DISSERTATION

EXPORT-LED GROWTH HYPOTHESIS: CAUSALITY ANALYSIS FOR OIL-BASED GULF COOPERATION COUNCIL COUNTRIES

Submitted by

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WE HEREBY RECOMMEND THAT THE DISSERTATION PREPARED UNDER OUR SUPERVISION BY WALEED ALKHUZAIM ENTITLED EXPORT-LED GROWTH HYPOTHESIS: CAUSALITY ANALYSIS FOR OIL-BASED GULF COOPERATION COUNCIL COUNTRIES BE ACCEPTED AS FULFILLING IN PART REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY.

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ABSTRACT OF DISSERTATION

EXPORT-LED GROWTH HYPOTHESIS: CAUSALITY ANALYSIS FOR OIL-BASED GULF COOPERATION COUNCIL COUNTRIES

The main objective of this study is to examine the export-led growth (ELG) hypothesis for the Gulf Cooperation Council (GCC) countries. More specifically, the study empirically investigates the long run relationship and the causality direction between aggregate export and economic growth and between disaggregate export (oil and non oil export) and economic growth for Bahrain, Kuwait, Oman, Saudi Arabia, and the United Arab Emirates. Qatar, though one of the GCC countries is excluded from this study, since there is no data set suitable to examine the long run relationship between the variables under consideration. In the current study, the Johansen multivariate cointegration technique, the Granger causality test in the error correction model (ECM) framework, and the standard Granger causality test were applied to the investigation of the ELG hypothesis for the first model which is based on Ram's 1985 model. Moreover, the Ordinary Least Square (OLS) test was applied to the second model which is based on Feder's 1982 model to investigate how the export sector affects the non export sector (export-created externality) in these five countries.

The estimation result of the Johansen cointegration test in chapter five showed that, with the exception of Saudi Arabia, there is a long run relationship between economic growth and both aggregate and disaggregate exports in the GCC countries.

However, the results suggest that oil exports are not cointegrated with economic growth in the case of Oman, indicating that there is no long run relationship between these two variables.

The results of causality test provide support for the ELG hypothesis in the long run only in the case of Oman, where aggregate exports Granger cause real GDP. However, our findings showed that this hypothesis has not been supported in the case of Kuwait, Saudi Arabia, or the United Arab Emirates. In the case of Bahrain, the results indicated that the causal relationship among these variables has not existed in the long run.

The results obtained from investigating disaggregate exports showed that in regard to oil exports, a unidirectional causality from real GDP growth to oil exports was indicated in Kuwait, Saudi Arabia, and the United Arab Emirates while the reverse result was found in Oman. With regard to non oil exports, the causality tests clearly indicate that causality runs from GDP growth to non-oil exports in the UAE, and reverse causality is found for Oman. Bidirectional causality was found in the long run in Saudi Arabia and Kuwait. Oil and non-oil exports were found to have no causal relationship with economic growth in Bahrain. Finally, this study concludes with some implications for the GCC countries based on our empirical findings.

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CHAPTER ONE

INTRODUCTION

1.1 Overview

In the late nineteenth and early twentieth centuries, exports were seen as central to the development of a nation's economy and as the basic engine for economic growth. More recently, several theories hypothesize the important role for exports in economic growth. These theories are both development- and trade oriented, and all are based on the assumption that export growth contributes positively to economic growth. There are several facts that support the importance of exports in economic growth. First, an economy's specialization is improved by growth of exports, which leads to more efficient production. Second, the exports sector often generates positive externalities in other economic sectors, through improved production techniques. Third, if a country has export promotion, it uses more of the available factors of production, and uses these factors more efficiently. Fourth, an expansion of exports may increase the scope of the economy of scale in exporting firms and encourage allocative efficiency and dynamic competitiveness of these firms.

Since exports are one of the GDP components, it is suggested that export growth contributes directly to GDP. Accordingly, recent development and trade literature shows a reemergence of interest in the issue of exports and economic growth. In

particular, there is a renewed and considerable attention and interest in the export-led growth phenomenon.

The relationship between export and economic growth for various countries has been analyzed theoretically and empirically. A great number of empirical studies have applied to several decades' worth of data to examine the impact of exports on economic growth or to develop the export led growth hypothesis (i.e., that export growth causes economic growth), by using either cross section or time series data. Although the majority of empirical work supported this hypothesis (Chenery, 1979; Tyler,1981; Balassa,1985; and Salvatore and Hacter,1991), others (Jung and Marshal, 1985; Ahmad and Kwan, 1991; and Dodaro,1993) reached the opposite conclusion: that increased exports did not lead to faster growth.

1.2 Problem Statement

There is an ongoing debate in literature about the relationship between export expansion and economic growth. Preceding studies suggest that with strong export expansion there is faster economic growth and vice versa.

Since the early 1970s, a large number of empirical studies have been conducted to investigate if exports promote economic growth or not. The early studies on this issue tested the simple correlation coefficient between exports and output. Most of these studies such as Michaely (1977) and Balassa (1978) found that the export promotion and output growth were highly correlated. The weakness of this group of studies is that while a simple correlation between these variables was found to exist, the direction of causality was not tested.

Later, in early 1980s, the testing of causality between export growth and economic growth became more common. During this time there were many studies designed to examine the export led growth hypothesis by using Granger or Sims causality tests (see Jung and Marshal, 1985; Chow, 1987; Kunst and Martin, 1989; Khan and Saqin, 1993; and Dodaro, 1993). The basic problem with these types of causality tests was that their results were only valid if the time series data used were stationary; as it is quite likely that a given economic time series data set will be non stationary, additional analytical techniques were developed. A contemporary analysis thus begins with a test to determine the stationarity of the data to be examined.

More recently, the techniques of cointegration and the Error Correction Model (ECM) have become popular and many researchers use some variation of them for determining the long run relationship between exports and economic growth, such as Serletis (1992), Oxley (1993), Bahmani-Oskooee and Alse (1993), Ghatak, Milner and Utkulu (1997), Rahman and Mustafa (1998), Isalm (1998), and Titus (2003). However, no one has studied the phenomenal growth of the economies of the Gulf Cooperation Council (GCC) countries. It is clear that GCC economic growth is heavily dependent upon exports, particularly oil exports, yet to date no study has been made using cointegration methodology to estimate the long run relationship for these countries. This study will attempt to address this gap in the literature.

Furthermore, while most of the existing research on the relationship between export and income growth takes GDP and GNP as measures of income or output and look only at total exports, this study will employ GDP as the measure of output, and will investigate disaggregate exports (oil exports and non oil exports) in addition to total

exports. Thus the influence of both aggregate export and disaggregate export on GDP will be examined.

1.3 The Purpose of the Study

The objective of this dissertation is to investigate the long run relationship between aggregate export and economic growth (as measured by GDP growth) as well as oil and non oil export and economic growth in the Gulf Cooperation Council Countries (GCC), namely Bahrain, Kuwait, Qatar, Oman, Saudi Arabia, and the United Arab Emirates, using a cointegration method. In addition to being linked by religion, culture, geography, and political ties, these countries all have oil-based economies in which most of the oil produced is exported and the revenues gained are used to purchase basic needs, including capital commodities and labor, from other countries. It is important to note that while the GCC countries have significant similarities, the differences among them are substantial, including vast differences in population size, territorial areas, per capita income, and oil reserves. For example, the total population in Saudi Arabia in 2001 was 22,689,903, while Bahrain had only 650,604 . Likewise, in 2001 the per capita income for Saudi Arabia was USD $7000, while $13000 in Kuwait, and $11000 in Bahrain.

Studies investigating the direction of causality between export promotion and output growth are also lacking for the GCC countries. Thus, the causal relationship between variables will be determined by using either the Error Correction Model if the variables consider are cointegrated or the Granger causality test if the variables under

study are not cointegrated, and a determination will be made whether export growth causes economic growth or economic growth causes export expansion.

1.4 Importance of the Study

In addition to providing a much-needed analysis of the relationship between export and economic growth in the GCC countries, this study will add to the small number of empirical studies examining economic data by means of cointegration and causality methodologies (i.e., the standard Granger causality test and the ECM). Furthermore, the direction of causation between export and economic growth will help policy makers and development economists in the GCC countries determine the best strategy for application in their respective countries. Therefore, if exports are found to lead economic growth in a particular country, then an export promotion strategy may be most appropriate. Conversely, if economic growth is found to cause export growth, then internal infrastructure development may be required for the country to expand its export sector.

1.5 Source of Data and Limitation of the Study

Annual data for the period 1970-2001 for Kuwait, Oman, and Saudi Arabia, for the period 1973-2001 for the United Arab Emirates, and for the period 1980-2001 for Bahrain will be used in this study to examine the long run relationship between aggregate and disaggregate exports and economic growth. The data on gross domestic product (GDP), labor force, gross capital formation as a proxy of capital accumulation, exports, oil export, as well as non oil export for those countries have been collected

from three sources: the International Monetary Fund (IMF) International Financial Statistics Yearbook 1999 and 2004; the World Development Indicators 2004 (WDI) (World Bank); and the Gulf Cooperation Council's Annual Statistical Bulletin from various volume.

The data series used in this study have a few limitations that should be indicated. First, the sample period is varies slightly between the countries studied: due to the lack of consistent data, it is limited to 1973-2001 for the UAE, and to1980-2001 for Bahrain. Furthermore, there is simply no data set suitable for a study of the long run relationship between exports and economic growth in Qatar, so this GCC country will be excluded from this study.

1.6 Organization of the Study

The dissertation is divided into six chapters. Chapter one begins with a brief summary, which explains and justifies the proposed study. It then states the problem to be examined, and describes the need for addressing this problem, argues for the importance of this study to the field, and identifies the sources of the data to be used and the corresponding limitations of that data, as mentioned above. It concludes with a thorough description of the study's organization.

Chapter two is a literature review. Using different types of econometrics techniques as an organization method, it summarizes the existing literature examining the relationship between export promotion and economic growth. In other words, this chapter has split the available literature into two main periods. The first period is characterized by the early empirical estimates which used simple correlation techniques

to study the relationship between exports and economic growth. The second period consists of the empirical studies which attempted to estimate the causality and cointegration of data sets describing exports and economic growth.

Chapter three presents necessary background information about the Gulf Cooperation Council and its member states, including the foundation and subsequent history of the GCC, the original objectives of this organization and how they have changed over time, and the institutional structure of the GCC. This chapter also presents a brief discussion of the economic structure of the GCC countries, including an economic overview, recent economic activities, regional and foreign trade, and finally the direction of exports of GCC countries.

Chapter four describes the methodology of the study and growth models. Included here is a detailed explanation of unit root tests, cointegration test, the Granger causality test, and the causality test with Error Correction Model. Finally, this chapter will discuss some growth models and present an argument for the models adopted in this study.

Chapter five will present the empirical results of this study, including data description. This discussion will include the results of the unit root test and the cointegration test, and it will describe causality based on the Error Correction Model (ECM) and the standard causality test. This chapter will also present the findings of the second model used, that of the Ordinary Least Square Regression (OLS).

The final chapter summarizes the work, concluding with policy implications for the GCC countries based on the results of our estimations.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

Since the late 1960s, numerous empirical studies have focused on the relationship between exports and economic growth. While many of these studies pioneered new modeling techniques or explored new hypotheses, many worked simply to expand important theories to new sets of data or to new types of data (i.e. cross sectional vs. time series data). Many differed substantially only in the types of economies they examined, in the sample size of the study, or in their overall purpose. In this review of the literature on empirical studies of exports leading economic growth, I will discuss these studies in two parts. I will trace the chronological development of the discipline. These early studies all used relatively simple methodology to examine economic relationships: they employed a basic correlation test to determine if and to what degree exports have a positive impact on a particular economy.

In the next section I examine more recent econometrics estimations. These studies tend to fall into one of two basic methodological types:

(1) Studies that apply the causality test, either that developed by Granger (1969) or by Sims (1972).

(2) Studies that apply both a causality test and a cointegration technique in order to examine the long-term relationship between exports and economic development, as well as directions of influence (whether exports cause economic growth or vice versa).

My review treats each of these methodological types in a separate subsection, exploring the different purposes, sample sizes, and time frames of specific studies, and attempting to understand the larger patterns of analysis within each. While these studies presented numerous important conclusions about the interdependent nature of exports and the growth of economy, they nearly all shared the overall conclusion that exports promote economic development.

2.2 Early Empirical Estimation

The empirical work of testing a simple correlation between exports and economic growth was started in the late 1960s and early 1970s. Over the course of the studies examined below, increasing effort was put into examining different types of exports, and the effect of exports on economic growth in comparison to the effects of other sources of capital; also, the categorization of countries changed from the rather simplistic "developed and developing" to more diversified categories like "low income, less developed countries."

The first study of this nature (Emery,1967) investigated the relationship between exports and economic growth. The objective of his study was to test the hypothesis that exports and economic growth are correlated. Annual data from 1953 to 1967 was used for 50 developed and developing countries.

In his paper, he used the following regression equation:

$\Delta GNP = \alpha + \beta \Delta X$

$\Delta GNP = \alpha + \beta_1 \Delta X + \beta_2 CA$

where:

ΔGNP: The average annual rate of change in per capita real GNP.

ΔX: The average annual rate of change in exports.

CA: Current account balance.

Emery's results illustrated that a higher rate of export is associated with a higher rate of economic growth. The correlation coefficient between GNP and exports was found to be 0.82 with a high F value of 98.722 which reinforced the significance of the relationship. The correlation between GNP and current account was also found to be high; for example, the correlation coefficient was (0.753 and the F value was 62.95. Also, Emery found that most countries that have a low rate of export have a low rate of economic growth. Therefore, based on this result he concluded that these countries should adapt the type of policies that will stimulate exports or at least not promote import substitution.

Maizels (1968) examined the relationship between the change in the rate of export and the rate of change in GDP as a measure of economic growth. He used a data set of nine developing countries covering the period 1951 to 1962. The result of this study illustrated that there is a significant correlation between these two variables.

Using data for the period 1960-73 from 39 less developed countries (LDC), Michalopoulos and Jay (1973) used regression procedures to assess the effect of export growth on economic performance. In their study, they used general production function

with exports as an additional input. Also, they divided investment into domestic and foreign investment, so the model became:

$$\frac{\dot{Y}}{Y} = \alpha + \beta_1(\frac{\dot{Kd}}{Kd}) + \beta_2(\frac{\dot{Kf}}{Kf}) + \beta_3(\frac{\dot{L}}{L}) + \beta_4(\frac{\dot{X}}{X}) \qquad (2\text{-}1)$$

Where dots indicate change over time.

$\dot{K} = \Delta K/\Delta t = I$

According to their results, a significant relationship between export performance and economic growth exists. Also, the relationship between the competitive factor of export growth and the degree of openness of the economy was positive and significantly high.

In another study, by using both time series and cross sectional data, Voivodas (1973) conducted a study on 22 less developed countries for the period 1956-1967. The examination of the relationship between exports and foreign capital inflow, and domestic growth rate was the main goal of his paper. he used two models to analyze this relationship: the first was the two-gap model and the second was the Harrod-Domer growth model. His results indicated that, while there was a significant and positive relationship between exports and domestic growth, the relationship between foreign capital inflow and the rate of growth of GDP was insignificant, meaning that the foreign capital inflow did not contribute significantly to the development process of these countries.

Moreover, using the same methodology as above, Voivodas (1974) conducted a study of the South Korean economy during the period 1962 to 1970. The data used was time series data. While his methods were the same as his 1973 study, his results were strikingly different: he found that in this data set there was a positive and significant

relationship between all variables tested. His final conclusion was that unlike less-developed countries, South Korea's development process benefited strongly from foreign capital inflow.

Taken together, Voivodas's two studies emphasized the importance of the type of economy under consideration. While the economies of the semi-industrial countries can reap immediate benefit from capital inflow, poorer economies may require foreign capital inflow in order to prosper. In other words, the role of capital goods in the development of an economy is critical, and the relationship between exports and economic growth is dependent on these goods.

Michaely (1977) tested the hypothesis that the rapid growth of exports accelerates economic growth. In his study, he did not use the absolute level of exports as a measure of export performance but instead used the proportion of exports in the gross national product. The rate of change of per capita GDP was used as a measure of growth rate. Twenty four observations were used to test the hypothesis starting from 1950 to 1973 for 41 less developed countries. This study concluded that there is a positive correlation between the growth rate of exports and the rate of economic growth.

In addition, the effects of exports on economic growth in a group of eleven industrial developing countries were examined by Balassa (1978). He used data from 1960 to 1973, using three measures to test the relationship between export expansion and economic growth. These measures were: the growth of export versus growth of output, export growth versus growth of output in net of export (i.e. EX-IM), and the average ratio of exports to output versus the output growth. In his study, he found that export expansion affects the rate of economic growth. Also, the estimate he presented in

his study provides evidence as to the benefits of export-orientation as compared to policies oriented towards import substitution.

Twenty-two Latin American countries were chosen by Williamson (1978) to investigate the relationship between economic growth and exports, foreign capital, and investment. He used both time series and cross sectional data covering the period from 1960 to 1974. The results indicated that there is a significant relationship between growth and the explanatory variable under consideration. Based on his finding, for countries that wished to increase their rate of economic growth, Williamson suggested that one or more of the following should be increased: exports, foreign private direct investment inflows, or other foreign capital inflows.

Nigeria's economy was studied by Faijana (1979). His study was based on time series for the period 1957 to 1974. He estimated the relationship of exports and foreign capital on economic growth in order to investigate the impact of trade on the Nigerian economy. The time period (1957-1974) was divided into two subperiods, 1957-1964 and 1965-1974, to differentiate between the impact of agriculture and oil exports on the Nigerian economy. During the earlier period exports were primarily agricultural; during the later period they were dominated by petroleum. In his study, Fajana found that a significant relationship existed between exports and growth. During the second period of study this relationship was stronger than in the first period. Accordingly, he concluded that petroleum exports have a greater impact on economic growth than agricultural exports. He found that the effect of exports on economic performance was stronger than the effect of foreign capital inflow, leading him to the conclusion that self-

initiated trade has played a more important role in the growth of Nigeria than outside aid.

Tyler (1981) conducted a study of 55 developing countries over the period 1960-1977. The main purpose of this study was to examine the relationship between growth and export expansion. By using a bivariate technique, he examined economic growth in relationship to various economic variables such as investment, the growth of manufacturing output, aggregate exports, and manufacturing exports. The result of Tyler's study showed that there is a significant positive relationship between GDP growth and exports. Furthermore, this result indicated that the export performance and capital formation are important factors to consider when trying to explain the inter-country variance in GDP growth rate during the period 1960-77.

Ram (1985) used the production function model that includes exports as a productive input to investigate the role of exports in economic performance. He looked at data from 73 less developed countries (LDC) between the periods 1960-1970 and 1970-1977. He divided the data into two time periods in order to judge whether the importance of exports for economic growth increased during 1970s. He worked under the hypothesis that in the 1970s, the burden of petroleum imports may have made exports more important for economic growth than earlier. Also, in order to see if the impact of exports on growth differed from one group to another over 1960s and 1970s, the study focused on two groups; low-income LDC and middle-income LDC. Moreover, since the cross sectional models are often beset by heteroscedasticity, Ram tested the assumption that the disturbance term is homoscedastic, a technique pioneered

in his paper. The following model was used to test the homoscedasticity of the error term by using a white test:

$$\frac{\dot{Y}}{Y} = \alpha + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X}) \qquad (2\text{-}2)$$

where the dot over a variable indicates the rate of growth and $I = \frac{dK}{dt}$.

The results of this study indicated that export growth is important for economic growth, both for low-income LDC and middle-income LDC. In addition, the study concluded that while the importance of exports for economic growth increased everywhere during the 1970s, during the 1960s the impact of exports on growth was smaller in low income LDC than in the middle income LDC. Finally, the statistical results indicated that there is an absence of both heteroscedasticity and other major specification errors in this study.

In a subsequent study, Ram (1987) examined the relationship between exports and economic growth in order to estimate two models of export-growth linkage. These models were both based on data from a sample of 88 LDC, and used both time series and cross sectional data for the period 1962-1982. He divided the time series data into two subperiods, 1962-1972 and 1873-1982 (a similar but slightly different division made in his 1985 study). For the cross sectional study, he sorted the countries by income into a low income group and a middle income group, and then added government size (expenditure) as an explanatory variable. He applied the following models:

$$\frac{\dot{Y}}{Y} = \alpha + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X}) + \beta_4(\frac{\dot{G}}{G}) \quad (2\text{-}3)$$

$$\frac{\dot{Y}}{Y} = \alpha + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \{\frac{\delta}{1+\delta} + F_x\}(\frac{\dot{X}}{X})(\frac{X}{Y}) + v \quad (2\text{-}4)$$

One of the chief advantages of Ram's method here was his use of the time series for a large sample size in order to estimate the export-growth linkage in each country. This study represented the first attempt to examine a country's export-growth linkage on an individual basis. In most cases, this method provided a good fit for both models. A positive relationship was found to exist between exports and economic growth in both the time series model and the cross-sectional one; additionally, this study showed the important influence of the government on economic growth. None of the results obtained were unexpected.

Overall, these early studies examined a simple correlation coefficient between export growth and economic growth, and found strong evidence in favor of the export-led growth hypothesis. This evidence was based on the fact that generally export growth and economic growth are highly correlated, and this also points out the central weakness of this group of studies: their over reliance on positive correlation as proof of causality. They generally make the a priori assumption that export growth causes output growth and do not consider the direction of the causal relationship between two variables.

Table 2-1: A Summary of Correlation Studies of Exports and Economic Growth Relationship

STUDY	DATA SET	METHODOLOGY	VARIABLES	RESULTS
Emery (1967)	50 Developed and developing countries 1953-1967	OLS	GNP growth and Export growth	Export and economic growth are correlated
Maizels (1968)	19 developing Countries	OLS	GDP growth and Export growth	A significant correlation between these two variables
Michalopoulos and Jay (1973)	39 less developed countries 1966-1973	OLS	GDP Export, Labor force, domestic and foreign investment	A significant relationship between export growth and economic growth
Voivodas (1973)	22 less developed countries 1956-1967	OLS	Exports, foreign capital inflow, and domestic growth rate	A significant and positive relationship between export and domestic growth
Voivodas (1974)	South Korea 1962-1970	OLS	Exports, foreign capital inflow, and domestic growth rate	A significant and positive relationship between all variable tested
Michaely (1977)	41 less developed countries, 1950-1973	Spearman's Rank Correlation	Per capita GNP growth and growth in the share of exports in GDP	A positive correlation between the growth rate of exports and the rate of economic growth

Table 2-1: (Continued)

STUDY	DATA SET	METHODOLOGY	VARIABLES	RESULTS
Balassa (1978)	Eleven countries, 1960-1973	Rank Correlation	GNP growth, Export growth, labor force growth, and capital growth	Support for (ELG) Hypothesis
Williamson (1978)	22 countries, 1960-1970	OLS, Linear Models.	Change in GDP, export, countries domestic investment, and other foreign capital	Support for (ELG) Hypothesis
Faijana (1979)	1957-1974 Nigeria	OLS	GDP growth, export share/output, trade balance, and current account.	A significant relationship existed between export and economic growth
Tyler (1981)	55 developing countries, 1960-1977	OLS	GDP growth, Export growth, L, and I	A significant positive relationship between exports and GDP growth
Ram (1985)	73 less developed countries, 1960-1977	OLS, tests for Hetroskedasticity and siginificions bids	Real GDP growth, real export growth, L, and I	Support for (ELG) Hypothesis
Ram (1987)	Time series and cross sectional, 88 less developed countries, 1962-1982	OLS	Real GDP growth, real export growth, L, I, and G	A positive relationship existed between exports and economic growth

Note: ELG: stands for Export-led growth hypothesis
L: stands for labor force
I: stands for the growth of capital input
G: stands for government expenditure

2.3 Recent Empirical Estimation

2.3.1 Estimation of Causality

The causality estimation between economic variables began with Granger (1969). He took the standard assumption, that a variable *X* causes *Y* if *Y* can be shown to be more predictable when the past history of *X* as well as all available information on *Y* is taken into account, and developed a statistical causality test, where for a variable *X* to influence another variable *Y* the information for *X* should include information about *Y* that is not available anywhere else. Granger found that for the most part there are four different directions for causality. These are: X causes Y; Y causes X; and X causes Y and Y causes X in a bidirectional relationship. Finally, Granger concluded that if X does not cause Y and Y does not cause X, the two variables can be said to be statistically independent of each other. The Granger test for causality is by far the most common, with the Sims test (Sims, 1972) being used for certain other situations. The Sims test is almost identical to the Granger test, except that it uses a different filter to separate trends in time series data. It has been shown that the Granger test performs slightly better than the Sims test when applied to a small sample size (Guilkey and Salemi, 1982).

In the decades since Granger's seminal paper, a great number of different causality tests have been developed to estimate the relationship between exports and economic growth. In the following section some of the more significant empirical causality tests will be highlighted and the ways they have been used to investigate the export-growth relationship.

Jung and Marshall (1985) used International Financial Statistics data from the period 1950 to 1981 in order to perform causality tests examining the relationship between export and growth for 37 countries. Surprisingly, they were able to establish a causal link between export growth and output growth in only four cases: Indonesia, Egypt, Costa Rica, and Ecuador. Greece and Israel, on the contrary, were found to support a growth-reducing export hypothesis, while Iran, Kenya, and Thailand provided data supporting the internally generated export hypothesis.

Taking total exports and manufactured output as his variables, Chow (1987) approached the problem using a Sims causality test. Chow's central purpose was to determine the causal relationship between export growth and industrial development in eight Newly Industrializing Countries (NICs): Argentina, Brazil, Hong Kong, Israel, South Korea, Mexico, Singapore, and Taiwan. His data spanned two decades, from 1960 to 1980, and his results indicated that except in the case of Argentina (where no causality was found), export growth has significantly influenced the process of industrial development. In Mexico this causality was found to be unidirectional, while in Hong Kong, Israel, South Korea, Singapore, and Taiwan it was bidirectional. Furthermore, he found that bidirectionality is not limited to small economies. Even Brazil, with its relatively large domestic market in contrast to the five other countries, revealed that export growth has a bidirectional causal relationship with the development of manufacturing industries. He found that in Mexico the expansion of exports has accelerated industrialization, while industrialization, interestingly, failed to contribute to the growth of export. One way to read this result is to conclude that export growth can

influence industrialization by unidirectionally or bidirectionally causing the development of manufacturing, depending on the size of the domestic market.

Chow's study confirmed the importance of an export-led growth strategy for small open countries. The Asian NICs have clearly overcome a limited domestic market by exporting their manufacturing outputs to the international market, allowing them to take advantage of the positive relationship between the expansion of manufactured exports and industrial development.

In a different type of economy, Kunst and Marin (1989) examined the Austrian manufacturing sector for evidence of a causal relationship between export growth and productivity growth. In this study they used data from the period 1956 to 1982. Their results indicated that productivity growth, measured as manufacturing output per employee, had a unilateral effect on the manufacturing sector export.

Hsiao (1987) conducted a study to test the export-led growth hypothesis for four Asian NICs (Hong Kong, South Korea, Singapore, and Taiwan). To do so, she applied both Granger and Sims tests. The data set that she used in her study were from the years 1960 to 1984. The results of this study indicated the subtle differences between the tests: according to the Granger test, GDP growth caused an increase in exports in Hong Kong and no causality was revealed between the two variables in the other countries (South Korea, Taiwan, and Singapore). However, the Sims test showed that the GDP growth caused an increase in exports in Hong Kong, and indicated a bidirectional causality for other countries. Clearly, Hsiao's study supported the export-led growth hypothesis for Hong Kong, while explaining less about other Asian NICs in general.

By using the Granger causality test, Chan et al. (1990) examined the causality between real GDP and real exports. The focus of their study was Taiwan during the period 1952 to1987, and their results appeared to somewhat corroborate those of Hsiao (1987), as she found that the data from Taiwan during this time does not support an export-led growth hypothesis. In contrast, they found that growth of the GDP drove an expansion in exports.

Ahmad and Kwan (1991) applied the Granger causality test to the relationship between exports and national income in 47 African countries from 1981 to 1987. They used both a pooled time series and cross sectional data and found that the causality inferences reveal no causality link in either direction between exports to economic growth for the region as a whole. However, a few subsets of sample countries indicated faintly that economic growth leads an expansion in exports.

The causal relationship between export growth and economic growth was taken up again by Bahmani-Oskooee and et al. (1991), using a Granger causality test on data from 20 developing countries. They selected lag lengths according to Akike's FPF criteria. Various causal links from export growth to output were revealed:

(1) Unidirectional positive causality (The Dominican Republic and Taiwan);

(2) Unidirectional negative causality (Paraguay, Peru, and El Salvador);

(3) Positive feedback between the two (South Korea and Thailand);

(4) Internally-generated export growth (South Africa);

(5) No causality (Brazil, Ecuador, Greece, Guyana, Honduras, Jamaica, Morocco, the Philippines, Sri Lanka, and Tunisia); and

(6) Positive causality from exports to growth but negative causality from growth to exports (Indonesia).

Sharma et al. (1991) used time series data and a quarterly data set to apply the test to the causal relationship between growth and exports in five industrialized countries (Germany, Italy, Japan, the United Kingdom, and the United States) over the period 1960-1987. They found that Italy lacked a causal relationship between exports and output growth, while reverse causality characterized the relationship between exports and growth in the U.S and the U.K. They concluded that domestic demand conditions in these countries may have a significant impact upon growth and its related processes, with export relegated to a reactive rather than a deterministic role. Only Germany and Japan were determined to have experienced export-led growth. Bidirectional causality between exports and output was not observed in any of the developed countries.

Using Hsiao's version of Granger's causality test, Chartey (1993) approached the problem of determining the direction of the causal relationship between exports and economic growth in Japan, Taiwan, and the U.S. The results of his study indicate that export growth creates economic growth in Taiwan and that reverse is true in the U.S., with economic growth driving export growth, while in Japan Chartey found a feedback causal relationship between economic growth and export growth. In other words, the traditional export-led growth hypothesis was supported in the case of Taiwan, while in the U.S. it was the trade policies that argue that intra-industry trade or economic performance that were validated. Japan's feedback loop, in contrast, did not prove or disprove the wisdom of particular policies.

In the same year, Dodaro (1993) turned his attention to the contemporaneous relationship between real export growth and real GDP growth as well as the direction of causality between them. He studied individual countries' time series data for 87 LDCs over the period 1967-1986. He found that causality tests provided only minimal support for the hypothesis that GDP will grow if exports do; this causal relationship was identified in just four countries. In ten more cases he found a bi-directional causal relationship between export and GDP growth; in the 73 remaining countries there was no causality between these two factors at all.

In one of the more recent studies of causality, Suliman et al. (1994) used the Granger causality test and vector autoregressive (VAR) models to examine the relationship between exports and manufacturing output of South Korea from 1967 to 1989. Significantly, they used the ratio of currency to money supply in order to measure the degree of financial development. They concluded that export growth causes manufacturing output indirectly, by first creating financial development, which in turn causes an increase in manufacturing.

Table 2-2 Summary of Causality Studies of Export and Economic Growth Relationship

STUDY	DATA SET	METHODOLOGY	VARIABLE	RESULTS
Jung and Marshall (1985)	37 developing Countries, 1950-1981	Granger's test	Real GDP And real export	Only 4 countries provide support ELG hypothesis.
Chow (1987)	8 NICs (Argentina, Brazil, Hong Kong, Israel, South Korea, Mexico, Singapore, and Taiwan)	Sim's test in bivariate system	Real GDP in manufactures And export	Export cause GDP growth in Mexico Bidirectional causality found in Brazil, Hong Kong, Israel, South Korea, Singapore, and Taiwan, and no causality in the case of Argentina
Hsiao (1987)	Asian NICs (Hong Kong, Korea, Taiwan, and Singapore), 1960-87	Comparison between Granger and Sim tests	Real GDP And real export	GDP growth causes exports in Hong Kong on both Granger and Sims tests; No causality in other countries on Granger test and bidirectional causality on Sims test
Kunst and Marin (1989)	Austria, 1956-1982	Granger's tests with AIC for lag lengths	Productivity on manufacture and exports	No support for export led growth in productivity
Chan et al (1990)	Taiwan, 1952-1987	Granger's test with impulse lags	Real GDP and real exports	GDP growth causes exports

Table 2-2 (Continued)

STUDY	DATA SET	METHODOLOGY	VARIABLE	RESULTS
Ahmad and Kwan (1991)	47 African countries, 1981-1987	Granger test, AIC lag selection	Real GDP, per capita GDP, real total exports, manufactured exports, share of manufactures in total exports.	No causality in full sample; for high income group GDP growth cause export, but for low income group GDP cause a rise in the share of manufactures in total export
Sharma et al (1991)	Germany, Italy, Japan, and the US; 19160-191987	Granger's test, FPE criterion	Real GDP and real exports	GDP growth cause exports in UK and the US, and exports cause GDP growth in Germany and Japan
Chartey (1993)	Taiwan, Japan, and US, 1982-1986, Quarterly data	Granger's test, and Hsiao method	Real GNP, real exports, capital stock, and terms of trade	GDP cause exports in the US, but exports cause GDP in Taiwan, feedback causal relationship in Japan
Dodaro (1993)	87 developing countries, 1967-1986	Granger's test with 2 lags	Real GDP/ GNP and real exports	Exports cause economic growth in 4 cases; bidirectional causality in 10 cases and no causality in the rest
Suliman (1994)	South Korea, 1967-1989	Granger's test, VAR models	Real manufacturing GDP, real exports; the level of financial development, measured by the ratio of currency to money supply	Exports cause GDP growth indirectly via changes in money supply

Note: NICs : stands for "Newly Industrializing Countries"

2.3.2 Estimation of Cointegration and Causality

Currently, many empirical studies use cointegration and causality methods to investigate the relationship between economic variables, particularly the relationship between economic growth and export, along with other explanatory variables. There are many advantages for using cointegration methods to test economic variables. First, with a cointegration test the long-term relationship between growth and exports can be estimated, instead of simply the temporary dynamic between two variables. Second, a few tests that do use time series data do so without testing for stationarity. The stationarity of time series has important implications for the proper estimation of a long-term relationship.

Kugler (1991) examined the causal link between growth and exports using quarterly data over the period 1970-1987 for six countries: the U.S., Japan, Switzerland, Germany, the U.K., and France. This study provided one of the first tests of the theory proposed by Johansen (1988), in which the cointegration, or long-term, relationship, between GDP, consumption, investment, and export are determined. Kugler also studied the Granger causality model, showing that while there is only weak empirical evidence in support of export-led growth in the cases of France and Germany, overall there appears to be a strong interrelationship between the movement of exports and the trends of the other three variables.

In a similar study of highly developed countries, Marin (1992) applied the parameters of Kunst and Marin's 1989 study to Germany, the U.K., the U.S., and Japan. This study looked at export productivity, the terms of trade, and world output using the twin techniques of cointegration and Granger causality, and found in contrast to Kugler

(1991) that in all countries except the U.K. these factors moved together. Moreover, all four highly developed countries were found to demonstrate support of export-led growth.

Serletis (1992) used the cointegration techniques and the causality tests of Philip and Perron (1988) in order to study the empirical relationship between export promotion and GNP growth. He applied these tests to annual Canadian data from 1970 to 1985. He concluded by suggesting that the growth of GNP and export growth are largely independent and went on to take a stance in favor of the export led growth strategy, saying that an expansion of exports would promote the growth of national income.

Giles, Giles and McCann (1992) set out to show that the commodity composition of exports is essential to a study of the link between economic and export growth. Using disaggregate exports as well as aggregate data, they examined the role of exports in New Zealand's economic growth performance by means of cointegration, error correction and vector autoregressive models. Significantly for the development of cointegration and causality models, they concluded that their results reject the export led growth hypothesis at the aggregate level, but not at the disaggregate level. Specifically, they found that the export of live animals and meat, minerals, chemicals, plastic, manufactured goods, and metals contributed positively to economic growth in New Zealand.

Another test of the export-led growth hypothesis came from Oxley (1993), who took tests of cointegration as pretests for the Granger causality test and applied these models to data from Portugal for the years 1833-1985. In order to determine whether bivariate cointegration coexists between exports and aggregate income, as well as what

the direction of causality between the growth of the two variables was, Oxley developed a VAR model using the first differences of the data. He also added an error correction term in an attempt to capture the short-run dynamic. Using this technique in combination with the pretests strategy allowed him to identify the existence of causality before determining its direction via the standard Granger test, and his results favored the income growth theory of export growth in place of export-led growth.

An attempt to determine whether exports, investment, consumption, and real GDP are cointegrated was conducted by Kugler and Dridi (1993). They did this study for 11 developing countries for the period 1960 to 1986. The results of their study indicated that exports were cointegrated with other variables in seven countries. However, they did not analyze the direction of causality in their study.

Another attempt to determine the causal relationship between the expansion of exports and the expansion of an economy was undertaken by Bahmani-Oskooee and Alse (1993) using cointegration and an error correction model designed to maintain the long-run information of a series. They studied empirical evidence from nine countries, Columbia, Greece, South Korea, Malaysia, Pakistan, the Philippines, Singapore, South Africa, and Thailand, and found support for cointegration between exports and the GDP. As in the studies discussed above, they found that when they simply tested causality they did not find evidence for export-led growth, but when they included long-run data through the use of cointegration and error correction techniques, they did find that an increase in exports promoted a growth in output.

Using data spanning four decades (1953-1991) from twenty-six low, middle, and high income countries, including four newly industrialized countries (NICs), Dutt and

Ghosh (1994) examined exports versus economic growth. Intending to study long-term trends within the data, they tested stationarity using the Dickey Fuller and Phillips-Perron test, and achieved cointegration with the Phillips-Hansen fully modified Ordinary Least Square method. They ran the Phillips-Ouliaris test of non stationarity on the remaining data. While they did not test for the direction of causality, they were able to conclude that export growth and economic growth have increased concurrently for most countries after World War II.

Ahmed and Harnhirun (1996) employed the Engle and Yoo (1987) method for cointegration along with the bivariate Granger test (the error correction model) in order to examine the question of causality between exports and growth of GDP for the five member countries of the Association of South East Asia Nations (ASEAN), Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The data they examined by these methods were annual data for the years 1966 through 1988, and they were able to present both the series on exports and GDP in terms of real per capita. Their results indicate that economic growth determined the expansion of exports for all member countries of the ASEAN, and rejected the export-led growth hypothesis.

Rahman and Mustafa (1998) applied the Granger causality test modified by the cointegration and error correction techniques, to the problem of causality between real exports and real economic growth in thirteen Asian countries, Bangladesh, India, Pakistan, Sri Lanka, Nepal, Japan, China, Indonesia, Thailand, South Korea, Singapore, Philippines, and Malaysia. Based on their cointegration test, they found that there is likely to be a long-term equilibrium between the log of real exports and the log of real GDP for some of these countries, as these factors were cointegrated at a ten percent

level of significance or higher for Bangladesh, India, Pakistan, China, Thailand, Philippines, and Malaysia. However, they were unable to turn up any evidence for cointegration in Sri Lanka, Nepal, Japan, Indonesia, or South Korea. Importantly, the Granger causality test indicated that real export growth generally preceded real economic growth in countries from each of these contrasting groups, Bangladesh and Japan, while evidence supported the opposite conclusion, that GDP growth led export growth, for India, Pakistan, Sri Lanka, Indonesia, and Nepal. Finally, China, South Korea, Singapore, Thailand, Philippines and Malaysia showed evidence of having a bidirectional causality between GDP and export growth.

Biswal and Dhawan (1998) applied Engle and Granger's (1987) cointegration and error correction model technique to export led growth hypothesis in Taiwan, using annual data of that country from 1960-1990. They collected their data from Taiwan Statistical Data Books and used data in 1986 prices; they took the real GDP series as the output growth. They developed an alternative approach to the question of exports: they divided them into total real exports (EXP) and total manufactured exports (MFG), and took the natural logarithms of these variables. Thus, the variable pairs they tested for cointegration and causality were LGDP against LEXP and LGDP against LEXP. Their results indicated that under the cointegration test, there was a long term relationship between total exports and GDP over the decades 1960-1990, while using the causality test showed a bidirectional causality between these variables. Furthermore, they concluded that there was a long term relationship between manufactured-good exports (MFG) and GDP, and that there existed a faint causality in the opposite direction. Thus their findings directly contradicted the "no causality" result of Jung and Marshall (1985)

for data from a similar period in Taiwan, supporting instead the results of Chow (1987), who found that there was a bi-directional causality between exports and GDP growth during this period. The essential differences between the various studies involved Biswal and Dhawan's use of updated econometrics techniques, as well as the exact time series data used here.

Islam (1998) developed a multivariate error correction model to test the causality between exports and economic growth in 15 Asian countries, Bangladesh, India, Nepal, Sri Lanka, Fiji, South Korea, Singapore, Thailand, Philippines, Malaysia, Japan, Hong Kong, Indonesia, and Pakistan, using data from the period 1967-1991. Using the multivariate cointegration methodology, his study found that there exists only a single cointegration vector for Bangladesh, India, Nepal, Sri Lanka, and Fiji, and that there was no empirical evidence of cointegration between the variables for the remaining countries. By using the error correction model on the countries with a single cointegration vector and a multivariate Granger model on the others, and correcting for simultaneity between the causal factors, they found that the export-led growth hypothesis was strongly supported in two-thirds of these Asian countries for the period studied. They concluded that a country is in a better position to reap the benefits of an export promotion policy if it has a large public sector, a high level of economic development, and is able to minimize its vulnerability to external economic shocks. Over the entire sample period, the causal inferences are fairly stable.

Strong empirical evidence for the export-led growth hypothesis was found by Ekanayake (1999), who employed cointegration and error correction models to analyze the causal relationship between export growth and economic growth in eight Asian

developing countries: India, Pakistan, Sri Lanka, Indonesia, Thailand, Korea, Philippines, and Malaysia. He used annual data from the period 1960-1997. His results indicated the existence of strong bidirectional causality between export growth and economic growth in India, Pakistan, Sri Lanka, Indonesia, Thailand, Korea, and Philippines, with additional evidence for export-led growth in Malaysia. In all countries except Sri Lanka, he found clear evidence for short run Granger causality between economic growth (leading) and export growth (following). Importantly, the same test found almost no evidence for short-run Granger causality in the reverse direction.

More recently, Panas and Vamvoukas (2002) examined empirical evidence from Greece to trace the causal link between exports and economic growth. They used a modern time series analysis based on cointegration procedure, including its applied error correction model, and a multivariate causality test, applied to annual data from 1948 to 1997 taken from the National Greek statistical service and the central bank of Greece. The variables they tested in their multivariate analysis were real GNP, exports, the exchange rate of the Greek drachma, and the price level. They concluded that empirical evidence from a half century of data for Greece did not support the export-led growth hypothesis, instead finding that there exists a strong and consistent pattern of long-run causality running from output growth to export performance.

Table 2-3 A Summary of The Studies Testing Cointegration and Causality between Exports and Output Growth

STUDY	DATA SET	METHODOLOGY	VARIABLE	RESULTS
Kugler (1991)	5 countries, (The US, Japan, Switzerland, Germany, and France) 1970-1987	Cointegration Test, and Granger's test	Real GDP, Real Export, Investment, and Consumption	Export cointegrated with other variables only in France and Germany
Marin (1992)	4 countries, (Germany, UK, US, and Japan) 1960-1982	Cointegration test, Granger's test with (ECM)	Productivity in manufacturing, And real exports	Export cause growth of productivity in manufacturing in all countries except the US
Serleties (1992)	Canada, 1870-1985	Cointegration test, Granger's test, Schwartz criterion	Real GDP, real export, and real import	Export cause the growth of imports, Which in turn cause the growth of the GDP
Giles et al (1992)	New Zealand, 1963-1991	Cointegration test, Error Correction, Vector Autoregressive	Real GDP, Aggregate and Disaggregated real exports data for 7 sectors.	No support for export in the aggregate. Disaggregate exports contribute positively to economic growth
Oxley (1993)	Portugal 1865-1985	Cointegration test, Granger's test (ECM)	Real GDP, and real exports.	Growth of the GDP cause exports.
Kugler and Dridi, (1993)	11 developing countries 1960-1989	Cointegration test	Real GDP/GNP, real export, investment, and consumption.	Exports are cointegrated with other variables in 7 cases.

Table 2-3 (continued)

STUDY	DATA SET	METHODOLOGY	VARIABLE	RESULTS
Bahmani-Oskooee and Alse, (1993)	9 developing Countries, 1973-1988	Cointegration test, and (ECM)	Real GDP/GNP, And real export	Exports and GDP are cointegrated in all cases
Dutt and Ghosh (1996)	26 developing countries, 1953-1991	Various cointegration tests	Real GDP, and real exports	Exports and GDP are cointegrated in many cases
Ahmed and Harnhirn (1996)	ASEAN Countries, 1966-1988	Engle and Yoo Cointegration test, Granger's test, and (ECM).	Real GDP, and real exports	No cointegration between variables and GDP causes exports in all countries
Rahman and Mustafa (1998)	13 Asian countries	Cointegration test, Granger's test, and (ECM).	Real GDP, and real export	Real export growth cause real economic growth in 2 countries, while GDP growth led export growth in 5 countries, also, a bidirectional causality existed between GDP and export growth
Biswal and Dhawan (1998)	Taiwan 1960-1990	Cointegration and Granger's causality with (ECM).	Total export, manufactured export, and real GDP	Variable are cointegrated and causality bidirectional
Islam (1998)	15 Asian NICs 1967	Cointegration and Granger tests.	Real GDP, and real exports	The export led growth hypothesis was supported in two thirds of these countries

Table 2-3 (Continued)

STUDY	DATA SET	METHODOLOGY	VARIABLE	RESULTS
Ekanayake (1999)	8 Asian developing countries, 1960-1997	Cointegration and Error Correction Models tests	Real GDP, and real exports	Tow variables are cointegrated in all eight cases. And there is a bidirectional causality between exports growth and economic growth in 7 of 8 countries. Also, export cause economic growth in Malaysia.
Panas and Vamvoukas (2002)	Greece 1948-1997	Cointegration test, and (ECM)	Real GNP, export, the exchange rate, and price level	Output growth cause export growth

Note: ECM: stands for Error Correction Model
ASEAN: stands for the Association of South East Asia Nations

CHAPTER THREE

GULF COOPERATION COUNCIL: HISTORY, OBJECTIVES, AND ECONOMIC STRUCTURE

3.1 Overview

This chapter examines the history of the Gulf Cooperation Council, especially as it relates to the development of the GCC member state economies. The founding, the objectives, and the institutional structure of the GCC are discussed. The rest of the chapter is devoted to a thorough look at the history of each GCC nation's economy, and how the economy has been shaped and developed by its association with the GCC.

3.2 History and Foundation of the Gulf Cooperation Council

The Arab Gulf states of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates are united by several traits: they are rich countries ruled by dynastic regimes that share a socially conservative culture. These traits have enabled them to find common ground for several decades, and promoted a level of cooperation unknown in the rest of the region.

Since achieving independence, the majority from the United Kingdom, the Gulf countries have pursued the goal of political and economic cooperation throughout the region. Sheikh Jaber Al Sabah, president amir and crown prince of Kuwait, began the effort in 1976, traveling throughout the Gulf region to promote economic union and

cooperation between the Gulf countries. His efforts have come to be known as the beginning of the Gulf Cooperation Council (GCC), which was formally founded several years later (Bishara, 1984). His brother crown prince, Sheikh Saad Al Sabah, repeated the Kuwaiti effort in 1978. He repeated his brother's itinerary, trying to strengthen Arab relations among the Gulf countries through more coordination and cooperation on several issues (Assiri, 1990).

The Gulf Cooperation Council formally began a few years after Sheikh Saad Al Sabah's trip, when the leaders of the six Gulf states met in Abu Dhabi on May 25, 1981. This essential event in the affairs of the Gulf states culminated in the signing of an agreement to cooperate in political and economic matters to avoid the crises that afflicted some of their fellow Arab states. Al-Mofarrej (1991) sums up their motivations as:

> "The creation of the GCC was motivated by political as well as economic factors. Regarding the political factors, the Iranian revolution (1979) and the Iran-Iraq war (1980) may be consider as the main motivating political factor. The need for diversification and the fear of depletion of their oil reserves are perhaps the most overriding economic consideration the move to integrate the economy of the six countries. The weakness of OPEC's[1] position in the early 1980s may also be considered as a motivating factor as GCC members wanted to restore their international political and economical standpoint."

At the beginning this association, different member countries have had different concepts of the GCC's purpose. Kuwait was mainly interested in economic cooperation, Saudi Arabia placed emphasis on both economic factors and the security of the region, and Oman focused on its major security issue, the defense of the Straits of the Hormuz,

1 - Organization of Petroleum Exporting Countries.

as a first step towards a collective defense system. The final agreement achieved a cooperative balance between these diverse needs (Thackwary, 1997).

3.3 Gulf Cooperation Council Objectives

The mission, goals, and activities of the Gulf Cooperation Council are laid out in the charter[2], which also serves as its principal organizational tool. The charter states the highest goals of the member countries in a preamble and 22 articles and is based throughout on the principles of coordination, cooperation, and integration, as well as Arabic and Islamic values. The main objectives of the council are:

1- To increase coordination, integration and interconnection among member states, with a final goal of unity of purpose and action.

2- To deepen and strengthen relations between their citizens on both personal and professional levels.

3- To formulate similar regulations in various fields, including: economic and financial affairs; commerce, custom and communication; education and culture; social and health affairs; information and tourism; and legislative and administrative affairs.

4- To stimulate scientific and technological progress in the fields of industry, agriculture, and the like.

Finally, the GCC charter provides for several committees to be established to achieve these objectives. These committees include but are not limited to the social and economics planning committee, the economics and the financial cooperation committee,

[2] For the text of the GCC charter, see Appendix A.

the oil committee, and the industrial cooperation committee. Each committee has a set of separate but related goals, which will be described briefly below.

The social and economic planning committee is dedicated to national development among member states, allowing countries to evolve socially and economically while acting in common and providing for future coordination among the six states.

The economic and financial cooperation committee follows a similar trajectory, with a more technical bent. Above all, it is dedicated to the formulation of investment rules and regulations so that a unified investment policy can develop throughout the member states. Sub-objectives of this committee include increasing the coordination between currency and member state banking institutions, with the eventual goal of creating a unified currency, as well as working to remove trade barriers between member states and to create a single custom levy to be enacting between member states and other countries. Another sub-objective is to coordinate export and import policies so that member states can bargain as one with foreign suppliers. Finally, this committee is working to develop a unified policy toward all its citizens which would facilitate freedom of movement, work, and residency among all six states, as well as freedom of economic activity and ownership of property.

The oil committee was developed with the aim of achieving coordination throughout the six states' oil and petrochemical planning policy. This daunting task includes monitoring and issuing recommendations for such diverse aspects of oil policy as oil production, oil refining, marketing, pricing and shipping, natural gas production,

and energy resource development. This committee also has the crucial task of presenting a unified oil policy toward the outside world.

Finally, the industrial committee works to enhance coordination between industrial activities in member states through introducing council-wide industrialization policies that promote complementary industrial development, emphasizing mutual benefits and diversification. It seeks to standardize industrial production and to minimize internal competition. It also falls to this committee to design a unified system of vocational training within various industries, as well as to increase appreciation for technology and development throughout the six member states. (Al-Aboudi, 1997)

3.4 Institutional Structure of the GCC

The GCC consists of three basic hierarchical components: the supreme council, made up of the leaders of the six member states, the ministerial council, and the secretariat general. This structure ensures the participation of all member nations' leaders.

3.4.1 The Supreme Council

The six leaders of the GCC member states meet regularly as part of the Supreme Council, the highest level of authority of the GCC. This council's duties including addressing issues critical to the member states, the surrounding region, and internationally. Presidency of this council rotates alphabetically by member state; the council meets once a year to discuss and ratify resolutions and recommendations forwarded from the ministerial level and from the various directorates of the secretariat.

Since 1998 the annual meetings have been supplemented by additional biannual summits to consult on relevant issues.

In addition to its duties as the final authority for matters of governance and policy, the Supreme Council develops and presents consensus on political, economic, and security issues facing the GCC states. The quorum for all Supreme Council meetings is attendance by at least two-thirds of the member states. Each state has one vote. For issues affecting GCC vitally, resolutions must be passed by unanimous vote of all present members; for more procedural matters, a majority vote is sufficient. (Peterson, 1988).

3.4.2 The Ministerial Council

The foreign ministers or appropriate representatives of each member state make up the next tier of the GCC, the Ministerial Council. This council serves to develop policies, recommendations, and resolutions for the Supreme Council to act upon. It also carries out studies to gather data on which actions might best foster cooperation and communication between member states. This council meets every three months and may meet more frequently at the formal request of one member state that has been seconded by another. The presidency of this council also rotates alphabetically by member state, changing every six months.

The Ministerial Council serves as an intermediary between the numerous committees of the GCC and the Supreme Council. It has final approval over which reports and recommendations get sent to the Supreme Council and thus has a powerful role in determining the agenda of the annual GCC summit. It is equally important in

facilitating regular communication and cooperation between member states, and acts as an important target of mediation when difference arise over GCC response to regional and international issues.

3.4.3 The Secretariat General

The third level of the GCC is the Secretariat General, which is comprised of the various committees outlined previously. The Secretariat oversees these committees, which comprehensively cover all of the major concerns of the GCC, including political affairs, economic affairs, military affairs, human and environmental affairs, legal affairs, and financial and administrative affairs. This council has permanent offices in Riyadh, Saudi Arabia, and is continually engaging in producing studies and reports on the issues relevant to the GCC. Its duties also include implementing all resolutions, agreements, treaties, and recommendations enacted by the Supreme Council. They draft the administrative and financial regulations and administer the GCC's budget (GCC, The Organizational Structure, 2004).

3.5 Economic Structure of the GCC Countries

One of the basic objectives of the GCC at its establishment was to enable unrestricted movement of human and capital resources among member states, and to thereby facilitate economic interaction, cooperation, and creativity. The GCC's unified economic agreement, ratified in 1983, spelled out these goals more specifically: the member states were to strive for economic complementarity and increased productivity while maintaining competition for GCC goods and services at local and international

levels. Twenty years after this agreement went into effect; it is helpful to review current economic structure of the GCC member states to see how they have fulfilled its mission.

3.5.1 Economic Overview

With the exception of Saudi Arabia, which with 2,250,000 km^2 accounts for 83 percent of the total land area of the GCC, the GCC countries are fairly small. Bahrain is the smallest GCC country, controlling only .02 percent of the total land area (Al-Mofarrej, 1991). Kuwait and Qatar have roughly the same amount of total land, at 17,820 km^2 and 11,000 km^2 respectively; the UAE has just over twice the land area of both these countries combined, with 83,600 km^2, and Oman comes in second after Saudi Arabia, with 309,500 km^2.

In terms of population the GCC countries are also fairly similar, with Saudi Arabia having the largest population and accounting for 70.6 percent of the total GCC population of 32,146,299 and the other five states accounting for the remaining 29.4 percent. According to the 2001 census, Saudi Arabia has a population of about 22,689,903, Bahrain has 650,604, Oman 2,477,687, Kuwait 2,243,080, Qatar 597,025, and UAE 3,488,000. Table 3-1 illustrates the change in the size of GCC member states' population from 1995 to 2001.

Table 3-1: Total Population of GCC Countries, 1995 to 2001

Year	Bahrain	Kuwait	Oman	Qatar	Saudi Arabia	UAE	Total
1995	577,684	1,801,797	2,131,000	490,132	18,801,588	2,411,041	26,213,242
1996	598,625 (3.62)	1,894,362 (5.14)	2,214,720 (3.93)	505,826 (3.20)	19,344,556 (2.89)	2,479,000 (2.82)	27,037,089 (3.14)
1997	620,378 (3.63)	1,979,689 (4.50)	2,255,609 (1.85)	522,023 (3.20)	20,001,487 (3.39)	2,624,000 (5.85)	28,003,186 (3.57)
1998	604,841 (-2.50)	2,270,865 (14.71)	2,287,644 (1.42)	544,031 (4.21)	20,664,760 (3.32)	2,834,000 (8.00)	29,206,141 (4.29)
1999	620,989 (2.67)	2,273,719 (0.12)	2,325,438 (1.65)	561,270 (3.17)	21,334,170 (3.34)	3,033,000 (7.02)	30,148,586 (3.23)
2000	637,582 (2.67)	2,228,363 (-1.99)	2,401,256 (3.26)	578,510 (3.07)	22,009,535 (3.17)	3,247,000 (7.06)	31,102,246 (3.16)
2001	650,604 (2.04)	2,243,080 (0.66)	2,477,687 (3.18)	597,025 (5.20)	22,689,903 (3.09)	3,488,000 (7.42)	32,146,299 (3.36)

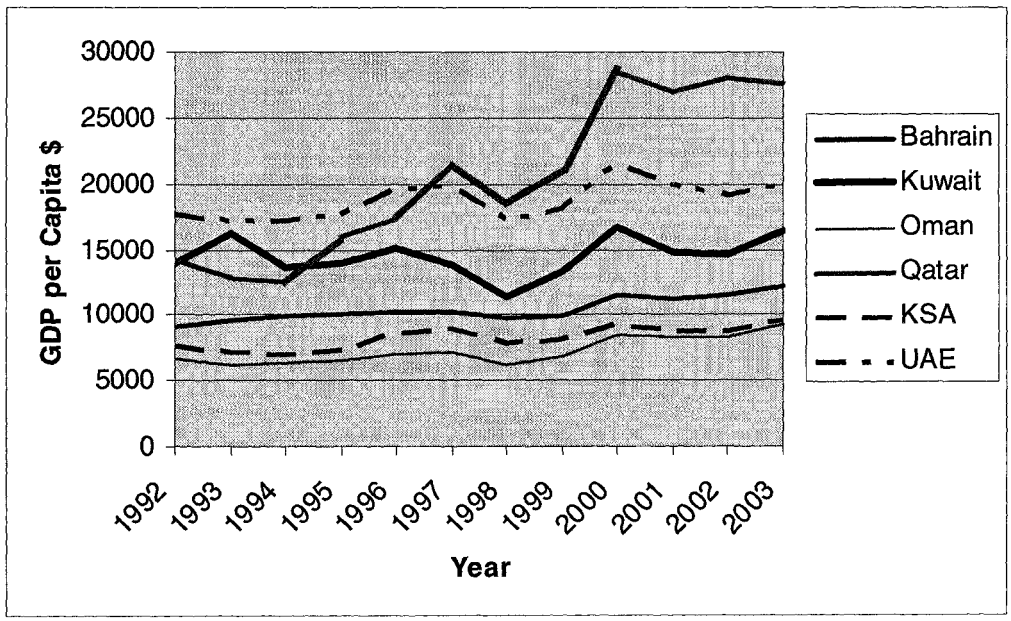
Source: Statistical Bulletin of GCC, 1998, 2000, 2004.
Note: the numbers between parentheses show the population growth rate by author's own calculation.

This population growth was accompanied by a phenomenal economic boom. Between 1971, when the combined GDP of the six states was roughly $11 billion, and 1981, the GDP of the GCC increased about 19 Times, to $210 billion. Moreover, the GCC states had a combined trade surplus of $105 billion. This unprecedented growth in GCC output can largely be attributed to the steady increase in oil prices after the oil embargo imposed by OPEC in 1973, as well as a continual increase in the world's demand for oil.

The rapid increase in GDP allowed the GCC countries to keep pace with the increase in population, developing infrastructure and public services as well as increasing the per capita GDP from $2366 in 1970 (average across all six states) to $16,838 in 1981, a growth rate of roughly 20 percent per year. Looking at this growth per country, the greatest growth occurred in Qatar and the United Arab Emirates (with a final per capita GDP of $35,000 and $23,000 respectively), with Kuwait, Saudi Arabia, and Bahrain increasing to $17,000, $12,000, and $10,000. Oman's per capita GDP increased the least, to only $3140. Rapid economic expansion has been possible in most of the GCC countries, with all economic sectors able to undertake ambitious programs of development; the level of consumption among the GCC population as a whole has increased exponentially. However, this phenomenal growth has been accompanied by inflation in both consumer and investment goods.

An additional problem with GCC economic growth was revealed in the nineteen eighties, when falling oil prices caused a drop in GDP and then per capita income in every GCC state except Oman. Al-Mofarrej (1991) blamed this recession on the Gulf

state economies' heavy dependence on oil exports, and, more significantly, the lack of effective initiatives to use the decade of oil revenue increase (1972-1983) to diversify the GCC economies. However, the formation of the GCC has begun to address this lack of initiative, enabling the six Gulf states to coordinate their policies of development and diversification and reducing their dependency on oil revenue. Figure 3-1 displays the pattern of per capita GDP for each GCC member state from 1992 to 2003.



Source: IMF, World Economic Outlook 2004

Figure 3-1: Per Capita GDP Path for GCC Countries (1992-2003)

3.5.2 Recent Economic Activity of the GCC Countries

Despite two decades of work in economic diversification, the economic activities of the GCC countries are still highly dependent on oil revenue. Likewise, the oil sector continues to fluctuate in response to international demand for oil, as well as in response to world prices. Thus the overall growth of GCC economies is frequently interrupted by large dips in GDP; for example, in 1998 the economy of the entire GCC dropped significantly when average oil export prices dipped from $17.7 to $10.5 per barrel, a drop of 40 percent in just one year.

At the level of individual GCC states, the fluctuation can be even more obvious. For example, Saudi Arabia's real GDP growth slowed in 1998, from 2.7 percent growth to 1.6 percent growth, largely as a result of a 34.5 percent drop in exports in 1998. In contrast, four years later the increase in international oil prices and domestic oil production caused the nominal GDP to climb to $192 billion, a growth rate of 3 percent; meanwhile, real growth moved more slowly, at only 1 percent. This growth was aided by stable oil price and recent measures taken by the Saudi government to attract foreign investment and to promote the role of the private sector.

An examination of other GCC countries reveals similar trends in recent years. Kuwait, highly dependent on oil revenue, saw a 14 percent drop in its nominal GDP in 1998, while its real GDP growth fell by only 1.8 percent during this period; however, in 1999 and 2000 a strong increase in international oil prices caused modest economic growth. This growth continued through 2002, with its nominal GDP rising by 2.3 percent. Similarly, Qatar recorded a large jump in real GDP growth in 2002, which was

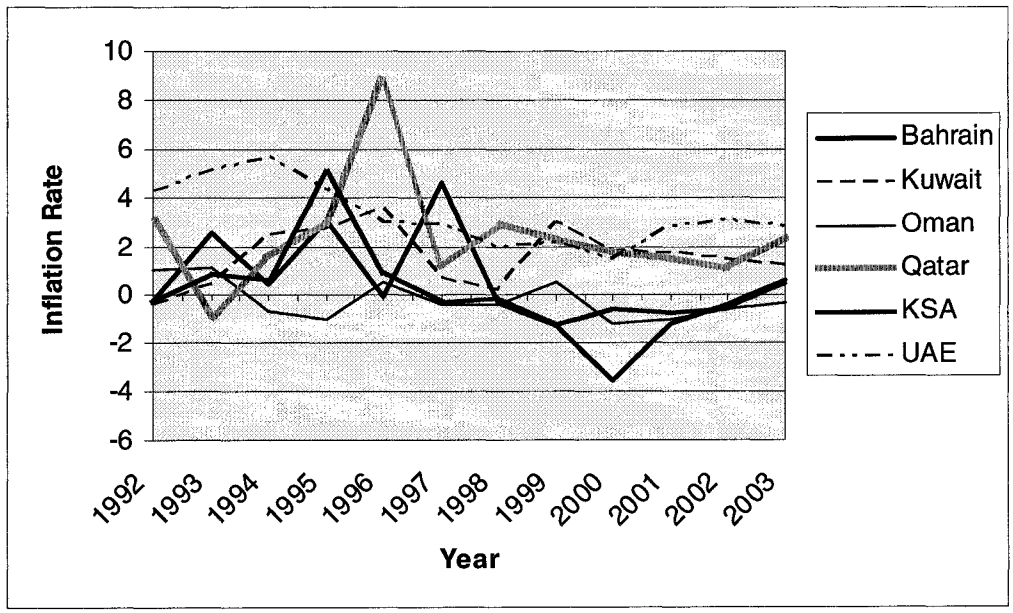
7.3 percent, the highest in the region. However, just the year before its growth had been slightly over half, at 4.5 percent. In both cases its strong growth was related to good investment in oil and gas sectors. Likewise, the UAE, another oil-based economy, has seen its economy fluctuate wildly in response to international circumstances, with its GDP dropping 6.2 percent in 1998, leading to a 33 percent drop in government revenues for that year, only to rebound sharply in 1999 when oil prices recovered and the GDP in nominal terms increased 10 percent and reached $52.3 billion. The following year the nominal GDP grew by 20.4 percent, largely due to increased crude oil prices, but also to growth in the private sector in response to a focused effort on increasing foreign investment. The UAE spent the 1990s developing ways to reduce its dependence on oil, and has largely succeeded in this effort, with non-oil GDP increasing at a steady rate of 9 percent a year over the period 1990 to 2000, and cutting the oil sector of its economy from 46 of the total to 26 percent. The service sector in the UAE grew at annual average rate of 8.4 percent, with its share of total GDP rising from 34.7 percent to 45 percent over this period. Manufacturing has been the fastest growing sector, with growth of 10.6 percent over the period; its share of GDP rose to 13 percent in 2000 from 7.7 percent in 1990, mainly due to the surge in the sub-sector of petroleum and petrochemical products. The real GDP growth remained positive for the UAE at 1.9 percent, and a nominal GDP growth of 3.1 percent in 2002 was supported both by strong continuing oil prices as well as an increased industrial capacity.

Oman and Bahrain, the two GCC countries with the shortest history of dependence on oil, have seen somewhat different growth patterns from the rest of the GCC. Oman's economy was based primarily on fishing and agriculture until the 1970s,

but after 1975, the oil sector became the backbone of the economy and its main source of income. By the end of the twentieth century oil made up 40 percent of its GDP and 80 percent of its exports, and its economy began to reflect the same sorts of fluctuation seen in the other GCC states. Real growth dropped to 2.9 percent in 1998 in response to international demand for oil and economic conditions, including the Asian economic crises. In 2000, The Omani economy recorded positive real GDP growth of 4.6 percent in 2002. The solid growth was the result of high oil prices, the development of the private sector, their joining of the World Trade Organization, and the initiation of major industrial projects based on Oman's gas resources. Recently, Bahrain has managed to expand two non-oil sectors of the economy, tourism and offshore banking, and this expansion has stimulated growth in the economy. Therefore, Bahrain economy recorded real growth of 4.2 percent and 5.1 percent in 2001 and 2002 respectively.

As mentioned in the previous section, the rapid economic growth during the 1970s and early 1980s was accompanied by significant inflation; however, this high rate of inflation did not persist. In fact, for most of the 1990s the inflation throughout the GCC countries was quite low compared to world rates, hovering at an average rate of 1.6 percent over the course of the decade. During this time Saudi Arabia maintained the lowest inflation rate in the entire region, staying considerably below 1 percent. The turn of the century saw Bahrain and Qatar achieve these low rates as well, and in 2001 and 2002 all three countries had a negative inflation rate: -1.2 percent in Bahrain, -1.1 percent in Qatar, and –0.8 percent in Saudi Arabia for 2001, and –0.5 percent, -0.6 percent, and –0.6 respectively in 2002.

The other GCC countries have fared nearly as well. Prudent monetary policy in its central bank has helped Oman achieve price stability through a period of fluctuating economic growth; from 1994 to 1998 it managed a negative inflation rate (deflation). While this rate rose to 0.5 percent in 1999, it dropped again in the first two years of the 21st century to negative levels. Likewise, Kuwait has maintained price stability since 2000 and has recorded only minor annual increases in the CPI, 1.8 percent for 2000, 1.7 percent for 2001, and 1.4 percent in 2002. The United Arab Emirates recorded the highest inflation levels of the GCC during this time; however, these rates were still low, a stable 2 percent for 1999 and 2000 and rising to 2.8 percent and 3.1 percent in 2001 and 2002. Nonetheless, the stability provided by the exchange rate peg, and the central bank's ability to absorb excess liquidity are expected to provide sufficient stability to deter severe inflationary pressures. The inflation rate for all six countries for the period 1992-2003 is displayed graphically in Figure 3-2.



Source: IMF, World Economic Outlook 2004

Figure 3-2: Inflation Rates Path for GCC Countries (1992-2003)

Unlike other developing countries, in all member states of the GCC, government expenditure is the most important indicator, acting as a device to encourage the development process. However, other indicators such as taxes, open market operations, and interest rates play very minor role. This is due to either institutional reasons or religious reasons. Since the religion of all members of the GCC is Islam, they are reluctant to use interest rates in stabilizing economic fluctuations. Because of that the government expenditure is the main vehicle to achieve positive economic growth in

these countries. Therefore, public expenditure in the GCC countries closely follows development in the international oil market. An important example of this relationship is illustrated by steps taken after the first and second major oil price shocks, in 1973 and 1979 respectively, after which the GCC countries adopted an expansionary fiscal policy. The main goals of this expansionary policy in government expenditure were to diversify the economic base, encourage private sector development, and improve the public welfare. Since the 1970s the ratio of government expenditure to GDP has risen continually in the GCC countries, averaging 42 percent in the 1970s, 46.7 percent in the 1980s, and around 58 percent in 1990s. The trend continues today: in 2001, the total government expenditure increased in every GCC member state except Kuwait. The greatest increase occurred in Saudi Arabia, where it jumped to $68 billion in 2001 from $60 billion in 2000; however, the pattern is identical, if on a slightly smaller scale, in Bahrain, Oman, Qatar, and the UAE, where the total public expenditure increased in 2001 to $2.8 billion, $7.3 billion, $5.3 billion, and $25.5 billion respectively. Kuwait was the only country able to cut public spending in 2001, dropping to $10.4 billion in 2001 from $13 billion the year before.

3.5.3 Intra Region Trade

Promoting intra-GCC trade was one of the first priorities of the Gulf Cooperation Council to strengthen local economies and to facilitate economic integration. The first effort to liberalize trade among GCC member states was through

the unified economic agreement[3] in 1983. This agreement suggests abolishing all custom duties on animals, agricultural products, natural resources, and manufactured goods when trading within the GCC states. The intention of this policy was to encourage trade between member countries, leading to intra-regional integration in which each country could pursue a more economic diversification. However, a sharp decline in oil exports in the early 80s slowed all trade in the region and caused a drop in both intra-GCC trade as well as foreign trade until the mid-1980s.

Other factors have also hindered the growth of intra-regional trade and the development of a regional self-sufficiency, such as a heavy reliance on foreign products. For the most part, trade between the GCC countries is of low volume. Table 3-2 shows this slow growth in intra GCC trade: in 1985, exports to other GCC countries averaged only 5.0 percent of the total exports of each GCC country; by the end of 1993, that percentage had increased only to 6.8 percent, and by 2001 only to 7.4 percent. Similarly, the average share of GCC imports was 7.3 percent of total imports in 1985, increasing to 10.2 percent in 1993, but dropping to 6.7 percent in 2001.

[3] For the text of the Unified Economic Agreement between the Gulf Cooperation Council Countries, see Appendix B.

Table 3-2: Intra-GCC Trade as a share of Total Trade (%)

COUNTRIES	Exports			Imports		
	1985	1993	2001	1985	1993	2001
Bahrain	15.1	20.9	11.0	42.7	45.8	17.3
Kuwait	4.1	6.0	7.9	3.0	7.4	1.6
Oman	2.9	9.6	33.2	22.8	24.4	47.0
Qatar	4.5	5.2	12.2	4.9	12.4	9.7
Saudi Arabia	4.9	6.5	3.9	2.1	5.7	5.8
UAE	5.0	6.0	4.8	6.7	5.9	15.3
GCC States	**5.0**	**6.8**	**7.4**	**7.3**	**10.2**	**6.7**

Source: Statistical Bulletin of GCC, 1988, 1995, 2004.

While there are several causes for this slow growth in intra regional trade, one of the chief factors is the limited scope of trade. The re-export of commodities imported from outside the GCC is the foundation of intra-GCC trade. Even though the GCC economies have been diversified, the volume of trade has been low, and the trade with other foreign countries still dominates the intra region trade.

By looking at the amount of trade between GCC countries, Looney (1994) analyzed the intra trade between these countries. In his study, he discusses the positive factors that encourage the growth of intra-GCC trade and negative factors that prevent such growth. Some of the positive factors he identifies include:

1- Geographical proximity, and thus reduced transport costs.
2- High per capita income and thus high demand for imports.
3- Absence of exchange controls in most states in the region.

4- Absence of customs barriers or quotas in most states.
5- A high tendency to import.

Then, he continues his analysis by listing the negative factors that discourage the growth of trade among member GCC countries as follows:

1- Similarity of industrial output in each states and lack of coordination.
2- Development of identical industrial plants in neighboring states (petrochemicals, fertilizers, steel) has led to increased regional competition.
3- With each state at similar stage in its development and with similar industrialization strategies, there has been a huge demand for capital goods, which are not manufactured in the region.
4- The Gulf market is wide open to the international market.
5- High demand for same manufactured products leaving no surplus for export.
6- Absence of export promotion system.
7- Lack of information on export opportunities in neighboring states.
8- Minimal import duties on foreign goods from outside the regime leading imports to continue importing with higher profit margins than trading in regional goods.
9- The dumping policy practiced by some foreign companies.
10- The high cost of production in the Gulf States.

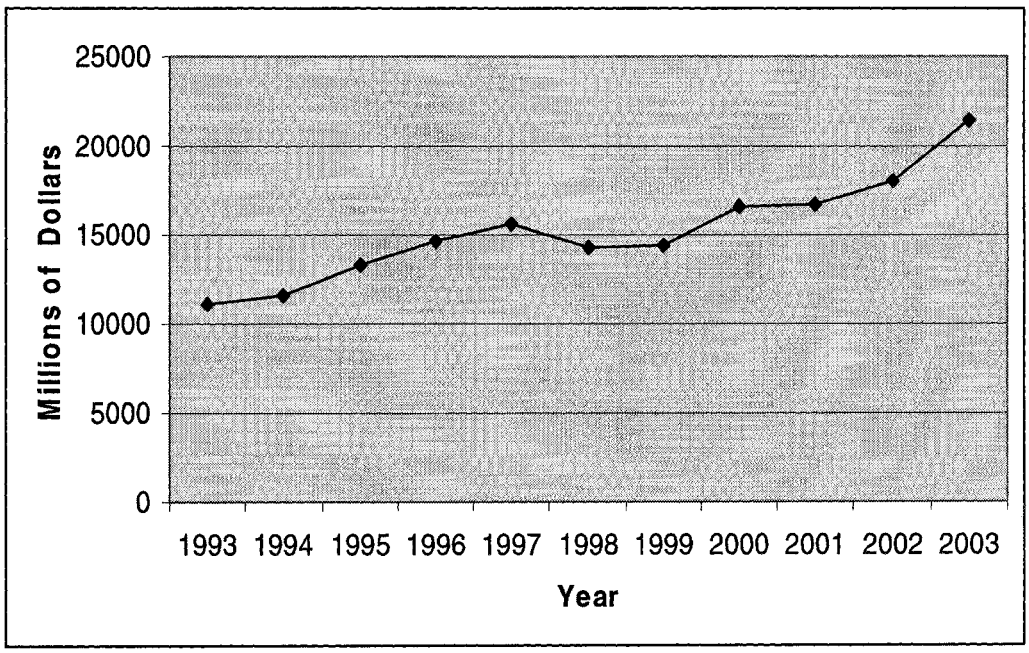
At the conclusion of his analysis, Looney presents several solutions to the problem of low intra region trade. While he prefaces this discussion by admitting that the only real way to increase intra Gulf state trade is to develop long term coordination in industrial development, he encourages adoption of his proposed measures as a way to achieve good results within short term. His proposed measures include:

1- Abolition of import duties for products originating in other Gulf states, removing all obstacles to the free flow of goods between states in the region. The six states of the GCC agreed to such measures under the terms of the GCC unified Economic Agreement signed in 1981 and scheduled to be fully implemented in 1988.
2- Action against unfair competition from foreign imports by the imposition of productive tariffs to raise the price of imports at least equal to the price of locally manufactured goods, especially, if the goods are of equal quality and standards. The GCC decision to impose minimum duties on foreign imports

of 4 percent and a maximum of 40 percent from September 1983 was not adequate to meet the problem which exists.

3- Preferential purchasing of national products by government departments, especially where the local products are of similar specifications and quality to the imported alternative. Under this point comes the question of price differentials and of import license quotas to force importers toward commodities manufactured within the region.

The Intra region trade for all six countries for the period 1993-2003 is displayed graphically in Figure 3-3.



Source: GCC, Statistical Bulletin 2004

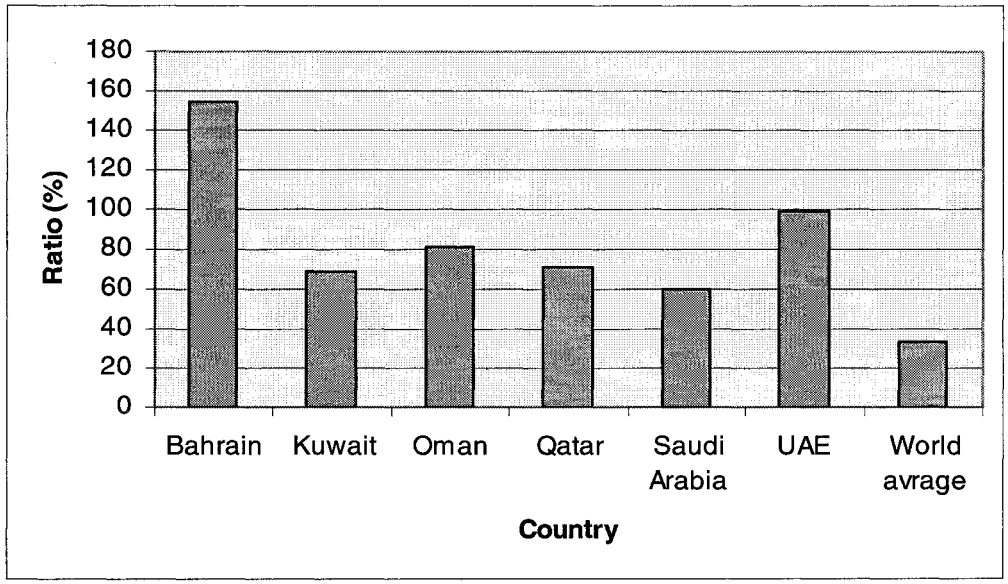
Figure 3-3: Intra-trade Path for GCC Countries (1993-2003)

3.5.4 Foreign Trade and Direction of Export of GCC Countries

In logical contrast to the problem of low intra regional trade within the GCC, the Gulf countries, like the majority of small and third world nations, are very dependent on trade with the developed world. In particular, they need such essential products as machinery, transportation equipment, consumer goods, and intermediate producer goods in order to build infrastructure and satisfy the consumption needs of an increasingly well-off population. The GCC Economic Bulletin for 2002 listed external trade between the GCC and other countries as $188.3 billion; this was a significant jump from the $138.7 billion recorded in 1998. Breaking this trade down into its components, the total GCC export recovered from $62.8 billion in 1998, when there was a downturn in worldwide oil price, to $102.2 billion in 2001. Foreign imports surged as well, from $76.6 billion in 2000 to $86.1 billion in 2001. This continuous increase of the amount of import of GCC shows the large reliance of GCC on the importation of foreign products such as machines, producer and consumer goods, and transportation equipment to satisfy consumption needs and to achieve economic development. The consequence of this dependence on foreign trade is that the GCC economies tend to fluctuate in concert with fluctuations in the economies of industrial countries, and are unable to achieve stability solely on their own power.

Regarding GCC trade with other economies, the greatest foreign trade occurred between the GCC and Islamic countries with the rest of world together (Australia, Asian and South American countries), which we can call IRW countries, followed by the EU countries, the United States, and then Japan. In 2002, the total GCC trade with IRW

countries was approximately 40.3 percent. The EU countries, the United States and Japan accounted for 21 percent, 14 percent, and 13.3 percent of the total GCC trade. In contrast, the GCC countries' trade with other Arabic countries is still quite low, consisting of only 3.8 percent of the total trade in 2002. This is despite the fact that the GCC economies are among the most open in the Middle East, due to their dependence on exported oil and need to import goods. The degree of openness of an economy is traditionally measured by total trade as percent of the GDP. The GCC countries together recorded that 75 percent of their total export and government expenditure was made up of exported oil. The average trade as a share of GDP for each GCC country from 1999 to 2000 is shown in Figure 3-4; the average trade as a percentage of GDP is relatively high and higher than the world average. These high averages are presumed to be due to these countries' economic dependence on exported oil and imported goods.



Source: World Bank, World Development Indicators

Figure 3-4: Average of trade/ GDP ratio (1980-2000)

A closer analysis of these averages reveals that Bahrain and the UAE are the most dependent on international trade; their trade to GDP ratio in 2001 was 65 and 64 percent, respectively (World Bank 2003). The other GCC countries maintained a trade to GDP ratio of around 40 percent for that same year. Saudi Arabia, as the largest economy in the GCC, is also the largest trader, with an export total of $62.5 billion in 2002; Kuwait and Qatar follow, at $15.4 and $10.7 billion in exports, respectively. In 2002, less than 10 percent of GCC member exports went to GCC partner countries except Oman and the UAE; therefore, most exports were directed toward non GCC countries. As discussed in more detail above, the lack of diversity in the region is still a

difficult factor to overcome, as most of the GCC states produce similar, oil or oil-based products. Conversely, intra-GCC sourcing is a significant import only for Oman. Less than 15 percent of GCC member imports come from GCC partner countries.

As might be expected for the dependent relationship described here, foreign trade in the GCC countries is one of the largest factors in the growth of the economy. It serves as the engine for both economic growth and development, and is based squarely on huge oil and petrochemical exports. As shown in Table 3-3, the direction of GCC trade looks like this: in 2002, the exports to IRW countries was high, accounting for 45 percent of total export; exports to Japan represented 15.8 percent of the total exports; to the United States, 15.4 percent; to the EU, 11.7 percent. However the export to Arabic countries was still low, representing only 4 percent of the total GCC exports. The direction of imports was similar, and the imports from IRW countries as a share of total import was 34.7 percent. Thirty-two percent of imports came from the EU, 12.4 percent from the U.S., 10.3 percent from Japan. The imports from other countries were lower than from other partners, representing only 3.5 percent.

Further analysis of trade direction figures shows that while intra-GCC trade is universally low, and each country's main trading partners are different. For example, almost half (49 percent) of total exports from Saudi Arabia went to the United States, Japan, and the EU together in 2002. In contrast, 93 percent of Kuwait's exports in 2002 went to IRW countries, and 27 percent of exports from the UAE went to these regions. Kuwait's exports to the United States made up the smallest fraction of its total exports, at under 1 percent in 2002. For the UAE, only 6.2 percent of its exports went to Japan

in 2002. Tables 3-5 and 3-9 illustrate the direction of Kuwait and UAE exports from 1996 to 2002. Qatar was also different, as shown in Table 3-7; its biggest trading partner in 2002 was Japan, which represented 45.5 percent of total exports, and it sent nearly as many exports to IRW countries, which recorded 40 percent of total exports. Only Bahrain and Oman focused exports on Islamic countries and on GCC countries; for Bahrain, other Islamic countries comprised the first export direction, with $776 million in exports in 2002. Oman exported 49 percent of its total exports to other GCC countries in 2002, followed by IRW countries, at 33 percent of the total export. Tables 3-4 and 3-6 illustrate export direction of Bahrain and Oman from 1996 to 2002. These export direction are provided as references to understand the current situation in these countries.

Table 3-3: Direction of Trade of the GCC Economies, 2002
(US$ million)

	Bahrain	Kuwait	Oman	Qatar	KSA	UAE	GCC
Total Exports	5651.45	15394.14	2580.34	10771.11	62557	2352.82	99306.86
To other GCC	542.52	393.51	1272.0	574.72	4468	490.30	7741.05
To other Arab Countries	648.93	141.12	221.14	304.44	2386	269.69	3971.32
To Japan	69.14	19.22	5.78	5117.61	10406	147.92	15765.67
To EU	127.65	94.82	135.58	181.39	10784	325.58	11649.02
To U.S.A	457.44	9.68	85.85	277.35	14288	166.26	15284.58
To other Islamic Countries	776.59	270.22	859.99	4315.60	3925	310.41	* 44895.22
To Rest of the World	3029.18	14465.57			16300	642.66	
Total Imports	3329.79	9000.19	6005.39	4040.92	32333.5	33401.2	88110.99
From other GCC	497.31	988.39	1993.13	623.7	1484.12	1817.16	7403.81
From other Arab Countries	574.46	270.46	74.57	85.92	1290.52	779.16	3075.09
From Japan	316.48	962.02	968.77	526.83	3579.44	2764.33	9117.87
From EU	994.68	2738.93	1471.75	425.38	10287.1	12211.4	28129.24
From U.S.A	218.08	986.02	393.47	1396.66	5270.23	2617.48	10881.94
From other Islamic Countries	757.97	622.41	1103.72	982.43	1452.07	2209.48	* 30574.9
From Rest of the World	1042.55	2431.96			8970.08	11002.2	

Note: * The sum of Islamic countries and Rest of the world.
Source: Statistical Bulletin of GCC, 2004.

Table 3-4: Direction of Bahrain Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Kuwait	48.21	49.21	54.70	53.19	39.89	42.55	39.89
Oman	17.29	10.38	16.78	18.61	21.82	21.28	13.29
Qatar	42.39	36.92	37.03	98.40	37.23	69.15	63.82
Saudi Arabia	247.59	267.48	286.06	279.25	247.34	305.85	327.12
United Arab Emirates	83	79.54	94.32	82.44	82.44	85.11	98.40
Total of GCC	438.48	443.53	488.89	531.89	428.72	523.94	542.52
Rest of Arabic Countries	114.26	112.27	60.46	50.53	500.00	617.02	648.93
Rest of Islamic Countries	59.22	88.70	91.03	106.38	648.94	816.49	776.59
European Union	73.57	111.56	159.14	148.93	140.95	138.30	127.65
United States of America	106.61	143.97	198.46	260.63	375.00	454.79	457.44
Japan	195.71	192.50	144.16	47.46	93.09	61.17	69.14
Rest of the world	554.77	576.31	434.01	414.89	460.11	425.53	406.91
Grand Total	1542.62	1668.84	1576.15	1587.76	2646.81	3037.24	3029.18

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

Table 3-5: Direction of Kuwait Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Bahrain	17.73	18.86	16.83	20.30	22.25	18.4	25.19
Oman	12.61	16.56	14.22	20.17	17.47	18.37	21.51
Qatar	16.69	17.40	17.99	17.06	24.34	17.09	36.57
Saudi Arabia	128.13	132.82	128.14	136.64	152.17	106.20	172.44
United Arab Emirates	113.72	116.06	101.49	111.31	90.31	94.97	137.80
Total of GCC	288.88	301.7	278.67	305.48	306.54	254.67	393.51
Rest of Arabic Countries	358.19	407.58	56.78	413.42	129.86	127.04	141.12
Rest of Islamic Countries	402.75	446.97	497.67	543.43	210.17	220.59	270.22
European Union	34.53	34.79	77.66	105.13	150.33	276.17	94.82
United States of America	43.17	47.41	23.44	54.68	46.69	14.77	9.68
Japan	9.81	15.15	15.04	13.18	18.54	8.57	19.22
Rest of the world	265.76	13579.62	8186.99	10705.86	18538.78	15251.56	14465.57
Grand Total	1403.06	14833.19	91136.25	12141.18	19400.90	16153.37	15394.14

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

Table 3-6: Direction of Oman Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Bahrain	8.92	10.75	13.76	11.20	12.27	15.36	22.44
Kuwait	15.33	28.17	19.20	21.69	30.14	25.38	26.23
Qatar	15.36	10.50	16.34	16.69	19.93	20.79	34.21
Saudi Arabia	65.44	72.90	101.08	116.51	162.83	188.74	180.95
United Arab Emirates	606.86	744.92	746.12	719.02	777.98	780.89	1008.17
Total of GCC	711.90	867.24	896.11	885.11	1003.15	1031.16	1272.00
Rest of Arabic Countries	47.51	111.72	213.06	189.28	257.76	198.80	221.14
European Union	55.19	112.20	114.59	124.53	136.13	134.17	135.58
United States of America	74.30	74.30	86.85	86.55	106.99	98.48	85.85
Japan	31.44	31.44	14.20	7.14	7.54	7.47	5.78
Rest of Islamic Countries and Rest of the world	536.93	655.87	476.01	417.40	429.65	723.52	859.99
Grand Total	1457.28	1846.73	1801.21	1710.01	1941.22	2193.59	2580.34

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

Table 3-7: Direction of Qatar Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Bahrain	7.95	7.83	9.13	-	8.32	10.12	19.06
Kuwait	22.86	21.48	14.00	-	7.05	12.60	18.21
Oman	9.53	8.61	8.09	-	3.49	4.87	7.33
Saudi Arabia	76.65	81.25	77.73	-	89.15	114.43	158.18
United Arab Emirates	218.18	179.61	149.40	-	470.41	193.00	371.94
Total of GCC	335.17	298.78	258.35	546.30	587.42	335.02	574.72
Rest of Arabic Countries	28.23	33.56	49.22	46.90	53.38	47.14	304.44
European Union	7.86	1.26	55.02	74.10	77.20	82.65	181.39
United States of America	56.17	61.89	135.09	257.60	354.24	378.81	277.35
Japan	249.85	286.89	1993.80	3380.10	5214.60	5542.53	5117.61
Rest of Islamic Countries and Rest of the world	3064.89	3064.71	3744.17	2746.60	5146.67	4319.53	4315.60
Grand Total	3764.89	3781.09	6494.00	7051.60	11424.52	10705.67	10771.11

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

Table 3-8: Direction of Saudi Arabia Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Bahrain	1755.62	1674.77	1171.43	1484.65	1911.35	1416.21	1756
Kuwait	455.81	538.85	503.87	473.10	481.17	417.89	538
Oman	117.64	155.67	139.10	153.81	110.81	153.00	189
Qatar	206.13	224.57	196.80	182.38	195.19	198.40	259
United Arab Emirates	1807.62	1969.29	1311.62	1257.68	1571.70	1755.94	1724
Total of GCC	4342.2	4563.15	3322.56	3554.07	4270.22	3941.44	4468
Rest of Arabic Countries	1628.27	1979.71	1615.75	1448.86	1663.55	2200.22	2386
Rest of Islamic Countries	3149.06	2450.20	1939.65	2589.05	3936.98	3716.42	3925
European Union	11529.60	11655.81	7340.19	8488.38	13485.18	10780.68	10784
United States of America	10637.60	9239.79	6327.10	9929.24	15709.48	12411.75	14288
Japan	9125.60	10510.28	5785.85	7609.08	12302.80	10440.32	10406
Rest of the world	20235.14	20333.51	9167.98	13583.44	26216.04	24572.64	16300
Grand Total	60647.47	60732.45	38821.90	50756.74	77584.25	68063.47	72561

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

Table 3-9: Direction of the UAE Exports (Millions of Dollars)

Country	1996	1997	1998	1999	2000	2001	2002
Bahrain	56.87	60.75	72.15	-	47.83	53.08	185.99
Kuwait	74.26	81.18	49.51	-	50.20	66.29	109.41
Oman	73.35	86.35	84.58	-	57.45	41.75	29.78
Qatar	122.89	26.70	90.31	-	52.30	73.96	55.08
Saudi Arabia	50.29	55.57	57.45	-	62.75	79.60	110.03
Total of GCC	377.66	310.55	354.00	294.20	270.08	314.68	490.30
Rest of Arabic Countries	85.82	137.56	200.41	210.40	187.83	202.86	269.69
Rest of Islamic Countries	-	196.40	167.72	221.80	243.23	280.32	310.41
European Union	201.90	311.63	402.05	344.70	381.78	339.55	325.58
United States of America	97.77	96.16	162.43	119.70	174.78	157.76	166.26
Japan	168.77	224.46	147.95	143.40	155.92	122.56	147.92
Rest of the world	566.11	532.82	1341.60	524.90	533.99	635.66	642.66
Grand Total	1498.03	1809.58	2776.16	1859.10	1947.11	2053.39	2356.81

Source: Statistical Bulletin of GCC, 1999, 2001, 2004.

CHAPTER FOUR

METHODOLOGY OF STUDY AND GROWTH MODELS

4.1 Overview

Chapter Two surveyed the existing empirical literature on the relationship between the growth of a country's exports and the growth of its economy. In order to investigate this critical question, numerous methodologies have been developed, beginning with the simple correlative studies of the 1960s and 70s, to the complex cointegration and multivariate analyses used today. These tests have been applied to every conceivable data set, from detailed studies of a single country to large scale studies of scores of countries of widely varying economic types. In general, these studies support the early assumption that an expansion of exports benefits a country's economic growth; however, a significant number have also found the reverse relationship to be true.

The aim of current study is to investigate the long run and short run relationships between export growth and economic growth in the Gulf Cooperation Council (GCC) countries for the thirty-year period 1970 to 2001 for Kuwait, Oman, and Saudi Arabia, and for the period 1973 to 2001 for UAE, and for the period 1980 to 2001 for Bahrain. We will focus particular attention on the long run relationship between aggregate export (or total exports) and disaggregate export (i.e., oil exports and non-oil exports) and the growth of the total GDP.

Granger and Newbold (1974) argued that, in general, macroeconomic time series data are non-stationary, and thus contain unit roots which cause numerous problems when entered into econometrics models. More specifically, when one non-stationary time series is regressed on another, the least square regression can produce misleading results, such as spurious regression. Standard t-tests of significance can be inaccurate in this situation, rejecting the null hypothesis of "no relation" too frequently in proportion to actual occurrence, and claiming that meaningless results present a significant relationship. To deal with this problem, tests of long-run economic relationships require the use of various cointegration techniques when the time series data being used is not stationary; this is a fairly new statistical technique.

This chapter will determine the appropriate specification of export and economic growth, and will briefly discuss the relevant econometrics techniques and the theoretical basis of export and output growth models. Also, it will conclude with the introduction of a feasible estimation model for the GCC countries.

4.2 Empirical Specification

A review of the literature of the empirical investigation of the export-led growth hypothesis indicates the following basic form:

$$DV = f(K, L, X)$$

Where DV represents the dependent variable, in this study either the gross domestic product (GDP), or non export GDP, K the capital stocks, L the labor force, and X exports.

4.3 Econometrics Methodology

Time series data are the primary subjects of empirical analysis in studies of economic change. The available econometrics methods regress one set of data against another, assuming that both are stationary, meaning they have a constant mean and constant variance. However, with a few exceptions, time series data, like most economic variables, are not stationary, and therefore the classical regression techniques can lead to spurious results because they regress one non-stationary variable against another. One of the essential developments of the past twenty years in econometrics has been cointegration, which allows us to manipulate sets of non stationary data and thus estimate relationships between these time series data. The following section will explore the basic elements of the cointegration technique as developed by the studies discussed in Chapter Two.

4.3.1 Cointegration Technique

4.3.1.1 Stationary and Nonstationary Time Series

I. Stationary

A time series sequence (Y_t) has covariance stationarity if its mean possesses the following characteristics: it is finite and independent of time. The periods of the variable are all described as having the same finite mean, defined thus:

$$E(Y_t) = \mu_t$$

In addition, the variance of the series must be finite and independent of time; that is,

$$Var(Y_t) = \sigma^2$$

Thus, a variable that is stationary has a constant mean and constant variance (Eichhorn, 1999).

A sample stationary time series can be described thus:

$$Y_t = \delta + \lambda Y_{t-1} + \varepsilon_t \qquad 0<\lambda<1 \qquad (4\text{-}1)$$

II. Nonstationary

A time series is considered nonstationary if the probability distribution of its process changes over time; in other words, if it does not demonstrate mean reversion. A nonstationary time series could be described by the following equation:

$$X_t = \delta/(1-\lambda) + \varepsilon_t + \lambda \varepsilon_{t-1} + \lambda^2 \varepsilon_{t-2} \qquad (4\text{-}2)$$

The vast majority of time series data sets are non stationary in level. There are several methods for creating stationarity in these types of economic variables; some sort of detrending process must be undergone before they are ready to be used in a conventional regression analysis. One of the best detrending techniques takes the first difference of a particular series and uses that difference as the basis for the series; a variable that achieves stationarity in this way is referred to as being difference stationary.

4.3.1.2 Integration and Cointegration

Nelson and Plosser (1982) surveyed the properties of several macroeconomic times series and discovered that most of these time series were nonstationary and stochastic; most of them were also first-order integrated series. In fact, they considered it highly likely that most currently used economic time series data sets have this latter

nonstationary characteristic. Stock and Watson (1988) further proved that two or more integrated series may eventually achieve equilibrium; that is, these series share a common trend and are therefore cointegrated. The linear combination of this series, they suggested, is stationary.

A stochastic process may be described as integrated of order d, I (d), only if stationarity is achieved after differencing (d) times. A deterministic trend, in contrast, is an I(0) process after detrending has occurred and no difference is required.

Thus, cointegration theory states that if two times series such as X_t and Y_t, are nonstationary, and they possess the same order of integration, then a linear combination of the two produces a stationary process, and it is said X_t and Y_t are cointegrated. A linear combination of two I(d) series may create a third series (short run disturbance), known as (d-1); if this occurs, the two original series are also said to be cointegrated.

An example of two cointegrated series is as follows:

$$Y_t = a + \beta X_t + \varepsilon_t$$

Both X_t and Y_t are non stationary , but the linear combination $Y_t - a - \beta X_t = \varepsilon_t$ is stationary. Then, over the long run the relationship between X_t and Y_t can be developed.

4.3.2 Testing for Cointegration

Cointegration is not necessary with every type of data series. In order to determine whether the series in question are suitable, two tests must be performed. First, it is necessary to test the unit root properties of the series; this essentially means to

run a pretest of the variables to determine the order of integration. Next we examine the data to see if there is actually a long-run relationship between the variables in question.

4.3.2.1 Unit Root Test of Stationarity

In order to determine the order of cointegration of a series, the series' stationarity must be tested by one of several means. Currently, the most widely used test for stationarity is a unit root test; the existence of unit roots in a series indicates a lack of stationarity. There are several variations of the unit root test; the Dickey-Fuller (DF) test, the Augmented Dickey-Fuller (ADF) test, and the Phillips and Perron (PP) test are the most frequently used. If it is determined that a series is in fact stationary, then cointegration is not necessary, and ordinary least square (OLS) models can be used with stationary variables (Enders, 1995).

The essential feature of these unit root tests is that the stationarity is not checked using the standard tabulated critical value for t-statistics. Instead, the calculated t-statistic is compared to the critical values tabulated by Dickey and Fuller (1979). While this tabulation has some limitations, it still serves as the basic set of values at the core of stationarity measurements. In addition, MacKinnon (1991) has recently tabulated a much larger set of simulations, and has estimated the response surface for these simulation results, so that it is now possible to calculate Augmented Dickey-Fuller critical values using any sample size and any number of independent variables.

The ADF test has been the most popular test used to check for data stationarity for over two decades, according to Dickey and Fuller (1981). A variable is said to be stationary if it does not have unit roots; it is integrated of order zero, and denoted I(0). Similarly, if a variable is nonstationary in its level form but is stationary in its first

difference form, it is integrated of order one, and denoted I(1). The ADF test determines the true structure of a time series by means of the following equation:

$$\Delta Y_t = \alpha + \delta Y_{t-1} + e_t \qquad (4\text{-}3)$$

where the null hypothesis of this test is:

H_0: $\delta = 0$.

In other words, the null hypothesis states that there is a unit root in the variable and therefore the series has first order integration (Maddala and Kim, 1998). If the null hypothesis is rejected, the series is stationary.

4.3.2.2 The Johansen Cointegration Test

If we have more than two series and once the nonstationary of series has been determined, then the series are integrated: the Johansen test can be applied. We will discuss here the Johansen approach, which is a multivariate approach, permitting the estimation of several cointegration relationships at once; this versatility has made it the most popular of the system methods of cointegration (Phillips and Cutler, 1998). Because its likelihood estimators can work with more than two I(1) variables, it can describe all of the cointegration relationships among a particular set of variables and in addition gives a test statistic for the number of cointegrating vectors. Ideally, the Johansen procedure finds a linear combination of a set of variables such that the correlation among the variables is maximized (Lai and Lai 1991).

The Johansen method of cointegration is particularly useful for time series data because it enables us to test for the number of cointegrating vectors (r) existing between a number of time series (n); it also allows us to test selected restrictions on these

vectors. In other words, we can both estimate and test the equilibrium relationship among a set of nonstationary variables while at the same time abstracting from short run deviations from the equilibrium.

A long run relationship will only exist between a set of I(1) variables which have one or more cointegrating vectors (Johansen and Juselius, 1990). The Johansen method has two tests which are used to determine the number of cointegrating vectors. These are the maximum (λ-max) Eigenvalue:

$$\lambda\text{-max} = -T \ln (1- \lambda_{r+1})$$

and the trace (λ-trace) test:

$$\lambda\text{-trace} = -T \sum_{i=r+1}^{n} \ln (1- \lambda_i).$$

4.3.3 Causality Tests

4.3.3.1 Granger Causality Test

The standard method for estimating the causal relationship between a change in exporting and a change in the GDP is the Granger causality test as refined by Guilkey and Salemi (1982) and Geweke et al. (1983). A typical Granger test for a bivariate system proceeds in the following manner:

$$Y_t = \sum_{i=1}^{k} a_i X_{t-i} + \sum_{i=1}^{k} b_i Y_{t-i} + u_t \qquad (4\text{-}4)$$

$$X_t = \sum_{i=1}^{k} c_i X_{t-i} + \sum_{i=1}^{k} d_i Y_{t-i} + v_t \qquad (4\text{-}5)$$

where u_t and v_t are uncorrelated errors. The equation (4-4) postulates that current Y_t is related to past values of Y_t itself as well as of X_t, and equation (4-5) postulates a similar behavior for X_t.

By examining data with the Granger test, we can distinguish four scenarios of causality:

1. Unidirectional (one way) causality from X_t to Y_t is present if the estimated coefficients on the lagged X_t in (4-4) are statistically different from zero as a group (i.e. $\sum a_i \neq 0$) and the set of estimated coefficients in the lagged Y_t in (4-5) is not statistically different from zero (i.e. $\sum d_i = 0$).
2. Conversely, unidirectional causality from Y_t to X_t is present if the lagged X_t coefficient in (4-4) is not statistically different from zero (i.e. $\sum a_i = 0$) and the set of the lagged Y_t coefficients in (4-5) is statistically different from zero (i.e. $\sum d_i \neq 0$).
3. Feedback, or bilateral causality, is present when the sets of X_t and Y_t coefficients are statistically significantly different from zero in both regressions.
4. No causality is present (the sets are independent) when the sets of X_t and Y_t coefficients are statistically insignificant in both regressions.

According to the Granger test, if variable X_t causes variable Y_t, a change in X_t should precede any change in Y_t. Thus, if we incorporate past or lagged values of X_t and these significantly improve the prediction of Y_t in a regression of Y_t on another variable set (including Y_t's own past values), then we can conclude that X_t Granger causes Y_t. Similarly, if a change in Y_t Granger precedes changes in variable X_t, then Y_t Granger is said to cause X_t (Gujarati, 1995). The Granger test has one substantial

drawback: it is only valid if the time series data are stationary or I (0). In order to determine the direction of causality by using the Granger test it is therefore necessary to test for the integration properties of each variable. If series has been thus determined to be cointegrated, and once a long run relationship has been established between the variables, the Error Correction Model (ECM) is more appropriate for causality analysis.

4.3.3.2 Error Correction Model (ECM)

Recent development of the cointegration concept indicates that the Granger causality test is valid only if the variables under study are not cointegrated. Accordingly, if the variables are cointegrated, and we use Granger test to investigate the causality between variables, the regressions can produce misleading results. In this case, an ECM should be employed, rather than standard causality test. Granger (1988) pointed out that if there exists a cointegration vector among integrated variables, there is causality among these variables at least in one direction. Engle and Granger (1987) provided a test of causality which takes into account the information provided by the cointegrated properties of variables. The model can be expressed as an error correction model (ECM) as follows:

$$\Delta Y = \alpha_1 + \beta_1 ECT_{t-1} + \sum_{i=1}^{n} \delta_i \Delta Y_{t-i} + \sum_{i=1}^{n} \gamma_i \Delta X_{t-I} + \varepsilon_{1t} \qquad (4\text{-}6)$$

$$\Delta X = \alpha_2 + \beta_2 ECT_{t-1} + \sum_{i=t}^{n} \mu_i \Delta Y_{t-i} + \sum_{i=1}^{n} \lambda i \Delta X_{t-I} + \varepsilon_{1t} \qquad (4\text{-}7)$$

Where the ECT_{t-1} is the error correction term lagged one period. The ECT_{t-1} is equivalent to the e_t in equation (4-3) and thus represents the disequilibrium residuals of a cointegration equation.

Sources of causation can be identified by testing for significance of the coefficients on the dependent variables in equations (4-6) and (4-7). For example, testing Ho: $\gamma_i=0$ for all i in equation (4-6) or Ho: $\mu_i=0$ for all i in equation (4-7), produces a Granger causality. Asafu-Adjaye (2000) interpreted the Granger causality as a short run causality in the sense that the dependent variables respond only to short term shocks to the stochastic environment.

Another possible source of causation is the ECT_{t-1} in equation (4-6) and (4-7). The coefficient of the ECT_{t-1} represents how fast deviation from the long run equilibrium is eliminated following change in each variable. If for example β_1 is zero, then Y does not respond to a deviation from the long run equilibrium in the previous period. This can be tested using a simple t-test.

It is desirable to check whether the two sources of causation are jointly significant in order to test causality. Anwer et al (1996) pointed out that the analysis of causality in the ECM are applied in three stages. First, joint hypothesis Ho: $\beta_1=0$ and Ho: $\gamma_i=0$ is tested for for all i in the equation (4-6) or Ho: $\beta_1=0$ and Ho: $\mu_i=0$ for all i in the equation (4-7). If this procedure fails to reject the null hypothesis, then there is no further testing and the variables are determined to have no causality at all. However, if the null hypothesis is rejected, causality is inferred, and an assessment of the source of causality is needed. It is important to check if the causality is related to short term stationary variation or to the terms of the error correction. The second step of the ECM is to test the significance of the γ_i and μ_i to check for the possibility of a short run causality. The final step is the analysis of the direction of the β's to see if they infer a long run equilibrium relationship.

4.4 Modeling of Exports and Economic Growth

4.4.1 Feder's Model

Many authors have approached the problem of the export-led output growth by analyzing and dividing the total economy into various subsets. The first and foremost division is between growth in exports and growth in other areas of the economy. Feder (1982) described this division thus:

> "The economy is viewed as if it consists of two distinct sectors: one producing export goods, and the other producing for the domestic market. Instead of an aggregate national production function, each of the two sectors' output is a function of the factor allocated to the sector. In addition, the output of the non export sector is dependent on the volume of export produced. (P.60)"

Thus, the variable chosen for one sector would be different from those chosen for other sector. One advantage of dividing the economy this way, as indicated by Keesing (1967), is that it shows the effects that a growth in exports has on the rest of economy, such as the introduction of improved production techniques, the resulting steady input of improved products, the development of a management sector that is efficient and internationally competitive, the training of higher quality labor, etc. These effects are referred to as externalities, and are described by the following formulas:

$$N = F(Kn, Ln, X) \qquad (4\text{-}8)$$

$$X = G(Kx, Lx) \qquad (4\text{-}9)$$

where N represents non exports, X exports, Kn capital stocks for the non export sector, Kx capital stocks for the export sector, Ln labor forces in the non export sector, and Lx labor forces in the export sector.

The marginal factor productivities between the two sectors are assumed to deviate from unity by a factor δ:

$$(G_k/F_k) = (G_L/F_L) = 1+ \delta \qquad (4\text{-}10)$$

where the subscripts denote partial derivatives.

Feder used aggregate data to calculate the marginal sector productivities, because disaggregate data for labor and capital was not available. To develop a set of formulas suitable for empirical work, he took the total differentiation for equations (4-8) and (4-9) with respect to time, which yield

$$\dot{N} = F_n * I_n + F_n * \dot{L}_n + F_x * \dot{X} \qquad (4\text{-}11)$$

$$\dot{X} = G_k * I_x + G_L * \dot{L}_x \qquad (4\text{-}12)$$

Where I_n, I_x denote respective sectoral gross investments, $\dot{L}_n$, $\dot{L}_x$ the sectoral change in labor forces, and F_x the marginal externality effect of exports on the output of non exports[4]

Since GDP is first represented by Y and Y= N+X, then,

$$\dot{Y} = \dot{N} + \dot{X} \qquad (4\text{-}13)$$

By substituting equations (4-11) and (4-12) into equation (4-13), he got the following equation:

$$\dot{Y} = [F_k * I_n + F_L * \dot{L}_n + F_x * \dot{X}] + [G_k * I_x + G_L * \dot{L}_x] \qquad (4\text{-}14)$$

From equation (4-10): we get

[4] $\dot{N} = \frac{dN}{dt}, \dot{X} = \frac{dX}{dt}, \dot{L}_n = \frac{dL_n}{dt}, \dot{L}_n = \frac{dL_x}{dt}, I_n = \frac{dK_n}{dt}, I_x = \frac{dK_x}{dt}$

$$G_k = (1+\delta)F_k \text{ and } G_L = (1+\delta)F_L \tag{4-15}$$

The equation (4-15) can be substituted into equation (4-14):

$$\dot{Y} = F_k * I_n + F_L * \dot{L}_n + F_x * \dot{X} + (1+\delta)F_k * I_x + (1+\delta)F_L * \dot{L}_x \tag{4-16}$$

The equation can be rearranged as:

$$\dot{Y} = F_x * (I_n + I_x) + F_L * (\dot{L}_n + \dot{L}_x) + F_x * \dot{X} + \delta\{F_k * I_X + F_L * \dot{L}_x\} \tag{4-17}$$

The total investment can be expressed as I= I_n + I_x and the increase in labor as $\dot{L} = \dot{L}_n + \dot{L}_x$, then,

$$\dot{Y} = F_x * I + F_L * \dot{L} + F_x * \dot{X} + \delta\{F_k * I_X + F_L * \dot{L}_x\} \tag{4-18}$$

By substituting equation (4-15) into equation (4-12) we obtain the following:

$$\frac{\dot{X}}{1+\delta} = [F_k * I_x + F_L * \dot{L}_x] \tag{4-19}$$

By substituting equation (4-19) into equation (4-18), we get the following equation:

$$\dot{Y} = F_k * I + F_L * \dot{L} + \{\frac{\delta}{1+\delta} + F_x\}\dot{X} \tag{4-20}$$

By assuming the linear relationship between the marginal productivity of labor in a given sector and the average output per worker in the economy, we can write:

$$F_L = \beta(Y/L) \tag{4-21}$$

By dividing both sides of (4-20) by Y and using (4-21) and denoting $F_k = \alpha$, while $\frac{\dot{X}}{Y}$ can be decomposed as $(\frac{\dot{X}}{X})(\frac{X}{Y})$, we can obtain the following estimatable equation, which is the basis for his empirical results:

$$\frac{\dot{Y}}{Y} = \alpha(\frac{I}{Y}) + \beta(\frac{\dot{L}}{L}) + \{\frac{\delta}{1+\delta} + F_x\}(\frac{\dot{X}}{X})(\frac{X}{Y}) \quad (4\text{-}22)$$

Based on equation (4-22), the following statements can be made:

If $\delta = 0$, the marginal factor productivities are equalized across sectors.

If $F_x = 0$, there is no export created externality.

Equation (4-22) can also be written as:

$$\frac{\dot{Y}}{Y} = \alpha(\frac{I}{Y}) + \beta(\frac{\dot{L}}{L}) + \gamma(\frac{\dot{X}}{X})(\frac{X}{Y}) \quad (4\text{-}23)$$

where

$\frac{\dot{Y}}{Y}$ is the growth rate of GDP, $\frac{\dot{L}}{L}$ is the growth rate of labor force, $\frac{\dot{X}}{X}$ is the growth rate of export, $\frac{I}{Y}$ is the investment/ output ratio, $\frac{X}{Y}$ is the export share in GDP, and γ represents the term $\{\frac{\delta}{1+\delta} + F_x\}$, which is the differential productivity of factors.

Next, Feder tries to break down $\{\frac{\delta}{1+\delta} + F_x\}$ into its components. In order to do this, he formulates the following production function, where exports affect the production of non exports with constant elasticity:

$$N = F(K_n, L_n, X) = X^{\theta}\psi(K_n, L_n) \quad (4\text{-}24)$$

Where θ is a parameter, then

$$\frac{\partial N}{\partial X} = \theta X^{\theta-1}\psi(K_n, L_n) = \theta * \frac{X^{\theta}\psi(K_n, Ln)}{X} = \theta(\frac{N}{X}) \quad (4\text{-}25)$$

In other words, equation (4-22) can be rewritten as:

$$\frac{\dot{Y}}{Y} = \alpha(\frac{I}{Y}) + \beta(\frac{\dot{L}}{L}) + \{\frac{\delta}{1+\delta} + \theta(\frac{N}{X})\}(\frac{\dot{X}}{X})(\frac{X}{Y}) \quad (4\text{-}26)$$

But,

$$\theta(\frac{N}{X}) = \theta\left\{\frac{N}{Y}/\frac{X}{Y}\right\} = \theta * \frac{[1-(\frac{X}{Y})]}{\frac{X}{Y}} = \frac{\theta}{\frac{X}{Y}} - \theta \quad (4\text{-}27)$$

By substituting equation (4-27) into (4-26), we obtain

$$\frac{\dot{Y}}{Y} = \alpha(\frac{I}{Y}) + \beta(\frac{\dot{L}}{L}) + \{\frac{\delta}{1+\delta} - \theta\}(\frac{\dot{X}}{X})(\frac{X}{Y}) + \theta(\frac{\dot{X}}{X}) \quad (4\text{-}28)$$

This equation can be estimated as:

$$\frac{\dot{Y}}{Y} = \beta_0 + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X})(\frac{X}{Y}) + \theta(\frac{\dot{X}}{X}) \quad (4\text{-}29)$$

Where β_3 represents the term $\{\frac{\delta}{1+\delta} - \theta\}$ and θ is the inter-sector externality parameter as stated before.

4.4.2 Ram's Model

Ram (1985) took the most popular model of the time and applied it to the relationship between export and economic growth. He adapted it so that he examined this relationship (in particular, the role of exports within the growth of the larger economy) within the framework of a basic production function model, treating exports as a type of indirect input. This aggregate production function can be formulated thus:

$$Y = f(K, L, X) \quad (4\text{-}30)$$

where Y is aggregate real output, L is the labor input, K is the input of capital, and X measures exports. Equation (4-30) can also be specified in terms of rate of growth by taking the total derivatives in (4-30), which would be:

$$dY = \frac{\partial Y}{\partial L} \bullet dL + \frac{\partial Y}{\partial K} \bullet dK + \frac{\partial Y}{\partial X} \bullet dX \qquad (4\text{-}31)$$

By dividing equation (4-31) by Y and slightly manipulating it, another equation is obtained:

$$\frac{dY}{Y} = \frac{\partial Y}{Y} / \frac{\partial L}{L} \bullet \frac{dL}{L} + \frac{\partial Y}{Y} / \frac{\partial K}{K} \bullet \frac{dK}{K} + \frac{\partial Y}{Y} / \frac{\partial X}{X} \bullet \frac{dX}{X} \qquad (4\text{-}32)$$

Ram added a constant term to equation (4-32) to yield the following formulation:

$$\dot{Y} = \beta_0 + \beta_1 \dot{L} + \beta_2 \dot{K} + \beta_3 \dot{X} \qquad (4\text{-}33)$$

Where β_1 represents the elasticity of output with respect to L, β_2 the same for K, and β_3 for X, A dot over a variable indicates its rate of growth.

4.5 The Models for this Study

In this section the models to be used in the proposed study of the export-economic growth relationship in the GCC countries are described. The methodology is derived from my review of the literature on the relationship between exports and economic growth as well as the theoretical basis for current economic models as described in this chapter, and is designed to investigate both the long run relationship of these two variables as well as the short run relationship. The estimation is based on two models. The first Model is that of Ram (1985), explained above.

$$\dot{Y} = \beta_0 + \beta_1 \dot{L} + \beta_2 \dot{K} + \beta_3 \dot{X}$$

However, instead of a growth rate of (K, L, X), the logs of level of real exports, the log of real GDP, the log of gross capital formation as proxy of capital accumulation, and the log of labor, will be used in this study.

Both aggregate export and disaggregate export will be examined in this study, and the overall GDP will be determined. Aggregate exports will be estimated as follows:

$$GDP = \alpha_0 + \alpha_1 LAB + \alpha_2 CAP + \alpha_3 EX \qquad (4\text{-}34)$$

Where: GDP represents the Gross Domestic Product, LAB the labor forces, CAP the gross capital formation as proxy of capital accumulation, and EX the total exports.

The GCC countries present a special case in that all of their economies are based on oil; thus, it is important to closely examine the relationship between oil exports and the GDP. Therefore, I will analyze the effect of disaggregated exports on the GDP by dividing exports into two categories: oil and non-oil exports. The latter category includes manufacturing, and agricultural products.

The following equations will be used:

$$GDP = \beta_0 + \beta_1 LAB + \beta_2 CAP + \beta_3 EXo \qquad (4\text{-}35)$$

$$GDP = \delta_0 + \delta_1 LAB + \delta_2 CAP + \delta_3 EXn \qquad (4\text{-}36)$$

where EXo represents the export of oil products, and EXn the export of non oil products (from such industries as agriculture and manufacturing).

The second model will be essentially the Feder model described above.

$$\frac{\dot{Y}}{Y} = \beta_0 + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X})(\frac{X}{Y}) + \theta(\frac{\dot{X}}{X}) \qquad (4\text{-}37)$$

Where Y is GDP, I is gross investment, L is the labor force, X is export, and θ is the inter-sector externality parameter. $\beta_3 = \{(\delta/1+\delta) - \theta\}$, δ the marginal factor productivity deferential.

Models will be applied to most of GCC countries individually, looking both at aggregate and disaggregate exports of each country, and should allow me to estimate the influence of the export sector on the non-export sector (i.e. the externality), as well as the sectoral marginal productivities for each country. The cointegration and causality tests with the first model which is based on Ram's 1985 model, and OLS will be applied with the second model which is based on Feder's 1982 model, as I am primarily interested in how the export sector affects the non-export sector (externality), without needing to know the direction of causality between the two variables.

I will present my empirical analysis in the next chapter (Chapter 5) as follows: first I will check to see if a long-run relationship actually exists between the variables by using a cointegration test. If the variables are cointegrated, I will use the Granger causality test based on ECM to determine the direction of causality between the growth in the Gulf Cooperation Council countries' GDP and the growth in export (both aggregate and disaggregate). If the variables are not cointegrated, I will use the standard Granger causality test. Finally, I will compare the results of the aggregate export

approach and the disaggregate export approach, paying particular attention to the direction of causality as determined by the two different approaches.

CHAPTER FIVE

DATA DESCRIPTION, MODELS AND EMPIRICAL RESULTS

5.1 Overview

This chapter contains the empirical results of this study. It begins with a description of the data series chosen for this study, and their sources. Next the models used are outlined and then applied, and finally the results of each test as applied to the appropriate data sets are given.

5.2 Data Description

The data used in this study are annual time series because these data are usually available on a yearly basis in GCC countries. The source of the data used are the World Development Indicators (WDI) (World Bank, 2004), the International Monetary Fund (IMF) International Financial Statistics Yearbooks for 1999 and 2004, and the Gulf Cooperation Council's annual Statistical Bulletin. The data include the years 1970-2001 for Kuwait, Oman, and Saudi Arabia, and is slightly smaller for Bahrain (1980-2001) and the UAE (1973-2001), due to unreliability of the time series data for the earlier years.

The relevant variables used in this study include the following economic measurements: gross domestic product (GDP), labor force, gross capital formation as proxy for capital accumulation, aggregate exports, oil (petroleum) exports, and non-oil exports. All data except the GDP and labor force were initially collected in nominal terms and in U.S. dollars. The other types of data series used in this study (gross capital formation, exports, oil exports, non oil exports) have not been expressed elsewhere in real terms and thus have had to be calculated here. Their real terms have been obtained by deflating the nominal value using the respective GDP deflator[5].

GDP was collected directly from the WDI and is expressed here in real terms (constant 1995 US$). A quick glance at the GDP series shows that over the past thirty years the GDP for the GCC countries has increased as oil prices and exports have increased. The GDP series for a particular country is described by World Development indicator (WDI) thus: "GDP at purchasers' prices is the sum of gross value added by all resident producers in the economy plus any product taxes and minus any subsidies not included in the value of the products. It is calculated without making deductions for depreciation of fabricated assets or for depletion and degradation of natural resources. Data are in constant 1995 U.S. dollars. Dollar figures for GDP are converted from domestic currencies using 1995 official exchange rates. For a few countries where the official exchange rate does not reflect the rate effectively applied to actual foreign exchange transactions, an alternative conversion factor is used."

The second major data series used here, labor force, is defined thus by the WDI: "The total labor force comprises people who meet the International Labor Organization definition of the economically active population: all people who supply labor for the

[5] The GDP deflator for 1995 was used to convert all nominal terms to real terms.

production of goods and services during a specified period. It includes both the employed and the unemployed. While national practices vary in the treatment of such groups as the armed forces and seasonal or part-time workers, in general the labor force includes the armed forces, the unemployed, and first-time job-seekers, but excludes homemakers and other unpaid caregivers and workers in the informal sector."

As this is an empirical study, gross capital formation is used here as proxy for real capital accumulation. WDI defines this series thus: "Gross capital formation (formerly gross domestic investment) consists of outlays on additions to the fixed assets of the economy plus net changes in the level of inventories. Fixed assets include land improvements (fences, ditches, drains, and so on); plant, machinery, and equipment purchases; and the construction of roads, railways, and the like, including schools, offices, hospitals, private residential dwellings, and commercial and industrial buildings. Inventories are stocks of goods held by firms to meet temporary or unexpected fluctuations in production or sales, and 'work in progress.' According to the 1993 SNA (System of National Accounts), net acquisitions of valuables are also considered capital formation."

Exports of goods and services are included here as real exports according to WDI's definition of exports as, "the value of all goods and other market services provided to the rest of the world. They include the value of merchandise, freight, insurance, transport, travel, royalties, license fees, and other services, such as communication, construction, financial, information, business, personal, and government services. They exclude labor and property income (formerly called factor services) as well as transfer payments."

A fifth variable used here is oil exports. This series is compiled from two sources, the IMF's International Financial Statistics Reports for 1999 and 2004 as well as from the GCC Statistical Bulletin. The IMF fund's staff estimated the petroleum export data from prices listed in *Petroleum Intelligence Weekly* and other international sources.

The final variable used here is non-oil exports. This data is simply the difference between the total exports and the oil exports. An incomplete list of non-oil exports for GCC countries includes: live animals and their products, vegetable products, mineral products, and manufactured goods, including textile, machinery and mechanical appliances, products of the food and beverage industries, and articles of stone, plaster, cement, ceramic, and glass.

5.3 The First Model

Both models in this study are based on a review of the literature studying the relationship between exports and economic growth, particularly the studies of Feder (1982) and Ram (1985) as described in previous chapter. The first model used here is based on the work of Ram (1985) and examines the relationship between the GDP and both aggregate and disaggregate exports. The relationship between aggregate exports and the GDP is tested as follows:

Model I: $GDP = \alpha_0 + \alpha_1 LAB + \alpha_2 CAP + \alpha_3 EX$

Where GDP represents the Gross Domestic Product, LAB the labor force, CAP the gross capital formation as proxy of capital accumulation, and EX the total exports.

Similarly, the effects of oil exports and non-oil exports on GDP are estimated thus:

Model II: $GDP = \beta_0 + \beta_1 LAB + \beta_2 CAP + \beta_3 EXo$

Model III: $GDP = \delta_0 + \delta_1 LAB + \delta_2 CAP + \delta_3 EXn$

EXo represents the export of oil products and EXn the export of non-oil products.

5.3.1 Cointegration Analysis

Investigation of the long-run relationship and the causality between GCC exports and economic growth involves three steps. The first step is to examine the integration properties of the variables, i.e., testing unit root properties of the series. The second step is to examine whether or not there exists a long-run relationship between the variables by using Johansen's cointegration approach. Finally, the ECM approach is used to test the causality between the series if the variables are cointegrated. However, with the variables that are not cointegrated, the standard Granger causality test is used to determine the direction of causality by differencing the variables once.

5.3.1.1 Unit Root Test

Prior to testing for cointegration or a causal relationship between the time series, it is necessary to establish that they are integrated of the same order. Accordingly, I used the Augmented Dickey-Fuller (ADF) method to test for the existence of unit roots and to identify the order of integration for all data series used in this study. The ADF method can be applied using the following models:

$$\Delta Y_t = \delta Y_{t-1} + \sum_{i=1}^{m} \gamma \Delta Y_{t-i} + \varepsilon_t \qquad (5\text{-}1)$$

$$\Delta Y_t = \alpha + \delta Y_{t-1} + \sum_{i=1}^{m} \gamma \Delta Y_{t-i} + \varepsilon_t \qquad (5\text{-}2)$$

$$\Delta Y_t = \alpha + \beta t + \delta Y_{t-1} + \sum_{i=1}^{m} \gamma \Delta Y_{t-i} + \varepsilon_t \qquad (5\text{-}3)$$

Where t is the linear time trend term.

The difference among these three models concerns the presence of the deterministic elements α and βt. The first is a random walk model, the second adds an intercept term, and the third includes both an intercept and the linear time trend (Enders, 2004). The null hypothesis Ho: $\delta=0$ is that the variable under study contains a unit root, against the alternative that it does not. Therefore, the failure to reject the null hypothesis means that the variable is nonstationary, I(1), while the rejection of the null hypothesis reflects the absence of unit root problems, meaning that the variable is stationary, I(0). The test involves estimating one of the equations above using Ordinary Least Squire (OLS) in order to obtain the estimated value of δ and the associated standard error, and then comparing the resulting t-statistic with the critical values reported in the Dickey-

Fuller tables to determine whether to accept or reject the null hypothesis $\delta=0$. If, for instance, the t-statistic is less than the critical values, the null hypothesis of a unit root is rejected and the series is stationary.

The first stage of the cointegration and causality procedure determines the order of integration of the data. In this case the ADF of the unit root test was done for each data series for each country included in this study. The logarithm form, as is common in the literature, is used for each series and these series are defined in the model as:

LGDP: logarithm of real gross domestic product.

LLAB: logarithm of labor force.

LCAP: logarithm of real gross capital formation.

LEX: logarithm of real exports.

LEXo: logarithm of real oil exports.

LEXn: logarithm of real non oil exports.

Tables 5-1 and 5-2 summarize the results of the ADF test for both levels and the first difference for each data series used in this study. Table 5-1 listed the result of the ADF test for countries with same order of integration for all variables., Comparing the ADF t-values of the level series with the 1 and 5 percent critical value that is reported at the bottom of the table, it is clear that the null hypothesis of the unit root cannot be rejected at any level of significance. Therefore, these results indicate that all variables are non stationary in the levels.

Table 5-1: ADF Unit Root Tests on Series for Four Countries with the Same Order of Integration for All Variables

Variable	ADF Test Statistics		
	Levels	1st Difference	Result
Bahrain			
LGDP	0.499	-3.006	I(1)*
LCAP	0.239	-3.055	I(1)*
LLAB	-0.352	-2.994	I(1)*
LEX	-0.433	-2.737	I(1)*
LEXo	-0.255	-2.523	I(1)**
LEXn	0.389	-4.525	I(1)*
Kuwait			
LGDP	-1.678	-5.700	I(1)*
LCAP	-2.831	-4.711	I(1)*
LLAB	-1.880	-3.625	I(1)**
LEX	-2.141	-4.463	I(1)*
LEXo	-2.675	-5.701	I(1)*
LEXn	-2.908	-5.309	I(1)*
Oman			
LGDP	-0.830	-5.386	I(1)*
LCAP	-2.272	-3.086	I(1)**
LLAB	-1.931	-2.996	I(1)**
LEX	-0933	-4.767	I(1)*
LEXo	-1.161	-5.301	I(1)*
LEXn	-1.165	-4.452	I(1)*
UAE			
LGDP	-1.580	-3.908	I(1)*
LCAP	-2.130	-4.021	I(1)*
LLAB	-1.178	-3.458	I(1)**
LEX	-1.020	-3.894	I(1)*
LEXo	-1.469	-4.276	I(1)*
LEXn	-1.813	-3.672	I(1)**

Note: *, ** denotes significance at 1 and 5 percent, respectively.
The 1% and 5% critical values of ADF statistics for Bahrain in the levels are -2.699, and -1.961, and for the first difference are -2.708, and -1.962.
The 1% and 5% critical values of ADF statistics for Kuwait are -4.296, and -3.568, and for the first difference are -4.309, and -3.574.
The 1% and 5% critical values of ADF statistics for Oman in the levels are -3.679, and -2.967, and for the first difference are -3.689, and -2.971.
The 1% and 5% critical values of ADF statistics for UAE are -3.699, and -2.976, and for the first difference are -3.711, and -2.981.
I(0) stationary in levels, and I(1) stationary after first differencing.

For the first difference series, however, the null hypothesis of a unit root is rejected for all data series either at the 1 percent or 5 percent level of significance. And as shown in Table 5-1, the ADF t-value lies to the left of the critical values, thus indicating that all data series are stationary in first difference and that they are integrated of order one I(1) for Bahrain, Kuwait, Oman, and the UAE.

Table 5-2: ADF Unit Root Tests on Series for Saudi Arabia that are Integrated of Different Orders

Variable	ADF Test Statistics		
	Levels	1st Difference	Result
Saudi Arabia			
LGDP	-1.834	-3.930	I(1)*
LCAP	-3.932	—	I(0)*
LLAB	-1.814	-2.996	I(1)**
LEX	-1.782	-4.805	I(1)*
LEXo	-2.505	-3.067	I(1)**
LEXn	-3.552	—	I(0)*

Note:
*, ** denotes significance at 1 and 5 percent, respectively.
The 1 and 5 % critical values of ADF statistics for Saudi Arabia in the levels are -3.689, and -2.971, and for the first difference are -3.699, and -2.976.
I(0) stationary in levels, and I(1) stationary after first differencing.

As shown in Table 5-2, the series for Saudi Arabia under study are integrated of different orders. Therefore it is possible to reject the null hypothesis of the unit root at any significant level for the LCAP and LEXn series, suggesting that these two series are integrated of order zero, I(0) (stationary). However, for the series LGDP, LLAB, LEX, and LEXo, the null hypothesis of a unit root in the first difference is rejected, strongly suggesting that these series are stationary I(1). Since for Saudi Arabia the variables are integrated of different orders, it is therefore possible to infer that the series for this country are not cointegrated.[6]

5.3.1.2 Johansen's Cointegration Test

Once the results of the unit root test have determined the data series to be cointegrated of the same order I(1), the next step is to estimate the long run equilibrium relationship among the various sets of variables. The results given above indicate that Bahrain, Kuwait, Oman, and the UAE are appropriate for this analysis. The long run equilibrium relationship is attained by using two test statistics, the trace statistic (λ_{trace}) and the Max-Eigenvalue statistic (λ_{max}). The trace statistic tests the null hypothesis that the number of cointegration vectors is less than or equal to r against a general alternative. The second statistic, Max-Eigenvalue, tests the null hypothesis that the number of cointegration vectors is r against the alternative of r+1 cointegration vectors. Accordingly, to test the null hypothesis r=0 against the specific alternative r=1, the calculated value of the λ_{max} statistic is compared with the critical value of the λ_{max}. If

[6] Enders (2004) states that if the variables are integrated of different orders, it is possible to conclude they are not cointegrated in the usual term.

the calculated value of Max-Eigen exceeds the critical values at 1 and 5 percent, the null hypothesis is rejected, and the variables are determined to be cointegrated.

As the series used in the present study appear to have stochastic trends, the Johansen multivariate cointegration test with the deterministic linear trend in the data was considered to be most appropriate for application. One of the most commonly used information criteria in econometrics, the Akaike information criterion (AIC), was used to determine the appropriate lag interval. The number of cointegration relations is decided by the value of the Eiqenvalue and the Max-Eiqen statistic[7]. Table 5-3 summarizes the results of the Johansen cointegration test for models I, II, and III for Bahrain, Kuwait, Oman, and the UAE.

In the case of Bahrain, as shown in Table 5-3, the Max-Eiqen statistic indicates one cointegration vector at both a 5 and a 1 percent significance level among considered variables in model I. Since the Max-Eiqen statistic of (33.78) exceeds the critical value of Max-Eiqen at the 5% and 1% levels of significance, which are 23.8 and 28.82 respectively. However, the null hypothesis of $r \leq 1$ is rejected at both the 5% and 1% levels of significance as the Max-Eiqen statistic (17.66) is less than the critical value at 5% (17.89) and at 1% (22.99). Therefore, this result indicates that the existence of one cointegrating equation at 5% and 1% level of significance which means that there does exist a long run relationship between aggregate exports and economic growth.

[7] Enders (2004) states that the Trace and Max-Eigen tests can conflict. The Max- Eigen test has the sharper alternative hypothesis. It is usually preferred for trying to pin down the number of cointegration vectors.

Table 5-3: Johansen Cointegration Test Results.

Countries	Max-Eigen Statistic λ_{Max}	Hypothesized Number of Cointegrated Equations				Number of Cointegration Equations
		r =0	r =1	r =2	r =3	
Bahrain	λ_{Max} Model I	33.78	17.66	11.24	2.63	1**
	λ_{Max} Model II	2839	15.65	10.13	0.75	1*
	λ_{Max} Model III	26.72	15.79	10.88	0.20	1*
Kuwait	λ_{Max} Model I	35.58	20.44	10.50	1.55	1**
	λ_{Max} Model II	37.90	18.66	8.93	0.34	1**
	λ_{Max} Model III	38.27	13.83	9.37	0.21	1**
Oman	λ_{Max} Model I	39.42	17.44	6.80	2.44	1**
	λ_{Max} Model II	19.10	14.06	13.07	2.85	0
	λ_{Max} Model III	38.52	18.02	6.43	2.01	1**
UAE	λ_{Max} Model I	32.60	20.12	12.74	1.40	1**
	λ_{Max} Model II	27.48	13.68	11.87	0.02	1*
	λ_{Max} Model III	36.84	20.78	13.70	2.85	1**

Note:
*, ** denote rejection of the null hypothesis at the 5 percent and 1 percent level, respectively.
The critical values of Max-Eigenvalue statistic for r=0, r=1, r=2 and r=3 test at 5% level of significance are 23.8, 17.89, 11.44 and 3.84; and at 1% level of significance are 28.82, 22.99, 15.69, and 6.51, respectively, for Bahrain.
The critical values of Max-Eigenvalue statistic for r=0, r=1, r=2 and r=3 test at 5% level of significance are 27.07, 20.97, 14.07, and 3.76; and at 1% level of significance are 32.24, 25.52, 18.63, and 6.65, respectively, for Kuwait, Oman, and UAE.

Moreover, a long run relationship between oil exports and economic growth (Model II) exists in Bahrain. This result is derived from the fact that there is one cointegration equation at the 5% level of significance. The null hypothesis is rejected only at the 5% significance level where the Max-Eiqen statistic (28.39) is greater than the critical value at 5% (23.8) but less that the critical value at 1% (28.82). Also the test supports the existence of a long run relationship between non-oil exports and economic growth at the 5% level of significance in Bahrain. As shown by the Johansen test outcome, the hypothesis of no cointegration is rejected at 5 percent, indicating that there exists at most one cointegrating equation between the variables.

In addition, the finding of the Johansen test indicates that cointegration exists among the variables in model number I at the 5 and 1 percent levels of significance in Kuwait, Oman, and the UAE. The Max-Eiqen statistics of the Johansen test were found to be greater than critical values at both levels of significance. Also, the results of the Johansen cointegration procedure indicate that one cointegration equation exists between oil exports and economic growth at both 5 and 1 percent levels of significance in Kuwait and only at 5 percent level of significance in the UAE. However, oil exports and GDP growth are not cointegrated in Oman, as shown by Table 5-3. The Max-Eiqen statistic indicates no cointegrating vector at any significance level among the variables. The null hypothesis of no cointegration between variables is rejected at the 5% and 1% levels of significance since the Max-Eiqen statistic (19.10) is below the 5 percent critical value (27.07) or 1 percent critical value (32.24). This last result is surprising, as oil exports usually act as the engine for economic growth in oil-based economies such as those found in the GCC. The expected result in the GCC countries is that these two

variables would be highly correlated, which was not found to be the case. One may speculate that the lateness in Omani starting its oil export may be responsible for this unexpected result.

Finally, the Johansen test result indicates that one cointegration vector exists between variables in model III for Kuwait, Oman, and the UAE. The Max-Eiqen statistic of the Johansen test was found to be greater than the critical values at both levels of significance, implying the existence of a long run relationship between non-oil exports and economic growth in those countries.

The estimated cointegration equations are reported in Table 5-4. Generally, the sign of a variable in the cointegration vectors needs to be compared with the sign of the error correction terms to determine whether a variable's long run movement is consistent with an economic relation. Moreover, a comparison of these signs will help to determine the direction of a long run relationship between variables. The direction of Granger causality can be detected by testing the significance of the error correction term for each variable.

Table 5-4: Estimated Cointegrating Equations

Countries	Model Number	Normalized Cointegrating Vectors on *LGDP*
Bahrain	Model I	*LGDP – 0.675 LLAB – 0.349 LCAP – 0.272 LEX= et* *(-0.029) (-0.050) (-0.040)*
	Model II	*LGDP – 0.713 LLAB – 0.323 LCAP – 0.304 LEXo= et* *(-0.029) (-0.039) (-0.033)*
	Model III	*LGDP – 1.354 LLAB – 1.040 LCAP – 0.917 LEXn= et* *(-0.194) (-0.085) (-0.148)*
Kuwait	Model I	*LGDP – 0.376 LLAB + 0.710 LCAP – 1.271 LEX= et* *(-0.156) (-0.173) (-0.153)*
	Model II	*LGDP – 0.721 LLAB – 0.597 LCAP – 0.491 LEXo= et* *(-0.192) (-0.265) (-0.162)*
	Model III	*LGDP + 0.340 LLAB – 0.584 LCAP + 0.267 LEXn= et* *(-0.065) (-0.104) (-0.024)*
Oman	Model I	*LGDP – 8.307 LLAB – 1.601 LCAP + 5.879 LEX= et* *(-1.28) (-0.297) (-1.01)*
	Model II	No Cointegration
	Model III	*LGDP – 1.498 LLAB – 0.399 LCAP + 0.067 LEXn= et* *(-0.054) (-0.053) (-0.011)*
UAE	Model I	*LGDP + 0.078 LLAB + 0.278 LCAP – 1.025 LEX= et* *(-0.101) (-0.103) (-0.107)*
	Model II	*LGDP – 0.219 LLAB + 0.414 LCAP – 0.974 LEXo= et* *(-0.057) (-0.094) (-0.091)*
	Model III	*LGDP + 1.105 LLAB – 0.358 LCAP – 1.280 LEXn= et* *(-0.324) (-0.276) (-0.181)*

Note that the sign of *LLAB, LCAP, LX, LXo,* and *LXn* are reversed since they are brought to the left hand side of the structural equation.
The numbers in parentheses represent the standard error.

5.3.1.3 Granger Causality test within Error Correction Model

Since the series under study were found to be cointegrated as shown in the previous section, the Granger causality test based on the vector error correction model have to be estimated in order to investigate the causality relationship among LGDP, LEX, LEXo, and LEXn in Bahrain, Kuwait, Oman, and the UAE[8]. Cointegration tests for models I, II, and III for Bahrain, Kuwait, and the UAE and for Models I and III for Oman suggest a long run relationship, but they do not indicate the direction of this relationship. The Granger causality test was applied in this study to analyze the causality structure of the variables considered. The t-statistic on the error correction term, ECT, and the probability values for various χ^2 statistics for the joint significance of each of the other lagged endogenous variables are presented in models. The t-statistics indicate the existence of a long run causality, while the probability values (Wald test) indicate the presence of a short run causality. In Table 5-4, the error term on the right hand side describes departure from long run equilibrium and is equivalent to the error correction term, ECT, as described in equations (4-6) and (4-7) and the coefficients of the error correction term, generally known as the speed of adjustment coefficients, capture the response to deviation from the long run steady state for each variable.

In this section, the causality between GDP and exports, oil exports, and non-oil exports for Bahrain, Kuwait, Oman, and the UAE is determined in both the long and

[8] The direction of causality between real GDP and exports, LEX, LEXo, and LEXn is the only interest in this study, therefore, the causality direction between real GDP and the other variables, LLAB, or LCAB will not be discussed here.

short run. As explained in chapter four, there are four patterns of causality that can be identified. First, there is one way (unidirectional) causality from economic growth (GDP) to exports. A causal relationship from GDP to exports can be expected for countries with comparative advantages in certain commodities, and which produce more than they consume and export their surpluses. There can also be unidirectional causality from exports to economic growth. From a macroeconomic perspective, a causal direction from exports to GDP can be expected, particularly for less developed countries or for countries at early stages of economic development where the increase of exports enhanced the efficiency of production through increased competition and specialization. Also, the increase of exports will lead to more foreign exchange inflow; consequently, these countries can use the foreign currency to import capital inputs needed in final production. Third, there can be two way (bidirectional) causality between exports and GDP. Finally, there may be no causality suggested between exports and economic growth, even if a long run relationship was indicated in the cointegration test (Anwer and Sampath, 1999). There may exist other independent factors which explain the correlation, such as LLAB or LCAP in the case of the GCC countries.

The causal relationship results for both the short and long run relationships are presented for each of the models in Table 5-5. By comparing the sign of error correction term in column 7 of Table 5-5 with the sign of cointegration equations and the t-statistic in column 8 of same table, the results indicates that for Bahrain, real total export (LEX) and (LGDP) were statistically insignificant at 1%, 5%, and 10% levels of significance which means that the long run causality between real exports and economic

growth does not exist. The short term relationship between real exports and economic growth, reflected in the P-value of the Wald test, show unidirectional causality running from real total exports to economic growth, at a conventional 5% level of significance. Moreover, focusing on the long run relationship between oil exports and real GDP, the error correction results show that there is no causal relationship between oil exports (LEXo) and economic growth (LGDP), as well as there being no short term causality found between them at any level of significance. In addition, as shown in Table 5-5, the long run causality between non-oil exports (LEXn) and (LDGP) does not exist. We came up with this result by comparing the sign of the ECTt-1 with the sign of cointegrating equations results in Table 5-4. It is clear that the appropriate sign on error correction term coefficients for a positive ECTt-1 should be negative for LGDP or positive for LEXn. Therefore, in our result, we found that LGDP moves in a correct direction but it is insignificant. In the other hand, the t-value of the error correction term of LEXn is significant at a1% level, while its sign moves in wrong direction which indicates that none of these variables cause each other. However, the short run tests suggest, at a 5% level of significance, that the real GDP caused non-oil export expansion in Bahrain.

The results found here for Bahrain were unexpected. No causal relationship was found between LEX and LGDP, or between LEXn and LGDP in the long term or LEXo and LGDP in either the long or the short term, even though the variables are cointegrated. An explanation for this result may be found in the fact that our estimation was based on a limited sample size (only 21 observations). Related to this, Engle and Granger (1991) observed that, theoretically, if variables are cointegrated, causality

should exist in at least one direction, but that with a limited period of data, the causality tests may not be powerful enough to find this causal relationship.

For Kuwait, the results of the causality tests show that the error correction term ECt-1 is statistically significant at 1 % and has the expected positive sign for total exports (LEX). Therefore, the significant error correction indicates that the GDP growth Granger causes real total exports in Kuwait. Additionally, as Table 5-5 illustrates, in the short run, bidirectional causality is found between real total exports and economic growth for Kuwait at 10% and 5% levels of significance, respectively. Therefore, GDP growth Granger causes total export growth in both the short run and the long run, but total exports Granger cause real GDP growth only in the case of the short run. Furthermore, there is a long run causality running from economic growth (LGDP) to oil exports (LEXo) at a1% level of significance, as shown by the outcome of the Granger causality tests. Moreover, the results show that a short run Granger causality runs from GDP growth to oil export growth. Also, the error correction terms for LGDP and LEXn are statistically significant and have the expected sign; accordingly, the results suggest a bidirectional long run causal relationship between real GDP growth and non oil exports (LEXn). The results also show a two-way bidirectional causal relationship between (LGDP) and (LEXn) in the short term, with significance levels above 10% for (LGDP) and 1% for (LEXn).

In the case of Oman, with respect to the long run causality, the empirical results did support the export-led growth hypothesis in the long term. A unidirectional causal relationship running from real total exports (LEX) to real GDP. In the short run, the finding suggests that a causal relationship runs from non-oil exports (LEXn) to

economic growth (LGDP). However, in the long run, the results did support the export-led growth hypothesis, at a10% level of significance, showing that the non-oil exports (LEXn) cause real GDP growth in Oman, as shown in Table 5-5. Moreover, the same causal relationship is found between non-oil exports and the real GDP growth.

Finally, with respect to long run causality, the results did not support the export-led growth hypothesis at both the aggregate and disaggregate levels. A unidirectional causal relationship was found to run from real GDP growth to real total exports (LEX), oil exports (LEXo), and non oil exports (LEXn). The similar relationship was found in the short term, where real GDP was shown to cause total exports, oil exports, and non-oil exports at the 5%, 10%, and 10% level of significance, respectively.

Table 5-5: Granger Causality Test Results Based on VECM

Countries	Dependent Variable	Causality test in Short Run (P. Values)				Long Run Causality	
	Model I	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEX***	***ECTt-1***	***t-stat***
Bahrain	***ΔLGDP***	—	0.367	0.695	0.010**	0.296	1.58
	ΔLLAB	0.139	—	0.070*	0.994	0.045	2.78**
	ΔLCAP	0.006***	0.123	—	0.010***	1.63	2.25**
	ΔLEX	0.399	0.226	0.813	—	0.56	0.78
	Model II	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXo***		
	ΔLGDP	—	0.998	0.374	0.965	-0.018	-0.067
	ΔLLAB	0.030**	—	0.0002***	0.433	0.073	4.01***
	ΔLCAP	0.845	0.097*	—	0.210	1.64	1.67
	ΔLEXo	0.240	0.957	0.105	—	0.026	0.038
	Model III	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXn***		
	ΔLGDP	—	0.337	0.679	0.429	-0.044	-0.47
	ΔLLAB	0.099	—	0.041**	0.157	0.014	1.14
	ΔLCAP	0.814	0.985	—	0.619	-0.028	-0.05
	ΔLEXn	0.014**	0.006***	0.001***	—	-4.03	-3.75***
Kuwait	Model I	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEX***		
	ΔLGDP	—	0.22	0.67	0.07*	0.36	3.23***
	ΔLLAB	0.41	—	0.006***	0.001***	-0.06	-2.27**
	ΔLCAP	0.40	0.010**	—	0.81	-0.41	-2.38**
	ΔLEX	0.017**	0.51	0.78	—	0.84	2.95***
	Model II	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXo***		
	ΔLGDP	—	0.038**	0.178	0.31	-0.02	-0.21
	ΔLLAB	0.001***	—	0.003***	0.001***	0.12	5.85***
	ΔLCAP	0.18	0.62	—	0.55	0.19	1.06
	ΔLEXo	0.0001***	0.003***	0.45	—	0.55	3.001***
	Model III	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXn***		
	ΔLGDP	—	0.62	0.56	0.08*	-0.62	-2.19**
	ΔLLAB	.0001***	—	0.82	0.93	0.11	0.96
	ΔLCAP	0.39	0.11	—	0.001***	-1.43	-4.10***
	ΔLEXn	0.005***	0.006***	0.001***	—	-5.7	-4.36***

Table 5-5: (Continued)

Countries	Dependent Variable	Causality test in Short Run (P. Values)				Long Run Causality	
	Model I	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEX***	***ECTt-1***	***t-stat***
Oman	***ΔLGDP***	—	0.355	0.786	0.030**	-0.80	-2.72**
	ΔLLAB	0.128	—	0.391	0.001***	0.02	4.15***
	ΔLCAP	0.677	0.755	—	0.765	0.18	1.30
	ΔLEX	0.38	0.298	0.181	—	0.16	2.09**
	Model III	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXn***		
	ΔLGDP	—	0.231	0.137	0.020**	-0.4	-1.99*
	ΔLLAB	0.812	—	0.532	0.003***	0.107	2.94***
	ΔLCAP	0.75	0.123	—	0.012**	0.54	0.764
	ΔLEXn	0.232	0.013**	0.062*	—	4.87	1.88*
UAE	Model I	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEX***		
	ΔLGDP	—	0.129	0.240	0.111	0.25	0.89
	ΔLLAB	0.858	—	0.588	0.977	0.02	0.37
	ΔLCAP	0.498	0.005***	—	0.694	-0.80	-3.56***
	ΔLEX	0.045**	0.029**	0.206	—	0.98	2.14**
	Model II	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXo***		
	ΔLGDP	—	0.407	0.338	0.321	0.45	1.109
	ΔLLAB	0.483	—	0.686	0.394	-0.03	-0.35
	ΔLCAP	0.626	0.003***	—	0.382	-1.09	-3.86***
	ΔLEXo	0.101*	0.265	0.306	—	1.157	1.815*
	Model III	***ΔLGDP***	***ΔLLAB***	***ΔLCAP***	***ΔLEXn***		
	ΔLGDP	—	0.299	0.483	0.146	0.056	0.87
	ΔLLAB	0.323	—	0.153	0.312	0.017	1.27
	ΔLCAP	0.920	0.112	—	0.535	-0.078	-1.17
	ΔLEXn	0.051*	0.042**	0.038**	—	1.14	5.09***

Note:
*, **, *** indicates that a test statistic is significant at the 10%, 5%, and 1% levels of significance, respectively.

5.3.1.4 The Standard Granger Causality Test

In this section, the standard Granger causality test was performed in order to investigate the causal relationship between aggregate and disaggregate exports and economic growth for Saudi Arabia, where no cointegration exists between LEX and LGDP, LEXo and LGDP, LEXn and LGDP, and also for Oman, where no cointegration exists between LEXo and LGDP. Enders (2004) state that if the variables under study are cointegrated, causality tests cannot be performed using F-tests. However, it is possible to take the first difference if the variables are I(1) and are not cointegrated; therefore, the Granger causality test can be performed on any equation using F-tests. In this study, the standard Granger causality test was used after taking the first difference for all variables that are I(1)1 to determine whether one variable Granger causes another.

The Granger causality test was applied to the log value for total exports, oil exports, and non-oil exports and GDP growth for Saudi Arabia, as well as between oil exports and GDP growth in Oman. The results of the test are presented in Table 5-6, which includes the calculated F-statistic and probability for each pair of variables in the first column. The hypothesis of non causality can be rejected if the probability of non causality is below 10 percent, indicating that a causal relationship exists.

The results of the Granger causality test indicate that causality runs from oil exports (DLEXo)[9] to economic growth (DLGDP) in the case of Oman. As shown in

[9] D Stands for the first difference

Table 5-6, the probability for accepting the null hypothesis is around 5.8 percent, while there is a 94.2 percent probability for rejecting this hypothesis, meaning that the oil exports cause growth in Oman by 94.2 percent probability.

In the case of Saudi Arabia, the results reported in Table 5-6 suggest that the causality runs from GDP growth to the real total exports. The null hypothesis that DLEX does not cause DLGDP is rejected by around 99.4 percent, meaning that economic growth had a causal impact on real total exports. Also, the results obtained in Table 5-6 indicate a strong evidence of the existence of a one-way (unidirectional) causal relationship runs from GDP growth to oil exports. The probability of accepting the null hypothesis that the DLEXo does not cause the DLGDP is around 3.5 percent, implying that GDP growth causes the Saudi oil exports by around 96.5 percent. Finally, Table 5-6 shows strong evidence of the existence of bidirectional causality (feedback) between non-oil exports and real GDP growth. The null hypothesis that DLEXn does not cause DLGDP is rejected by around 99.4 percent, implying that the real GDP growth causes non-oil export by around 99.4 percent. Moreover, the reversed null hypothesis where DLGDP does not cause DLEXn is rejected by around 91.8 percent which means that the real non-oil exports had a causal impact on real GDP growth by 91.8 percent in the case of Saudi Arabia.

5.3.1.5 Summary of Results

The test results for models used to examine the long run relationship and the direction of causality between exports (aggregate and disaggregate) and GDP growth as a measure of economic growth is reported in Table 5-7.

Table 5-6: Granger Causality Test Results

Null Hypothesis	F-Statistic	Probability
Oman		
DLEXO does not Granger Cause DLGDP	0.42271	0.73858
DLGDP does not Granger Cause DLEXO	2.89096	0.05834
Saudi Arabia		
DLEX does not Granger Cause DLGDP	5.52999	0.00552
DLGDP does not Granger Cause DLEX	1.29919	0.29971
DLEXO does not Granger Cause DLGDP	3.40364	0.03561
DLGDP does not Granger Cause DLEXO	2.11895	0.12682
LEXN does not Granger Cause DLGDP	5.58079	0.00563
DLGDP does not Granger Cause LEXN	2.56652	0.08179

Table 5-7: Summary of the Empirical Results

Countries	Model No.	Johansen-Cointegration Test	Causality Based on VECM		The Standard Granger Causality
			Short-Run	Long-Run	
Bahrain	Model I	Cointegration	LGDP←LEX	No	—
	Model II	Cointegration	No	No	—
	Model III	Cointegration	LGDP→LEXn	No	—
Kuwait	Model I	Cointegration	LGDP↔LEX	LGDP→LEX	—
	Model II	Cointegration	LGDP→LEXo	LGDP→LEXo	—
	Model III	Cointegration	LGDP↔LEXn	LGDP↔LEXn	—
Oman	Model I	Cointegration	LGDP←LEX	LGDP←LEX	—
	Model II	No cointegration	—	—	LGDP←LEXo
	Model III	Cointegration	LGDP←LEXn	LGDP←LEXn	—
Saudi Arabia	Model I	No cointegration	—	—	LGDP→LEX
	Model II	No cointegration	—	—	LGDP→LEXo
	Model III	No cointegration	—	—	LGDP↔LEXn
UAE	Model I	Cointegration	LGDP→LEX	LGDP→LEX	—
	Model II	Cointegration	LGDP→LEXo	LGDP→LEXo	—
	Model III	Cointegration	LGDP→LEXn	LGDP→LEXn	—

5.4 The Second Model

The second model used in this study is the Feder (1982) model which was discussed in details in chapter four and can be expressed as:

$$\frac{\dot{Y}}{Y} = \beta_0 + \beta_1(\frac{I}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X})(\frac{X}{Y}) + \theta(\frac{\dot{X}}{X}) \quad (5\text{-}4)$$

The above model is estimated empirically in this study as:

$$\frac{\dot{Y}}{Y} = \beta_0 + \beta_1(\frac{S}{Y}) + \beta_2(\frac{\dot{L}}{L}) + \beta_3(\frac{\dot{X}}{X})(\frac{X}{Y}) + \theta(\frac{\dot{X}}{X}) \quad (4\text{-}5)$$

Where:

$\frac{\dot{Y}}{Y}$ is the growth rate of the GDP.

$\frac{S}{Y}$ is the gross national of saving share of in GDP[10] .

$\frac{\dot{L}}{L}$ is the growth rate of the labor force.

$\frac{\dot{X}}{X}$ is the growth rate of exports.

$\frac{X}{Y}$ is the export share in GDP.

$\beta_3 = \{(\delta/1+\delta) - \theta\}$

θ is the export created externality coefficient.

δ is the marginal factor productivity deferential.

[10] For the lake of data, we used the gross saving as a proxy of the gross investment, depends on Keynesian equality (where I=S).

5.4.1 Unit Root Test

In this section, the time series properties of the data used in this model is examined. The Augmented Dickey-Fuller (ADF) test is applied to test the stationarity of all data series used. The methodology of the ADF test was briefly discussed in chapter four.

The results of the ADF unit root test on all data series are shown in Table 5-8 for Bahrain, Kuwait, Oman, Saudi Arabia, and the UAE. The ADF unit root test is performed for $\dot{Y}$, $\dot{L}$, $\dot{S}$, $\dot{X}(\frac{X}{Y})$, and $\dot{X}$ (where a dot over a variable indicates rate of growth). The null hypothesis is that the variable under study contains a unit root, against the alternative that it does not. Therefore, the failure to reject the null hypothesis means that the variable is non stationary, I(1), while the rejection of the null hypothesis reflects the absence of the unit root problem which means that the variable is stationary, I(0). As shown in Table 5-8, with the exception of the rate of growth of labor $\dot{L}$, the null hypothesis is rejected at a 1 percent significance level for all other variables, $\dot{Y}$, $\dot{S}$, $\dot{X}(\frac{X}{Y})$, and $\dot{X}$, implying that the series are stationary, I (0) for both Bahrain and Saudi Arabia.

In the case of Kuwait, Oman, and the UAE, the null hypothesis is also rejected either at a 1 percent or 5 percent level of significance for all data series used in this model. Accordingly, the Augmented Dickey-Fuller results suggest that all the variables under study are stationary, I(0).

Table 5-8: ADF Unit Root Tests on Series

Variables	ADF Test Statistics	
	Levels	Result
Bahrain		
$\dot{Y}$	-3.959202	I(0)*
$\dot{L}$	-1.975621	I(1)
$\dot{S}$	-4.145857	I(0)*
$\dot{X}(\frac{X}{Y})$	-5.103789	I(0)*
$\dot{X}$	-4.817123	I(0)*
Kuwait		
$\dot{Y}$	-5.55862	I(0)*
$\dot{L}$	-5.09853	I(0)*
$\dot{S}$	-4.55074	I(0)*
$\dot{X}(\frac{X}{Y})$	-5.734611	I(0)*
$\dot{X}$	-5.990045	I(0)*
Oman		
$\dot{Y}$	-4.591384	I(0)*
$\dot{L}$	-5.323384	I(0)*
$\dot{S}$	-5.425602	I(0)*
$\dot{X}(\frac{X}{Y})$	-4.691834	I(0)*
$\dot{X}$	-4.773648	I(0)*

Table 5-8 (continue)

Variables	ADF Test Statistics	
	Levels	Result
Saudi Arabia		
$\dot{Y}$	-7.018588	I(0)*
$\dot{L}$	-1.181781	I(1)
$\dot{S}$	-5.379382	I(0)*
$\dot{X}(\frac{X}{Y})$	-7.185956	I(0)*
$\dot{X}$	-3.86314	I(0)*
UAE		
$\dot{Y}$	-3.143077	I(0)*
$\dot{L}$	-2.742648	I(0)*
$\dot{S}$	-2.154527	I(0)**
$\dot{X}(\frac{X}{Y})$	-3.285084	I(0)*
$\dot{X}$	-3.316375	I(0)*

Note:
*, ** denotes significance at 1 and 5 percent, respectively.
The 1% and 5% critical values of ADF statistics for Bahrain are -3.808, and -3.020, respectively
The 1% and 5% critical values of ADF statistics for Kuwait are -3.670, and -2.963, respectively.
The 1% and 5% critical values of ADF statistics for Oman are -3.679, and -2.967, respectively.
The 1% and 5% critical values of ADF statistics for Saudi Arabia are -3.699, and -2.976, respectively.
The 1% and 5% critical values of ADF statistics for UAE are -2.656, and -1.954 respectively.
I(0) stationary in levels, and I(1) stationary after first differencing.

5.4.2 OLS Results

As the growth rate of the labor force in Bahrain and Saudi Arabia was found to be nonstationary, it was necessary to take the first difference in order to convert these nonstationary series to a stationary one[11]. Because of this procedure, all data series under study here are stationary, I(0), and the next step of analysis involves applying the second model in this study with the OLS technique. Accordingly, OLS regression for Bahrain, Kuwait, Oman, Saudi Arabia, and the UAE was performed using the Eviews 5 software in order to determine whether the export sector affects the non export sector (inter-sector externality) in these GCC countries.

The OLS regression performed for Bahrain indicates that the inter-sector externality parameter (θ) is statistically insignificant (t-value=0.88) and has a negative sign, which in turn indicates that the growth of the export sector does not influence the growth of the non-export sector. In other words, this study has found that the inter-sector externality effect does not exist in Bahrain between the export sector and non-export sector. Furthermore, the results indicate that the extent of marginal factor productivity differentials cannot be established, since (β_3), the coefficient of $\dot{X}(\frac{X}{Y})$, the basis for calculating δ, is not statistically significant at any level of significance, implying that there is no productivity differential between the export and non-export sectors in Bahrain.

The results for Kuwait, as shown in Table 5-9, indicate that inter-sector externality exists, since the coefficient (θ) of export growth is positive and highly

[11] Studenmund (2001) states that " with economic data, taking a first difference usually is enough to convert a nonstationary series to a stationary one, but it's a good habit to test the first difference just to make sure".

significant, meaning that the exports sector has a positive externality on other economic sectors. According to these results, if exports in Kuwait grew by one unit, the non export sector grew by 0.901. Thus, it is possible to conclude that the export sector strongly affects other economic sectors (non-exports sector) in Kuwait. Furthermore, the results indicate that the coefficient of $\dot{X}(\frac{X}{Y})$, β_3, is statistically highly significant, and that the productivity differential δ can be calculated given the estimate of the inter-sector externality (θ) and the parameter associated with $\dot{X}(\frac{X}{Y})$, (β_3)[12]. Therefore, the results of this calculation reveal that the parameter δ is approximately equal (2.61), implying that there is a substantial productivity differential between the export sector and the non-export sector.

In the case of Oman, the results of the regression indicate that the inter-sector externality parameter (θ) is statistically insignificant (t-value=0.95) and has a negative sign, which in turn indicates that the growth of the export sector does not influence the growth of the non-export sector. Thus, this result strongly suggests that the inter-sector externality effect does not exist in Oman between the export sector and the non-export sector. Moreover, the results indicate that the extent of marginal factor productivity differentials cannot be established, since β_3, the coefficient of $\dot{X}(\frac{X}{Y})$, β_3, the basis for calculating δ, is not statistically significant at any level of significance, showing that there is no productivity differential between the export and the non-export sectors in Oman.

[12] $\beta_3 = \{(\delta/1+\delta) - \theta\}$

Performing the regression on the data from Saudi Arabia indicate that the inter-sector externality coefficient (θ) is statistically significant (t-value=2.17). In other words, the export sector in the Saudi economy positively affects the non-export sector. Furthermore, we can say that the externality effect between the export sector and other economic sectors does exist in Saudi Arabia. Estimating the inter-sector externality coefficient (θ) shows that if the Saudi export sector increased by one unit, without withdrawing resources from the non-export sector, then the non-export sector would grow by 0.28 unit. The results also imply that the extent of marginal factor productivity differential is firmly established, since the coefficient of $\dot{X}(\frac{X}{Y})$, β_3, is statistically significant. Using the inter-sector externality parameter (θ) and the coefficient of $\dot{X}(\frac{X}{Y})$, β_3, as a basis for calculation yields $\delta/1+\delta= 0.562$, which implies $\delta=1.28$; thus, the results suggest that there is a substantial productivity differential between exports and non-exports in Saudi Arabia.

Finally, in the case of the United Arab Emirates, the findings of the OLS test indicate that there is a substantial externality effect between the export sector and the non-export sector, since the inter-sector externality coefficient is statistically significant (t-value 2.18). Accordingly, if the export sector increased by one unit, the non-export sector would grow by around 0.69 unit. However, the results show that the marginal factor productivity differential cannot be established, since the coefficient of $\dot{X}(\frac{X}{Y})$, β_3, is not significant at any level of significance.

Table 5-9: Regression Analysis for Second Model for Bahrain, Kuwait, Oman, Saudi Arabia and UEA

Variables	Bahrain	Kuwait	Oman	Saudi Arabia	UEA
C	2.177828 (1.314522)	-2.955636 (-1.27381)	-2.580329 (-0.695603)	-2.966774 (-0.455146)	-1.189036 (-0.430105)
$\dot{S}$	0.152054 (1.781655)	-0.032081 (-1.827043)	0.12078 (1.391514)	0.691109* (11.14073)	-0.044435 (-0.820298)
$\dot{L}$	-2.557267 (-1.740523)	0.569313 (1.573537)	1.660819 (1.944369)	1.164038 (0.944832)	0.578418 (1.805294)
$\dot{X}(\frac{X}{Y})$	0.703146 (1.210006)	-0.178489* (-9.253738)	1.277589 (1.683748)	0.2575511* (2.422633)	-0.133422 (-0.285794)
$\dot{X}$	-0.502075 (-0.887737)	0.901923* (12.96305)	-0.250343 (-0.955709)	0.286474* (2.170673)	0.698107* (2.187459)
R^2	0.611468	0.976538	0.968852	0.918066	0.872494
Adj- R2	0.462032	0.970952	0.96406	0.905461	0.83894
D-Watson	1.8506	1.954452	1.916044	2.133314	2.480084
δ	—	2.61	—	1.28	—

Note: * denotes significance at 5 percent.
The numbers in parentheses represent the t-stat.

CHAPTER SIX

CONCLUSION, IMPLICATIONS, AND SUGGESTION FOR FURTHER RESEARCH

6.1 Conclusion

The purpose of this dissertation was to determine the long run relationship and direction of causation between exports (aggregate and disaggregate) and economic growth in five member nations of the Gulf Cooperation Council, or GCC (Bahrain, Kuwait, Oman, Saudi Arabia, and United Arab Emirates). These five countries all have oil-based economies. It is important to remember that the long run relationship between GDP growth and export growth is extremely complex, and there are several important variables, such as price fluctuation, investment climate, and political conditions, which influence this relationship but could not be included in the models because of the lack of measurable indicators. In theory, export growth might affect output growth in a number of ways. For example, the export sector can generate positive externality in the non-export sector by increasing the efficiency of management styles and improving production techniques. Likewise, export growth may increase the scope of economies of scale in exporting firms and encourage an economy's efficiency and competitiveness. The hypothesis of export-led growth (ELG) has been tested empirically in a range of economies, for less developed countries and industrial countries, using either time series or cross sectional data. The results of these studies reject the ELG hypothesis in some

cases and support it in others [see Tyler (1981), Balassa (1985), Jung and Marshal (1985), Chow (1987), Ahmad and Kwan (1991), and Ahmed and Harnhirun (1995)]. In this dissertation I have attempted to address two questions: (1) are real exports and real GDP cointegrated in these five GCC countries? (2) Is there causation between real exports and real GDP, and if there is, what is the direction of that causation? Three tests were used to answer the above questions: the Johansen cointegration approach, the error correction model (ECM), and the Granger causality test. The Johansen cointegration test was used to establish the long run relationship and causality tests to establish the direction of causation between the variables. It is anticipated that the results presented here will be able to help GCC planners and policy makers adopt appropriate economic policies that will promote economic growth.

The first chapter of this dissertation introduced the statement of the problem and described the purpose of the study, as well as its importance, its limitations, and the source of the data used. Since there is no data set suitable for a study of the long run relationship between exports and economic growth in Qatar, this GCC country has been excluded from this study.

The second chapter provided a review of the relevant empirical literature working with the export-led growth hypothesis. As described in this chapter, the relationship between economic growth and export has been the subject of extensive research since the late 1960s,. Research results differ according to methodology, model, and data used. The primary literature on this subject is divided into two categories. First I discuss the early empirical studies that used simple correlation tests to examine the relationship between exports and economic growth. Most of these studies were done in

the late 1960s and early 1970s. The second category, focusing on recent empirical literature, I further divided into two main parts. There are the studies that apply the causality tests using either the standard Granger causality test (1969) or the Sims test (1972). Then there are the studies that apply both cointegration techniques in order to establish the long run relationship, and then apply the causality test in order to determine the direction of causality between variables.

Chapter three presented the history and foundation of the Gulf Cooperation Council. Historically, the effort to attain political and economic cooperation between Arab Gulf countries (Iran is the only non Arabic Gulf Country) began in 1976 when the President Amir of Kuwait, Sheikh Jaber Al Sabah visited all six Gulf States in an effort to promote economic union and corporation. The Gulf Cooperation Council was formally established a few years later, in May 1981, with the stated purpose of strengthening regional cooperation and coordination. This chapter also detailed the main objectives and the institutional structure of the GCC.

Chapter three discussed the economic structure of the GCC countries. First, I present an economic overview of each of these oil-based countries. I selected economic indicators, such as the rate of economic growth, inflation, and government expenditure. As discussed earlier in more detail, per capita GDP in the Gulf region grew from a simple average of $2,366 in 1970 to $12,495 in 1995. Over the last decade, the GCC member countries had an average 1.6 percent inflation rate, considerably lower than world rates. Furthermore, since the 1970s, government expenditure has increased in all Gulf countries as result of huge oil revenues. The ratio of government expenditure to

GDP has risen continually in the GCC countries, averaging 42 percent in the 1970s, 46.7 percent in the 1980s, and around 58 percent in the 1990s.

In the last part of chapter three, I discussed intra-GCC trade, foreign trade, and the direction of GCC exports to other countries in detail. Certain conditions in the GCC countries become apparent in this discussion: for example, the growth rate of trade among member countries is slow. In 2001, exports to other GCC countries averaged only 7.4 percent of the total exports of GCC countries, while the average share of GCC imports was 6.7 percent of total import in the same year

In chapter four I presented the methodology of the study and growth models. The current study attempted to investigate empirically the relationship and the direction of causation between exports and the growth of real GDP in most of the GCC countries: I therefore discussed an appropriate econometrics methodology for this purpose. For example, the data sources for the GCC countries contain both stationary and nonstationary data. In chapter four I explored the basic elements of the cointegration test as a relevant econometrics technique to apply to nonstationary data. Similarly, I explain the difference between stationary and nonstationary time series, the unit root test for stationarity, and the Johansen cointegration test. The second part of the methodology section presents the causality tests used to determine the causal relationship between variables; in this case, the standard Granger causality test and the error correction model have been briefly discussed. Finally, chapter four concluded by discussing the theoretical basis of the export and output growth model and introduced a feasible estimation model for the GCC countries.

At the beginning of chapter five I presented a descriptive analysis of the data used in current study. The data used are annual time series and cover the period from 1970 to 2001 (31 years) for Kuwait, Oman, and Saudi Arabia, and the period from 1980 to 2001 (21 years) for Bahrain and the period from 1973 to 2001 (29 years) for the United Arab Emirates. I then presented my empirical analysis. The first model based on Ram (1985) looks at the behavioral relationship between total exports, oil exports, and non-oil exports and output growth by using the Johansen cointegration test. The causal link between these four variables in the GCC countries are also investigated. The second model used here is based on the Feder (1982) model and attempts to determine if the export sector affects the non-export sector (export created externality) in these countries.

The results of the empirical analysis suggest several important conclusions. The Johansen cointegration test shows that the aggregate exports and disaggregate exports were cointegrated with GDP growth in Bahrain, Kuwait, and the UAE for the period under study, thus indicating that a long run relationship exists between them. The results for Oman were slightly different: the total exports and non-oil exports were cointegrated with GDP growth, while the oil exports were not. In the case of Saudi Arabia, no cointegration was found to exist between the considered variables.

My attempt to determine a causal relationship between export growth and GDP growth was inconclusive. There was mixed evidence of unidirectional and bi-directional causality between different measures of export and output growth; in some cases no causality was found to exist (For details, see Table 5-7).

For total exports, the results indicate that there is unidirectional causality from output growth to total export in the long run in Kuwait, Saudi Arabia, and the UAE. For Oman, however, the direction of causation runs from total export to the growth of the GDP, and thus tends to favor the export-led growth theory. Finally, the results for Bahrain indicate that the causal relationship between these variables does not exist in the long run.

For disaggregate exports, i.e. oil and non oil exports, the results indicate that the causality between the growth of oil exports and output growth are similar in Kuwait, Saudi Arabia, and the UAE, with unidirectional causality from GDP growth to oil exports indicated. The reverse result was found in Oman, where oil exports were shown to cause the growth of the GDP; finally, no evidence of causality was found between oil and non-oil exports and income growth in Bahrain. Additionally, the causality tests clearly indicate that causality runs from GDP growth to non-oil exports in the UAE, while a bidirectional causality was found between non-oil exports and economic growth in Saudi Arabia and Kuwait. Finally, the causality test shows that causality runs from non-oil exports to GDP growth in Oman.

The second model (i.e. the Feder type model) of this study used the OLS technique to estimate the export created externality in each of five GCC countries. The regression analysis concluded that the externality exists in the case of Kuwait, Saudi Arabia, and the UAE, meaning that the export sector has a positive effect on other economic sectors. However, the finding of the regression shows that the export sector has no effect on other economic sectors in Bahrain and Oman.

6.2 Implications

Some important implications for the GCC countries are presented in this study, although each economy has a slightly different scenario. In Bahrain, no evidence was found to support the export-led growth hypothesis in the long run, but evidence to support it was found in short run, implying that export promotion is a feasible economic growth strategy. For Oman, support for export-led growth hypothesis was found for all three measures of exports in the long run. Both aggregate and disaggregate export were found to play an important role in Omani economic growth, therefore suggesting that in this country, an export promotion policy is a reasonable economic method to encourage economic growth.

In the case of Kuwait, Saudi Arabia, and the UAE, evidence supporting the export-led growth hypothesis was not found in the long run, and the causality analysis implied that GDP growth caused the growth of exports, thus suggesting that export promotion is not an effective policy for these countries. Instead, it is recommended that policy makers develop policies that promote economic growth, since such strategies should generate higher growth in exports. These countries would be best served by policies which encourage domestic investment in their countries, such as investment in human capital and investment in infrastructure. Investment of this sort will cause an increase in the productivity of capital and labor, eventually promoting faster economic growth.

Finally, this study has implications for intra-GCC trade. Our discussion in chapter three made clear that even though one of the first priorities of the Gulf Cooperation Council was to encourage trade between member countries to strengthen

local economies, intra- GCC trade still remains very small. An obvious factor affecting the growth of trade among the member GCC countries is that these countries all produce a very similar set of goods; they also lack council-wide coordination. Unless these countries are able to diversify beyond oil and oil based exports such as petrochemicals, the intra-GCC trade as a share of total trade will remain small. Therefore, it is imperative that export diversification policies should be implemented regionally, as well as on a per-nation basis, in order to increase mutual exchange and achieve more internal stability, leading to faster economic growth in these countries.

6.3 Suggestion for Further Research

The empirical findings in this study contribute to an understanding of the role of export in economic performance in one of the most important parts of Arab region (Gulf region) which is characterized by an oil-based and open economy. In this study, it was most appropriate to examine the relationship between exports and economic growth for individual countries on the basis of time series techniques. According to these techniques, cointegration and error correction models are employed to test for both the long run relationship and causality linkages between the tested variables. As the current study is only focused on five oil-based economies, and because of the lack of empirical studies in non-oiled based economies in the same region such as Egypt, Jordan, and Syria, an important next step would be to investigate these Arab economies using these same econometrics techniques to determine if these countries support or reject the export-led growth hypothesis.

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APPENDICES

Appendix A

Charter of the Cooperation Council For The Arab States of the Gulf

The United Arab Emirates
The State of Bahrain
The Kingdom of Saudi Arabia
The Sultanate of Oman
The State of Qatar, and
The State of Kuwait

Being fully aware of the ties of special relations, common characteristics and similar systems founded on the creed of Islam which bind them; and

Desiring to effect coordination, cooperation and integration between them in all fields; and,

Having the conviction that coordination, cooperation, and integration between them serve the sublime objectives of the Arab Nation; and,

Having the conviction that coordination, cooperation, and integration between them serve the sublime objectives of the Arab Nation; and,

In pursuit of the goal of strengthening cooperation and reinforcement of the links between them; and

In an endeavour to complement efforts already begun in all essential areas that concern their peoples and realize their hopes for a better future on the path to unity of their States; and

In conformity with the Charter of the League of Arab States which calls for the realization of closer relations and stronger bonds; and

In order to channel their efforts to reinforce and serve Arab and Islamic causes,

Have agreed as follows:

ARTICLE ONE

The Establishment of the Council

A Council shall be established hereby to be named The Cooperation Council for the Arab States of the Gulf hereinafter referred to as the Cooperation Council (GCC).

ARTICLE TWO

The Cooperation Council shall have its headquarters in Riyadh, Saudi Arabia.

ARTICLE THREE

Cooperation Council Meetings

The Council shall hold its meetings in the state where it has its headquarters, and may convene in any member state.

ARTICLE FOUR

Objectives

The basic objectives of the Cooperation Council are:

1. To effect coordination, integration and inter-connection between Member States in all fields in order to achieve unity between them.

2. To deepen and strengthen relations, links and areas of cooperation now prevailing between their peoples in various fields.

3. To formulate similar regulations in various fields including the following:
    a. Economic and financial affairs
    b. Commerce, customs and communications
    c. Education and culture

To stimulate scientific and technological progress in the fields of industry, mining, agriculture, water and animal resources; to establish scientific research; to establish joint ventures and encourage cooperation by the private sector for the good of their peoples.

ARTICLE FIVE

Council Membership

The Cooperation Council shall be formed of the six states that participated in the Foreign Ministers' meeting held in Riyadh on 4 February 1981.

ARTICLE SIX

Organization of the Cooperation Council

The Cooperation Council shall have the following main organizations:

1. The Supreme Council to which shall be attached the Commission for Settlement of Disputes.

2. The Ministerial Council.

3. The Secretariat General.

Each of these organizations may establish sub-agencies as may be necessary.

ARTICLE SEVEN

Supreme Council

The Cooperation Council shall be formed of the six states that participated in the Foreign Ministers' meeting held in Riyadh on 4 February 1981.

1. The Supreme Council is the highest authority of the Cooperation Council and shall be formed of heads of member states. Its presidency shall be rotatory based on the alphabetical order of the names of the member states.

2. The Supreme Council shall hold one regular session every year. Extraordinary sessions may be convened at the request of any member seconded by another member.

3. The Supreme Council shall hold its sessions in the territories of member states.

4. A Supreme Council's meeting shall be considered valid if attend by two-thirds of the member states.

ARTICLE EIGHT

The Functions of the Supreme Council

The Supreme Council shall endeavour to realize the objectives of the Cooperation Council, particularly as concerns the following:

1. Review matters of interest to the member states.
2. Lay down the higher policy for the Cooperation Council and the basic lines it should follow.
3. Review the recommendations, reports, studies and joint ventures submitted by the Ministerial Council for approval.
4. Review reports and studies, which the Secretary-General is charged to prepare.
5. Approve the bases for dealing with other states and international organizations.
6. Approve the rules of procedure of the Commission for the Settlement of Disputes and nominate its members.
7. Appoint the Secretary-General.
8. Amend the Charter of the Cooperation Council.
9. Approve the Council's internal rules of procedure.
10. Approve the budget of the Secretariat General.

ARTICLE NINE

Voting in the Supreme Council

The Cooperation Council shall be formed of the six states that participated in the Foreign Ministers' meeting held in Riyadh on 4 February 1981.

1. Each member of the Supreme Council shall have one vote.

Resolutions of the Supreme Council in substantive matters shall be carried by unanimous approval of the member states participating in the voting, while resolutions on procedural matters shall be carried by majority vote.

ARTICLE TEN

Commission for the Settlement of Disputes

1. The Cooperation Council shall have a commission called "The Commission for the Settlement of Disputes" which shall be attached to the Supreme Council.

2. The Supreme Council shall establish the composition of the Commission for every case on an "ad hoc" basis in accordance with the nature of the dispute.

3. If a dispute arises over interpretation or implementation of the Charter and such dispute is not resolved within the Ministerial Council or the Supreme Council, the Supreme Council may refer such dispute to the Commission for the Settlement of Disputes.

4. The Commission shall submit its recommendations or opinion, as applicable, to the Supreme Council for such action as the Supreme Council deems appropriate.

ARTICLE ELEVEN

Ministerial Council

1. The Ministerial Council shall be formed of the Foreign Ministers of the member states or other delegated ministers. The Council Presidency shall be for the member state, which presided the last ordinary session of the Supreme Council, or if necessary, for the state which is next to preside the Supreme Council.

2. The Ministerial Council shall convene every three months and may hold extraordinary sessions at the invitation of any member seconded by another member.

3. The Ministerial Council shall determine the venue of its next session.

4. A Council's meeting shall be deemed valid if attended by two-thirds of the member states.

ARTICLE TWELVE

Functions of the Ministerial Council

1. Propose policies, prepare recommendations, studies and projects aimed at developing cooperation and coordination between member states in various fields and adopt the resolutions or recommendations required in this regard.

2. Endeavour to encourage, develop and coordinate activities existing between member states in all fields. Resolutions adopted in such matters shall be referred to the Ministerial Council for further submission, with recommendations to the Supreme Council for appropriate action.

3. Submit recommendations to the Ministers concerned to formulate policies whereby the Cooperation Council's resolutions may be put into effect.

4. Encourage means of cooperation and coordination between the various private sector activities, develop existing cooperation between the member states' Chamber of Commerce and Industry, and encourage the movement within the GCC of workers who are citizens of the member states.

5. Refer any of the various aspects of cooperation to one or more technical or specialized committee for study and presentation of appropriate recommendations.

6. Review proposals related to amendments to this Charter and submit appropriate recommendations to the Supreme Council.

7. Approve Rules of Procedure of both the Ministerial Council and the Secretariat General.

8. Appoint the Assistant Secretaries-General, as nominated by the Secretary-General, for a period of three year, renewable.

9. Approve periodic reports as well as internal rules and regulations relating to administrative and financial affairs proposed by the Secretary-General, and submit recommendations to the Supreme Council for approval of the budget of the Secretariat General.

10. Make arrangements for meetings of the Supreme Council and prepare its agenda.

11. Review matters referred to it by the Supreme Council.

ARTICLE THIRTEEN

Voting in the Ministerial Council

1. Every member of the Ministerial Council shall have one vote.

2. Resolutions of the Ministerial Council in substantive matters shall be carried by unanimous vote of the member state present and participating in the vote, and in procedural matters by majority vote.

ARTICLE FOURTEEN

The Secretariat General

1. The Secretariat General shall be composed of a Secretary-General who shall be assisted by assistants and a number of staff as required.

2. The Supreme Council shall appoint the Secretary-General, who shall be a citizen of one of the Cooperation Council states, for a period of three years, which may be renewed once only.

3. The Secretary-General shall nominate the Assistant Secretaries-General.

4. The Secretary-General shall appoint the Secretariat General staff from among the citizens of member states, and may not make exceptions without the approval of the Ministerial Council.

The Secretary-General shall be directly responsible for the work of the Secretariat General and the smooth flow of work in its various organizations. He shall represent the Cooperation Council with other parties within the limits of the authority vested in him.

ARTICLE FIFTEEN

Functions of the Secretariat General

The Secretariat General shall:

1. Prepare studies related to cooperation and coordination, and to integrated plans and programmes for member states' action.

2. Prepare periodic reports on the work of the Cooperation Council.

3. Follow up the implementation by the member states of the resolutions and recommendations of the Supreme Council and Ministerial Council.

4. Prepare reports and studies requested by the Supreme Council or Ministerial Council.

5. Prepare the draft of administrative and financial regulations commensurate with the growth of the Cooperation Council and its expanding responsibilities.

6. Prepare the budgets and closing accounts of the Cooperation Council.

7. Make preparations for meetings and prepare agendas and draft resolutions for the Ministerial Council.

8. Recommend to the Chairman of the Ministerial Council the convening of an extraordinary session of the Council when necessary.

9. Any other tasks entrusted to it by the Supreme Council or Ministerial Council.

ARTICLE SIXTEEN

The Secretary-General and the Assistant Secretaries-General and all the Secretariat General staff shall carry out their duties in complete independence and for the joint benefit of the member states.

They shall refrain from any action or behavior that is incompatible with their duties and from divulging confidential matters relating to their appointments either during or after their tenure of office.

ARTICLE SEVENTEEN

Privileges and Immunities

1. The Cooperation Council and its organizations shall enjoy on the territories of all member states such legal competence, privileges and immunities as are required to realize their objectives and carry out their functions.

2. Representatives of the members on the Council, and the Council's employees, shall enjoy such privileges and immunities as are specified in agreements to be concluded for this purpose between the member states. A special agreement shall organize the relation between the Council and the state in which it has its headquarters.

3. Until such time as the two agreements mentioned in item 2 above are prepared and put into effect, the representatives of the member states in the Cooperation Council and its staff shall enjoy the diplomatic privileges and immunities established for similar organizations.

ARTICLE EIGHTEEN

Budget of the Secretariat General

The Secretariat General shall have a budget to which the member states shall contribute in equal amounts.

ARTICLE NINETEEN

The Implementation of the Charter

1. This Charter shall go into effect as of the date it is signed by the Head of States of the six member states named in this Charter's preamble.

2. The original copy of this Charter shall be deposited with the Ministry of Foreign Affairs of the Kingdom of Saudi Arabia which shall act as custodian and shall deliver a true copy thereof to every member state, pending the establishment of the Secretariat General, at which time the latter shall become depository.

ARTICLE TWENTY

Amendments to the Charter

1. Any member state may request an amendment of this Charter.

2. Request for Charter amendments shall be submitted to the Secretary-General who shall refer them to the member states at least four months prior to submission to the Ministerial Council.

3. An amendment shall become effective if unanimously approved by the Supreme Council.

ARTICLE TWENTYONE

Closing Provisions

No reservations may be voiced in respect of the provisions of this Charter.

ARTICLE TWENTYTWO

The Secretariat General shall arrange to deposit and register copies of this Charter with the League of Arab States and the United Nations, by resolution of the Ministerial Council.

This Charter is signed on one copy in the Arabic language at Abu Dhabi City, United Arab Emirates, on 21 Rajab 1401 corresponding to 25 May 1981.

The United Arab Emirates
The State of Bahrain
The Kingdom of Saudi Arabia
The Sultanate of Oman
The State of Qatar
The State of Kuwait

Appendix B

The Unified Economic Agreement Between the Gulf Cooperation Council Countries

With the help of God the Almighty; The Governments of the Member States of the Arab Gulf Cooperation Council; In accordance with the Charter thereof, which calls for closer relations and stronger links; and , desiring to develop extend and enchance their economic ties on solid foundations, in the best interest of their peoples and for the sake of working to coordinate and standardize their economic, financial and monetary policies, as well as their commercial and industrial legislation, and Customs regulations have agreed as follows:

CHAPTER ONE
TRADE EXCHANGE

ARTICLE 1

a. The Member States shall permit the importation and exportation of agricultural, animal, industrial and natural resource products that are of national origin. Also, they shall permit exportation thereof to other Member States.

b. b. All agricultural, animal, industrial and natural resource products that are from Member States shall receive the same treatment as national products.

ARTICLE 2

1. All agricultural, animal, industrial and natural resource products that are of national origin shall be exempted from reciprocal charges.

2. Fees charged for specific services such as demurrage, storage, transportation, freight or unloading, shall not be considered as customs duties when they are levied on domestic products.

ARTICLE 3

1. For products of national origin to qualify as national manufactured products, the value added ensuing from their production in Member States shall not be less than 40% of their final value as at the termination of the production phase. In addition Member States citizens' share in the ownership of the producing plant shall not be less than 51%.

2. Every item enjoying exemption hereby shall be accompanied by a certificate of origin duly authenticated by the appropriate government agency concerned.

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2. Every item enjoying exemption hereby shall be accompanied by a certificate of origin duly authenticated by the appropriate government agency concerned.

ARTICLE 4

1. Member States shall established uniform minimum Customs tariff applicable to the products of countries other than G.C.C. Member States.
2. 2. One of the objectives of the uniform Customs tariff shall be the protection of national products from foreign competition.
3. 3. The uniform Customs tariff shall be implemented gradually within five years from the date on which this agreement becomes effective. Arrangements for its gradual implementation shall be agreed upon within one year from the said date.

ARTICLE 5

Member States shall grant all facilities for the transit of any Member State's goods to other Member States, exempting them from all duties and taxes whoever, without prejudice to the provisions of Paragraph 2 of Article 2.

ARTICLE 6

Transit shall be denied to any goods that are barred from entry into the territory of a Member State by its local regulations. Lists of such goods shall be exchanged between the Customs authorities of the Member States.

ARTICLE 7

Member states shall coordinate their commercial policies and relations with other states and regional economic groupings and blocs with a view to creating balanced trade relations and equitable circumstances and terms of trade therewith. To achieve this goal, the Member States shall make the following arrangements:

1. Coordination of import / export policies and regulations.
2. Coordination of policies for building up strategic food stocks.
3. Conclusion of collective economic agreements in cases where joint benefits to Member States would be realized.
4. Taking of action for the creation of collective negotiating power to strengthen their negotiating position vis-à-vis foreign parties in the field of importation of basic needs and exportation of major products.

CHAPTER TWO THE MOVEMENT OF CAPITAL AND INDIVIDUALS AND THE EXERCISE OF ECONOMIC ACTIVITIES

ARTICLE 8

The Member States shall agree on executive principles to ensure that each Member State shall grant the citizens of all other Member States the same treatment as is granted to its own citizens without any discrimination of differentiation in the following fields:

1. Freedom of movement, work and residence
2. Right of ownership, inheritance and bequest.
3. Freedom of exercising economic activity.
4. Free movement of capital.

ARTICLE 9

The Member States shall encourage their respective private sectors to establish joint ventures in order to link their citizen's economic interests in various spheres of activity.

CHAPTER THREE
COORDINATION OF DEVELOPMENT

ARTICLE 10

The Member States shall endeavour to achieve the coordination and harmonization of their respective plans with a view to achieving integration in economic affairs:

ARTICLE 11

1. The Member States shall endeavour to coordinate their policies with regard to all aspects of the oil industry including extraction, refining, marketing, processing, pricing, the exploitation of natural gas, and development of energy sources.

2. The Member States shall endeavor to formulate united oil policies and adopt common positions vis-à-vis the outside world, and in international and specialized organizations.

ARTICLE 12

To achieve the objectives specified in this Agreement, the Member States shall

1. Coordinate industrial activities, formulate policies and mechanism which will lead to industrial development and the diversification of their products on an integrated basis.
2. Standardize their industrial legislation and regulations and guide their local production units to meet their needs.
3. Allocate industries between Member States according to relative advantages and economic feasibility, and encourage the establishment of basic as well as ancillary industries.

ARTICLE 13

Within the framework of their coordinating activities, the Member States shall pay special attention to the establishment of joint ventures in the fields of industry, agriculture and services, and shall support them with public, private or mixed capital in

order to achieve economic integration, productive interface, and common development on sound economic bases.

CHAPTER FOUR
TECHNICAL COOPERATION

ARTICLE 14

The Member States shall collaborate in finding spheres for common technical cooperation aimed at building a genuine local base founded on encouragement and support of research and applied sciences and technology as well as adapting imported technology to meet the needs of the region and to achieve the objectives of progress and development.

ARTICLE 15

Member States shall establish procedures, make arrangement and lay down terms for the transfer of technology, selecting the most suitable or introducing such changes thereto as would serve their various needs. Member States shall also, whenever feasible, conclude uniform agreements with foreign governments and scientific or commercial organizations to achieve these objectives.

ARTICLE 16

Members States shall formulate policies and implement coordinated programs for technical, vocational and professional training and qualification at all levels and stages. They shall also develop educational curricula at all levels to link education and technology with the development needs of the Member States.

ARTICLE 17

Member States shall coordinate their manpower policies and shall formulate uniform and standardized criteria and classifications for the various categories of occupations and crafts in different sectors in order to avoid harmful competition among themselves and to optimize the utilization of available human resources.

CHAPTER FIVE TRANSPORT AND COMMUNICATIONS

ARTICLE 18

Member States shall accord passenger and cargo transportation belonging to citizens of the other Member States, when transiting or entering its territory, the same treatment they accord to the means of passenger and cargo transportation belonging to their own citizens, including exemption from all duties and taxes, whatsoever. However, local means of transportation are excluded.

ARTICLE 19

1. Member States shall cooperate in the fields of land and sea transportation, and communications. They shall also coordinate and establish infrastructure projects such as seaports, airports, water and power stations and roads, with a view to realizing joint economic development and the linking of their economic activities with each other.
2. The contracting states shall coordinate aviation and air transport policies among them and promote all areas of joint action at various levels.

ARTICLE 20

Member States shall allow steamers, ships and boats and their cargoes, belonging to any Member State freely to use the various port facilities and grant them the same treatment and privileges granted to their own in docking or calling at the ports as concerns fees, pilotage and docking services, freight, loading and unloading, maintenance, repair, storage of goods and other similar services.

CHAPTER SIX
FINANCIAL AND MONETARY COOPERATION

ARTICLE 21

Member States shall seek to unify investment rules and regulations in order to achieve a joint investment policy aimed at directing their domestic and foreign investments towards serving their interest, and realizing their peoples' aspirations for development and progress.

ARTICLE 22

Member States shall seek to coordinate their financial, monetary and banking policies and enhance cooperation between monetary agencies and central banks, including the endevour to establish a joint currency in order to further their desired economic.

ARTICLE 23

Member States shall seek to coordinate their external policies in the sphere of international and regional development aid.

CHAPTER SEVEN CLOSING PROVISIONS

ARTICLE 24

In the execution of the Agreement and determination of the procedures resulting there from, consideration shall be given to differences in the levels of development as between Member States and the local development priorities of each. Any Member States may be temporarily exempted from applying such provisions of this Agreement as may be necessitated by temporary local situations in that state of specific circumstances faced by it. Such exemption shall be for a specified period and shall be the Supreme Council of the Cooperation Council of the Arab States of the Gulf.

ARTICLE 25

No Member State shall grant any non-member state any preferential privilege exceeding that granted herein.

ARTICLE 26

a. This Agreement shall enter into force four months after its approval by the Supreme Council.
b. This Agreement may be amended by consent of the Supreme Council.

ARTICLE 27

In case of conflict with local laws and regulations of Member States, execution of the provisions of this Agreement shall prevail.

ARTICLE 28

Provisions herein shall supercede any similar provisions contained in bilateral agreements. Drawn up at Riyadh on 15 Muharram 1402, corresponding to 11 November 1981.