substituting for cov(PR) from equation (9), may be written as:

(11) $V = x^2V_P + (1-x)^2V_P + 2x(1-x)rV_P$

As known from equation (10) that V is at a minimum when $x = 0.5$, substituting for x in equation (11) gives:

(12) min $V = 0.5\ V_p\ (1+r)$

It follows that:

(13) as $1 \geq r \geq -1$, then $V_p \geq \min V \geq 0$

Two conclusions follow from this result. First, policy-makers in Saudi Arabia, by adapting diversification policies within the national economy, may reduce the degree of fluctuation in total export earnings below the levels experienced by exporting crude oil, provided earnings from oil and other products are not perfectly, positively correlated. Secondly, fluctuations in Saudi's total earnings will be eliminated when earnings from the individual products are perfectly, negatively correlated.

These conclusions require only minor qualification if the assumption that $V_p = V_R$ is relaxed. Saudi Arabia may be attracted to increase the share of R and reduce the share of P as long as $V_R < V_p$. It may be specified that:

(14) $V_p = z\,V_R \quad 0<z<1$

and thus:

(15) $\sigma_R = \sqrt{z\sigma_P}$

Substituting from equation (14), equation (4) becomes:

(16) $V = x^2V_P + (1-x)^2 zV_P + 2x(1-x)\mathrm{cov}(PR)$

Further substituting from equations (8) and (15) gives:

(17) $V = x^2V_P + (1-x)^2 zV_P + 2x(1-x)r\sqrt{z}V_P$

Multiplying out and differentiating equation (16) with respect to x gives:

(18) $\frac{\partial V}{\partial x} = 2xV_P - 2zV_p + 2xzV_P + 2r\sqrt{z}V_P - 4xr\sqrt{z}V_P$

(18a) $= 2xV_P(1+z-2r\sqrt{z} - 2V_P(z-r\sqrt{z})$

Solving equation (17) for minimum V gives:

(19) $x = \frac{(z-r\sqrt{z})}{(1+z-2r\sqrt{z})}$

It follows that:

(20) as $1 > z > 0$, then $0.5 > x > 0$

Unlike the case where $V_p = V_R$, therefore, min V is reached here only when $x<0.5$.

In addition, the larger the difference between V_p and V_R, the further must diversification be pursued beyond $x = 0.5$ to achieve min V.

Substituting from equation (8), equation (4) becomes:

(21) $V = x^2V_P + (1-x)^2V_R + 2x(1-x)r\sigma_P\sigma_R$

Therefore:

(22) as $1 \geq r \geq -1$, then

$$\left[x\sigma_p + (1-x)\sigma_R\right]^2 \geq V \geq \left[x\sigma_p - (1-x)\sigma_R\right]^2$$

(23) as $1 \geq r \geq -1$, then $[\sigma_R(\frac{x}{\sqrt{z}} = 1-x)]^2 \geq V \geq [\sigma\frac{x}{\sqrt{z}} - 1 + x)]^2$

Introducing the result obtained in equation (20) min V may be solved as follows:

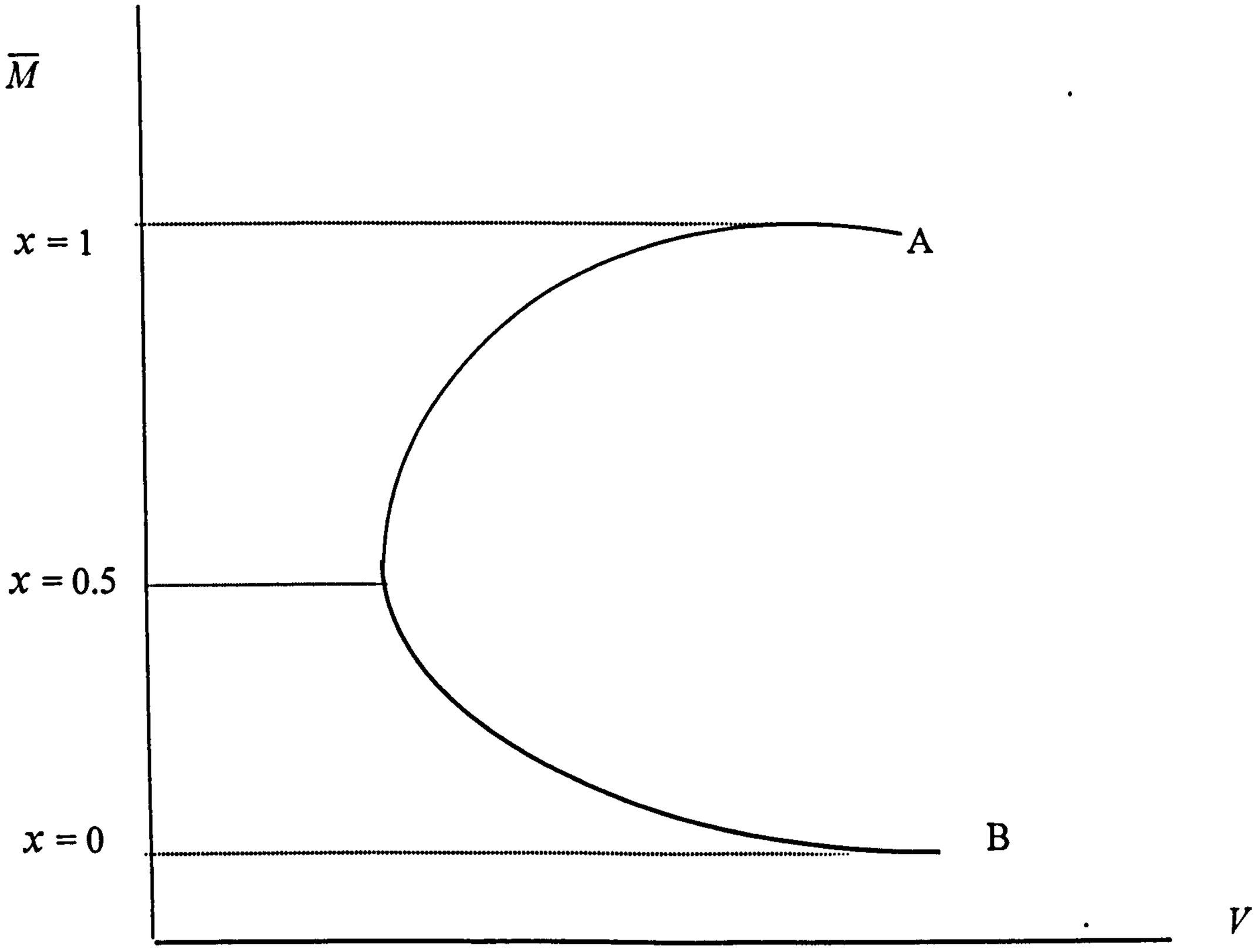
(24) as $1 \geq r \geq -1$, then $V_R \rangle \min V \rangle 0$

Figure 6.1 illustrates the effect of Saudi diversification on both the mean and variance of total earnings. Curve AB summarises the means and the variance associated with each value of x. The position and the slop of AB depend on $\overline{P}$, $\overline{R}$, V_p, V_R, and cov(PR). It is assumed that $\overline{P} \rangle \overline{R}$, specially that $\overline{R} = 0.5\overline{P}$, that $V_p = V_R$ and cov(PR) = 0. Point A indicates the situation of complete concentration on oil production, while point B shows the result of concentrating entirely on petrochemicals.

Given the above conditions, it is obvious from figure 6.1 that there is a trade-off between the stability of export earnings, and the share of oil exports in total exports up to the point at which export earnings are divided equally between oil production and petrochemicals. Below the point where $x = 0.5$, despite the increase in the value of V, which means an increase in the degree of fluctuation especially in the short run, diversification may lead to a larger share of non-oil exports in total export proceedings. Albeit, there will be a sacrifice in some of the earned benefits of specialising in oil in line with comparative advantage, in exchange for greater stability of earnings in the long run.

Figure 6.1

The Effects of Diversification on the Mean and Variance of Total earnings



Source: Love, J. (1979), "A Model of Trade Diversification Based on the Markowitz Model of Portfolio Analysis," pp. .238.

This highlights the principle of diversification. It looks especially at the relationship between average export earnings (AXE) and the risk (variability) of earnings. The model does not say anything directly about the other dimensions of diversification, such as the generation of externalities and in the case of an oil exporting country, the fear of depletion of a non-renewable source. There is still some evidence that Saudi Arabia has other known reserves which will probably last 30 to 40 years. The concern is to maximise the benefit of that through the development of petrochemicals for which as explained in chapter five an industrial base has now been established. These are obviously important considerations in an economy like that of Saudi Arabia.

6.2 Definitions and Measurements of Concentration and Fluctuations

A Markowitz-type model uses shares in total earnings to reflect the extent of concentration/diversification and variances and covariances to reflect fluctuations. The extensive literature which has developed over the past three decades has generated, however, different definitions and measures of concentration and fluctuations. It is instructive, therefore, at this point, to review these alternative forms.

6.2.1.1 Definitions of Concentration

Concentration may take the form of commodity concentration in which a country exports only a few commodities often with that set dominated by one product, as in the Saudi case. Commodity concentration, as MacBean pointed out, 'reduces a country's chances of having fluctuations in one direction in some of its exports offset or ameliorated by counter-fluctuations or stability in others' (MacBean: 1966, pp. 41). This means that export diversification may create the conditions that help to offset export fluctuation from occurring by producing several varieties of commodities and/or moving from primary commodity exports into manufactured exports, preferably those with negative covariance so that positive movements in earnings from other commodities counterbalance negative export earnings. Analogously, concentration may take the form of geographic concentration, which occurs when a country exports to one or a few countries, so that it reduces its chances of having different covariances in different markets to offset export earning fluctuations. In this respect, geographic diversification may be conceived in terms of expansion of opportunities for trade across markets instead of "putting all one's eggs in a single basket".

A country can diversify its export commodity structure either horizontally and/or vertically. Horizontal diversification can be achieved by adjusting the commodity mix and/or shares on the basis of covariances of export earnings from individual commodities, whereas, vertical diversification can be achieved by adjusting the commodity's characteristics e.g. processing a raw material for sale in both domestic and international markets.

The most advanced and sophisticated form of export diversification is that outlined in the endogenous growth models, first developed by Roemer in the 1980s and applied to export diversification by Mayer (1996). According to the endogenous growth models, diversification is defined as upgrading or structurally moving from low-tech-low labour skill manufactures to more sophisticated high-tech-high-labour skill manufactures as the level of R&D and knowledge increases. Obstfeld highlighted the claim by Helpman and Grossman (Obstfeld: 1994, pp. 1310) that on-going growth in the global economy depends on investments in supplying specialised, hence inherently risky, production inputs. This coincides with Obstfeld's conclusion (1994, pp. 1327) that international risk sharing can yield substantial welfare gains through its positive effect on expected consumption growth. This means that the economic profit motive and the interplay of innovation and imitation may motivate the process of structural diversification.

6.2.1.2 Measurements of Concentration

Traditionally, concentration is measured by applying the Gini-Hirschman (1964) index of trade concentration. The Gini- Hirschman coefficient is represented as:

$$C_{xt} = 100\sqrt{\sum_{i=1}^{n}\left(\frac{X_{it}}{X_t}\right)^2}$$

where C_{xt} represents the degree of commodity concentration in a country's exports in time t and X_{it} represent the value of export earnings in year t.

The squaring of each commodity's share in total earnings prior to summation is intended to impose greater importance on the major export products. If a country depends on exporting only a single commodity, then the coefficient will reach its highest possible value of 100. The greater is the number of export products, the lower will be the value of the index. The lowest value of the coefficient is defined as:

$$\frac{100}{\sqrt{n}}$$

where n is the number of different commodities being exported. However, the expression $100/\sqrt{n}$ is the value of the Gini-Hirschman coefficient when the shares of all products are equal.

Analogously, the Gini-Hirschman coefficient can also measure the extent of geographical concentration. Where X_{jt} represents the value of exports to market j in year t, G_{xt} measures the degree of geographical concentration.

The Gini-Hirschman measure is entirely consistent with concentration reflecting shares in total earnings. However, being based on export shares, it provides no direct insight into the factors underlying any changes in concentration which may emerge, for example, from the development of "new" products/markets or from redistribution of the shares of existing products/markets.

6.2.2.1 Definitions of Export Fluctuations

In the literature, as Love (1987, pp. 3) stated, 'there is no single, universally-accepted definition of instability, and the absence of a clear, definitional benchmark against which actual export earnings can be compared has generated considerable efforts to determine what is meant by instability and subsequently to establish which particular statistical forms correspond most neatly to conceptual definitions'. Accordingly, this section will be concerned with shedding some light on the conceptual debate with a view to developing a framework for application to the Saudi economy.

Coppock (1962, pp. 22) argued that not all changes are "undesirable". Coppock was aware that there are some changes in the economic activity which are of no "useful purpose" and will result in "undesirable" or "wasteful" effects. However, he recognised it is difficult to separate out the different kinds of changes. Coppock (1977, pp. 4) stressed that instability means a deviation from some "normal" level but not from a fixed level. Love (1987, pp. 4) suggested that Coppock's interpretation necessitates explicit judgement about the meaning of terms such as "excessive", "wasteful" and "normal". There is a generally accepted definition of what is meant by "normal" earnings with trend values being taken to represent the "normal" path of earnings, whereas instability tends to mean deviations from trend. As such, any deviations from trend can be treated as wasteful or excessive components, which are thought to have harmful effects on the domestic economy.

Massell (1964, pp. 48) differentiated between "long-run forces" used to determine trend and "short-run forces" which determine fluctuations around the

trend. Massell's reasoning for the distinction between the two sets of forces was that 'a country with a rapid secular increase (or decrease) in its export earnings will exhibit greater instability than a country whose export earnings are secularly unchanging' (Massell: 1964, pp. 48-49). Massell (1964, pp. 49) tried to measure instability by using two measures of trend-correction, one he termed the "normalised standard error" and the other as the average annual percentage rate of change in the value of exports.

In examining the measures of instability based on identification of trend with "normal" values, there was a tendency to treat any deviation from trend as "excessive" or "wasteful". Hirschman (1959, pp. 355), in discussing price instability, rejected the approach, regarding deviations from trend as "excessive" or "wasteful" since 'the trend itself is known'. Hirschman (1959, pp. 365) preferred to define "excessive" in terms of changes that are more than required to restore the imbalance between long-run demand and long-run supply. Hirschman (1959, pp. 357) was aware, however, of the potentially serious implications of "excessive" changes on economic activities. Love's (1987, pp. 5) interpretation of the approaches of Michaely (1962) and Massell (1970) to the terms "excessive" or "wasteful" was that 'the implications of potential for adverse consequences should not be attached to events which are predictable or certain'. Accordingly, "wasteful" and "excessive" should be related to deviations from some "normal" level which constitute a large degree of uncertainty.

Although Michaely (1962) and Massell (1970) drew a distinction between regularly reversing and occasionally fluctuating elements by stating that 'regularly reversing elements make it much easier for policymakers' 'to predict and react

correctly', Love (1979a, pp. 234) doubted the ability of governments in developing countries to forecast the future correctly and, hence, react correctly. Love's reasoning arises from problems in developing countries concerning inadequate foreign exchange reserves and the capability of the government to pursue effective fiscal and monetary policies.

6.2.2.2 Measurements of Export Fluctuations

Despite some differences in view over definitional matters, instability is commonly measured in terms of deviations from trend. Therefore, as Massell (1970, pp. 619) noted, 'in constructing an export instability index, it is necessary first to eliminate the trend', and there have been a number of statistical forms applied to export data for developing countries to produce trend forms and then estimates of instability. This, however, leads to concerns about identifying the "appropriate" form of trend correction and selecting an "appropriate" summary statistic (Love: 1987, pp. 6).

There are three widely used trend forms to remove the "normal" or "anticipated" values from export data; linear, exponential and moving average. Each of the trend forms has a number of limitations, and choosing the type fitted to the data influences the measures of instability obtained. While the purpose of trend correction is to permit isolation of the "harmful residuum", the selection of trend form has tended to concentrate on the criterion of "best-fit". The "best fit" is determined on the basis of comparison of the coefficients of determination derived from applying the different trends to the data using ordinary least squares (OLS) regression.

Despite the fact that the instability arguments are designed at the level of the individual country, empirical analyses tend to be conducted within a cross-country framework which requires, for any given time period, one measure of instability for each country included in the sample. This has produced a number of indices with different statistical properties (Love: 1987, pp. 7). However, there have been many views on the relative values of different indices and substantial efforts have been directed at refining the different forms.

There are several indices which are used frequently to measure the dispersion around the trend including (a) the standard error of estimate divided by the mean of observations; (b) the standard deviation from the logarithmic trend; and (c) the average proportionate deviation from a logarithmic trend.

The various indices can be grouped into two main categories: those based on first-order deviations from trend and those based on squared deviations. Within the former category, instability is measured in terms of the absolute values of deviations of actual observations from trend estimates, while no adjustment is made to take account of the frequency and duration of the component of instability. This category of indices may be typically represented by:

$$I_1 = (1/n)\sum_{t=1}^{n}(X_t - \hat{X}_t)/X_{st}$$

where n = the number of observations in the export earnings time series,

X_t = actual export earnings,

$\hat{X}_t$ = the trend or "predicted" value, and

X_{st} = the scaling factor applied at time t.

The scaling factor, X_{st}, as Love (1987, pp. 7) noted, 'is introduced to produce normalised measures which are independent of the currency units in which the export series is measured and which, therefore, permit cross-country comparison of instability. Commonly used scaling factors include the mean value of the actual export series, $\overline{X}$, the estimated trend value of the year t, $\hat{X}_t$, and the actual value of earnings in year t, X_t. Where time trend values are based not on ordinary least squares (OLS) regression estimates but on moving averages, the scaling factor is the moving average estimate for year t. In the case of the MacBean (1966) index, for example, X_{st}, is the average value of actual earnings for a five year period with the middle value being that for year t'.

The second category of indices by squaring deviations appoints greater importance to larger deviations from trend which solves the problem occurring in the first category of indices. An arithmetic measure of instability based on squared deviations may be represented as follows:

$$I_2 = (1/n)\sum_{t=1}^{n}[(X_t - \hat{X}_t)/X_{st}]^2$$

This arithmetic index provides a normalised summary in the form of an "average" of the squared deviations from trend. Formulating a geometric index based on squared deviations requires the provision of growth rates rather than absolute changes, and this may be formulated as follows:

$$I_3 = (1/n)\sum_{t=1}^{n}(\log X_t - \log \hat{X}_t)^2$$

In this case the instability index measures the "average" squared deviations between the logarithms of the time series X_t and the trend values $\hat{X}_t$ with no scaling factor being required for a geometric form.

Knudsen and Parnes (1975) defined instability in terms of the transitory component of export earnings. They devised a variant of the foregoing arithmetic index which is different from others in its substitution of a measure of permanent export income for a measure of trend earnings. Permanent export income, X_{t*}, is defined as a weighted average of export income in current and past years. Transitory export income, T_x, is then defined as the difference between actual and permanent export income:

$$T_x = X_t - X_{t*}$$

Knudsen and Parnes then follow the practices of squaring deviations and employing a scaling factor to produce an instability index of the form:

$$I_4 = \sum_{t=1}^{n} (X_t - \hat{X}_{t*})^2 / (X_{t*})^2$$

Love (1979b, pp. 62) argued that the instability indices will produce different numerical values from the same data series, but pointed out that various authors (Coppock: 1962; Erb and Schiavo-Campo: 1969, pp. 263-283; and, Leith: 1970, pp. 267-272) have observed similarity in the ranking of results obtained using different indices. Much of the debate about the issue of instability and the inconclusive nature of much empirical work draw out directly, as Love (1987, pp. 8) indicates, from 'a

continuing failure to define adequately the nature of the concern about instability and from the resulting use of inappropriate statistical proxies'.

Instability indices such as these have been applied in two ways, separable from the debates over the alleged consequences and causes of instability: first, to establish whether the degree of measured instability of export proceeds is greater for developing countries than the developed countries; and, secondly, to establish whether measured instability has been changing over time.

Many studies have been conducted to measure the extent to which the developing countries are experiencing greater instability in their export proceeds as exporters of primary products compared to developed countries as exporters of manufactured products. Coppock (1962) and MacBean (1966) found developing countries are experiencing more stable proceeds. However, it is difficult to draw judgements from evidence on the behaviour of aggregate proceeds for primary products. Furthermore, as Love (1987, pp. 10) mentioned, 'instability measured at the level of aggregate proceeds in world markets need not be indicative of the degree of export earnings instability experienced by individual exporters'.

Subsequently, the relationship between levels of income per head and earnings instability has been examined at the level of individual countries as a means of differentiating between developed and developing countries. The conclusion reached in numerous studies including MacBean (1966), Massell (1964, 1970), Leith (1970), Glezakos (1973), Naya (1973), Lawson (1974), Knudsen and Parnes (1975), Sheehey (1977), and, Murray (1978), is that the developing countries are experiencing higher average levels of instability than the group of developed countries. These results formed the basis for the view that the export earnings of

developing countries fluctuate more around the trend than is the case of the developed countries.

Several studies considered whether the degree of export instability was changing over time, including Kenen and Voivodas (1972), Naya (1973), Lawson (1974), Knudsen and Parnes (1975) and Sheehy (1977). These studies found that instability declined in the 1960s as compared to the 1950s for both developed and developing countries. However, it was obvious in most studies that export earnings in the developing countries continued to fluctuate more than in the developed countries. Some authors, such as Leith (1970), doubted the conclusion of declining instability, attributing it to the kind of index employed and Love (1977) recorded increases in instability in both groups of countries.

Measuring instability initially requires the examination of the causes and the domestic consequences of instability in export earnings.

6.3 Causes of Export Instability

During the 1950s and early 1960s the debate on causes tended to be on factors contributing to export instability originated in demand and/or supply conditions and factors at the level of world markets. On the demand side, instability is the result of two factors: (a) cyclical variation in income in the developed country market; and (b) the low price elasticities of demand in world markets for developing countries' export (Love: 1987, pp. 37). Furthermore Love (1987, pp. 38) specified factors following instability on the supply side, which are: natural factors affecting the level of output in developing countries; and the short-run price inelasticity of supply.

As for the instability of world market proceeds for any particular product over a given time period, this will be determined by the interaction of supply and demand factors, i.e. by the relative frequency and amplitude of supply and demand disturbances and by the price elasticities of supply and demand, including the possibility of lagged output response (Love: 1987, pp. 39).

An important feature characterising developing countries and thus contributing to the causes of export earning instabilities in these economies is their specialisation on the export of primary products. Love (1987, pp. 40) pointed out that 'the alleged inherent tendency to greater instability for primary products is very much a part of the accepted wisdom in the literature and the reason for this can be traced directly to the foregoing analysis of supply and demand characteristics'. Massell (1970, pp. 621) recognised that 'fluctuations in supply are more severe for some goods than for others'. He indicated that the elasticity of foreign demand determines the effect on a country's export receipts of a given degree of supply instability. Massell (1970, pp. 621) ascertains that 'In general, the smaller the country's share of the market, the more elastic the relevant demand curve will tend to be'. He argues that 'if we assume that a country is faced with less-than-unitary elastic demand curve only in rare circumstances, it follows that the departure of the demand elasticity from unity increases as the country's share of the world market declines'. Massell (1970, pp. 621) then concluded that 'as a result supply fluctuations can be expected to generate greater fluctuations in export receipts from a product the smaller the country's share of the world market for the product'.

With respect to demand, Massell (1970, pp. 622) differentiated between different types of primary goods in term of their impact of shifts of demand arising

from changes in purchasing power arguing that foods, with lower income elasticities, will tend to be less affected by foreign demand shifts than other products such as raw materials. He suggests that the impact of foreign demand may be reinforced by short-run instability in domestic demand, arguing that for a product both consumed domestically and exported 'instability in domestic demand for a product (unless fortuitously offset by corresponding shifts in supply) tends to produce instability in the net export supply curve'. Fluctuations in domestic demand curve, therefore, produce effects similar to those of domestic supply instability.

Furthermore, the instability of total export receipts depends on the interrelationships among products as well. Massell (1970, pp. 622) argues that 'a country's total export receipts will tend to be more stable the more diversified are its exports i.e. the larger the number of goods it exports, the more evenly its resources are spread over the different goods, and the more dissimilar these products are'.

Instability of exports may also be an increasing function of the geographic concentration of exports by a country of destination. Massell (1970, pp. 622) summarises the customary view of the impact of geographic concentration by arguing that 'high geographic concentration is likely to imply greater dependence on economic conditions in one or a few countries. Fluctuations in demand in any receipt country will then have a more pronounced effect on receipts of the exporting country than if exports were more diversified among receipts'.

Massell (1970, pp. 624) provided a more specific two-fold defence of the importance of the level of development as measured by the per capita income level. First, he regards per capita income as 'a rough measure of the level of economic sophistication of a country, which in turn is an important determinant of the types of

goods produced. A more sophisticated country tends to produce, and export products that are skill-and research-intensive. It is plausible to argue that the demand for such goods is relatively stable'. Secondly, Massell (1970, p. 624) regarded a high per capita income as usually being 'associated with greater flexibility. A more flexible country is better able to shift resources among products in response to (or in anticipation of) changes in demand conditions, and thereby reduces the impact of sudden changes in demand'.

Erb and Schiavo-Campo (1969) suggested that the size of the economy should be considered in absolute terms to determine the degree of instability. They suggest (1969, pp. 272) that small markets ensuing from small total income and the absolute lack of the variety of natural resources result in 'characteristics of lower overall flexibility to adjust to short-run external disturbances, aggregate supply and demand obstacles to production and export diversification and specialisation in demand- and income-inelastic export commodities.

Furthermore, a number of authors, as mentioned in Love (1987, pp. 43-44), i.e. Brundel et al (1983), Lawson and Thanassoulas (1981) and Glezakos and Nuget (1983) argue that there is a causal relationship between the degree of openness of the economy and export instability.

However, as Love (1987, pp. 68-69) noticed 'it is difficult to be other than cautious about the success achieved in attempts to resolve empirically the arguments about the causes of instability. Lack of comparability and consistency across studies contributes greatly to these judgements. Empirical studies on any of the issues associated with export instability usually differ in a number of important respects including country coverage, data periods, instability measures, variable definition

and estimating equations'. Then he concluded 'it is then difficult to conclude whether generalisable, underlying, relationships do exist but are obscured by choices made concerning matters such as model specification and variable definition'.

6.4 Domestic Consequences of Export Instability

Since the 1950s and early 1960s extensive debate concerning the consequences of export instability for developing countries came to be fused in an orthodoxy which has prevailed as a recurrent theme and source of debate in the literature on economic development. In general, there are two sets of arguments about the consequences of export instability: one is the pessimistic orthodoxy which believes that export instability inflicts a series of damaging consequences on the domestic economies of developing countries; and the other is the more optimistic minority which suggests that export instability might exert a number of positive influences.

Much of the pessimistic orthodoxy debate was constructed in an *ad hoc* fashion with the principal arguments being developed by the United Nations (1952) and by Coppock (1962). However, MacBean's argument (1966) was the first systematic attempt to provide a comprehensive statement of the prevailing orthodoxy, which, twenty years on, remains the single most important milestone in the development of the debate on domestic consequences. Drawing on MacBean and on the elaboration of particular arguments in other sources, Love (1987, pp. 12) argued that 'it is possible to identify several forms of adverse effects thought to result from instability and to set out the assumptions made about the structural characteristics and behavioural relationships which permit the transmission of the "instability problem"'.

It is assumed that domestic consequences of export instability in developing countries is characterised by having as their starting point the high degree of openness and trade orientation. Typically, in these economies, exports account for a high portion of total output. As such, and by adding particular assumptions about the type of production system and about the consumption and saving behaviour of producers to the characteristic of export dependence, this would result, according to the pessimistic orthodoxy, in considerable asperity to domestic economies especially to producers in general and agricultural producers in specific, the government sector and the import sector. These assumptions, as Love (1987, pp. 12) noted, are that 'the production is based on small-scale units with some part of output in excess of producers' own immediate requirements being destined for export production and that producers have a very low (or zero) marginal propensity to save out of current income'.

The induction of instability in producers' money incomes is thought to result in adverse effects on producers' welfare which, based on Lawson and Theobold's (1976) suggestions that positive and negative deviations from trend are not equally harmful, are the result of shortfalls (below-trend movements) in earnings. These shortfalls, as mentioned by Love (1987, pp. 12), may be genuinely unanticipated or may be foreseen but producers may be operating at such low levels of income as to effectively transform all income into consumption expenditure even in periods of above-trend income and thereby, preclude the accumulation of balances to maintain consumption levels in below-trend income periods.

The impact of export instability on small-scale producers is quite apparent if these producers are forced to rely on moneylenders who charge usurious interest

rates due to their inability to provide the necessary collateral to borrow from the financial system and this in turn tends to raise the cost. However, MacBean (1966, pp. 87-89) enumerated a number of factors concerning the impact on producers provided that the export sector is characterised by large-scale expatriate firms and/or plantation system. In this case, the impact is thought to be more muted for first, larger operations may be more flexible in adjusting with fluctuations in export proceedings through variation in profits and/or in reserves held abroad; making appropriate inventory adjustments, with stocks being accumulated in slack periods to be run down in boom periods; and by borrowing from the financial system. Secondly, large enterprises' calculations may be driven primarily by considerations of long-run returns and profitability rather than short-run changes around trend (Love: 1987, pp. 13).

Export instability poses a challenge to the government's revenues in the developing countries as it affects their ability to finance their development projects for it generates uncertainty and inflationary pressures. The inflationary pressures incline towards assuming, as Love (1987, pp. 14) pointed, that the governments in developing countries are unable 'to offset effectively through fiscal or monetary policies the short-run changes in aggregate domestic demand resulting from movements from trend in export producers' incomes and the associated multiplier effects'.

The customary assumption of the pessimistic orthodoxy is that governments in developing countries spend revenues as they become available, with no considerations to above-trend revenue periods to support expenditure in subsequent periods of below-trend revenue. However, the inflationary pressures, with the

government's commitments to development, are not exclusive to periods of above-trend revenues and expenditures.

The combination of circumstances of uncertainty over movements from trend in aggregate demand and inflationary pressures adversely affects the pace of economic growth as it lowers the rate of private investment. The presence of inflationary pressure is thought to depress private investment expenditure in three ways (Love: 1987, pp. 14-15). First, it complicates the process of business calculation, which may induce risk-averse behaviour, with resources being directed from risky but higher-yielding projects and towards less risky but lower-yielding projects. Secondly, inflationary pressures reduce real returns, which in turn depress domestic savings. Thirdly, inflationary pressures may reduce investment by raising investors' fear about the likelihood of exchange rate depreciation.

As for the impact of export earnings instability on the capacity to import, the consequences are quite obvious. The fluctuations in export earnings affect harmfully the development plans, private investors and the balance of payment, as the country's ability to import is uncertain.

Despite the above-mentioned pessimistic orthodoxy arguments about the adverse effects of export earnings instability on the domestic economies of developing countries, there are a number of authors i.e. Hirschman (1959) and Michealy (1962), who suggest that export instability might occupy a number of positive influences. Love (1987, pp. 15-16) enumerated several inter-related arguments of the more optimistic minority. First, according to the optimistic minority, investors may be attracted by risky projects where there are some prospects of high return. Secondly, periods of high export earnings may create a climate of

optimism leading to increased investments. Thirdly, marginal propensity to save may rise, for unstable incomes generate a precautionary balance and this in turn may provide higher levels of investible resources. Fourthly, short-run instability may impinge little on investment decisions, especially for tropical agricultural products and extractive industries.

It is difficult empirically, however, as Love (1987, pp. 68) acknowledges, 'to arrive to an agreement about the consequences of export instability'.

6.5 Results of Empirical Studies

Applied empirical studies usually employed the Gini-Hirschman coefficient to measure commodity concentration and have related values of these coefficients to measures of fluctuations in total earnings within the framework of cross-country regression analyses (Love: 1983, pp. 787). Empirical evidence from these studies provided little support for the conventional view on the relationship between concentration and fluctuations and, hence, provides little justification for the call for diversification. Similar studies on geographic concentration and export fluctuations found none or only a weak negative relationship between the two variables (Coppock: 1962; Massell: 1964 and MacBean: 1966) while some later studies (Massell: 1970; Khalaf: 1974 and Kingston: 1976) found a negative but insignificant relationship between the two variables. The rejection of any significant empirical relationship between commodity/geographic concentration and export instability generated uncertainty about the efficacy of diversification policies, although such policies remained a prominent feature of development plans and of discussions in international fora.

Another set of studies addresses the issue of the export fluctuations as the domestic economics of countries that typically have a concentrated export structure. However, here also cross-country evidence gave inconclusive results. According to some studies export instability has a negative effect on economic growth and development of the LDCs (Coppock: 1962; and Glezakos: 1973), while others conclude that there is a positive relationship between instability and economic growth (Lim: 1980; and Yotopoulos and Nugent: 1976). Yet, other studies have ambiguous results on the effect of export fluctuations on economic growth (MacBean: 1966; Maizels: 1968, Kenen and Voivodas: 1972; Moran: 1983; and Voivodas: 1974).

The strength of the intuitive argument and the persisting advocacy of diversification by policy makers led some scholars to ask whether the use of a cross-country approach was the source of difficulty (Massell: 1964; and Love: 1983). The justification for this was two fold:

i) the inconclusive results of other studies are misguided, unreliable and contradict the soundness of the argument that a greater degree of concentration would be associated with bigger levels of instability; and

ii) there was concern that cross-section analysis may obscure the presence of causal relationships for individual countries.

In looking at the relationship between concentration and instability Love (1985,1986) moved his analysis from a cross-section to a time-series basis for individual countries. By moving analysis in this way Love (1979b, 1986) was able to establish a causal relationship between commodity concentration and instability.

This provides some justification for the pursuit of the export diversification objective.

However, Love in his market model (1981) differentiated between demand ("the external market condition") and supply ("internal") elements of instability. He then constructed a model (Love: 1984) to investigate the determinants of trade performance for individual developing countries based on competitive, diversification and external market factors. The results obtained suggested that trade performance is relatively insensitive to a country's external market conditions, but is more sensitive to supply-side factors, specially the ability to compete internationally. This inference indicates the importance of designing appropriate policies to improve domestic supply conditions for exportables.

Love (1992, pp. 538) stresses that although diversification might result in lowering the degree of export instability it might not necessarily be a "desirable" option, as such diversification must proceed with cautious optimism and within a broad macroeconomic dimension. This implies that for developing countries to enjoy an improvement in welfare, they have to adopt strategic and specified export diversification policy program instead of a general and uncontrolled program.

In a more recent model of export diversification, Pineres and Ferrantino (1997) analysed the impact of export diversification on the growth of exports and GDP in Chile. Their results are consistent with the possibility that in the longer term export diversification has enhanced Chilean export performance.

Whatever the outcomes of such studies, there are some issues which have to be taken into consideration when considering diversification in a particular country: first, the production of non-traditional and other goods that utilise scarce domestic

resources has to be within the locus of efficient possibilities; secondly, the need for special domestic or multilateral facilities to promote and finance greater export diversification will vary among countries in the light of the problems that surround the external sector and general economic conditions. Each particular country should tailor any export diversification programme to match its development requirements and its economic conditions

6.6 Methods Involving Concentration Measures and Instability Indices

The tendency for empirical studies not to demonstrate convincing support for a causal relationship between concentration and fluctuations conflicts with the conventional wisdom and with intuitive reasoning. The typical approach to empirical testing has employed cross-country regression analysis with an instability measure I as the dependent variable and measures of commodity concentration and geographic concentration, C_x and G_x as independent variables, i.e.

$$I_t = a + bC_{xi} + cG_{xi} + \varepsilon$$

There are, however, several problems inherent in the above formulation which may prevent or obscure the identification of casual relationships between concentration and instability:

(a) The Gini-Hirschman coefficient measures concentration (product/market) in terms of one year, often chosen arbitrarily, whereas the various instability indices measure deviations from trend and provide one statistic summarising, the degree of instability over the whole period of analysis. Love (1979b, pp. 63) argued that the value of a Gini-Hirschman coefficient for a particular country might vary from year to year, and emphasised the importance of the

changes that might occur for a particular country over time. Intrinsically, Love (1979b, pp. 63), drawing on Naya's study (1973) indicated that averaging of the series of coefficients might solve the problem of arbitrary selection.

(b) There are differences among countries in terms of their exported commodities, the relative importance of different export items, the markets to which they export and the relative importance of their trading partners. These differences do not necessarily mean that greater concentration is associated with greater instability. While Massell (1970, pp. 618-630) developed a model consisting of nine structural variables in an attempt to avoid specification bias and to raise the explanatory power of the model, there was evidence of collinearity. Massell (1970, pp. 626) found that geographic concentration coefficient was one of the four variables exhibiting collinearity. In an attempt to investigate more directly the extent to which instability in total export earnings of a particular country is related to concentration, an alternative approach was developed which draws on Markowitz-type analysis. Love (1979b, pp. 65) argued that beginning by dividing total earnings into earnings from the major product (M) and the sum of earnings from all other products (S) a more specific measure, which he termed the "proportionate contribution statistic", can be developed.

$$P_m = C_m / V_t$$

where C_m is the contribution of the major product to instability in total earnings.

$$C_m = x_m^2 V_m + x_m x_s \operatorname{cov}(ms)$$

V_t is a weighted average of the variance and covariance of total earnings from the two sources, which represent fluctuations in exports:

$$V_t = x_m^2 V_m + x_s^2 V_s + 2x_m x_s \operatorname{cov}(ms)$$

where V_m is the variance of earnings from the major product,

V_s is the variance of the sum of the earnings from all other products,

x_m and x_s are the respective shares of the major product (oil) and all other products in total earnings, and

$\operatorname{cov}(ms)$ is the covariance of earnings from oil and all non-oil sources.

As shown above, V_t is determined by the variances of earnings from the major product and the sum of the earnings from all other products (V_m and V_s respectively), their shares in total earnings (x_m and x_s respectively), and the covariance of M and S ($\operatorname{cov}(ms)$).

The possibility that the major source may contribute disproportionately to the total instability, Love (1979b, pp. 65) tried estimating the ratio of the "proportionate contribution statistic" to the export share of the major product by using the ratio expressed as:

$$R_m = P_m / x_m$$

By applying both linear and exponential trend forms to his data, Love (1979b, pp. 68) was able to reach to the conclusion that commodity and/or geographic concentration contributed disproportionately to earnings fluctuations in a study of fifty-two developing countries.

6.7 Method to be Applied in the Saudi Context

The Kingdom, as stated earlier in chapter three, relies heavily on the oil sector as a major source of exports to finance its developmental plans. Yet, the abundance of local raw material (crude oil and gas) availed the Kingdom with the opportunity to exploit its comparative advantage to establish export-orientated industries. Intrinsically, the export sector is considered as the engine of growth to the Saudi economy depending on crude petroleum and gas as products and as feedstock for manufacturing or processing of petrochemicals. The reliance of Saudi's export sector on a few commodities makes it susceptible to fluctuations. This necessitates a clear look at the structure of the Saudi economy in general and the export sector in particular.

Since this study covers one country, the emphasis in empirical work has to be on the use of time-series data. Following the foregoing exposition of approaches, the approach to be used has revolved around Gini-Hirschman coefficients, instability indices and the component deviations from trend, and proportionate contribution statistics.

The procedure adopted begins by estimating Gini-Hirschman coefficients for Saudi in respect of both commodity and geographic concentration. Different instability indices are then calculated for the entire time period and sub-periods. The associated fluctuations (deviation from trend) are identified on a time series basis. Proportionate contribution statistics are also estimated for markets and products.

At each stage in this procedure the results obtained are examined to identify the information which they yield on developments in Saudi Arabia. Results from

each measure or index are also cross-referenced to build up a clearer picture of any inter-relationships.

The over-riding purpose is that of deploying the information generated to comment on diversification efforts in the kingdom with particular reference to expansion of petrochemicals and integration of the GCC states.

6.8 The Data

The data mainly used here is time series data for a period of 26 years from 1969 to 1994. This availability coincides with the period covered by the Saudi Development Plans. Reliable data are not available for the Kingdom before 1969. The data used is from Governmental Agencies (e.g. The Saudi Arabian Monetary Agency (SAMA)), international organisations such as the IMF, UN publications and regional publications such as the GCC Annual Report, GOIC publications and The GCC Economic Data Book, with the data available in the "external" sources being drawn from SAMA sources.

Data availability also constrains the work that can be conducted. Specifically, one is constrained in many instances to using aggregated data since the component data from which aggregates are constructed are frequently unpublished and unavailable from any source.

6.9 Conclusion

Shifting the attention from cross-section analysis to time series and from cross-country to individual country analysis, provides the means to measure the concentration of export earnings. Furthermore, by using the 'proportionate contribution statistic' and the appropriate trend correction it became much easier to

measure correctly the contribution of both major product and major market to export earnings instability. The emphasis in this chapter was to provide the conceptual definition of the tools used to explain the hypothesis, while chapter seven will be interested in operating the data, providing and analysing the results obtained from the implementation of the selected tools.

Chapter Seven

Analysis of the Findings: Application of the Measures of Concentration and Export Fluctuations

The success of a diversification policy depends on the ability of the country to establish a wider industrial and/or agricultural base, which grants the country the flexibility to produce a wider range of products with different covariances in order to overcome the problem of vulnerability to events in the external sector.

The objective of this chapter, then, is to analyse the data collected in earlier chapters in order to test the validity of the hypothesis under investigation. These empirical results are then related to the findings in the review of literature. Furthermore, this chapter examines the validity of the diversification policy to the Saudi economy. This chapter will apply the conceptual definition of diversification and export earning fluctuation described in the previous chapter in order to develop the operational framework required to accomplish the task of this chapter.

Accordingly, this chapter will be divided into three sections: the first will recapitulate some material on Saudi policy regimes, particularly the thrust of policy; the second will focus on the measurement of concentration-geographic and commodity-and fluctuations in different policy periods, along with measurement of proportionate contribution statistics; and the third will discuss trade with the GCC in the context of the diversification arguments.

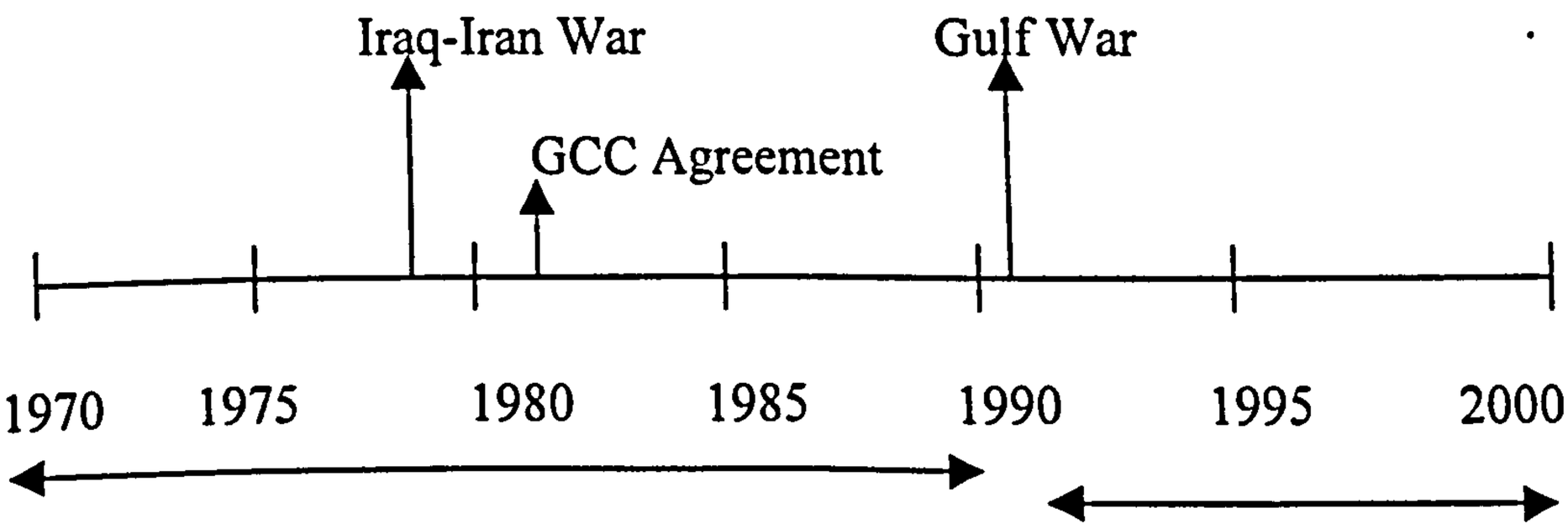
7.1 Saudi Arabia's Policy Regime

7.1.1 The Thrust of Policy

Before shifting to empirical evidence, it is useful to present a diagram highlighting the thrust of policy in Saudi Arabia during the six Development Plans discussed in chapter three. This is done in the following schema, Figure 7.1, which shows the main features of policy in the period spanned by these six Development Plans.

Figure 7.1

The Thrust of Policy



First stage: policy action covering the period 1970 – 1990 involves:

1. Import substitution.
2. Restructuring the economy.
3. Diversifying the economy.
4. Government-induced development.
5. Limited private involvement.
6. Basic infrastructure.
7. Establishment of SABIC.
8. Expatriate manpower.

Second stage: policy action for the period 1990 – 2000 involves:

1. Export promotion.
2. Commodity diversification.
3. Geographic diversification.
4. Decreasing Government expenditure.
5. Private-induced development.
6. Science & Tech. Infrastructure.
7. New capital markets.
8. Saudisation.

As discussed earlier in chapter three, the First Plan, with modest financial assets, involved setting a comprehensive planning framework for the construction of long term strategic goals concerning infrastructure, Government services and human resources. Increases in Government revenues in the later years of the First Plan permitted a more ambitious Second Plan. Accordingly, the Second Plan was concerned with establishing effective institutional development such as the establishment of the Ministry of Industry and Electricity, the Royal Commission for Jubail and Yanbu, and the creation of SABIC. Establishing a more diversified economic base, with the Government playing a major role as a prime investor to initiate capital-intensive industries linked to the Kingdom's petroleum sector influenced the Third Plan. During the Third Plan, the volatility of oil revenues reaffirmed the role of the agriculture sector and the private sector, which became more involved in import substitution manufacturing. The Fourth Plan laid more emphasis on diversifying and restructuring the economy and on the private sector playing a prominent role in the non-oil sector. The Fifth Plan reinforced the involvement of the private sector in the economic activities of the country and placed higher priority on the policy and institutional innovations essential for economic diversification. Perhaps the fundamental feature of the Fifth Plan was the acceleration of the Saudisation process through strengthening the capabilities of the labour force and by implying measures to decrease the number of expatriates. The prime theme of the Sixth Plan was in maximising the contributions of the private sector and on diversifying exports (geographically and commodity) to decrease the reliance on oil exports to ensure stability of earnings.

7.2 Measurements of Concentration and Export Fluctuations in Saudi Arabia

The objective of this section is to apply the concentration index and instability indices to test the hypotheses formulated by this study and to test the validity of the research hypotheses. This section is concerned with: (a) measuring concentration to test, as stated earlier in chapter six (section 6.2.1.2), the extent to which the Saudi Government succeeded in achieving its diversification goal, and, in addition, to appraise the benefits from the diversification argument to the Saudi economy; and (b) measuring the degree of export fluctuations of total export earnings and its various components.

As stated earlier, the study will cover a period of 26 years from 1969-1994 depending on the availability of data. The areas which could be investigated are limited by the availability of data. The availability of data requires that the work focus on exports, GNP and its various component. Unfortunately, consistent reliable data are not available for variables such as employment.

7.2.1 Measurements of Concentration in Saudi Arabia

In this section, the emphasis will be on using Gini-Hirschman coefficients to measure diversification of Saudi GDP and of Saudi export structure in commodity and geographic terms.

7.2.1.1 Measurements of Concentration in Saudi's GDP

The Gini-Hirschman coefficient has been applied to the major components of Saudi GDP, as shown in Table 7.1. The results of this indicate that in the early years of the 1970s, up until the effects of the 1973 oil price rises began to be felt, the

values recorded for the Gini-Hirschman coefficient were high i.e. values of 60 or more each year. This reflected the very heavy dependence on the oil sector. Throughout the remainder of the 1970s and until the end of the 1980s the values obtained for the Gini-Hirschman coefficient showed a marked downward trend, indicating increasing diversification of GDP.

While oil prices rose sharply in the 1970s, raising the value of oil earnings on world markets, those higher oil receipts facilitated the expansion of other components of GDP. Several of the areas in which expansion took place comprised goods and services which were not in the main traded, e.g. construction, utilities, wholesale and retail trade services and transportation, storage and communications. There was also growth in the manufacturing sector and in agriculture, forestry and fishing, again much of this being for domestic consumption. As is clear from the values of the Gini-Hirschman coefficient and the data in Table7.1, the oil sector remained the single largest component of GDP but the extent of its dominance had been diminished by expansion of other activities.

The trend towards greater diversification was halted and partially reversed at the beginning of the 1990s, with values of the Gini-Hirschman coefficient during 1991-1994 rising back to higher levels than at any time since 1981. This reversal was a consequence of the impact of the Gulf War on world markets. Although the other components of GDP continued to grow in the 1990s, the more rapid expansion of oil resulted in higher measured concentration of domestic activity. Even after the impact of the Gulf War, the values of the Gini-Hirschman coefficients in the 1990s were still substantially lower than the values recorded in the early 1970s. This marked diversification of GDP was consistent, of course, with the Government's

strategic priorities and through access to expanded oil revenues the Government was able to support and increase expenditure in sectors other than oil.

Table 7.1

Commodity Concentration in Saudi Arabia's GDP Structure

(At Constant 1970 Prices: Million SR)

	Oil	Agricult Forestry & fishing	Manufact-uring	Elec., Gas, & water	Construc-tion	Wholesale, Retail Trade, Restaurant	Transp., Storage, Communication	GDP	GDP Concentration index
1970	11542	1018	1839	298	957	1051	1468	19907	60
1971	14014	1050	1847	329	1053	1146	1544	22963	62
1972	17413	1089	1977	381	1396	1375	1849	27495	65
1973	20063	1130	2082	417	1737	1623	2224	31642	65
1974	18903	1174	2021	322	2461	1920	1289	31724	61
1975	19112	1221	2187	345	3309	2331	1580	34462	57
1976	21626	1282	2479	414	4146	2881	1929	39669	57
1977	21513	1483	2694	546	4582	3555	2367	42028	54
1978	21999	1550	2865	725	4700	4272	2729	44838	52
1979	23869	1640	3226	868	5128	5349	3118	49371	52
1980	24653	1735	3456	1109	5654	6334	3383	53282	50
1981	22383	1839	3699	1396	6225	7289	3659	54163	46
1982	14309	2023	4047	1686	5837	8212	3985	48342	38 .
1983	13033	2286	4578	1977	5329	8368	4426	48287	37
1984	11453	2707	4863	916	5126	8410	4533	47217	35
1985	9286	3193	5454	979	4259	8417	4522	45304	34
1986	13032	3673	5466	1032	3733	8097	4399	47824	37
1987	11524	4275	6166	1093	3627	7956	4293	47165	36
1988	13931	4736	6737	1159	3446	7877	4336	50733	37
1989	13629	5068	6555	1218	3428	7798	4358	50825	37
1990	16671	5422	6917	1279	3428	7954	4511	56243	38
1991	20618	5304	8485	1317	3532	8049	4525	60962	41
1992	22031	5399	8909	1366	3595	8146	4589	62663	42
1993	21258	5466	8750	1417	3649	8203	4621	62264	41
1994	21299	5504	8817	1469	3682	8218	4653	62584	41

Source: SAMA, Thirty Second Annual Report, 1998, Table (2), pp. 271- 272; and, own calculation.

7.2.1.2 Measurements of Concentration in Saudi's International Trade

Application of the Gini-Hirschman coefficient to Saudi international trade data indicates, as shown in Table 7.2 and Figure 7.2, that values recorded for the Gini-Hirschman coefficient for the years 1970 up until 1973 were low. This reflects

the fact that the Saudi economy was depending during that period on other activities e.g. religious tourism while oil represented only a small portion in its international trade structure. Throughout the remainder of the 1970s and until 1983 the values obtained for the Gini-Hirschman coefficient showed a marked upward trend, indicating increasing reliance on oil. The values obtained for the Gini-Hirschman coefficient for the years 1983 up until the end of the 1980s generally showed a marked downward trend, indicating increasing diversification of the Saudi international trade structure. The trend towards greater diversification paused and was moderately reversed at the beginning of the 1990s, with the values of the Gini-Hirschman coefficient rising back to values of around 90. It is evident from Table 7.2 and Figure 7.2 that the pattern of Saudi export proceeds during the period of the early 1990s became more concentrated, asserting the fact that oil is the prime source of export earnings in the Saudi economy. This indicated that events affecting oil markets, e.g. the Iran-Iraq War and the Gulf War, complicated the Saudi case. As seen, it became obvious that the post-Iran-Iraq-war period and the Gulf post-war period necessitated an increased role for oil to finance both wars and to guarantee stability in the international oil market.

Plotting the GDP concentration indices data also in Figure 7.2 enables one to draw an explicit contrast between the trend diversification of GDP and the absence of diversification in the export sector. As discussed earlier in section 7.2.1.1, there have been important changes in the compositional structure of the Saudi GDP and much of that change has been directed at the production of goods and services for domestic consumption. Furthermore, virtually as a consequence of the Gulf War and its aftermath, there was an increase in the production of oil. All these factors together

resulted in more concentration in Saudi exports sector despite the efforts to increase the level of diversification in Saudi economic activities.

Table 7.2

Commodity Concentration in Saudi Arabia's International Trade Structure

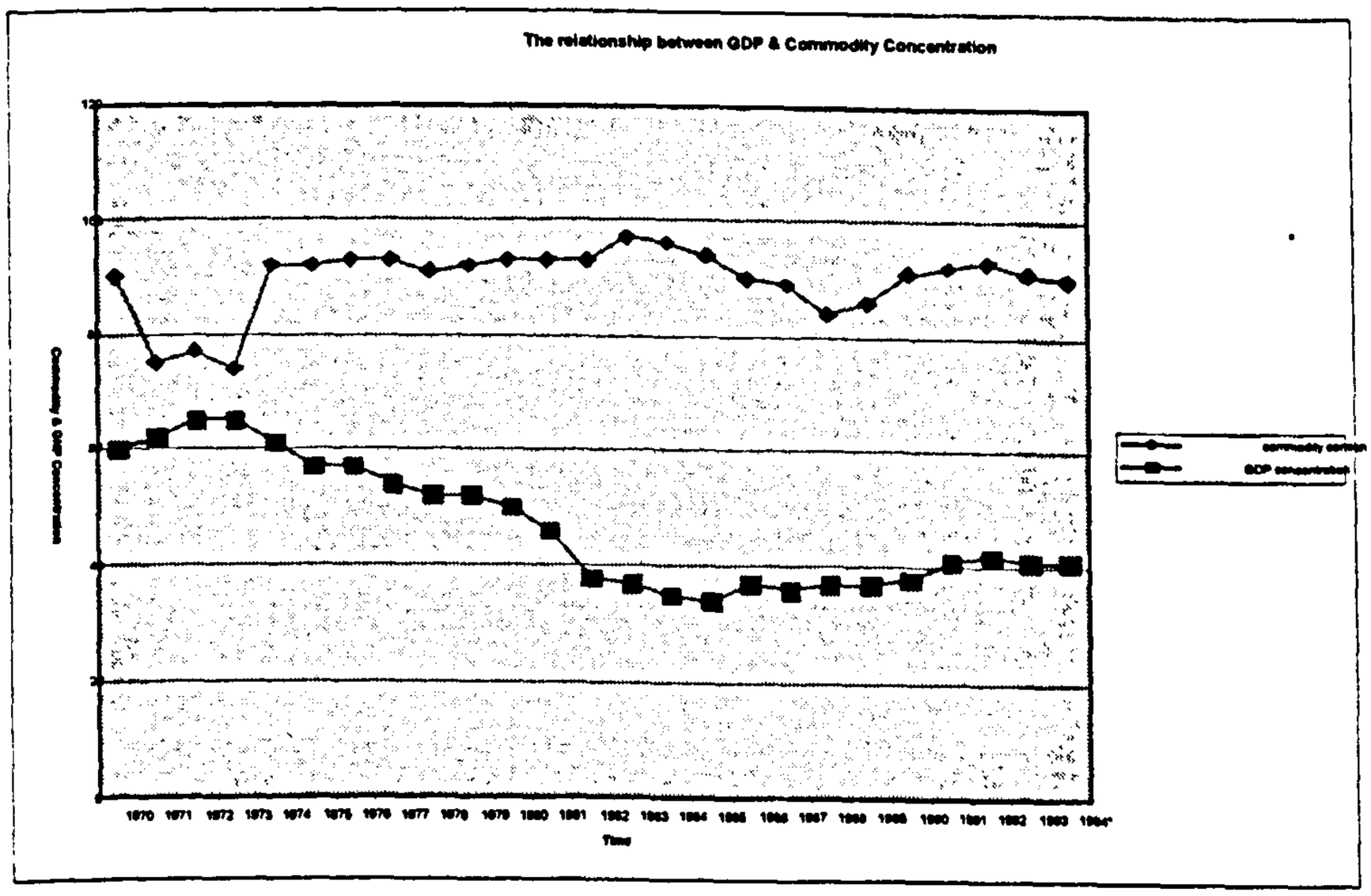
(Values in Current Prices: Million SR)

	Oil Export	% in total Export	Non-oil Export	% in total Export	Total Export	Commodity Concentration index
1970	9698	0.89	1209	0.11	10907	89
1971	11548	0.67	5755	0.33	17303	75
1972	16152	0.71	6609	0.29	22761	76
1973	21583	0.65	11726	0.35	33309	73
1974	115684	0.92	10539	0.08	126223	93
1975	95587	0.92	8825	0.08	104412	93
1976	125350	0.93	9804	0.07	135154	93
1977	141807	0.93	11402	0.07	153209	93
1978	125265	0.91	12977	0.09	138242	91
1979	194459	0.91	18725	0.09	213184	91
1980	334543	0.92	28342	0.08	362885	93
1981	375320	0.93	30161	0.07	405481	93
1982	249978	0.92	21112	0.08	271090	93
1983	154178	0.97	4266	0.03	158444	97
1984	127423	0.96	4876	0.04	132299	96
1985	93623	0.94	5913	0.06	99536	94
1986	66665	0.90	7712	0.10	74377	91
1987	76271	0.88	10609	0.12	86880	88
1988	75440	0.83	15848	0.17	91288	85
1989	89965	0.85	16330	0.15	106295	86
1990	149649	0.90	16690	0.10	166339	91
1991	162764	0.91	15860	0.09	178624	91
1992	173752	0.92	14573	0.08	188325	93
1993	144202	0.91	14568	0.09	158770	91
1994	142829	0.89	16761	0.11	159590	89

Source: SAMA annual Report, 1998, Tables (8.1; 8.2; and 1), pp. 134 –135 and pp. 296-297; 1997, Table (7.1; 7.2), pp. 100-101 and, own calculation.

Figure 7.2

GDP & Commodity Concentration: Saudi Arabia



Source: Table 7.2

A clear element of the Saudi diversification strategy has been the development of productive capacity in the petrochemicals sector (see chapter 5). This sector produces outputs which are consumed both domestically and in foreign markets. However, data are not available on the domestic consumption of these products. The only published data relate to exports and are shown in Table 7.3 and in Figure 7.3. The export data include the initial production and marketing of SABIC's petrochemicals which began in 1983 after the establishment of SABIC in 1976. Prior to 1983 all the data on Saudi petroleum products appearing in Table 7.3 are for chemicals, fertilisers and other by-products of oil and natural gas, mostly produced and marketed by the private sector as petroleum products. Throughout the years from 1969 until 1987 petrochemicals production was very minimal. However, starting in 1988 petrochemical exports tend to rise. In contrast, the pattern for crude oil was one of increasing substantially (by almost threefold) till the year·1981 before

it tended to decline from 1982 to a relatively its low level in 1987. Crude oil exports then rose from 1988 and were boosted by the market consequences of the Gulf War. Again, in contrast, the post Gulf War years of the 1990s, and more specifically 1992 up to 1994, signalled a decline in the production of petrochemicals while the production increased in 1995. In effect, the diversification efforts through petrochemicals were stalled and then reversed in favour of the export of crude oil.

Table 7.3

Saudi Petroleum Exports

(Thousand Barrels/Day)

Year	Saudi Crude	Saudi Products*
1969	2777	317
1970	3239	411
1971	3255	410
1972	5469	371
1973	7032	314
1974	7940	304
1975	6342	320
1976	8052	340
1977	8608	341
1978	7710	280
1979	8818	429
1980	9276	538
1981	9300	510
1982	5805	539
1983	4050	495
1984	3800	487
1985	2535	327
1986	3700	732
1987	2925	865
1988	3490	1135
1989	3390	1175
1990	4760	1264
1991	6452	1377
1992	6907	1136
1993	6809	973
1994	6791	830
1995	6795	892

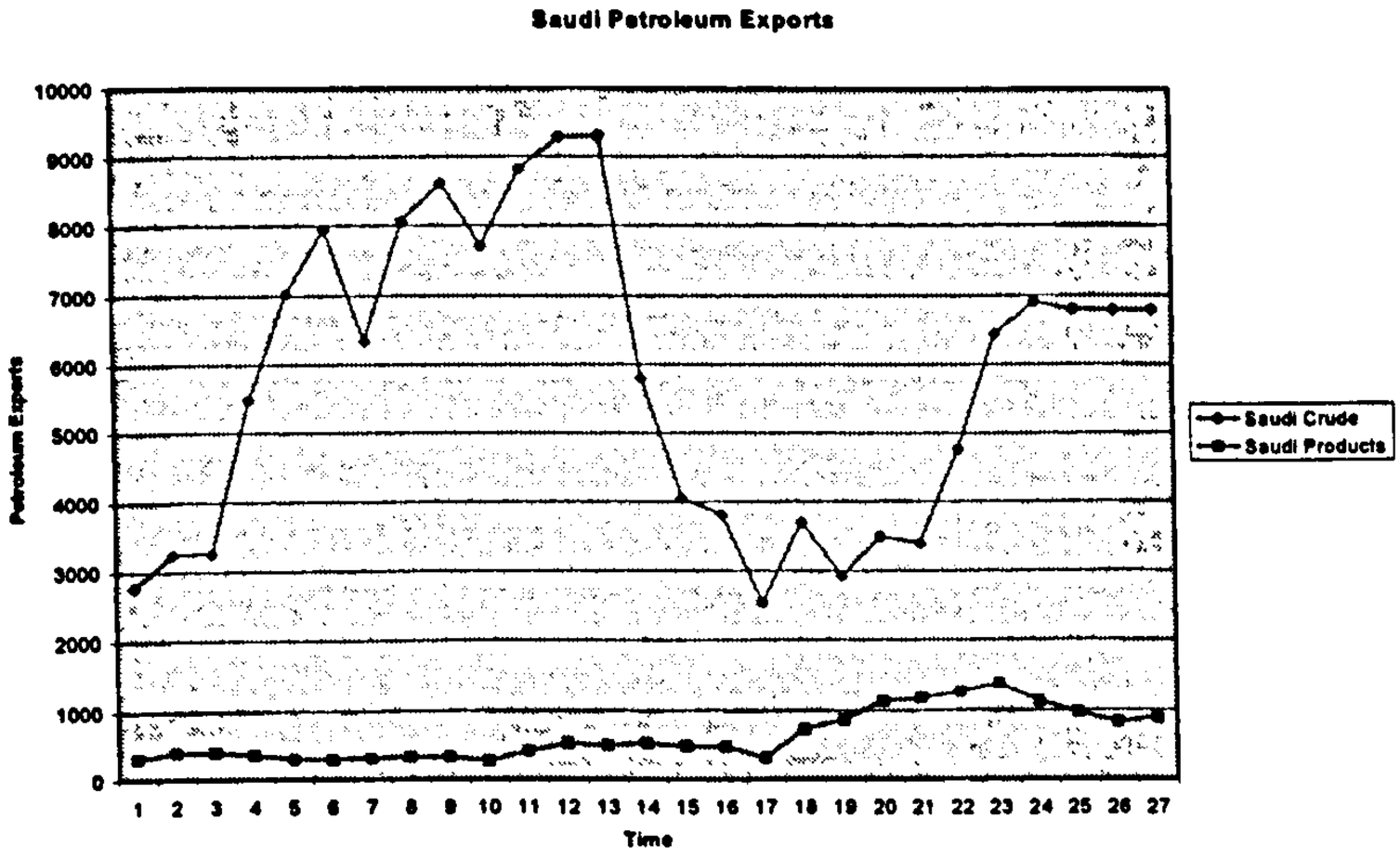
* Saudi Products are Equivalent to Thousand Barrels/Day.

Sources: 1976-1995 US Department of Energy, Energy Information Administration, International Energy Annual, various issues.

1976-1977 US Department of Energy, Energy Information Administration, International Petroleum Annual, various issues.
1969-1975 US Department of the Interior, Bureau of Mines, International Petroleum Annual, various issues.

Figure 7.3

Saudi Petroleum Exports



Source: Table 7.3.

The relation between petrochemical exports and total exports is shown in Table 7.4. The shares of petrochemicals in total exports have been relatively small (ranging between 3-6 percent). Establishment of production activities in the petrochemicals sector clearly necessitates more labour being employed in the sector. In practice, there may be a fear that labour will be pulled away from other activities. That, however, is not a serious problem in Saudi Arabia as additional labour requirements can be met by varying the size of the expatriate labour force and/or by involving more Saudi nationals in the production processes. To date, productive capacity has been installed to produce a wide range of primary and intermediate petrochemicals e.g. ethane methane, styrene, propane, butane, ethylene dichloride, ethylene glycol and purified terephthalic and a small range of end-use products e.g. polyester staple fibre for textile, filament yarn, bottle resin, MTBE/ETBE,

polypropylene, PVC and carpet fibres. However, the evidence indicates that these sources have not as yet contributed substantially to Saudi export diversification.

Table 7.4

The Relation between Total

Exports and Petrochemical Products

	Petrochemicals	Total Exports	Shares of Petrochemicals
1988	5547	91287	0.06
1989	5689	106295	0.05
1990	5684	166339	0.03
1991	5580	178624	0.03
1992	5762	188325	0.03
1993	5819	158770	0.04
1994	7878	159590	0.05

Source: SAMA Annual Report, 1992-1998.

Also, Table (7.2), pp. 189and Table (3.5), pp. 56.

7.2.1.3 Measurement of Geographic Concentration

Coppock (1962, pp. 95-6) pointed out that 'countries especially dependent on the United States market for the sale of their exports are especially subject to fluctuations in their export proceeds'. Furthermore, Massell (1970, pp. 622), summarises the customary view of the impact of geographic concentration by arguing that 'high geographic concentration is likely to imply greater dependence on economic conditions in one or in a few countries. Fluctuations in demand in any recipient country will then have a more pronounced effect on receipts of the exporting country than if exports were more diversified among recipients'. As previously stated, the Kingdom depends heavily on three traditional markets namely, the EU, Japan and the USA for the sales of its exports. This feature suggests that Saudi Arabia fits the a *priori* argument that "the greater is the degree of geographic

concentration, the more likely are a country's export to be susceptible to economic conditions in one or a few countries".

Table 7.5

Geographic Concentration in Saudi Arabia's Export Trade

	Geographic Concentration Index
1970	56
1971	51
1972	61
1973	59
1974	58
1975	54
1976	52,
1977	52
1978	53
1979	53
1980	54
1981	54
1982	56
1983	58
1984	58
1985	52
1986	49
1987	50
1988	48
1989	49
1990	49
1991	47
1992	49
1993	49

* GCC country figures were included in Arab league country calculations till 1982.
Source: SAMA Annual Reports, 1992-1996; and, own calculation.

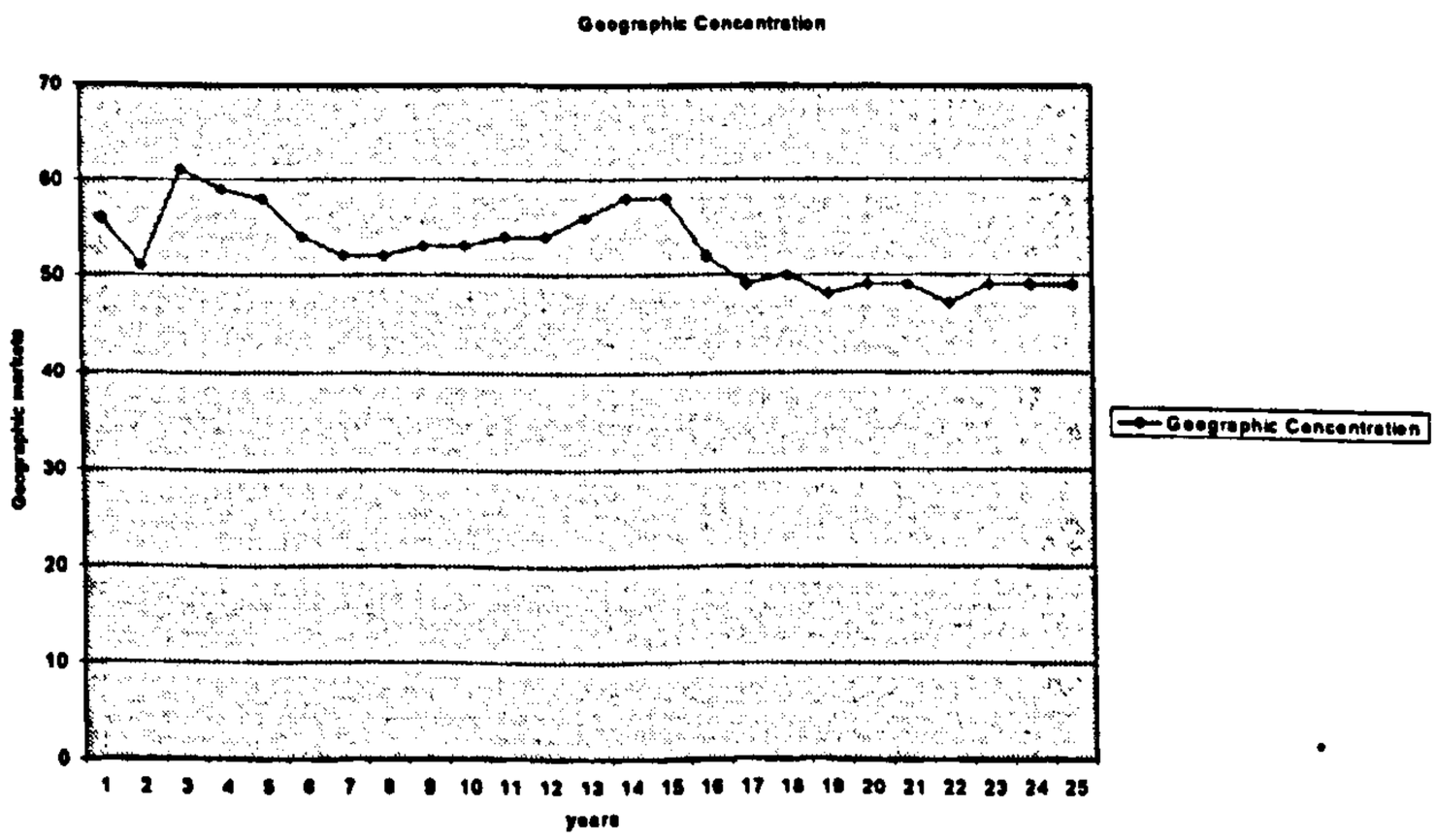
Table 7.5 presents estimates of the Gini-Hirschman coefficients for Saudi's export trade pattern and these values are plotted in Figure 7.4. This evidence shows that geographic concentration has been falling marginally over time although it began from a much lower level than commodity concentration and even in comparing both coefficients during the 1990s, geographic concentration's growth rate remains higher than commodity concentration, i.e. in 1992 in Table 7.5

geographic concentration grew by .04, while commodity concentration grew by .02 as indicated in Table 7.2.

The decline in the geographic concentration as is shown in Table 7.5 and Figure 7.4 embodies two facts: first, that the Kingdom's exports are becoming a little more diversified away from the traditional markets i.e. there is some greater trade with GCC, other Arab league countries, the East Asian countries, Central and Eastern European countries after their shift to the market system; and, secondly, that Saudi policy succeeded relatively in pulling the country's exports away from traditional markets. This also means that the composition of the export structure has been changed over time i.e. non-oil export products are finding their way to other markets, although they are relatively small in shares, i.e. the Kingdom increased its non-oil exports, during the 1990s, to GCC, Arab league, Islamic, African and South American countries (GCC Data Book: 1996, pp. 138).

Figure 7.4

Geographic Concentration: Saudi Arabia



Source: Table 7.5.

With respect to the GCC countries, the central objective of forming regional integration was to help to attain geographic diversification for their products. Yet the

inherent fact is that their intra-trade is relatively small and is increasing slightly, although beyond expectations, as indicated in Chapter Four. However, the question remains whether the development of the GCC and other markets contributed to the implementation of stability in the Saudi export proceeds. For Love (1987, pp. 41) argues that 'geographic diversification will reduce instability only if spatial markets differ in their degrees of instability and/or in the timing of fluctuations for a country's given commodity set'. Nevertheless, answering that question requires measuring the instability of the GCC member countries and correlating their deviation from trend with deviations to other markets.

7.2.2 Measurements of instability

7.2.2.1 Instability Indices Statistics

Export fluctuations in the Saudi economy were calculated using instability indices based on first-order deviation from trend and the squared deviations discussed in section 6.2.2.2. The particular forms of index employed are (a) the standard error of estimate divided by the mean of observation (1st index); (b) the standard deviation from the logarithmic trend (2nd index); (c) the average proportionate deviation from a logarithmic trend (3rd index); and (d) the Knudsen and Parnes index (4th index). The procedure adopted here is as follows. The first step involves calculating instability indices based on deviations from trend for the entire 26 year period from 1969 until 1994. The whole period was then broken into two sub-periods, ignoring the years 1980, 1981and 1982, and indices were estimated for the first 11 years and then the remaining 12 years. The years of 1980, 1981and 1982 were excluded from the calculations to remove the impact of the exceptional major fluctuations in total export figures during these years. This procedure is not valid for GCC markets

since the establishment of the GCC in the early eighties effectively confined the analysis to only one period from 1982-1994. The second step is to identify the deviations from trend on which the four measures of instability were based for the whole period and for the sub-periods to: (a) correlate the values obtained from the four different forms of deviations from trend together to determine whether the four indices are giving consistent results on the extent of instability; and (b) correlate the values obtained from the four sets of deviations from trend with Gini-Hirschman coefficients for commodity and markets to see if there is association between the forms of concentration and instability. Thirdly, this section will be concerned with looking at the relationship between total exports, oil and non-oil exports, between petrochemicals and total exports and between petrochemicals and oil exports in the same way. Furthermore, the section will look at the relationships between exports to GCC countries and exports to all other countries as a group, and between exports to GCC countries and total exports using the same technique. The Appendix to this chapter provides the statistical results of the correlation for oil and non-oil, petrochemicals commodity and for traditional and GCC markets for the whole period and sub-periods.

[1] Instability Indices

1. (a) Oil and Non-oil Commodity

While the thrust of the diversification argument relates to a widening of the export group being potentially associated with a fall in instability of export earnings, the results on instability shown in Table 7.6, are at odds with that argument when combined with the earlier information on concentration. The evidence is that instability has fallen in the second period during which the Gini-Hirschman

coefficient, as appears in Table 7.2, indicates increasing concentration in commodity composition.

Table 7.6

Instability Indices for Total Export Earnings

	Whole Period	1st Period	2nd Period
1st Index	0.06	0.18	0.04
2nd Index	0.55	0.77	0.09
3rd Index	0.99	1.38	0.10
4th Index	12.29	6.61	0.98

Source: Own Calculation.

(b) Petrochemicals

Table 7.7

Instability Indices for Petrochemicals for Saudi Arabia and the World

	Whole Period	1st Period	2nd Period
Saudi Arabia			
1st Index	0.11	-0.001	0.04
2nd Index	0.27	0.02	0.14
3rd Index	0.19	0.02	0.17
4th Index	7.75	2.29	1.55
World			
1st Index	0.06	0.003	0.03
2nd Index	0.04	0.004	0.02
3rd Index	0.04	0.004	0.02
4th Index	1.43	0.04	0.20

Source: Own Calculation

The values of instability indices for Saudi products (petrochemicals) for the two periods in Table 7.7 indicated that instability is increasing in the second period, except for the fourth index, as it did for the world. The increase in instability for Saudi petrochemicals fits with the results of the Gini-Hirschman coefficient for commodity concentration. This is really at odds with the expectations from the Saudi Government from the diversification program which is aiming at stabilising its export proceeds through increasing the capacity of the economy to induce a variety of products. Besides the result is at odds with the Gini-Hirschman coefficient for

geographic concentration which shows that there is a tendency to move towards more trade involvement with other non-traditional markets. In other words, while the geographic concentration figures indicate that there is diversification in terms of markets, Saudi petrochemical exports are becoming unstable, a direct consequences of slowdown in world-wide economic activities which in turn affected the prices for several of SABIC's petrochemical products.

2. For Markets

(a) Traditional Markets

Table 7.8

Instability Indices for Traditional Markets

	Whole Period	1st Period	2nd Period
1st Index	0.05	0.16	0.04
2nd Index	0.54	0.63	0.10
3rd Index	0.81	1.13	0.10
4th Index	11.95	5.14	1.03

Source: Own calculation

While the four instability indices shown in Table 7.8 produced different numerical values for the same data series i.e. the first index for the whole 26 years period was .05, whereas for the second index was .54, the third index was .81, and for the fourth index the value was11.95, values of instability indices for exports to geographic traditional markets were declining for the second period. This outcome matched the results obtained by Gini-Hirschman coefficient figures for geographic concentration which indicate that geographic concentration has been falling over time. Initially, this verifies the observation that the Kingdom gradually increased its trade relation with other markets i.e. East Asian countries, Arab league countries, GCC and African countries. This result is consistent with the notion that the

Kingdom has succeeded relatively in its program of diversifying its export markets away from its traditional markets.

(b) **GCC Markets**

Table 7.9

GCC Instability Indices

	2nd Period
1st Index	0.07
2nd Index	0.13
3rd Index	0.11
4th Index	1.46

Source: Own Calculations

As for the GCC markets, the values of the four instability indices are low and similar to those recorded for traditional markets over the same period (see Table 7.8). Thus, the GCC market appears relatively stable. Despite this, calculating trade growth rate for the GCC, showed that the GCC trade with the Kingdom is growing slowly since the Gulf war. This outcome conforms with the previously stated analysis in chapter four that the trade creation effect is very limited and this reflects the fact that the GCC countries are producing the same product and are more competitive rather than complementary. Furthermore, the impact of the Gulf war was so clear on the trade relations among those countries because of the exclusion of Kuwait from the trade interaction and this was reflected in the slowness of their intra-trade relations.

[2] Correlation

1. (a) Oil and Non-oil Commodity

Correlating, first, the values of the four series of deviations from trend of total export earnings for the whole period indicated a highly significant positive relationship between the first index, the second index and the fourth index where

r ranges between .66 and .97 at $p < 0.01$, and a poorly significant negative relationship between the first and the third indices where $r = -.40$ at $p < 0.05$ (see the Appendix, Table 7.A.1). In addition, the results indicate no significant relationship between the second and the third indices, or between the fourth and the third indices. This suggests that the first, the second and the fourth indices are giving consistent results on the extent of instability while the third index is providing a quite different pattern of results from the other three measures. As for sub-period 1, the results indicated a significant negative relationship between the first and the third instability measures where $r = -.73$ at $p < 0.05$ which reinforces the evidence that these measures are contradicting the results of one another, while it indicated a highly strong relationship between the second and the fourth instability measures. However, in sub-period 2, the results show a highly significant relationship between the second deviations from the trend measure, the third and the fourth measure where r is higher than 80 percent for the three measures at $p < 0.01$, i.e. these three measures are highly consistent in their results in this period.

Secondly, the findings of correlating the values of the four instability measures of total export earnings with the Gini-Hirschman coefficients for concentration show that according to the first measure there is a poorly positive association between commodity concentration and instability where $r = .45$ at the 0.05 level, while the third measure indicated that commodity concentration is not associated with total exports instability as there is a poorly negative significant relationship where $r = -.43$ at $p < 0.05$ between commodity concentration and instability. This indicates that, using the linear trend measure, commodity concentration is associated with the Saudi export instability of the whole period. For

sub-period 1, the results show that there is significant association between commodity concentration and instability in terms of the first measure of deviations from trend where $r = .73$ at $p < 0.05$, while sub-period 2, reveals no significant association between concentration and instability.

Finally, correlating (a) raw data of export earnings with oil and non-oil figures for the whole period resulted in a highly significant relationship where $r = .999$ for oil and $r = .87$ for non-oil at $p < .01$. This indicated that both commodities (oil and non-oil) are major components of export proceeds and oil is the most dominant factor in the Saudi economy. Correlating raw data of export proceeds with oil and non-oil for sub- period 1 resulted in a similar outcome confirming the same direction for the three variables for the whole period. However, in sub-period 2 the outcomes of the correlation indicated a highly significant relationship between total exports and oil where $r = .99$ at 0.01 level, while it indicated no association between total exports and non-oil exports. This in fact reflected the reversal of the Saudi policy from greater diversification to more concentration as a consequence of the impact of the Gulf War on world markets which in turn resulted in an increased in the demand for crude oil.

The findings of correlating (b) the values of deviations from trend for export earning measures with deviations from trend for oil and non-oil values for the whole period shows a highly significant positive relationship between the values of the first, the second and the fourth indexes for total exports and the deviations from trend indexes for oil and non-oil, i.e. r ranges between .55 and .999 at $p < .01$. These outcomes confirm the role of both oil and non-oil in the instability of export earnings. However, the results of the third indices indicated a significant negative

relationship where r = -. 39 and r = -. 40 for both oil and non-oil respectively at $p < .05$. The third index, therefore, presented a rather weak argument for the responsibility of oil and non-oil for the instability of export earnings. The outcomes of correlating the values of the four deviations from trend instability measures with deviations from trend for oil and non-oil values, for sub-period 1, indicated a highly significant relationship between the first, second and fourth indices and oil and non-oil deviations from trend values, while it produced an opposite highly significant relationship between oil and non-oil exports instability and total exports instability in terms of the third index. In sub-period 2 the results confirmed the impact of oil on total exports instability, while the fourth total exports index shows a significant negative relationship with the second non-oil exports index.

The results obtained from correlating (c) the four values of deviations from trend indices for oil and non-oil products for the whole period and sub-period1 indicated that there is a highly significant relationship between the two sets of commodities (oil and non-oil), where r ranges between .56 and .95 in the four indices at $p < 0.01$. This actually indicated that the newer non-oil products are not offsetting the fluctuations of export earnings. In fact, they are reinforcing movements in earnings. The results for sub-period 2 indicated no significant association between the instability of the two sets of products.

Correlating (d) the deviations from trend values of oil and non-oil with the Gini-Hirschman coefficient for both commodity and geographic for the whole period resulted in a significant relationship between the deviations from trend values for oil product and commodity concentration index where r = .47 at $p < 0.05$ supporting the *a prior* argument that commodity concentration contributes to the level of instability.

The correlation of the values of the third index with Gini-Hirschman coefficient shows a negative significant relationship between the deviation from trend values and commodity concentration where $r = -.56$ at $p < .01$ which indicate an opposite result that commodity concentration is not responsible for the fluctuations in oil export. The reason for this contradiction is due to disparity in the results of the index measures itself, as there is a significant negative relationship between the two indices. The outcomes of correlating values of the four deviations from trend for both oil and non-oil products for sub-period 1, showed that there was a highly positive association between the first instability oil index and commodity concentration, which indicated that concentrating on producing oil resulted in fluctuation in oil proceeds. The results, for sub period 2, showed disparity in the outcomes due to discrepancy in the results of the measures. For while the second, third and fourth non-oil instability indices revealed a highly significant association between the two types of concentration and non-oil instability, the first non-oil instability index shows a highly negatively association between the two types of concentration and non-oil instability.

(b) Petrochemicals

Correlating, first, the values of the four series of deviations from trend as a measure of Saudi petrochemical instability for the whole period indicated that there is a highly significant relationship between the four index values. This indicates that the four indices are consistent in their results on the extent of instability. The results in sub-period 1, indicated that there is a highly significant positive relationship between the values of the second measure of deviation from trend and that of the third measure where $r = .97$ at $p = 0.01$, while there is a highly negative relationship

between the first and the fourth instability indices. The result for sub-period 2, indicated that there is a highly positive significant relationship between the second, third and fourth instability measures. These outcomes indicated that the three measures are providing a highly consistent pattern of results on the extent of instability for the whole period and sub-periods.

The results of correlating, secondly, the four Saudi petrochemical deviations from trend values with Gini-Hirschman coefficients for the whole period reveal that there is a highly significant negative relationship between the first, second and fourth deviations from trend values and geographic concentration, while it is not significant for the third measure. This indicated that the Saudi petrochemicals are becoming unstable despite the fact that there is an increasing trend towards more geographic diversification. This disagrees with the conclusion reached by Brundell, *et al's* (1981, pp. 302) that when 'instability is induced through shifts in demand, greater openness tends to stabilise export earnings'. Results of correlating the values of the four Saudi petrochemicals instability indices with Gini-Hirschman concentration coefficients for the sub-period 1 showed no significant relationship between the values of the stated variables, while the results obtained for sub-period 2 indicated negative significant relationship between the values of the first indices and commodity and geographic concentration with $r = -.66$ at 0.05, and $r = -.77$ at 0.01 for commodity and geographic respectively.

Correlating, thirdly, Saudi products' (petrochemicals) values with world values and with rest of the world petrochemical products values for the whole period indicated that there is a highly significant relationship between the values of the three variables which indicated that introducing new petrochemicals products will not

contribute much in terms of lessening the consequences of petrochemical's instability. Also, correlating Saudi petrochemicals values with the rest of the world products for the first period indicated that there is no significant relationship and the covariance of the two is negative which support the view that the Saudi petrochemicals are complementing the other petrochemical markets. While in the second period, both variables are significantly correlated with each other which show that both Saudi Arabia and the other world are producing the same products and this affects the level of Saudi instability.

The results obtained from correlating (a) total exports with Saudi petrochemicals and (b) oil exports with petrochemical exports for the whole period or sub-periods, indicated that there was no significant relationship between these variables. This shows that the Saudi petrochemicals are so limited in its shares to have any effect on either total exports or oil exports.

2- For Markets

(a) Traditional Markets

Correlating, first, the deviations from trend values for the four instability measures of exports to major markets for the whole period resulted in high relationship between the first, second and the fourth instability indices values at $p < 0.01$, while the third index value is negatively but not significantly correlated with the first indices. In the sub-period 1, the results indicated that the second and the fourth measures are similar in their results, while it indicated negative significant relationship between the first and the third index values, which means that that they are giving contradictory results on the extent of instability. The results of the correlation between the four instability index values for sub-period 2 indicated that

the second, the third and the fourth instability index values are giving highly consistent results.

The results of correlating, secondly, the four instability indices values for exports to traditional markets with the Gini-Hirschman coefficients for the whole period showed that there is poorly positive significant relationship between the first index values and commodity concentration, and a poorly negative but not significant relationship between the third index values and commodity concentration. This coincides with the fact that the third index is negatively but not significantly correlated with the deviations from the trend of the first index. In sub-period 1, it is found that there is a positive significant relationship between the first linear trend instability measure and commodity concentration, while in sub-period 2 there is no evidence of association between concentration and exports instability. This means that during the first period Saudi exports to traditional markets were unstable due to oil being the major component of exports.

The outcomes of correlating, thirdly, raw data of total exports, exports to major markets and exports to non-traditional markets indicated that the three sets of values are highly correlated, where $r = .998$ for major markets and $r = .85$ for non-traditional markets at $p < .01$. This means that traditional markets and non-traditional markets are both affecting Saudi export earnings.

(b) GCC Markets

Correlating, first, the values of the four series of deviations from trend measures for exports to GCC markets indicated that there is a significant relationship between the first measure values, the second measure values where $r = .62$ at $p < 0.05$, at the same time there is a highly significant relationship between the second

index values, the values of the third index and the fourth instability measures, where $r = .86$ at $p < 0.01$ for all of the measures. This means that the four indices are consistent in their results about the extent of instability.

Correlating, secondly, the four indices values with Gini-Hirschman concentration measure indicated that there is a negative significant relationship between the degree of instability and geographic concentration in terms of the first deviations from trends measure values where $r = .65$ at $p < 0.05$. While the results indicated that there is a positive relationship in terms of the third index values and commodity concentration. The results indicated that commodity concentration is responsible for the degree of instability in the GCC markets, while it showed that geographic concentration is a major element of stability in terms of exports to the GCC markets.

Correlating, thirdly, total exports to GCC, Africa, Asia and the traditional markets indicated that there is a highly significant relationship between total exports and exports to Africa, Asia, and the traditional markets values with correlation ratio more than 90 percent for all the three markets at $p < .001$. This shows that the three sets of markets are contributi ng similarly to the instability of the Saudi export earnings, while there is no significant relationship between total exports and exports to the GCC market for the raw data and for the four deviations from trend data of exports to GCC countries. In addition, the evidence indicated that there is no significant relationship between exports to the GCC markets and exports to the other markets. This means that GCC products are producing a different set of products than the rest of the world products, as such widening the trade relationship between

the Saudi markets and the GCC products may benefit the economy if they tend to produce complementary products.

7.2.2.2 Measurements of Proportionate Contribution Statistics

In this section percentage contribution statistics, P_m, were calculated for the major sources, oil, petrochemicals and major markets. The associated ratio of the percentage contributions to the shares in total earnings, R_m, were also estimated.

Table 7.10

Summary of Contribution Proportionate Measure

	P_m (1)	P_m (2)	P_m (3)	R_m (1)	R_m (2)	R_m (3)
Saudi Commodity	0.991	0.989	0.996	1.126	1.163	1.095
Major Markets	0.98	.98	0.95	1.21	1.19	1.19
Saudi petrochemicals	0.009	-0.00002	0.01	0.15	-0.0004	0.16
World Petrochemicals	0.99	1	0.99	1.05	1.04	1.06
GCC	NA	NA	0.002	NA	N.A	0.27
Africa	NA	NA	0.002	NA	N.A	0.023
Asian	NA	NA	0.13	NA	N.A	0.36

(1) = Whole Period
(2) = 1st Period
(3) = 2nd Period

Both values of P_m and R_m, as defined in an earlier chapter, obtained for the major product for Saudi Arabia indicate that the major product, which is oil, was responsible for almost all of the instability experienced by Saudi Arabia for the whole period where P_m = .991 while it contributed more than proportionately to the fluctuations in total earnings R_m = 1.126. In the second period P_m = .996 is increasing while the ratio of percentage contribution to the export share of the major source is declining R_m = 1.095. This result agrees with the ones obtained from the four instability indices, and both results challenge the prospects of the Saudi Government from the thrust of policy as illustrated earlier. Evidently, it is clear that oil as a primary product is responsible for the fluctuations in the Saudi total earnings

although its share in the proportionate contribution statistic measure declined in the second period.

The value of the proportionate contribution statistic for Saudi petrochemicals and the ratio of the contribution of petrochemicals to Saudi export instability for the *whole period are .01 and .15 respectively.* While, the value of R_m for petrochemicals is increasing for the second period, which indicate that Saudi petrochemicals are partially responsible of the instability of Saudi total earnings, it appears that other petrochemical markets are in fact contributing greatly to the instability of Saudi petrochemicals.

Values of P_m and R_m for the major markets were calculated where the proportionate contribution statistics for the traditional markets P_m = .98, and the ratio of the contribution of the traditional markets to export earnings P_m =1.21. The evidence indicates that P_m of the traditional markets and the ratio of the contribution of the major markets to earnings instability declines for the second period which can be explained as the disproportionate contributions of traditional markets to instability in total export earnings and this might be adduced in support of the case for geographic diversification.

Introducing other markets to the analysis, it is found that GCC and Africa markets have low values of P_m (where P_m = .002 for both country groups) which indicates that they are not responsible for much of the instability experienced by Saudi Arabia, while the value of P_m = .13 and R_m = .36 for Asia indicate that Asia is relatively more responsible for the instability of Saudi total proceeds. This implies that diversifying export markets will impose more stability to the Saudi earnings as

the Kingdom tends to widen its trade relationship with more stable markets to reduce the impact of earnings instability inherited in its trade relationship with major markets.

7.3 Assessment of GCC

In the light of the empirical analysis carried out in the previous section, it was evident that despite the fact that the GCC markets are stable, their trade shares are very minimal. These low shares suggest that the GCC countries are not benefiting much from integration (Ali: 1980, pp. 473). GCC Governments pursue similar, independent policies, at the same time there has been no coordination between the GCC Governments in terms of policy-making.

Although, the GCC countries since their establishment have agreed to certain policies, in practice, there have been little positive actions in support of the agreement. For instance, the settlement to reduced tariff, which was announced in the agreement, has not been implemented. Similarly, there has been no effective progress with respect to the policy of diversification: each country continues to pursue its own independent strategy. In addition, the question of domination is of vital significance, especially in the early stages of building up a nation.

Regardless, there are several possible reasons which underline the establishment of this council:

1. Economic regionalism appears as one of the major goals of economic policy for both developed and developing countries. The justification for this sort of policy lies in the belief that more efficient settlement to some of the economic predicaments in a particular region can be found through a regional approach, rather than through approaches in a national or global

domain. Furthermore, economic regionalism can 'stimulate the multilateral liberalisation process and should be in conformity with international obligations and with the objective of maintaining and strengthening the multilateral trading system' (IMF, World Economic and Financial Survey: 1992, pp. 19). Therefore, there is a consistent philosophy of moving to unrestricted trade as within the Single Market of the EU extended to GCC countries;

2. The decision behind GCC may be a political issue of seeing a more unified GCC. In a sense it may be seen as a sign of greater cooperation, stability, and cohesion among GCC countries. Therefore, it becomes much easier to negotiate with than discussing trade arrangements on a bilateral basis with each of the GCC countries individually.
3. The GCC market comprises a substantial market with a substantially different set of products from those produced in the EU and with different trade (export and import) composition, and as such EU may see the GCC as a substantial market for its exports (although import duties are already low).

Whatever the reasons for the formation of the GCC, the Saudi Government attempts at greater diversification of domestic economic activity. Shifts to downstream activities may cause a reduction in the goods presently imported from the EU and others, and may mean an increase in exports to EU and other markets. The reason for that lies in the fact that the current policy is export orientated. Furthermore, the GCC General Agreement explicitly specifies diversification as an objective and individual Governments like Saudi Arabia are pursuing policies of diversification. Therefore, regional integration between GCCs may assess the

diversification argument in a manner that it can provide stimulus to the market and thus help to develop their manufacturing sector and bolster growth rate.

7.4 Conclusion

The evidence outlined in this chapter does not come out in harmony with the thrust of policy and the associated underlying view that commodity and geographic diversification potentially represent opportunities for a fall in instability. The evidence, however, indicated that although the level of instability has been falling in the second period, Gini-Hirschman coefficients witness increasing concentration in commodity composition and decreasing levels of geographic concentration although the latter began from a much lower level than commodity concentration and even in the 1990s it remains higher than commodity concentration.

It is evident that oil, as a prime product, is the major source responsible for commodity concentration and is, thus, responsible for almost all of Saudi's export earnings instability. This in fact poses a serious challenge to the Saudi economy as fluctuations in earnings means fluctuation in the Government ability to finance development projects. However, these fluctuations in earnings affect harmfully the country's balance of payments as well as it affects the private sector as it generates uncertainty and thus affects investors' confidence. Therefore, this justifies the implementation of the diversification policies in terms of commodity and geographic. Yet, in implementing diversification programs consideration of the cost of diversification should be undertaken i.e. policy makers should be aware of the consequences of shifting resources into less productive uses.

Saudi Arabia placed much of its policy thrust on the development of petrochemicals to create earnings stability but the evidence reveals a slight increase

in the level of instability. Subsequently, the Kingdom has to keep up with diversifying its productive base to produce other manufacturing goods, produce end-use types of petrochemicals and increase the efficiency of the already produced petrochemical products and carry on with diversifying the market zones.

GCC seemed to be a more stable market for Saudi Arabia but the issue is that the GCC member countries are producing the same product which makes trade creation very limited. However there are several reasons to continue with the establishment of customs union within the GCC members as seen in the chapter, depending on the efforts that would be done by the GCC Governments to coordinate their production and marketing strategies and their attempts to diversify their production accordingly so each one of them specialise in different type of product.

Appendix to Chapter Seven

This Appendix provides the statistical results of the correlation in section 7.2.2 for oil and non-oil, petrochemicals commodity and for markets for the whole period and sub-periods.

Table 7.A.1.
Correlation of Oil and Non-oil Commodity (Whole Period)

	Total Export Earnings				Oil Exports				Non oil Exports			
T. Exports	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index
1st index	1.000	.657	-.397*	.602**	.999**	.657**	-.426*	.599**	.860**	.570**	-.322	.552**
	.	(.000)	(.045)	(.001)	(.000)	(.000)	(.030)	(.001)	(.000)	(.002)	(.109)	(.003)
2nd index	.657**	1.000	.240	.974**	.655**	1.000	.220	.971**	.588**	.923**	.207	.952**
	(.000)	.	(.238)	(.000)	(.000)	(.000)	(.281)	(.000)	(.002)	(.000)	(.310)	(.000)
3rd index	-.397*	.240	1.000	.304	-.392*	.232	.990**	.296	-.398*	.283	.868**	.370
	(.045)	(.238)	.	(.131)	(.048)	(.253)	(.000)	(.142)	(.044)	(.161)	(.000)	(.062)
4th index	.602**	.974**	.304	1.000	.598**	.976**	.300	1.000	.555**	.876**	.221	.942**
Oil Exports	(.001)	(.000)	(.131)	.	(.001)	(.000)	(.136)	(.000)	(.003)	(.000)	(.278)	(.000)
1st index	.999**	.655**	-.392*	.598**	1.000	.654**	-.423*	.596**	.838**	.578**	-.305	.558**
	(.000)	(.000)	(.048)	(.001)	.	(.000)	(.031)	(.001)	(.000)	(.002)	(.129)	(.003)
2nd index	.657**	1.000**	.232	.976**	.654**	1.000	.215	.973**	.597**	.916**	.193	.946**
	(.000)	(.000)	(.253)	(.000)	(.000)	.	(.292)	(.000)	(.001)	(.000)	(.345)	(.000)
3rd index	-.426*	.220	.990**	.300	-.423	.215	1.000	.295	-.394	.240	.801**	.333
	(.030)	(.281)	(.000)	(.136)	(.031)	(.292)	.	(.144)	(.046)	(.237)	(.000)	(.097)
4th index	.599**	.971**	.296	1.000**	.596**	.973**	.295	1.000	.560**	.871**	.208	.936**
Non-Oil	(.001)	(.000)	(.142)	(.000)	(.001)	(.000)	(.144)	.	(.003)	(.000)	(.308)	(.000)
1st index	.860**	.588**	-.398*	.555**	.838**	.597**	-.394*	.560**	1.000	.381	-.479*	.397*
	(.000)	(.002)	(.044)	(.003)	(.000)	(.001)	(.046)	(.003)	.	(.055)	(.013)	(.045)
2nd index	.570**	.923**	.283	.876**	.578**	.916**	..240	.871**	.381	1.000	.401*	.970**
	(.002)	(.000)	(.161)	(.000)	(.002)	(.000)	(.237)	(.000)	(.055)	.	(.042)	(.000)
3rd index	-.322	.207	.868**	.221	-.305	.193	.801**	.208	-.479*	.401*	1.000	.423*
	(.109)	(.310)	(.000)	(.278)	(.129)	(.345)	(.000)	(.308)	(.013)	(.042)	.	(.031)
4th index	.552**	.952**	.370	.942**	.558**	.946**	.331	.936**	.397*	.970**	.423*	1.000
	(.003)	(.000)	(.062)	(.000)	(.003)	(.000)	(.097)	(.000)	(.045)	(.000)	(.031)	.
C	.447*	.105	-.428*	-.025	.473*	.088	-.559**	-.042	.046	.287	.152	.204
	(.025)	(.619)	(.033)	(.905)	(.017)	(.674)	(.004)	(.842)	(.827)	(.164)	(.469)	(.329)
G	-.033	.138	.290	.219	.013	.134	.312	.225	-.203	.245	.319	.234
	(.990)	(.511)	(.159)	(.292)	(.950)	(.523)	(.129)	(.280)	(.330)	(.237)	(.121)	(.260)

Table 7.A.2.
Correlation of Oil and Non-oil Commodity (1st Period)

	Total Export Earnings				Oil Exports				Non oil Exports			
T. Exports	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index
1st index	1.000	.487	-.729*	.194	.999**	.522	-.808**	.203	.832**	.084	-.573	-.009
	.	(128)	(.011)	(.567)	(.000)	(.100)	(.003)	(.549)	(.001)	(.805)	(.065)	(.980)
2nd index	.487	1.000	.115	.907**	.491	.998**	.045	.892**	.354	.829**	.186	.811**
	(.128)	.	(.736)	(.000)	(.125)	(.000)	(.896)	(.000)	(.285)	(.002)	(.584)	(.002)
3rd index	-.729*	.115	1.000	.240	-.710*	.065	.983**	.195	-.849**	.446	.933**	.539
	(.011)	(.736)	.	(.477)	(.014)	(.849)	(.000)	(.566)	(.001)	(.169)	(.000)	(.087)
4th index	.194	.907**	.240	1.000	.187	.898**	.221	.997**	.255	.869**	.250	.879**
Oil Exports	(.567)	(.000)	(.477)	.	(.582)	(.000)	(.513)	(.000)	(.449)	(.001)	(.459)	(.000)
1st index	.999**	.491	-.710*	.187	1.000	.524	-.793**	.193	.808**	.085	-.552	-.005
	(.000)	(.125)	(.014)	(.582)	.	(.098)	(.004)	(.569)	(.003)	(.804)	(.079)	(.989)
2nd index	.522	.998**	.065	.898**	.524	1.000	-.001	.888**	.397	.797**	.131	.775**
	(.100)	(.000)	(.849)	(.00)	(.098)	.	(.998)	(.000)	(.227)	(.003)	(.700)	(.005)
3rd index	-.808**	.045	.983**	.221	-.793**	-.001	1.000	.185	-.853**	.369	.862**	.470
	(.003)	(.896)	(.000)	(.513)	(.004)	(.998)	.	(.585)	(.001)	(.264)	(.001)	(.145)
4th index	.203	.892**	.195	.997**	.193	.888**	.185	1.000	.297	.843**	.198	.846**
Non-Oil	(.549)	(.000)	(.566)	(.000)	(.569)	(.000)	(.585)	.	(.374)	(.001)	(.560)	(.001)
1st index	.832**	.354	-.849**	.255	.808**	.397	-.853**	.297	1.000	.062	-.747**	-.059
	(.001)	(.285)	(.001)	(.449)	(.003)	(.227)	(.001)	(.374)	.	(.857)	(.008)	(.863)
2nd index	.084	.829**	.446	.869**	.085	.797**	.369	.843**	.062	1.000	.572	.980**
	(.805)	(.002)	(.169)	(.001)	(.804)	(.003)	(.264)	(.001)	(.857)	.	(.066)	(.000)
3rd index	-.573	.186	.933**	.250	-.552	.131	.862**	.198	-.747**	.572	1.000	.628*
	(.065)	(.584)	(.000)	(.459)	(.079)	(.700)	(.001)	(.560)	(.008)	(.066)	.	(.039)
4th index	-.009	.811**	.539	.879**	-.005	.775**	.470	.846**	-.059	.980**	.628*	1.000
	(.980)	(.002)	(.087)	(.000)	(.989)	(.005)	(.145)	(.001)	(.863)	(.000)	(.039)	.
C	.729*	.429	-.177	.062	.755*	.419	-.393	.014	.202	.250	.151	.223
	(.017)	(.216)	(.624)	(.865)	(.012)	(.228)	(.261)	(.969)	(.576)	(.487)	(.677)	(.535)
G	-.405	-.337	.060	-.185	-.417	-.340	.095	-.168	-.147	-.113	.095	-.135
	(.245)	(.341)	(.869)	(.609)	(.230)	(336)	(.795)	(.643)	(.686)	(.756)	(.793)	(.710)

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.3.
Correlation of Oil and Non-oil Commodity (2nd Period)

	Total Export Earnings				Oil Exports				Non oil Exports			
T. Exports	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index	1st index	2nd index	3rd index	4th index
1st index	1.000	.233	-.287	-.166	.993**	.172	-.372	-.202	.279	.100	.016	-.021
	.	(.466)	(.365)	(.606)	(.000)	(.592)	(.233)	(.528)	(.380)	(.757)	(.962)	(.948)
2nd index	.233	1.000	.837**	.866**	.218	.976**	.769**	.757**	.180	-.508	-.454	-.436
	(.466)	.	(.001)	(.000)	(.497)	(.000)	(.003)	(.004)	(.576)	(.092)	(.138)	(.157)
3rd index	-.287	.837**	1.000	.906**	-.296	.843**	.972**	.814**	.008	-.529	-.423	-.377
	(.365)	(.001)	.	(.000)	(.351)	(.001)	(.000)	(.001)	(.981)	(.077)	(.170)	(.227)
4th index	-.166	.866**	.906**	1.000	-.192	.913**	.923**	.960**	.170	-.601*	-.521	-.558
Oil Exports	(.606)	(.000)	(.000)	.	(.551)	(.000)	(.000)	(.000)	(.598)	(.039)	(.083)	(.059)
1st index	.993**	.218	-.296	-.192	1.000	.159	-.387	-.227	.160	.145	.109	.072
	(.000)	(.497)	(.351)	(.551)	.	(.621)	(.213)	(.477)	(.619)	(.653)	(.736)	(.823)
2nd index	.172	.976**	.843**	.913**	.159	1.000	.820**	.861**	.150	-.433	-.376	-.417
	(.592)	(.000)	(.001)	(.000)	(.621)	.	(.001)	(.000)	(.642)	(.159)	(.229)	(.178)
3rd index	-.372	.769**	.972**	.923**	-.387	.820**	1.000	.890**	.044	-.459	-.385	-.397
	(.233)	(.003)	(.000)	(.000)	(.213)	(.001)	.	(.000)	(.892)	(.134)	(.216)	(.201)
4th index	-.202	.757**	.814**	.960**	-.227	.861**	.890**	1.000	.162	-.438	-.388	-.499
Non-Oil	(.528)	(.004)	(.001)	(.000)	(.477)	(.000)	(.000)	.	(.614)	(.155)	(.213)	(.098)
1st index	.279	.180	.008	.170	.160	.150	.044	.162	1.000	-.331	-.735**	-.749**
	(.380)	(.576)	(.981)	(.598)	(.619)	(.642)	(.892)	(.614)	.	(.293)	(.006)	(.005)
2nd index	.100	-.508	-.529	-.601*	.145	-.433	-.459	-.438	-.331	1.000	.867**	.822**
	(.757)	(.092)	(.077)	(.039)	(.653)	(.159)	(.134)	(.155)	(.293)	.	(.000)	(.001)
3rd index	.016	-.454	-.423	-.521	.109	-.376	-.385	-.388	-.735**	.867**	1.000	.940**
	(.962)	(.138)	(.170)	(.083)	(.736)	(.229)	(.216)	(.213)	(.006)	(.000)	.	(.000)
4th index	-.021	-.436	-.377	-.558	.072	-.417	-.397	-.499	-.749**	.822**	.940**	1.000
	(.948)	(.157)	(.227)	(.059)	(.823)	(.178)	(.201)	(.098)	(.005)	(.001)	(.000)	.
C	.355	.039	-.129	-.246	.462	-.011	-.257	-.316	-.775**	.272	.619*	.663*
	(.258)	(.903)	(.689)	(.441)	(.130)	(.974)	(.419)	(.317)	(.003)	(.393)	(.032)	(.019)
G	-.077	-.481	-.407	-.521	.029	-.436	-.404	-.442	-.860**	.654*	.913**	.880**
	(.812)	(.113)	(.190)	(.082)	(.928)	(.156)	(.193)	(.150)	(.000)	(.021)	(.000)	(.000)

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.4.
Correlation of Total Exports, Oil and Non-oil Exports (Whole Period)

	Total Export	Oil	Non-oil
Total Exports	1.000	.999**	.865**
	.	(.000)	(.000)
Oil	.999**	1.000	.845**
	(.000)	.	(.000)
Non-oil	.865**	.845**	1.000
	(.000)	(.000)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.5.
Correlation of Total Exports, Oil and Non-oil Exports (1st Period)

	Total Export	Oil	Non-oil
Total Exports	1.000	.999**	.851**
	.	(.000)	(.001)
Oil	.999**	1.000	.829**
	(.000)	.	(.002)
Non-oil	.851**	.829**	1.000
	(.001)	(.002)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.6.
Correlation of Total Exports, Oil and Non-oil Exports (2nd Period)

	Total Export	Oil	Non-oil
Total Exports	1.000	.992**	.329
	.	(.000)	(.296)
Oil	.992**	1.000	.210
	(.000)	.	(.513)
Non-oil	.329	.210	1.000
	(.296)	(.513)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.7.
Correlation of Saudi Petrochemicals (Whole Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.821**	.467*	.682**	.120	-.693**
	.	(.000)	(.014)	(.000)	(.567)	(.000)
2nd index	.821**	1.000	.833**	.902**	-.129	-.576**
	(.000)	.	(.000)	(.000)	(.538)	(.003)
3rd index	.467*	.833**	1.000	.683**	-.347	-.389
	(.014)	(.000)	.	(.000)	(.089)	(.055)
4th index	.682**	.902**	.683**	1.000	-.036	-.534**
	(.000)	(.000)	(.000)	.	(.863)	(.006)
C	.120	-.129	-.347	-.036	1.000	-.128
	(.567)	(.538)	(.089)	(.863)	.	(.541)
G	-.693**	-.576**	-.389	-.534**	-.128	1.000
	(.000)	(.003)	(.055)	(.006)	(.541)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.8.
Correlation of Saudi Petrochemicals (1st Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.518	.318	-.988**	-.083	-.245
	.	(.103)	(.340)	(.000)	(.820)	(.495)
2nd index	.518	1.000	.971**	-.417	.120	-.197
	(.103)	.	(.000)	(.202)	(.741)	(.585)
3rd index	.318	.971**	1.000	-.208	.146	-.170
	(.340)	(.000)	.	(.539)	(.688)	(.638)
4th index	-.988**	-.417	-.208	1.000	.190	.153
	(.000)	(.202)	(.539)	.	(.599)	(.674)
C	-.083	.120	.146	.190	1.000	-.424
	(.820)	(.741)	(.688)	(.599)	.	(.222)
G	-.245	-.197	-.170	.153	-.424	1.000
	(.495)	(.585)	(.638)	(.674)	(.222)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.9.
Correlation of Saudi Petrochemicals (2nd Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.012	-.536	-.273	-.663*	-.769**
	.	(.970)	(.059)	(.366)	(.019)	(.003)
2nd index	.012	1.000	.774**	.923**	.275	.229
	(.970)	.	(.002)	(.000)	(.387)	(.474)
3rd index	-.536	.774**	1.000	.901**	.466	.476
	(.059)	(.002)	.	(.000)	(.127)	(.118)
4th index	-.273	.923**	.901**	1.000	.530	.362
	(.366)	(.000)	(.000)	.	(.076)	(.248)
C	-.663*	.275	.466	.530	1.000	.725**
	(.019)	(.387)	(.127)	(.076)	.	(.008)
G	-.769**	.229	.476	.362	.725**	1.000
	(.003)	(.474)	(.118)	(.248)	(.008)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.10.
Correlation of World, Saudi and Other Market's Oil Products (Whole Period)

	World Products	Saudi Products	Other Market Products
World Products	1.000	.890**	.997**
	.	(.000)	(.000)
Saudi Products	.890**	1.000	.854**
	(.000)	.	(.000)
Other Market	.997**	.854**	1.000
Products	(.000)	(.000)	.
Covariance			
World Products	2909625	22140.727	2887484
Saudi Products	22140.727	24469.636	-.2328.909
Other Markets Product	2887484	-2328.909	2889813

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.11.
Correlation of World, Saudi and Other Market's Oil Products (1st Period)

	World Products	Saudi Products	Other Market Products
World Products	1.000	.083	.996**
	.	(.808)	(.000)
Saudi Products	.083	1.000	-.009
	(.808)	.	(.980)
Other Market	.996**	-.009	1.000
Products	(.000)	(.980)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.12.
Correlation of World, Saudi and Other Market's Oil Products (2nd Period)

	World Products	Saudi Products	Other Market Products
World Products	1000	.756**	.988**
	.	(.003)	(.000)
Saudi Products	.756**	1.000	.648*
	(.003)	.	(.017)
Other Market	.988**	.648*	1.000
Products	(.000)	(.017)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.13.
Correlation of Total Exports, Oil Exports and Petrochemicals (Whole Period)

	Total Export	Oil Exports	Saudi Petrochemicals
Total Exports	1.000	.650**	.146
	.	(.000)	(.477)
Oil Exports	.650**	1.000	-.180
	(.000)	.	(.378)
Saudi	.146	-.180	1.000
Petrochemicals	(.477)	(.378)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.14.
Correlation of Total Exports, Oil Exports and Petrochemicals (1st Period)

	Total Export	Oil Exports	Saudi Petrochemicals
Total Exports	1.000	.897**	-.077
	.	(.000)	(.823)
Oil Exports	.897**	1.000	-.277
	(.000)	.	(.409)
Saudi	-.077	-.277	1.000
Petrochemicals	(.823)	(409)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.15.
Correlation of Total Exports, Oil Exports and Petrochemicals (2nd Period)

	Total Export	Oil Exports	Saudi Petrochemicals
Total Exports	1.000	.826**	.342
	.	(.001)	(.276)
Oil Exports	.826**	1.000	.465
	(.001)	.	(.127)
Saudi	.342	.465	1.000
Petrochemicals	(.276)	(.127)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.16.
Correlation of Total Exports to Traditional Markets (Whole Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.689**	-.325	.669**	.566**	-.320
	.	(.000)	(.113)	(.000)	(.005)	(.137)
2nd index	.689**	1.000	.264	.979**	.118	-.009
	(.000)	.	(.202)	(.000)	(.591)	(.966)
3rd index	-.325	.264	1.000	.302	-.310	.151
	(.113)	(.202)	.	(.143)	(.150)	(.492)
4th index	.669**	.979**	.302	1.000	.102	.016
	(.000)	(.000)	(.143)	.	(.643)	(.943)
C	.566**	.118	-.310	.102	1.000	-.412
	(.005)	(.591)	(.150)	(.643)	.	(.051)
G	-.320	-.009	.151	.016	-.412	1.000
	(.137)	(.966)	(.492)	(.943)	(.051)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.17.
Correlation of Total Exports to Traditional Markets (1st Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.411	-.710*	.204	.703*	-.402
	.	(.238)	(.021)	(.572)	(.023)	(.249)
2nd index	.411	1.000	.228	.958**	.201	-.240
	(.238)	.	(.526)	(.000)	(.577)	(.504)
3rd index	-.710*	.228	1.000	.323	-.290	.088
	(.021)	(.526)	.	(.362)	(.417)	(.810)
4th index	.204	.958**	.323	1.000	-.070	-.099
	(.572)	(.000)	(.362)	.	(.849)	(.785)
C	.703*	.201	-.290	-.070	1.000	-.424
	(.023)	(.577)	(.417)	(.849)	.	(.222)
G	-.402	-.240	.088	-.099	-.424	1.000
	(.249)	(.504)	(.810)	(.785)	(.222)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.18.
Correlation of Total Exports to Traditional Markets (2nd Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.217	-.324	-.172	.539	-.621
	.	(.498)	(.304)	(.594)	(.108)	(.055)
2nd index	.217	1.000	.827**	.859**	.031	.252
	(.498)	.	(.001)	(.000)	(.932)	(.483)
3rd index	-.324	.827**	1.000	.894**	-.318	.613
	(.304)	(.001)	.	(.000)	(.371)	(.059)
4th index	-.172	.859**	.894**	1.000	-.017	.490
	(.594)	(.000)	(.000)	.	(.963)	(.150)
C	.539	.031	-.318	-.017	1.000	-.424
	(.108)	(.932)	(.371)	(.963)	.	(.222)
G	-.621	.252	.613	.490	-.424	1.000
	(.055)	(.483)	(.059)	(.150)	(.222)	.

* Correlation is significant at the 0.05 level (2-tailed).

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.19.
Correlation of Total Exports, Traditional and Non-Traditional Markets (Whole Period)

	Total Exports	Traditional Markets	Non-Traditional
T. Exports	1.000	.998**	.847**
	.	(.000)	(.000)
Traditional	.998**	1.000	.817**
Markets	(.000)	.	(.000)
Non-Trad.	.847**	.817**	1.000
Markets	(.000)	(.000)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.20.
Correlation of Total Exports, Traditional and Non-Traditional Markets
(1st Period)

	Total Exports	Traditional Markets	Non-Traditional
T. Exports	1.000	.996**	.943**
	.	(.000)	(.000)
Traditional	.996**	1.000	.908**
Markets	(.000)	.	(.000)
Non-Trad.	.943**	.908**	1.000
Markets	(.000)	(.000)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.21.
Correlation of Total Exports, Traditional and Non-Traditional Markets
(2nd Period)

	Total Exports	Traditional Markets	Non-Traditional
T. Exports	1.000	.996**	.940**
	.	(.000)	(.000)
Traditional	.996**	1.000	.907**
Markets	(.000)	.	(.000)
Non-Trad.	.940**	.907**	1.000
Markets	(.000)	(.000)	.

** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.22.
Correlation of Total Exports to GCC Markets (2nd Period)

	1st index	2nd index	3rd index	4th index	C	G
1st index	1.000	.623*	.162	.320	-.237	-.650*
	.	(.023)	(.598)	(.287)	(.436)	(.016)
2nd index	.623*	1.000	.858**	.861**	.338	-.248
	(.023)	.	(.000)	(.000)	(.259)	(.414)
3rd index	.162	.858**	1.000	.856**	.576*	.103
	(.598)	(.000)	.	(.000)	(.039)	(.737)
4th index	.320	.861**	.856**	1.000	.433	-.194
	(.287)	(.000)	(.000)	.	(.140)	(.525)
C	-.237	.338	.576*	.433	1.000	.717**
	(.436)	(.259)	(.039)	(.140)	.	(.006)
G	-.650*	-.248	.103	-.194	.717**	1.000
	(.016)	(.414)	(.737)	(.525)	(.006)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Table 7.A.23.
Correlation of Total Exports, Traditional, GCC, African and Asian Markets (2nd Period)

	Total Export	GCC	Africa	Asian	Traditional Markets
Total Exports	1.000	.524	.908**	.926**	.997**
	.	(.066)	(.000)	(.000)	(.000)
GCC	.524	1.000	.236	.219	.472
	(.066)	.	(.438)	(.472)	(.104)
Africa	.908**	.236	1.000	.906**	.934**
	(.000)	(.438)	.	(.000)	(.000)
Asian	.926**	.219	.906**	1.000	.936**
	(.000)	(.472)	(.000)	.	(.000)
Traditional	.997**	.472	.934**	.936**	1.000
Markets	(.000)	(.104)	(.000)	(.000)	.

* Correlation is significant at the 0.05 level (2-tailed).
** Correlation is significant at the 0.01 level (2-tailed).

Chapter Eight

Summary and Concluding Remarks

The economic boom in the Kingdom in the seventies and the tremendous world-wide rise in oil prices had a great affect not only on the dominance of the oil sectors, but on all aspects of the Saudi national economy. Since the early 1970s international trade has been the main determinant of change in the Saudi economy. The thrust of the foreign trade policy was directed towards using export earnings for the attainment of development objectives. However, the instability of export earnings and the fluctuations in the terms of trade of oil posed a serious challenge to Saudi Arabia, which necessitated taking export diversification as a central task in its development objectives and efforts. Therefore, industrialisation was the key concern for Saudi Arabia through which the Kingdom had the opportunity to accomplish diversification by reducing a country's dependence on primary products and increasing manufacturers of the export products. This, in fact, is consistent with Massell's notion (1964, pp. 61-2) which regarded diversification as closely related with the industrialisation argument, and Love (1981, pp. 95) who asserted that 'such an interpretation was neatly compatible with the aspirations of many newly-independent and developing countries to seek growth through industrialisation, and diversification came to be associated with the addition of manufactures to the export list'.

Economic regionalism is a major goal of economic policy in both developed and developing countries. The success of the GCC wisdom will have, as El-Kuwaiz (1986-87, pp. 37) stated, 'a spillover effect on the Arab world at large' as it enhances relationships among Arab nations through reallocating resources; widening the

market zone; opening additional opportunities for job market; and creating a model for Arab unity. The concerted national and international efforts could be considered as a step toward commodity and geographic diversification, which promote the expedition of economic development and growth. Furthermore, these efforts could be directed to accelerate the industrialisation process within the framework of a GCC integrated economy.

Against this background, this chapter attempts to bring together the main findings and makes suggestions for further areas of investigation.

8.1 Overview of the Findings

This study attempted to explore industrialisation via national and regional approaches to development when applied to Saudi Arabia in an attempt to diversify in terms of commodity and geographically. In analysing the experience of Saudi Arabia internally and within the GCC trading partners, using the theoretical tools and economic justification, and by reviewing the economic structure of Saudi Arabia and the economic structures of the GCC member countries, the general position was that there is ample theoretical and practical justification for the application of the diversification program and the formation of some sort of economic integration among the GCC member countries.

However, the chosen diversification program and the form of economic integration among the GCC countries must be tailored to the needs of the political and economic structure of Saudi Arabia and its counterpart GCC countries. The endeavour examined in this study is the attempt to establish an industrialisation program that helps Saudi Arabia to diversify its internal economic structure, to raise foreign exchange earnings and to mitigate de-industrialisation effects of the resource

boom economies. Furthermore, this study considered the establishment of a regional industrial program and the establishment of the customs union for promoting industrial development among the GCC countries and at the same time strengthening their position in negotiation with the third parties.

In the course of considering these issues in this study, Chapter Two was devoted to shedding some light on the various industrialisation and integration schemes. The analysis of Chapter Two indicated that there are several reasons to justify the need and willingness of less developed countries to industrialise. In analysing the experience of the Kingdom, using the theoretical tools and economic analysis indicated in Chapter Two, it was evident that export-orientated industrialisation policies was used as a strategy for fostering economic diversification. Exports of manufactured goods, such as petrochemicals, permitted the exploitation of economies of scale, and at the same time availed the country with other financial sources. Analogously, export diversification, as indicated in chapter four, required widening of the Saudi market zone through engaging in economic cooperation with the GCC member countries and with other countries.

Analysing the economic structure of Saudi Arabia was the central focus of Chapter Three. The chapter discussed the essential conditions for diversification such as the role of the Government in economic activity, production conditions, and incentives to exports. The chapter indicated that Saudi Arabia is a growing economy relying on a primary product despite all the efforts done to diversify its productive base. This chapter revealed that international trade is playing a crucial role in supplying the country with foreign assets to finance its development plans, which is fluctuating over time. In addition, the chapter discussed diversification in a Saudi

contest and the implication of diversification on the Kingdom. It was found that there are several reasons for assessing the diversification strategy for Saudi Arabia i.e. reducing dependence on oil and gas exports, the fluctuations in oil export revenues and the need for more stable earnings and the need for more stable Government revenues to finance its development.

Chapter Four offered a view of the Saudi's diversification efforts within the GCC region. Reviewing the structures of the GCC countries in Chapter Four, it was found that these countries are almost economically, socially and politically homogeneous, exhibiting similar economic structure and problems. As such, trade creation hardly exists between this grouping. Yet, it is worth establishing a customs union among this grouping to benefit from the dynamic gains or from forming a strong bargaining power against third parties. Furthermore, the chapter reviewed the GCC objectives and policies, which stressed the fact that in order for the GCC to produce increased intra-trade they must be complementing each other and this depends on the efforts of their Governments.

Chapter Five was concerned mainly with petrochemicals which the Kingdom is relying much on to diversify its export structure. The chapter was involved in defining petrochemicals and introducing the various types of petrochemicals, their major characteristics and the principal markets, EU, US and Japan. The chapter also discussed the potential importance of the petrochemical industry to the Saudi economy where petrochemicals represent a viable source in acting as a major force for diversifying the industrial base. Inter-linkages created within the economy, the main problems facing the industry and the relevant policies directed towards the industry were also considered.

Models, method and measurement of diversification and fluctuations were presented in Chapter Six. In this chapter a model of trade diversification was developed in a Saudi context following the Markowitz model of portfolio analysis which highlights the relationship between export earnings and fluctuations. The model was directed at investigating the impact of Saudi trade diversification in reducing export-earning fluctuations and at determining the optimal mix of export commodity to mitigate the effects of short-run variation in export earnings. Then a proportionate contribution statistic approach was identified to examine the extent to which instability in total export earnings of a particular country is related to concentration. Gini-Hirschman coefficient and four instability indices were applied to measure concentration and instability.

Chapter Seven was concerned with the results. The chapter introduced the Saudi thrust of policy, which was done in a schema showing the main features of policy regimes in the period during the six Development Plans. The thrust of policy was classified into two stages according to policy action. The first stage was concerned with industrialisation adapting import-substitution-manufacturing scheme, restructuring and diversifying the structure of the economy. The Government was playing a leading role in inducing development while providing the appropriate investment opportunities and atmosphere to the private sector to increase their involvement and helping them to participate effectively and competitively in the economy. The second stage involves implementing export orientated industrialisation strategy as a step to achieve commodity and geographic diversification. The main feature of this stage was the decrease in government expenditure and the reliance on the private sector to induce development and on

diversifying exports to release the dependence on oil exports to ensure stability of earnings, yet, the emergence of some world events such as the Gulf War, delayed the reaping of the benefits of the diversification program.

Furthermore, the chapter shows that the diversification efforts in Saudi Arabia's GDP structure was successful in imposing important changes in the compositional structure of the GDP, but much of the change has been directed at the production of goods and services for domestic consumption. In reviewing the diversification efforts in terms of commodity, it appeared that although the pattern of Saudi export earnings is becoming more concentrated over the years 1974-1986, and then 1990-1993, the years 1987-1989 witnessed some positive effects of the diversification efforts as indicated by the decline in the country's commodity index. Though the decline is to be viewed as a positive effect of diversification, this result is to be interpreted cautiously as the main sources of this decline have not been clearly identified. The analysis of the geographic concentration index reveals positive results of the diversification efforts as an indication of the accomplishment of the Kingdom's policy in pulling the country's exports away from the traditional markets.

Although the instability indices showed decline in the fluctuation levels of Saudi export proceeds in the second period which contradict with the concentration profound in the commodity composition of export earnings, it was evident that oil was the major source of fluctuations in the Saudi economy. The evidence showed that the GCC market is a stable market while it indicated that the traditional markets are responsible for most of the fluctuations in total earnings. Reviewing the results obtained from petrochemicals indicated slight increase in the level of instability,

which was the product of external factors, this actually was regardless of the Saudi anticipations from the production of petrochemicals.

The results of the proportionate contribution statistic applied for the Saudi economy indicate that the major product (oil) and the major markets (traditional markets) contributed disproportionately to total earnings instability.

8.2 Areas for Future Study

The limitations encountered in this study, caused by lack of data, obligates that this study proposes areas for further study, with Saudi Arabia as a potentially relevant country for conducting this future research. Issues and potential areas for further research as data become available include:

1) Investigating the possible effects of the Dutch disease and resource curse hypothesis on the economy of Saudi Arabia, with emphasis on policy initiations which may help in mitigating undesirable effects.

2) Assessing the relevance of the East Asian model of export promotion to Saudi Arabia and the extent to which such a model embodies implications for economic policy in Saudi Arabia.

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