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An Inquiry into the Gulf Cooperation Council Feasibility and Readiness to Form a Monetary Union:
Optimum Currency Area Analysis and the Petroleum Effects

BY

Khalfan Mohamed Al-Barwani

A Dissertation submitted to the Faculty of Claremont Graduate University in partial fulfillment of the requirements for the degree of Doctor of Philosophy in the Graduate Faculty of Economics.

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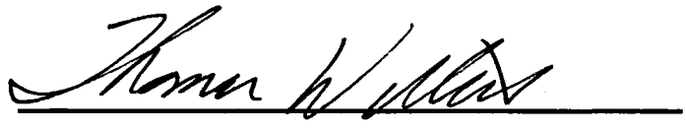

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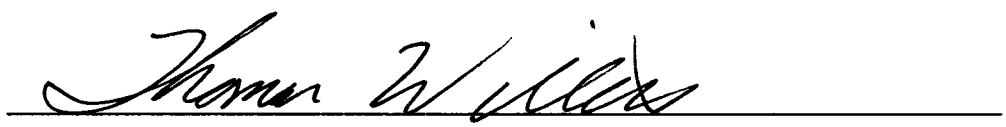

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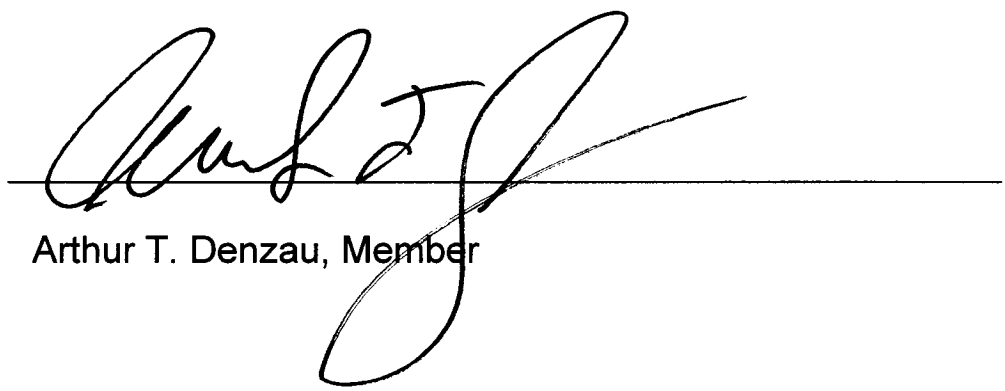

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Abstract of the Dissertation

An Inquiry into the Gulf Cooperation Council Feasibility and Readiness to Form a Monetary Union:
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Claremont Graduate University: 2006

This Dissertation uses OCA analysis to examine the feasibility and readiness of the GCC countries to form a monetary union. After reviewing and critiquing existing studies on this topic, improving on the analysis of previously examined OCA criteria, and extending our analysis to the criteria of business cycle synchronization and fiscal convergence, we conclude that from traditional OCA analysis perspective, the GCC countries are a major anomaly. They have successfully maintained fixed pegs among themselves for the last two decades despite an environment of relatively high capital mobility and at the same time fail to meet a number of OCA criteria. Most significantly, intra regional trade has not grown in these last two decades and has remained negligible. Moreover, as we document in our study, there is little synchronization of their business cycles or harmonization of their fiscal positions and all member states have faced substantial export instability while their real exchange rates remain closely related. The closely related real exchange rates imply an equilibrium relationship

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between the different bilateral GCC real exchange rates that are also characterized by relatively low inflation rates that move in similar fashion. To that end, we suggest that the GCC countries could form a monetary union, granted not an optimal one. An additional extension in this dissertation from previous studies includes the analysis of the incipient GCC monetary union from political economy perspective. Specifically, we examine the effects of rentier-like societies on the future this union. Accordingly, we argue that as rentier-like societies, together with the fact that some member states are running out of petroleum reserves, the six member states could face major challenges for the future of their monetary union.

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DEDICATION

To my Farther Mohamed Khaled Al-Barwani, my departed Mother Zainab Nasser Al-Maamri, my wife and best friend Iman Said Al-Busaidi, and all my brothers and sisters, I bestow this honor and express my eternal gratitude and thank you for your support and understanding.

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Chapter One: Introduction

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Chapter One: Introduction

Optimum currency area (OCA) theory emerged in the 1960's as an outcome of debates on the merits of fixed versus flexible exchange rate regimes. Subsequently it became the theoretical foundation in various studies that assess the readiness, merits and feasibility of optimum currency areas. Currency boards, dollarization, monetary unions and other types of economic integrations became parts of OCA literature. This theory has evolved over the years both in scope and complexity and a number of OCA criteria[1] have emerged ever since. Generally, the methodology to examine incipient monetary unions now entails the selection of a number of these criteria and an analysis of whether aspiring members meet their requirements. The number of these criteria has now increased from three to more than 20 from the time this theory was emerging in the 1960's.

The decision as to which criteria are relevant often depends on the significance the researcher attaches to them or reflects the characteristics of the region that is being examined. Some studies include a long selection while others select one or two criteria that are deemed critical by the researcher. An example of an OCA criterion that has been used as the only relevant prerequisite is that of real exchange rate variability; a criterion that also underlies the G-PPP approach. While one or two criteria may be relevant, they are far from being the only relevant criteria (Willett, 2005). Willett adds that a number of OCA criteria that were supposed to replace

[1] OCA criteria are also referred to as prerequisites, characteristics, or conditions.

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earlier criteria ended up being just other additional criteria. Recent approaches, some of which are now listed as parts of OCA criteria, entail more technical undertakings. Among others, these approaches include supply and demand shocks and business cycles co-movements and synchronization.

An impetus to further explore and study other potential and aspiring regional economic integrations was triggered by the implementation of the European Monetary Union (EMU) in 1999. While some academic and political circles have been advocating and earnestly promoting the idea of monetary unifications in their respective regions, subsequent literatures have been exploring their merits and feasibilities. Many, including Bayoumi and Eichengreen (2000), Shin and Wang (2004) and Kwack, Yong Ahn and Sun Lee (2003) have looked at the potential and merits of some Asian countries forming a currency union. A monetary union between North and Latin America, adopting the U.S. dollar as a common currency has also been discussed by Willett, Cohen, Grubel, Salvatore, and other scholars (2003). Among other, regions that have been explored as potential Optimum Currency Areas include West Africa, East Africa and South Africa by Grandes (2003) and Masson and Pattillo (2004).

Some proponents of other regional monetary unifications have referred to the EMU as a benchmark and a model to emulate. Al-Jasser and Al-Hamidy (2003) for example suggest that the level of economic coordination that has been achieved by the Gulf Cooperation Council (GCC) countries compares favorably with that which existed in Europe at the time EMS was established

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and they conclude, based on this observation, that the GCC is a viable monetary union. Using the EMU model as a benchmark is somewhat troublesome however since the success of Europe as an optimum currency area is increasingly coming into question in some quarters. Dallas and Tavlas (2003) explain that both economic and political considerations played parts in the adoption of the euro by the 12 EMU countries. They add that with regard to the economic considerations, and despite the fact that OCA criteria have featured prominently in the process of creating the EMU, they have not been of overriding significance. The authors also argue that with the exception of the trade integration criterion, EU countries do not generally meet the criteria prescribed for an OCA.

Other critics of the EMU argue that the EU is becoming gradually responsible for a tide of protectionism that is engulfing the European economy (Rachman, 2004). The author refers to a number of opinion polls that ask Europeans what they expect from the Union. The answer, according to these polls, has been overwhelming in that what Europeans mostly want are jobs. He explains that the heart of the union is beset by high unemployment. The euro area – the 12 countries that have so far adopted the single currency – average unemployment is 9% of the workforce. Rachman also recalls that the early years of European integration were helped by fast and sustained economic growth in Western Europe, but lately growth has become slow and sporadic. This trend, he argues, undermines one of the core arguments for European unity; an argument that was

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promoted on a reasonable expectation of ever-growing prosperity. Willett (2004) warns that non-European regions that aspire to form an OCA need to note that many benefits of adopting fixed exchange rate tend to manifest themselves more quickly than do the costs. For the European Union, as pointed by Rachman, some of these costs are becoming evident.

Some have suggested that the formation of the EMU was, to a large extent, driven by political considerations. Willett (2003) argues that while the EMU was promoted on doubtful pronouncements that monetary union was a necessary step to achieve a single market, it was mostly motivated by political considerations. He explains that joining the EMU came to be seen by politicians as a yardstick to gauge whether some European nation's citizens were considered as first or second class. He adds that while it is arguable that monetary union might be economically efficient for the inner members of the EU on OCA justifications, many members of the extended EMU barely meet OCA criteria. The expansion of the EU further afield to Eastern European countries for instance may have more to do with geopolitics and other factors rather than economics alone. Moreover, this enlargement does not necessarily guarantee or imply an automatic acceptance for the new members into the EMU.

A political argument in OCA analysis has also been advanced by Cohen (2003). He argues that consensus among economists on costs and benefits of regional currency unifications has been elusive. He attributes this

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elusiveness to the tendency by many analysts to focus mainly on economic gains and losses associated with monetary unions without giving due considerations to political factors. It is therefore critical to attach great importance to both economic and political considerations while studying the readiness and merits of optimum currency areas. While we can learn a great deal from the EMU experience, it is not prudent to use it as a benchmark, or for that matter a model to emulate in trying to form a monetary union some where else. Needless to say each region is unique and presents a set of its own challenges.

This study sets out to examine the readiness and feasibility of a regional grouping of six countries of the Arabian Peninsula, known as the Gulf Cooperation Council (GCC) countries, to form a monetary union. In 1981, the leadership of these six countries ratified a charter that had earlier called for the establishment of the GCC organization. The overall charter stipulates that the GCC is a political, economic and regional organization and lists a number of objectives that are supposed to be met by year 2010 when a unified currency is expected to be implemented. To that end, a number of steps that are to be listed and discussed later in this dissertation have already been implemented and a series of agreements signed.

The members of the GCC include Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE). A thorough discussion of these countries and the region as a whole can be found in other chapters and

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sections of this dissertation; but briefly, what sets this region apart from other potential or realized monetary unions is that they are endowed with significant amounts of hydrocarbon resources on which both their domestic and external economies heavily depend on. Relatively, another common feature of the six GCC countries is that their economies tend to be centrally managed. Moreover, the GCC economies, and to a great extent their societies, have been characterized in numerous studies as rentier in both structure and operation. Institutionally and politically, these countries are governed by hereditary monarchies with extensive power vested in their respective executive branches. These features are to a great extent unique to the GCC countries and as such, present challenges that are different from other regions such as those of Economic Community of West African States (ECOWAS) or Asian countries for example. Although a number of OCA criteria are critical to examine the merits of any given regional monetary integration, one needs to pay particular attention to the uniqueness of each of these regions while selecting from the long list of these criteria.

To examine the readiness and feasibility of the GCC countries as a monetary union, this study utilizes the OCA analysis that includes both political and economic considerations. In the economic analysis, unlike previous studies on the GCC monetary union, the criterion of business cycle synchronization together with six traditional OCA criteria is examined. The other six criteria include: trade integration, degree of openness, degree of commodity diversification, degree of goods market integration, real exchange

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rate variability, and degree of fiscal integration. The selection rationale for each of these criteria is discussed in the Data and Methodology chapter of this dissertation. What can be said briefly though is that together, the results from these criteria should provide a reasonable assessment as to whether this region would be ready and able to implement a monetary union by the prescribed year of 2010. The second economic extension of this study beyond previous studies is that it attempts to examine and explain the success of the pegged rate regimes of the six GCC countries over recent years.

A further feature of this study is that it extends the analysis of the GCC monetary union to include political economy. Specifically, given that GCC countries fall under the classification of rentier societies, this study examines whether current policies in these rentier societies would pose some challenges for the future of the GCC monetary union.

After examining seven OCA criteria and extending our study to include some aspects of political economy analysis, we conclude that from the standpoint of traditional OCA analysis, the GCC countries are a major anomaly. They have successfully maintained fixed pegs among themselves for two decades despite an environment of relatively high capital mobility while failing to meet a number of OCA criteria. Most glaringly, they have little trade with each other. Overall the six member states have also failed to meet the OCA criteria of goods market integration and commodity diversification as their economies remain heavily dominated by the hydrocarbon sector.

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Furthermore, as we document, there is little synchronization of their business cycles or harmonization of their fiscal positions and all member states have faced substantial export instability while their real exchange rates remain closely related. The closely related real exchange rates imply an equilibrium relationship between the different bilateral GCC real exchange rates that also are characterized by relatively low inflation rates that move in similar fashion.

Officially, the six GCC member states begun to peg their respective currencies both in terms of de jure and de facto to the US dollar in 2003 as a step towards adopting a common currency projected to take place in 2010. Unofficially, this policy was adopted much earlier. In fact, by 1986, except for Kuwait[2], the rest of the GCC member states had their respective de facto pegs to the US dollar. While the Omani riyal has been de facto pegged to the US dollar since 1973, the Bahraini dinar, the Qatari riyal and the UAE dirham became de facto pegged to the same currency in 1980; and the Saudi riyal in 1986 (Sturm and Siegfried, 2005). As a result, the exchange rate regimes of the GCC countries had already exhibited a significant degree of homogeneity for a reasonable period of time before 2003.

We argue that the primary reason why these failures to meet OCA criteria have not undermined the operation of fixed rates within the GCC is that to a substantial degree, their economies do not confirm to the market-oriented

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[2] Until 2003, the Kuwaiti exchange rate regimes differed slightly from the rest of the GCC countries in the sense that the Kuwaiti dinar was pegged to a basket of currencies of its main trading and financial partners. While the composition of the basket was not disclosed, the US dollar was known to be the dominant weight since minor fluctuations occurred vis-à-vis the US dollar and subsequently the fluctuations vis-à-vis other GCC currencies was also fairly small (Sturm and Siegfried, 2005).

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models that implicitly underlie traditional OCA analysis. The GCC economies are all heavily oil-based with relatively small private sectors and while the economic mobility of their citizens is typically low, heavy use of guest workers provides a substantial element of flexibility to their economies.

Their substantial export variability is due to common shocks to the global oil market, thus reducing the need for differential adjustments within their individual economies and their access to high level of oil revenues has reduced concern about short or medium run financial positions. The greatest potential cost of fixed exchange rates is that a country might have to adopt severely contractionary monetary policy to defend its currency in the face of an incipient payment deficit. In market economies, this would generate substantial unemployment in the absence of a highly flexible labor market. For the GCC countries, their domestic private market sector is quite small relative to the public sector implying that there would be many ways of cushioning the effects of restrictive monetary policy. One prominent method the GCC countries use to address payment deficit or other economic imbalances is to draw on their foreign reserves accumulated when oil prices are high. As a consequence, domestic monetary policy can pursue exchange rate adjustment in relative freedom from concern about possible effects on private sector unemployment and output growth.

The political economy we undertake in this dissertation examines whether the rentier nature of the GCC countries societies could pose challenges for the incipient monetary union. This analysis is conducted while keeping in

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mind that member states such as Bahrain and Oman are running out of petroleum reserves. We conclude that these scenarios could potentially pose serious challenges for the future of the monetary union as their economies become structurally divergent and rich member states become hesitant to share their resources with those without them. In this scenario, and unlike the current situation where all member states enjoy relatively large petroleum reserves and mostly use the fiscal policy instrument to deal with shocks and other economic imbalances, the OCA criteria of business synchronization and that of fiscal integration would become relevant.

Our subsequent discussions are structured as follows: Chapter 2 provides a general literature review on OCA; Chapter 3 discusses GCC countries profiles and charter; Chapter 4 reviews and critiques existing OCA analyses on the GCC monetary union; Chapter 5 analyzes seven OCA criteria within the GCC context; Chapter 6 uses one variation of OCA political economy and applies it to the GCC monetary union, and Chapter 7 gives some concluding remarks and implications.

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Chapter Two: General OCA Literature Review

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Chapter Two: General OCA Literature Review

Dellas and Tavlas (2003) cite two broad approaches that have been formulated in various literatures to evaluate the merits and readiness of monetary unions. The first approach consists of analyzing set OCA criteria in order to assess the viability of a given monetary union. The second method is that of a costs and benefits approach to OCA and evaluates the macroeconomic costs and microeconomic benefits of forming a monetary union. This chapter elaborates on both of these approaches. The first section discusses and critiques eleven traditional OCA criteria beginning with those that were pioneered in the 1960's. Reviews of a number of writings on these criteria and related discussions are also included in this section. The second section looks at three major non-conventional OCA criteria, and the third section explains the OCA theory from a cost-benefit approach. The fourth and last part of the chapter includes a brief discussion of the political, institutional, and other approaches to OCA analysis.

2. 1 Review and Discussion of Traditional OCA Criteria

The number of OCA criteria has increased significantly since the 1960's and now include traditional and more recently devised criteria termed as non-traditional criteria in this dissertation. Specifically, this section discusses eleven traditional OCA criteria. Dellas and Tavlas (2003) list and discuss six

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major traditional OCA criteria including labor mobility, fiscal integration, the degree of commodity diversification, trade integration, the openness and size of an economy, and the degree of market integration. An extended discussion on these six criteria is given below. Additional criteria to the six by Dellas and Talvas are discussed by Mongelli (2002) and are also the subjects of discussion in this section. These criteria include price and wage flexibility, financial integration, similarities in inflation rates, and political integration. The list below includes another important OCA criterion namely real exchange rate variability, introduced by Vaubel (1977).

Labor mobility

This criterion was originally presented by Robert Mundell in 1961. It simply suggests that currency unification is more feasible in the regions where the degree of labor mobility is high. Another important element in the definition of a regional currency area by Mundell is that it is a geographical domain where exchange rates are fixed among members, but flexible with regard to the rest of the world. Mundell (1961) argues that the degree of factor mobility between regions within a given nation or between nations is the key to forming a currency union. The free movement of labor is supposed to mitigate unemployment pressures caused by shocks while avoiding changes in real factor prices. Mundell explains that the fault in a currency union does not lie with the type of currency area, but with its domain; meaning that a global OCA is not feasible. This early view of OCA by Mundell implies that an

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effective monetary union is bound to be regionally small and confined to areas where factor mobility can take place with minimum constraints. This argument was made under the assumptions of wage rigidity and price stickiness that were later challenged.

Ronald McKinnon (2003) argues that the analytical consensus based on Mundell's argument of 1961 has little merit these days. Partly, McKinnon explains, the problem stems from a seemingly contradictory explanation given by Mundell himself, that in order to offset asymmetrical macroeconomic shocks, only smaller and more homogeneous currency areas, instead of larger and more heterogeneous, would be successful. McKinnon adds that this contradiction stems from the fact that Mundell actually acknowledges the advantages of flexible exchange rates. McKinnon, considering recent trends, concludes that instead, the hope of OCA is for those regions aspiring to form a currency union to come to terms with the inevitability of dollar predominance and work towards rationalizing the rules of the dollar-standard game. These two views are rather similar, but differ in the extent to which an OCA is feasible. While Mundell contends that an OCA is more desirable within a context of a small region, where there is high degree of factor mobility, McKinnon advocates a global OCA.

It is important to note, however, that the view that was espoused by Mundell in 1961, based on a single OCA criterion, has evolved over time in his analysis towards a more global monetarism, though with some caveats. In his recent paper, Mundell (2003) argues that dollarizing would be the quickest

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and most effective way to produce a world currency. He nonetheless acknowledges the difficulties of a world currency due to political constraints. He explains that dollarizing the world currency would make it almost impossible to negotiate since this global currency unification would significantly increase the power of the United States and leave the rest of the world at the mercy of "potentially aggressive unilateralism." He also observes that the advent of the euro has brought new perspectives insofar as the need for a world currency is required. Mundell (2003) concludes that a single-currency monetary union is not realistic given existing global trends, and that it could not be negotiated without a greater political integration. He proposes a more modest approach whereby a multiple-currency monetary union for "two or three of our three islands of stability" that would include the dollar, euro, and yen areas, and then consider how this type of the union might be generalized to take into account the interests of the rest of the world.

The view of global monetarism that has been espoused by Ronald Mckinnon and Robert Mundell has generated some of its critics. Willett (2003) argues that the arguments by these two renowned scholars and similarly that espoused by Arthur Laffer, that global integration has reached a point where all countries, regardless of their sizes are now functioning like open economies, is quite controversial and has failed to sell very well. To illustrate the limitation of their argument that the minimum size for OCAs is quite large, Willett (2003) explains that the fairly successful experiments of very small

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economies such as Latvia and Slovenia with managed floats suggest that "minimum viable sizes may be quite small."

The Degree of openness and size of an economy

McKinnon (1963) explains that economies that are highly open tend to favor fixed exchange rates since changes in nominal exchange rates in those economies are not likely to result in major effects on real competitiveness. He further argues that in an open economy, frequent adjustments in the exchange rate disrupt price stability given that the overall price index tend to fluctuate more than in relatively closed economies. Mongelli (2002) elaborates on this criterion and says that the higher the degree of openness, the more changes in international prices of tradable goods is likely to spread to the domestic cost of living thus minimizing the potential for money and/or exchange rate illusion by workers. He concludes that the fact that currency devaluation would quickly be transmitted to the price of tradable goods as well as to the cost of living would then negates its intended effects.

McKinnon (1963) explains that whether a change in nominal exchange rate is sufficient to change the real exchange rate and thereby eliminate excess supply or demand depends on a given economic degree of openness. He measures openness as the ratio of traded and non-traded goods in national production or consumption. He explains his argument by giving an example of a country that is experiencing a current account deficit. In order to correct this deficit, the price of traded goods must increase relative to the

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price of non-traded goods. Should this happens, production shifts into traded goods and domestic consumption out of it. According to Mongelli (2002), economic openness has a range of dimensions that include the degree of trade integration (ratio of reciprocal export plus imports over GDP) with member countries, the share of tradables versus non-tradable goods and services in production and consumption; the marginal propensity to import; and international capital mobility. He argues that a given economy could indeed exhibit a high share of tradables while having low imports and exports. This example illustrates the fact that Mckinnon's measurement of trade openness is not universal and as such does not always give conclusive results as to what extent a given economy is really open.

It is the case that often, in an open economy, adjustments in the exchange rate do not change the price ratio of prices between traded and non-traded goods (Mckinnon, 1963). The author assumes that prices and wages are not sticky in this case, and that a rise in traded good prices quickly feeds into the consumer prices. Moreover, since this rise in prices is noticed by labor, the latter tend to bargain for real rather than nominal wages. Therefore, the price of non-traded goods rises together with the price of traded goods. Given this argument, Mckinnon concludes that in an open economy, the exchange rate may as well be fixed and thus paves a way for a fixed exchange rate.

It is arguable that not all economies are entirely open, or at least that the extent of openness varies from country to country. Hallwood and MacDonald (2000) explain that unlike open economies where labor is assumed to notice

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inflation and negotiates its wages by factoring it in, for relatively closed economies, the assumption somewhat artificial that labor does not immediately notice the inflationary effect of devaluation can be explained by the following reasons: (i) the traded goods sector contributes minimally to the consumer price index in a closed economy and that the effect of devaluation on inflation may be negligible; and (ii) the dominant non-traded goods sector may have the capacity to absorb the switch in demand towards it without a visible rise in prices.

In short, the argument by Mckinnon in 1963 tries to demonstrate that only those economies that are relatively closed can effectively make use of the exchange rate instrument. This view, however, needs to be contrasted with his more recent argument that advocates global monetarism. In his latest argument, he suggests that all countries, regardless of their sizes, are now functioning like open economies. Others have contended that the mere fact that a given economy is fairly open might not be sufficient for joining an OCA and that other criteria need to be met in conjunction with that of openness.

The degree of commodity diversification

Economic diversification is supposed to insulate countries against a variety of shocks and thus minimize the need for frequent changes in terms of trade through the nominal exchange rate. In other words, countries that are highly diversified economically are better suited to form a currency union as compared to those whose economies are less diversified. This is the

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argument that is advanced by Kenen (1969). Mongelli (2002) explains that highly diversified production and consumption, and similarity in imports and exports between countries, dilutes the potential effect of specific sectoral shocks.

Hallwood and McDonald (2000) also elaborate on this criterion and explain that economies with diversified industrial and export bases as is the case of a number of western European countries, should try to capitalize on the benefits of fixed exchange rates. The intuition is that given a high degree of industrial diversification, demand fluctuations and supply shocks at microeconomic level will tend to cancel each other out. Therefore, changes in real exchange rates through nominal exchange rates adjustments are seldom required. The two authors also refer to an argument put forward by Ishiyamma (1975), that the Mundell, Mckinnon, and Kenen models of the optimum currency area could be classified as "single criterion cases". The consolidation of these three criteria by Ishiyamma illustrates their limitation as individual OCA criterion as well as their interconnection in explaining the formation of optimum currency area.

Trade integration and endogenous OCA theory

Eichengreen (1994) argues that the higher the trade intensity in a given country with a subset of other countries, the greater the savings in transaction costs associated with the use of a common currency. Whether trade intensity increases before or after a set of countries form a monetary union is

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discussed by *endogenous OCA Theory*. An extended discussion of this theory is included below.

Patterns of trade amongst countries or mere geographical proximity are some of the tools that have been used to study economic integration. Some have argued that geographical proximity promotes trade. The gravity model for example establishes that given other things are equal, trade between two countries is a function of distance and relative size (Ritschl and Wolf, 2002). Although geographical proximity may promote trade between two countries to a certain degree, this does not alone imply a viable OCA. Moreover, geographical proximity does not automatically lead to an increase in trade. A case in point would be that of the GCC countries. As a region, these six countries share common borders and form a geographical blocks. They trade much more with Europe, Asia and the United States than they do among themselves. Other variables come to play as to how trade patterns emerge. Production structures, degrees of specialization, and the types of goods and services produced could also determine which countries would constitute viable monetary unions. Willett (2004) illustrates this point by arguing that multi-country analysis raises an issue of path-dependency in forming currency areas. He explains that certain patterns of trade are conducive to forming a currency area that otherwise would not have been formed under independent decisions based on OCA criteria.

Endogenous OCA theory was introduced by Frankel and Rose (1998) and the basis of their argument is that there may be no pre-requisite for a country

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to meet OCA criteria for entry into a currency union or adopting a common peg *ex ante;* that trade intensity and macroeconomic convergence can significantly increase *ex post.* The authors suggest that a mere analysis of historical data does not provide an accurate picture of a country's suitability to join a currency union since the OCA criteria are endogenous in the first place. Using thirty years of data for twenty industrialized countries, they also found that countries with closer trade links tend to have closely correlated business cycles. Their endogeneity argument does not dispute this finding, but simply contends that trade intensity among prospective OCA candidates should not be a pre-requisite in joining a monetary union; that entry into the union would result in more trade and greater correlation in business cycles as members' economies gradually realign.

In a paper that studies exchange rate based stabilization, Willett (2004) raises the broader issue of discipline and the use of exchange rates as nominal anchors. He explains that the basic idea of endogenous OCA criteria is that by making a strong commitment to an exchange rate objective, domestic variables such as monetary growth, budget deficits, and labor market flexibility can be forced to adjust in favorable directions. He adds that such possibilities have long been the source of discipline arguments for fixed exchange rates. Willett cautions that though this argument may have some merit, it tends to be abused by advocates of fixed or pegged exchange rates. Furthermore, he argues that proponents of endogenous OCA theory appear

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to ignore the relevance and importance of political economy variables in influencing decisions by policy makers.

Another important issue that poses a challenge to the endogenous OCA argument of potential increase in trade intensity post monetary unification is that of economic specialization by member states that could follow the adoption a common currency. Specialization occurs when individual countries capitalize on their comparative advantage after joining a monetary union. Specialization may lead to dissimilarity in production structures among members of a monetary union and as such hinders, rather than promotes economic policy coordination. Mongelli (2002) cites the "*Krugman specialization hypothesis*" that is based on the economic developments experienced by the US over the last century (Krugman, 1993) and Venables (1996) to illustrate the issue of specialization in monetary unions. This hypothesis is rooted in trade theory and increasing return to scale as a common currency removes some obstacles to trade and promotes economies of scale. It postulates that the more countries become integrated (and their mutual openness increases) the more specialized become their economies based on producing where they have comparative advantage. Consequently, the member economies in a monetary union become less diversified and more prone to supply shocks. Likewise, these countries will experience lower income correlations as a result (Mongelli, 2002).

As stated earlier, OCA theory suggests that trade integration is a prerequisite to monetary integration. This is because the degree of economic

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integration between two countries affects the potential welfare gains of a monetary union. Ritschl and Wolf (2002) suggest the argument that trade integration is a prerequisite to monetary integration may cause endogeneity bias since national currencies may have been abandoned and currency union formed precisely because trade was already high. All the arguments advanced above further illustrate the extent of uncertainty as to whether trade intensity among prospective members of currency unions increases before or after monetary unification.

The Argentine experience with a currency board recently, illustrates both the strengths and weaknesses of the "endogenous OCA" approach (Salvatore, Dean, Willett, 2003). They argue that although a currency board in this country led to increased labor market flexibility, the magnitude of increased flexibility was not sufficient to circumvent a deep and long recession. Moreover, they suggest that the currency board could not by itself enforce fiscal discipline. This conclusion leads us to the next criterion: fiscal integration.

Fiscal integration

OCA theory also suggests that a higher level of fiscal integration between two areas increases their ability to smooth out diverse shocks through endogenous fiscal transfers. These transfers are expected to originate from a low-unemployment region to a high unemployment area. Citing Kennen's argument of 1969, Mongelli (2002) explains that countries that share a supra-

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national fiscal transfer system that allows for a redistribution of funds to a member country impacted by a negative asymmetric shock would smooth the adjustment to such a shock. This transfer mechanism is supposed to lessen the need for nominal exchange rate adjustments in dealing with shocks.

Eichengreen (2003) is critical of two arguments that suggest that dollarization would result in a quick consolidation of the public finances. The first argument contends that by eliminating inflation, dollarization would reduce interest rates to world levels, subsequently reducing debt-servicing costs. The second argument suggests that removing the inflation tax as a source of revenue of last resort would compel governments within a dollarization zone to live within their means[3]. Since fiscal policy tends not to be centralized in many countries, Eichengreen (2003) suggests that dollarization makes the most sense in countries where fiscal policy is centralized, or where there is a coordination mechanism among the various authorities.

The main drive for dollarization or its close substitute-the adoption of currency boards-has been to stop high inflation (Salvatore, Dean, Willett, 2003). The authors suggest that the result in this respect has been "excellent". However, they add, their record in providing fiscal discipline and promoting more flexible labor markets has not been that clear. In the case of Argentina, the currency board was not sufficient to enforce fiscal discipline although it was partially successful in promoting labor flexibility (Salvatore, Dean, Willett, 2003). In short, institutional structure, how centralized the fiscal

[3] For additional explanation, refer to the section under this chapter, on costs and benefits approach to OCA

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policy is and how much authority fiscal authorities have, would have some bearing on fiscal consolidation or the lack thereof in a common currency zone. Additional discussion on macroeconomic convergence criteria is found in subsequent sections of this dissertation.

The degree of goods market integration

Similarities in production structures among countries would likely produce symmetric terms-of-trade shocks, thus render the effectiveness of exchange rate policy almost obsolete (Dellas and Tavlas, 2003). Therefore, countries that share similar production structures are considered to be better candidates to form a currency union as compared to those with divergent production structures (Mundell, 1961).

Mongelli (2002) explains that when the incidence of supply and demand shocks and the speed with which the economy adjusts - taking into account the policy responses to shocks - are similar across countries, then the need for independent policy is reduced and the net benefits from joining a unified currency might be higher[4]. Additionally, he argues that diversified economies that are also similar in their production structures are more likely to endure small costs from giving up nominal exchange rate amongst them than would be otherwise. As a result, these economies tend to benefit more from a monetary union.

[4] More discussion on the supply and demand shock together with the speed of adjustment can be viewed under the section of non-conventional OCA critria

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Two implications are worth pointing out as far as similarity in production structure and shocks are concerned. The first implication is that, to a large extent, only diversified, export - based economies can effectively reap the benefits of an optimum currency area. The second implication alludes to an unstated assumption of this criterion, that somehow production structures are static. In other word, this assumption does not account for possible industrial specialization amongst member countries after monetary unification. Industrial specialization, as discussed earlier, could result in idiosyncratic and asymmetric shocks within the members of a monetary union. In turn, the asymmetry in shocks could compromise policy coordination among members of a currency union in dealing with internal or external disequilibrium. Some qualification on this implication is in order though. In the event where specialization hinges mostly on intra-industry rather than inter-industry trade, policy coordination may not be compromised among members of a currency unions since supply and demand shocks in this case may be more synchronized.

Price and wage flexibility

In regions where nominal prices and wages are flexible, the transition towards adjustment in the event of a shock is less likely to be associated with sustained unemployment in one country and/or inflation in another (Mongelli, 2002). In this instance, the need for nominal exchange rate adjustment becomes negligible (Friedman, 1953). Nonetheless, Mongelli points out that

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nominal price and wage flexibility may be more effective in the very short run in smoothing the adjustment process following a disturbance. Assuming that the long run Philips curve is vertical and prices and wages are flexible, temporary real effects are eroded by the higher domestic cost of inflation (Buiter, 1999).

When a shock is permanent, changes in real prices and wages may be required. Given an external adjustment that is rooted in a permanent shock can also be achieved through flexible labor costs, it follows that a high degree of real wage flexibility is also considered as a prerequisite in forming a currency union. When nominal prices and wages are very rigid, exchange rate adjustment could achieve some degree of real flexibility. In this case, however, the loss of direct control over the nominal exchange rate instrument, as would be the case for a country in a monetary union, becomes a cost (Kawai, 1987).

In short, price and wage flexibility is required to mitigate shocks in a monetary union as it reduces the need for nominal adjustments in exchange rate. Furthermore, the argument in this instance suggests that flexibility in prices and wages is critical not only in the case of temporary shocks but also when shocks are permanent, in which case external adjustment could be achieved through flexible labor costs. Therefore, both nominal and real prices and wages flexibility are considered to be pre-requisites to achieving an optimum currency area.

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Financial market integration

The need for exchange rate adjustments in the face of temporary shocks can be minimized by financial integration (Ingram, 1962). The argument here, among others, is that financial integration tends to lessen adverse shocks through capital inflows. A case in point as given by Mongelli (2002) would be to borrow from areas where there is surplus and revert when the disturbance is over. He adds that with a high degree of financial integration, even slight variations in interest rates would result in equilibrating capital movements among members of a unified currency. He reasons that this would reduce the margins in long-term interest rates, facilitating the financing of external imbalances while promoting efficient resource allocation among members. The author cautions that financial integration cannot be a substitute for permanent adjustment. What it can do is simply to temper the long-run adjustment process.

Canada considers dollarization as neither necessary nor desirable (Salvatore, 2003). The question, as posed by Salvatore is "why is Canada doing so well economically without dollarization?" The answer, he suggests is that Canada is highly integrated both financially and economically in the global economy and pursues sound economic policies. This implies that a global unified currency is not that essential as long as countries are financially and economically integrated. Mundell (2003) on the other hand suggests that significant universal benefits could be derived from a global currency. He argues that world dollarization would result in a common inflation rate and

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similar interest rates and a boost in trade, productivity, and financial integration; all of which would engender a substantial increase in economic growth and well-being.

Imbs (2003) investigates the determinants of business cycles synchronization across regions and looks at trade, finance, and specialization. One of his findings is that a variety of measures of financial integration suggest that economic regions where financial links are strong tend to be more synchronized. This finding, according to Imbs, still holds even though financial integration tends to result in more specialized economies. The implication here is that a strong regional, or for that matter global financial integration is good for a currency union. Given Mundell's, Salvatore's, and Imbs' arguments, the question of the chicken and egg parable comes to mind; that is whether global financial integration promotes a universal currency or a universal currency leads to greater financial integration.

Shin and Wang (2004) investigate four channels through which an increase in trade may influence the business cycle co-movements in East Asia. These channels include: (1) inter-industry trade, (2) intra-industry trade, (3) demand spillovers[5], and (4) policy coordination channels[6]. Out of the four channels, they find that only inter-industry trade implies that an increase in

[5] Given high trade intensity between countries, if demand shocks drive a boom in one country, the effects can spillover to its trading partners since the rapidly growing country will try to import more (Shin and Wang, 2004).

[6] A greater need for more fiscal and monetary policies coordination may be required given high trade intensity between countries. This is expected to lead to the synchronization of policy shocks among trade partners (Shin and Wang, 2004).
The authors suggest that both 2&3 linkages imply that increase in trade results in tighter business cycle co-movements.

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trade results in reduced business cycle synchronization. Shin and Wang (2004) refer to another study by Fidrmuc (2001) that uses cross-sectional analysis of OECD countries between 1990 and 1999 that showing while convergence in business cycles reflects intra-industry trade, there is no direct link between business cycles and intensity in bilateral trade.

Similarities of inflation rates

Constant differences in national inflation may lead to external imbalances resulting *inter alia* from disparities in structural developments, diversities in labor market institutions, differences in economic policies, and diverse social preferences such as inflation aversion (Mongelli, 2002). According to Fleming (1971), when inflation rates between countries are low and similar over an extended period of time, terms of trade will also remain somewhat stable. In turn, this stability is expected to foster a more equilibrated current account transactions and trade, therefore minimizing the need for nominal exchange rate adjustment. It is important to note however that not all inflations are bad, that some "catching up" process by developing countries could lead to "Balassa-Samuelson"[7] kinds of effects until the process is completed.

Mundell (2003) explains that the adoption of fixed exchange rates implies a strict monetary policy that gives a country the inflation rate of its partner

[7] Balassa and Samuelson argue that labor productivity in rich countries is higher than in poor countries. Moreover, this productivity differential tends to manifest itself in the tradeables rather than the non-tradeables sector. Their model helps explain why overall price indices tend to be higher in rich countries than they are in poor countries when aggregate baskets of traded and non-traded goods are converted into a common currency such as the US dollar. The model also explains why the ratio of non-traded to traded prices tends to be higher in developed economies than developing countries (Pilbeam, 1998).

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countries. He argues that stability of the inflation rate is an important policy goal, and that low inflation rate targets produce, generally, more stable inflation rates. He adds that if a country prefers to maintain a higher inflation rate than that which prevails in one or more of the main currency areas, then this country could not fix its exchange rate. Mundell (2003) also suggests convergence in inflation rates would possibly result in locking exchange rates and producing similar interest rates with one another in a currency area. The main motive for countries to dollarize or adopt currency boards has been to curtail high inflation and as mentioned earlier, they have largely been successful in this respect.

Another benefit would be to bring high inflation under control. Like a number of other OCA criteria, similarity in inflation rates is a relevant criterion, but not the only relevant criterion. The cases of Panama and Argentina illustrate this issue clearly. Edwards (2003) shows that in both these countries, low inflation that resulted from adopting the US dollar, as is the case for Panama, and a currency board for Argentina, did not achieve fiscal discipline. Other elements such as institutional structures, political incentives and access to available credits failed to bring fiscal discipline.

Real exchange rates variability and the G-PPP approach

In 1997, Bayoumi and Eichengreen published a study that examined whether OCA properties justify the degree of exchange rate variability among European countries. This study involves an analysis of

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bilateral nominal exchange rates for twenty one industrialized countries. The theoretical foundation underpinning this study suggests that countries that show lower exchange rate volatility amongst them are better candidates to form a monetary union than would be otherwise. The study cites five factors that are important in analyzing exchange rate variability approach to OCA. However, their empirical work focuses on capturing three out of these five factors. The three factors include asymmetric disturbances to output, trade linkages, and the usefulness of money for transactions. Unlike the other two factors, namely; labor mobility and the extent of automatic stabilizers, the three factors the authors focus on are presumed to have played a significant role in responding to shocks that are felt asymmetrically across countries given the selected sample period in the study.

This paragraph explains how these three variables are measured by Bayoumi and Eichengreen (1997). Output disturbance is measured as the standard deviation of logarithmic change of relative output in two countries. For countries that experience symmetric business cycles and their national outputs move together, the value of this measure is expected to be negligible. Dissimilarity of commodity composition of exports of two countries is added as proxy for the asymmetry of shocks on the grounds that shocks that are specific to industries are expected to be more symmetric when two countries have revealed comparative advantage[8] in the same export sectors. The

[8] Revealed Comparative Advantage (RCA) "measures the relative export performance by country and industry, defined as a country's share of world exports of a good divided by its share of total world exports. The use of the value of expenditure to "reveal" the preference of a consumer or group of consumers for the bundle of goods they purchase compared to other bundles of equal or smaller value" (http://www-

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authors measure the importance of trade linkages using data on bilateral trade. They do this by computing the average value of exports to the partner country and scaled by the GDP for the two countries concerned. The costs of common currency resulting from abdicating macroeconomic policy independence are balanced against the benefits. These benefits are greater for small economies where the capacity of utilizing a separate national currency in transactions is less. The benefit from a more stable currency is measured by including the average of the log of real GDP in U.S. dollars of the two countries as a measure of country size.

Having averaged each of the four independent variables[9] included the estimate equation over the selected sample period, and given the dependent variable is the standard deviation of the logarithmic change of the end-year bilateral exchange rate between two concerned countries, the findings show that all four variables have the predicted signs and the coefficient results indicate statistical significance at a one percent confidence level. The authors conclude that these findings strongly support the empirical implications of the OCA theory. The second part of this study involves the forecasting of the dependent variable during three different time intervals using the estimated regression equation. The dependent variables over these

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personal.umich.edu/~alandear/glossary/r.html). This measure was published by Balassa in 1965 and has been applied in numerous studies ever since including those measuring trade specializations. The index assumes that comparative advantage of individual regions can be proxied by a ranking of industries through their relative export performance (Clark et al., 2005).

[9] The four independent variables include the following: the standard deviation of logarithmic change of real output between two countries, the sum of absolute differences in the shares of agriculture, mineral, and manufacturing trade in total merchandize trade, the mean of the ration of bilateral exports to domestic GDP for two countries , and the man of the logarithm of the two GDPs measured in U.S. dollars

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three periods are referred to as the OCA index and are matched to that of Germany.[10] The index is then used to divide the European countries into three groups classified as prime candidates for EMU, those converging to EMU, and those for which this index shows little convergence[11].

Long before the Bayoumi and Eichengreen's study was published, Vaubel (1977) had examined the extent of exchange rate variability (deviations from relative PPP) as an OCA criterion. The discussion on Vaubel's study is extensive since real exchange rate variability is one of the important OCA criteria. On this criterion, he had argued that *"real exchange-rate changes are comprehensive and operational criteria of the comparative costs, or even of the comparative desirability, of monetary unification for groups of countries or regions*" (p.319). Using consumer price indices, he applied this criterion to the European Community members in order to answer some questions that he framed in three parts: (i) *Is the community a less desirable currency area than similar existing currency unions such as the US? (ii) Can the Community's failure to implement its 1971 plans for monetary union be explained by unusually unfavorable external disturbances which impacted the various member countries differently? (iii) What might be the price-level implications of EC monetary union for the individual member countries, and which of them*

[10] Other members' bilateral exchange rates must converge to that of Germany since this country is considered to be the largest and core EMU member.

[11] The first group includes Austria, Belgium, and the Netherlands that were joined shortly by Ireland and Switzerland. The second group includes the U.K., Denmark, Finland, Norway, and France the final group includes Sweden, Italy, Greece, Portugal, and Spain.

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are the most suitable candidates for monetary unification? The sample period was 1959 and 1976 and various sub-periods.

In order to address the first question of the relative desirability or undesirability of EC currency unification, Vaubel compared the real exchange-rate changes between the nine EC member countries[12], with the real exchange-rate changes between regions or cities of three existing currency areas. The three currency areas include West Germany, Italy, and the U.S., with West Germany being considered then as a desirable currency area while Italy and the US were not. The author suggests that the simplest and most useful measure of real exchange-rate variations within a group of countries is the variance of their rates of change vis-à-vis a common numeraire.

The findings on the first question by Vaubel indicate that Inter – country variance of real exchange rate changes was much larger as compared to intra – country variances. Overall, all the measures were statistically significant and consistent for all three countries. The author suggested that these findings were inconclusive since the international variance proved to be larger than intra - country variances. He nonetheless suggested that the Community as a whole had been in need of greater real exchange rate adjustment and as such was deemed as a less desirable currency area than would be Germany, Italy and the United States. Another finding by this study showed more pronounced changes in nominal exchange rates between the EC member countries relative to changes in real exchange rates. The large

[12] The EC members examined include Germany, France, Italy, Netherlands, Belgium, Luxembourg, U.K., Ireland, and Denmark.

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difference in the nominal and real exchange rate variations led Vaubel to imply that nominal exchange rate changes between the EC members were rather due to differences in inflation rates often attributed to lack of monetary policy harmonization. The author explains that this lack of monetary policy harmonization did not reflect economic necessity but rather mere political illusions.

According to Vaubel, the 1971 adoption of the EC monetary union was considered as realistic and even justified at the time within some academic circles, and its failure was largely attributed by unpredictable "unfavorable events", particularly, by external shocks such as the increase in oil prices and other raw materials, the preceding world depression, and the two dollar "crises". The author adds that these shocks not only exposed large structural differences among EC member countries, but also induced significant structural divergences. Vaubel contended that if this premise was correct, then changes in real exchange rate must had been much higher in the period after 1971 than in prior years that immediately preceded 1971. Indeed, the study gives statistically significant results showing higher real exchange rate variability after 1971. The author, however, suggests that these results most likely reflected, and to a large degree, the transition from an adjustable peg system (1967-1970) to a floating rate (1971-1976) in the Community.

The increase in exchange rate variability between the EC countries and those within the three currency areas were then compared by the author to allow for the effect of the change in the exchange rate regime that took place

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after 1970. According to Vaubel, the rationale for this comparison was that the increase in inflation which took place in the three currency areas had facilitated real exchange rate adjustment within their respective economies. This was because price rigidity became less of a hindrance to changes in relative prices between regions. The results showed that on average, in all three currency areas, real exchange rate changes had increased more than among the nine EC members. These results, according to Vaubel, do not lend credence to the "official excuse" of the Community's failure in that the lack of progress towards a monetary union was attributed to reasons beyond its control. On the contrary, Vaubel argues that the lack of progress could not be explained by the need to increase real exchange rate variability. Rather it could be attributed to lack of harmonization in inflation rates and, thus, of monetary policy. As a matter of fact, the results showed a decrease in harmonization that was reflected in the higher variance in nominal exchange rate changes by all measures within the Community and also by the increase in the ratio of nominal to real exchange rate changes.

On the second question, as to why the Community had failed to implement the 1971 monetary union in the decade of the 1970's, Vaubel concludes that this failure was mostly due to political rather than economic reasons. He qualifies this statement by suggesting that the responsibility for the failure could not necessarily be attributed to those members of the EC governments that had opted out of the Wernerian coordination strategy, rather possibly by a poor choice of a strategy that could not work.

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Let's now see how Vaubel addressed the third and last question as to what might have been the price-level implications of EC monetary union for the individual member countries, and which of them were the most suitable candidates for monetary unification. The criterion of real exchange rate changes and specifically the magnitudes of these changes were considered by Vaubel as the only relevant criterion in assessing not only the desirability of forming currency areas and the suitability of potential members, but also the timing to do so. He further argues that even the manner with which the costs and benefits could be distributed in a monetary union could be explained by this criterion.

With two caveats[13] in mind, Vaubel states that "*for the larger a country's observed need for real exchange rate changes vis-à-vis the other member countries (or the Community average), the less stable will be its domestic equilibrium price level if the average Community price level is kept constant and if the national member currencies are replaced by a Community Currency (of if exchange rates are fixed)*" (p.331). The analysis on this question focused on member countries which had experienced the largest real exchange rate depreciation. It then ranks the countries' real exchange rate performance over different time intervals between two time intervals, namely 1959-1976 and 1971-1976. The overall results showed that the same

[13] The first caveat by Vaubel says that the real exchange rate changes that have occurred between the independent members of the EC in the past appear to overstate the real exchange rate changes that would take place between the member countries if the latter combined to form a monetary union. The second caveat is that the resulting reduction of the real exchange rate changes is likely to be larger for the core members than for the peripheral members because the stimulus to economic integration as a result of monetary unification tends to be the most pronounced for those members, at the margin, are most open vis-à-vis other members (Vaubel, 1977).

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members that were suitable to form a monetary union in the first time interval appear in the second interval period, except for France.

The argument by Vaubel that real exchange rate changes were a comprehensive criterion to examine currency areas was somewhat tempered by his acknowledgment that the optimum currency area was a dynamic concept and that new ways had to be found to allow for flexible restructuring of currency domains in response to changes in economic realities. On the assumption that one criterion can capture all the dynamics of OCA, Willett (2003) reminds us that some criteria have been initially presented in strong terms but only to end up as fairly modest both in terms of replacing other criteria or in terms of their weight relative to other criteria. To that end, real exchange rate variability could simply be one of the many OCA criteria to be considered while examining optimum currency areas. Willett (2003) also contends that while real exchange rate variability is an important variable to consider, Vaubel has neither demonstrated convincingly that it has captured all other relevant criteria nor has it given optimal weight to those it has failed to capture.

The G-PPP approach to OCA analysis is an off-shoot of the real exchange rate variability criterion that was first initiated by Vaubel in 1977. This approach was introduced by Enders and Hurn (1994) and suggests that the long-run non-stationarity[14] of the real exchange rate is the result of the

[14] ***Stationarity*** is defined as a condition in which the fundamental characteristics of a series do not change over periods. These periods refer to series over time or across cross sectional units (Wilder, 1999). www.economics.ltsn.ac.uk . Given that stationarity as a concept is very restrictive in a sense that it rarely happens in real life and that there are only few situations where it occurs, examples of ***non-stationarity*** are

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non-stationarity of the fundamental determinants of real exchange rates, such as output and expenditure patterns. The foundation of G-PPP is rooted in the purchasing power parity (PPP) hypothesis. Sarno (1997) explains that a theory of G-PPP was proposed by Enders and Hurn as an alternative method of evaluating exchange rate behavior across countries as it tries to circumvent the fact that often, PPP is not able to explain price and exchange rate movements, specifically for low inflation countries in the post World War II period.

Additionally, the G-PPP approach suggests that even if the bilateral exchange rates are generally non-stationary, they might be co-integrated in the long run if the fundamental variables that determine exchange rates are highly interrelated (Sarno, 1997). Should this be the case in a clearly defined currency area, real exchange rates are then expected to contain common stochastic trends, and at least one linear combination of the various bilateral exchange rates is also expected to exist (Sarno, 1998). Consequently, it is possible to interpret G-PPP in terms of an OCA. The implication is that only countries that experience convergence and symmetrical shocks to their fundamentals could be able to form a viable monetary union. These fundamentals are supposed to move together and be sufficiently interrelated so that the real exchange rates have common stochastic trends.

In defense of the G-PPP, Enders and Hurn (1994) explain that a direct implication of their approach is that "a nation's price level and and/or its

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many and the concept simply means fundamental characteristics of a series can change over time or across sections.

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bilateral nominal exchange rate with some second country are influenced by *all* other countries in the currency area". Nonetheless, the two authors recognize the limitations of their methodology. They acknowledge the failure of the G-PPP approach to identify the mechanisms by which the fundamental (forcing) variables are linked or transmitted, and in their particular study, between the Pacific Rim nations and the larger nations. This is the same weakness that is attributed to the business cycle synchronization approach to OCA. Other critiques of the G-PPP approach to OCA includes the fact that it assumes that the analysis "*defines the optimum currency area in the sense of Mundell*" (Willett, 2005). According to Willett, this is not correct since the variability of real exchange rates that form the basis of the G-PPP may be a relevant criterion of OCA analysis, a case already advanced by Roland Vaubel in 1977, but not necessarily the only relevant criterion. In other words, the G-PPP approach to OCA, as is the case of real exchange variability, cannot simply supersede other OCA criteria and be considered as an encompassing replacement of all other criteria. An extended discussion on the G-PPP approach to OCA analysis can be found in the appendix section of this dissertation.

Political integration

Mintz (1970) argues that political will to integrate is the most important condition in forming a monetary union. He suggests that political will promotes compliance with joint agreements, sustains cooperation on economic policies

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in a union, and promotes more institutional convergence. Tower and Willett (1976) argue that successful currency areas would be those with a reasonable degree of compatibility in preferences toward growth, inflation, and unemployment and considerable ability by policy makers in trading-off between objectives.

In full-fledged democracies, governments are changed over intervals of time and various governments tend to have diverging preferences. Given these diverging preferences, one could argue that democracies can sustain an effective monetary union provided the perceived benefits of doing so are very obvious and large enough for the overwhelming majority of citizens to oppose the union. This needs not imply that dictatorships are better suited to form a currency union. Domestic politics, the size and influence of various interest groups whose benefits could be impacted by a currency union could either facilitate or hinder the formation of an OCA (Willett, 2004). Cohen (2003) raises the issue of political consideration in monetary unions. He argues that there is a tendency for many analysts to simply focus on economic gains and losses associated with monetary unions with little or no regard for political considerations. He suggests that ultimately, a common currency is about "the exercise of power and the ability of a national community to control its own affairs." On the same subject, Willett (2004) maintains that the choices of exchange rate regimes within the context of OCA are influenced by economics as well as politics.

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Other considerations, besides those dictated by politics and economics have played part in regional integrations, including proposals to form monetary unions. Among others, these considerations include security, societal homogeneity, geography, globalization, and improvement in trade negotiation leverage. One way of defining a region is to find out the extent to which a set of interconnected entities, particularly in terms of economic links (Choi and Caporaso, 2002). Katzenstein (1996) writes that economic regionalism is not simply an endeavor to increase economic growth or to achieve some economic objectives; it is also an attempt to regain some measure of political control over processes of economic globalization that have limited the power of national policy instruments.

2 .2 Review of Selected Non - Traditional OCA Criteria

As is the case for traditional OCA criteria, the number of non-traditional criteria has grown over the years. As part of an overall literature review, this section discusses two important non-traditional OCA criteria that have been used in a number of studies. The first criterion we examine is that of supply and demand shocks. Bayoumi and Eichegreen (1994) introduced this aspect of OCA analysis to study a number of regional OCA's including Europe, Asia, and Africa. The second non-traditional criterion we discuss is that of business cycle synchronization. This criterion has been used in various studies

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including those pertaining to EU members such as the U.K. and the enlarged EU.

Supply and demand shocks

The intuition behind the supply and demand shocks approach to OCA is that the more symmetric these shocks are, and the more similar the speeds the economies adjust among countries – taking into account the policy response to shocks - , the more viable these countries are as a currency union. Putting it differently, the cost often associated with abdicating monetary policy or using exchange rate policy instrument is minimized for countries that exhibit symmetric shocks and similar economic speed of adjustment. Accordingly, high coherence in pattern of shocks among countries may call for similar exchange rate adjustment; limiting or, in an optimum scenario, eliminating the need for individual currencies. Bayoumi and Eichegreen (1993) introduce the supply and demand shocks approach as a way to operationalize the theory of optimum currency areas. They used VAR decomposition[15] to analyze data on output and prices for eleven European Community (EC) nations in order to determine the underlying aggregate supply and demand disturbances. The pattern of shocks for these countries

[15] VAR is one of the techniques used to examine OCA's. It sheds some lights as to the relative importance of the different channels of transmission. Bayoumi and Eichengreen (1993) have used this technique to recover structural demand and supply shocks including the speed of adjustment from a bivariate model. VAR technique has also been used in a number of other OCA studies, including that by Artis (2004), using three-variable system to identify three relevant sources of output fluctuations that consists of three endogenous variables: rate of real GDP growth, inflation and change in the real interest rate. These variables are assumed to follow a stationary stochastic trend that responds in turn to three types of shocks: supply shocks, real demand shocks, and nominal shocks.

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and their speed of adjustment were then compared to US data. The finding showed that the EC country shocks were significantly more idiosyncratic than those across the US, indicating a more problematic European monetary union than that of the US.

Annual data on real GDP and nominal GDP between 1960 and 1988 were used for the study. The two authors also used aggregate demand, short and long-run aggregate supply diagrams to show their effects on output. This section does not discuss the latter part, but briefly explains the empirical part of the supply and demand shocks approach. The estimated framework uses the method initially suggested by Blanchard and Quah (1989) to disaggregate permanent and temporary shocks using a VAR. Bayoumi and Eichengren extended this model in their study. Their framework implies that supply shocks have permanent effects on the level of output while demand shocks only cause temporary effects. However, both shocks have permanent effects on prices. The model imposes other restrictions that result in a number of implications. One of the implications is that the cumulative effect of demand shocks on the change in output is zero; this is because output is written in difference form. Another implication of the aggregate demand and supply model is that positive demand shocks should raise prices in both the short and long run, while positive supply shocks are expected to lower prices.

In brief, the results from the 1993 Bayoumi and Eichengren's study show differences in both supply and demand shocks between the core European

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countries and the periphery [16]EC countries, with core countries exhibiting higher synchronization. The analysis of the American monetary union also suggests the existence of a regional core and periphery as far as these shocks are concerned. However, the shocks to the US core and periphery show more coherence as compared to the two areas in Europe. Looking at the impulse response functions, the results also suggest a higher speed of adjustment to shocks among the US regions than in Europe despite the lack of an exchange rate instrument. The two authors explain that this finding holds for both aggregate demand and aggregate supply shocks and suggest that in the case of the US, the higher speed of adjustment may be due to greater factor mobility as compared to that in Europe.

Mongelli (2002) refers to a number of other OCA studies that use a supply and demand shocks approach. Among others, he cites the study by Demertzis, Hughes and Rummel (2000) and that of Talvas (1994). Demertizis et al. find some evidence of overall symmetry of shocks among European countries. Like Bayoumi and Eichengreen (1993), they also find stronger correlation of shocks within the core group than the periphery group. The study also finds that there is more symmetry on the demand side than on the supply side, owing mostly to policy interventions. Moreover, this study finds that few policies have been directed to the supply side, and that idiosyncratic shocks among European countries do not have similar magnitudes. They observe that the symmetry reflects demand policies for the

[16] Core EC countries include Austria, France, Germany, Belgium, the Netherlands, Denmark and Luxembourg. The periphery countries include the UK, Greece, Ireland, Portugal, Spain, Italy, Finland and Sweden.

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most part rather than convergence in the underlying economic structures of the member countries. Given the findings in their study, Demertizis, Hughes and Rummel conclude that the EMU appears to be held together mainly by policy makers.

Talvas (1994) argues that the results of studies of similarity of shocks are ambiguous and frequently in conflict. He explains that there is no consensus among economists on the theoretical foundation of the tests; that is on the relationship between exchange rate variability, trade, and investment, and takes no account of the Lucas critique[17]. This is also one of the main critiques against traditional OCA theory by Frankel and Rose (1998) in their study of the endogeneity of OCA. Like all other OCA criteria, the supply and demand shocks approach to OCA has its limitations; it does, however, provide a comparative perspective of economies aspiring to enter a monetary union that could help policy makers.

Bayoumi and Eichengreen produced another study in 1994 that analyzed the potential for monetary unification in diverse parts of the world, using a supply and demand disturbances approach. In this study they emphasize the importance of distinguishing temporary and permanent shocks. They explain that while temporary shocks have short-term effects, permanent shocks have permanent ramifications that can manifest themselves through changes in output or competitive edge for the affected countries. Temporary shocks such

[17] According to the **Lucas Critique**," prediction based on historical data would be invalid if some policy change alters the relationship between relevant variables (such as private agents' rational expectations of inflation). If the policy change alters the relationship between the variables, then the historical relationship between the variables would differ in the future relationship" (www.Wikipedia.org)

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as unanticipated falls in demand may necessitate mere counter-cyclical policies. These policies may entail adjustments in fiscal or monetary policies or both, or borrowing (Bayoumi and Eichengreen, 2004). It is important, however, to distinguish between exogenous and domestic policy-driven shocks. While Bayoumi and Eichengreen suggest that it is less beneficial for countries that often practice short-term counter-cyclical policies to enter a monetary union, others have advanced an alternative suggestion. Monetary unifications can operate as a mean of absorbing idiosyncratic shocks among member countries. Willett (2003) explains that momentary asymmetric shocks would act as an automatic stabilizer since the lack of cyclical coherence in the short-run among members would result in these cycles being dampened among members.

Unlike temporary shocks, permanent shocks necessitate significant adjustments to the economy. Arguably, only flexible economies are equipped to handle permanent shocks effectively. When internal adjustment mechanisms are marred by inefficiencies that are often attributed to rigidity in prices, wages, and highly imperfect factor mobility, the cost of adjusting the economy and realizing internal macroeconomic balance could be quite high (Willett, 2003). Consequently, members that exhibit lack of coherence in the pattern of their shocks are expected to incur significant cost if they abdicate their independent monetary policy and lose the prerogative of using an exchange rate instrument as a policy tool. Policy prescriptions have implications and wrong prescriptions may prove costly. An analogous medical

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illustration would be that of a Doctor prescribing the same medication to patients suffering from different ailments.

The choice of exchange rate regime needs to be looked at in the context of the origin of shocks that a country is subjected to. Exchange rate theory suggests that typically, countries that experience shocks that originate from abroad have more to gain by adopting a flexible nominal exchange rate regime. If capital mobility is reasonably low, exchange rate adjustments in this case are supposed to insulate countries from external price shocks. Rather than interfering with prices, a nominal exchange rate is expected to adjust automatically in order to restore equilibrium. Note that we limit ourselves to fixed or flexible exchange rates in this analysis. There is a whole other literature on the degree and types of flexible exchange rate regimes. Domestic policy- driven shocks on the other hand would be more amenable to a fixed exchange rate regime. A country that finds itself in this predicament could fix its exchange rate to another major country's exchange rate with low inflation. The benefits of doing this are twofold: first, the creation of price stability in case of domestic inflationary pressure, and second the policy credibility generated by linking one currency to a major stable currency like the US dollar.

In short, the findings by Bayoumi and Eichengreen (1994) illustrate not only the importance of the patterns of shocks in forming a currency union, but also their types, origins, and magnitudes. They also attach significant importance to the speed of domestic adjustment to restore equilibrium when

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these shocks occur. Coherence and a high degree of synchronicity in the patterns of shocks between countries suggest a viable monetary union since similar policy responses may be required. As discussed above, supply and demand shocks have different effects on the economy, and foreign and domestically generated shocks may require different types of exchange rate regimes. Additionally, minor and negatively correlated economic disturbances should not result in a high cost of abdicating monetary policy independence because important economic variables such as unemployment, output and others may not swing far from equilibrium. In this case, adjustment in the market could mitigate the effects of asymmetric disturbances and as such limit the need for independent policy response.

Business cycle synchronization (BCS) and shocks

The BCS property suggests that countries that aspire to form a monetary union should display some similarity in their business cycles and shocks. The argument for synchronicity in business cycles is that the cost of giving up the possibility of using counter-cyclical monetary policy is minimized (Darvas and Szapary, 2004). In other words, the higher the correlation of the business cycles, the more symmetric the shocks, and the easier it would be to form a monetary union since similarity of shocks is expected to facilitate policy coordination. Isard (1999, pp194) explains this argument in the following way: Other things being equal, the less symmetric is the distribution of real shocks across countries, the greater is the cost of foregoing the option of exchange

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rate adjustment in response to shocks. It is important to note that the BCS approach does not examine the sources of shocks, i.e., whether the business fluctuations are driven by supply or demand shocks; it takes them as given.

A simple BCS approach entails the examination of real GDP growth over a given time frame and the extent to which the business cycles are cross-correlated to draw a conclusion as to whether a monetary union is feasible. While real GDP growth deviations from trend are used as a proxy for shocks to the economy in some studies, in others only correlation growth rates are used. Some studies analyze the cross-correlation of industrial production instead of GDP to examine currency areas. In a study on the euro zone, Darvas and Szapary (2004) not only examine the GDP growth as a proxy for shocks and the overall business cycle, they also look at the major expenditure and sectoral components of GDP that drive aggregate demand and inflation. These components include industrial production, trade, consumption, services and investment. The added value of this analysis is that it helps capture the co-movements of other aggregates that contribute to the overall business cycles.

The most interesting result of these components is that of consumption since it sheds some more light on the so-called "consumption-correlation puzzle"[18]. The authors look only at private consumption, arguing that government consumption can be regarded as a policy-driven component, the synchronization of which, if any, is determined by policy actions. Their finding,

[18] The "puzzle" is that theoretical models suggest that consumption should correlate more with GDP but the empirical findings show that it correlates less (Darvas and Szapary, 2004).

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contrary to what theory would suggest shows that consumption is generally less synchronized across countries than GDP. Factors that are often identified as contributing to this "puzzle" include imperfect financial market integration that tend to hinder risk-pooling and consumption-smoothing, the presence of durable goods in consumption, imperfect competition, and costs associated with trade (Darvas and Szapary, 2004).

The analysis of temporal variation in the synchronization of business cycles often involves multiple periods or sub-periods. Issues related to the selection of these periods sub-periods are discussed further below. But first, the measures of synchronization come in various forms. Darvas and Szapary (2004) use five measures explained below.

(a) *Correlation*. This measure involves contemporaneous unconditional correlation between a currency area and individual countries in a range of time periods, i.e., one-year, two-year and so on. One technique that is used with this measure is that of non-overlapping time frames, i.e., five-year long periods in order to examine the changing pattern of correlations. Another technique involves calculating rolling sample correlations, preferably using the same time frame as the overlapping one so as to test for the robustness of the results.

(b) *Leads or lags*. Leads and lags are calculated for the largest unconditional correlation and the interpretation is as follow: a zero value

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implies that contemporaneous correlation is the highest. Negative values indicate that a currency area leads the individual country that it is matched against, while positive values imply the opposite.

(c) *Volatility of the cycles*. Volatility is defined here as the squared deviation from the mean of the cycle, i.e., from zero. To facilitate the evaluation of the results, the values of individual countries are normalized relative to that of the currency area.

(d) *Persistence*. The dynamic effect of any shocks depends on the persistence of the series. Accordingly, from the synchronization standpoint, similar persistence is rather critical. The measure used is that of the first order autocorrelation coefficient of the cycle. This manner of defining persistence reflects the combination of the impacts of various shocks and the effects of the transmission mechanism through which these shocks extend to the economies. As discussed earlier, different shocks have different effects; some have long-lasting impacts while others do not. Moreover, the reactions to these shocks may differ across economies. Thus, the measure of first order autocorrelation of coefficients is simplistic since it does not identify the relative significance of various shocks and the manners with which these economies react to them. This weakness is also acknowledged by Artis (2004) in a study that analyzes the European and UK business cycles and shocks. He explains

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that a major limitation of this criterion is that there is nothing in OCA theory that establishes a "satisfactory value" for a cross-correlation. One can only engage in normative assessment as to how high a correlation coefficient is really high.

(e) *Impulse-response*. This is an accumulated effect of a currency area shock on the individual countries. In the event the results show a contemporaneous and large correlation, and that the volatility and persistence of the cycle of an individual country is similar to that of a currency area, then the results from impulse-response measure are not going to be different from the previous four measures. However, in case none of these conditions are satisfied, this measure then can give an additional indicator of synchronization by showing a measure of the magnitude of the impact of the currency area shock on individual countries. Additionally, by calculating the impact using Vector Auto Regression (VAR) technique, which by definition includes own lags as well, this measure can give an assessment as to whether the findings from previous unconditional correlation coefficients are simply distorted by persistence.

As mentioned earlier, one could use different time frames to examine the cross-correlations of business cycles. The time frame ranges from one year to three or five years, for example. Longer periods, such as five years can use a

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non-overlapping technique or rolling sample correlations. The difficulty with a one-year time frame analysis is that it fails to capture the medium term synchronization of business cycles and shocks. Furthermore, in order to gauge the costs of giving up differential policy responses, one needs to look at the correlations over an extended period of time so as to allow for policy lags to be captured. The one-year time frame results are more relevant for automatic stabilization rather than a more specific policy response. The reason is that this time frame may be capturing mostly short-term synchronization and possibly idiosyncratic shocks.

2.3 Costs-Benefit Analysis to OCA Analysis

Another approach to examining currency areas is through a costs and benefits assessment. When a country or countries enter into a monetary union there are both costs and benefits associated with that step. It is therefore sensible for potential members to try to identify these potential costs and benefits before the decision to join a monetary union is taken. Mongelli (2002) for example suggests that each country should evaluate the costs and benefits of joining a currency area in terms of its self -interest and overall welfare. He adds that most benefits and costs cannot be assessed statistically since they may reflect different policies over time. A case in point would be that in the early stages of a currency area relative to the time when it can fully display the benefits both domestically and internationally (Mongelli,

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2002). Further, the benefits conferred to member countries may vary between large and small members or for countries that displayed high inflation prior to joining a union. This section discusses the costs and benefits approach to OCA in general form and give a few specific examples. Various sources including Mongelli (2002), Salvadore, Dean, and Willett (2003), and Dellas and Telvas (2003) are used to illustrate this approach to OCA. The discussion on the costs and benefits analysis is based on Mongelli's paper.

We first list and discuss the benefits of an individual member country to join a monetary union as shown below:

Improvements in microeconomic efficiency

These benefits result mainly from the increased liquidity provided by a single currency circulating in a larger area. In other words, the usefulness of money as a unit of account, medium of exchange, standard for deferred payments, and the store of value is enhanced in a wider currency area since, among others, the information cost that is associated with processing and storing information of multiple currencies is eliminated. Additional benefits are those of greater price transparency as price discrimination is marginalized, market segmentation (as opposed to the law of one price) is reduced and competition increased. The transaction and hedging costs often associated with intra-nominal exchange uncertainty and risk would disappear. These benefits are also cited by Buiter (1999) in the event the U.K. would join the EMU. Assuming that a currency area results in even higher trade intensity

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among its members, then the internal market for goods and services will be strengthened, resulting in further trade improvement, lower investment risks, promote regional foreign direct investment and enhance resource allocation.

Increase in macroeconomic stability and growth

The benefits in this case come from overall price stability, expansion of sources of external financing, gain in credibility for those members with a history of higher inflation as a result of an anti-inflationary anchor, reduction in some fluctuations in output and employment within the currency area, due possibly to alignment in economic policies. Another potential benefit is that of lower interest rates resulting primarily from the reduction in currency and default risks. On the dollarization area, a less quantifiable set of benefits might come in the long run from "stability and integration" (Salvatore, Dean, and Willett, 2003). The authors also suggest that for developing countries, this would imply fewer currency crises in addition to closer economic integration with the United States. It is important to note that a currency union does not protect members from the impact of real economic shocks.

Positive external effects

For a currency such as the euro, the benefits in this instance are the results of savings on transaction costs generated from a wider international circulation of the single currency; revenues from international seignorage, the

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reduction in need for foreign exchange reserves and simplification of international co-ordination.

Now let's now look at the classification of costs that are often associated with joining a currency area:

Transaction and administrative costs

When members switch from their individual currencies to a single currency, there are switching cots associated with the changeover. Included in these costs are administrative and legal ones as contracts are re-denominated. Additionally, if a country selects a wrong nominal exchange rate parity at the inception of a currency area, this country may be either too competitive or not competitive at all vis-à-vis the other members. The external accounts imbalance is expected to continue until wages and price structures together with economic activity, adjust to those existing in the other member states. Currency areas require supranational institutions that will result in increased administrative costs for member countries that arguably may be offset by the phase out or reduction of national institutions and cost-sharing for the supranational institutions. Another argument of losing monetary sovereignty is that of the loss of control over the inflation tax and seignorage by individual members. However, such an argument can be countered by the price stability generated through currency unification.

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Decrease in macroeconomic stability

The macroeconomic challenges often faced by members of monetary unions have to do with the ability to conduct independent stabilization policies. The fact that the responsibility of setting monetary and fiscal policies is now under the supranational institution, the options insofar as policy instruments available to individual members are now limited. Subsequently, assuming sticky prices and wages, when a member experiences some form of asymmetric shock, it cannot follow some real adjustment policies. Likewise, when a member economy experiences higher nominal prices while domestic wages are sticky, then frictional unemployment in other members of the union with a lower inflation rate may increase until structural reforms that would reduce nominal wage rigidities are taken by the member. The results of wage rigidities may in a sense lead to short-term fluctuations in output and employment in the economy of the member that experience this divergence. Another ostensible cost is that direct control of foreign exchange reserves and other assets is transferred to the supranational institution.

On fiscal policy, members give up their prerogatives to increase their national debt in addition to other fiscal constraints that may be imposed on members to limit deficits. This is not done automatically and would require a side agreement. The costs of these constraints are even more pronounced for countries with relatively higher public debt and/or high budget deficits. On the EMU, Bayoumi and Eichengreen (1992) argue that insofar as monetary policy is critical in facilitating adjustment to disturbances, adjustment difficulties may

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continue to grow and be difficult to resolve. These qualms were reinforced if one assumed that a fully integrated market would add new constraints on the use of fiscal policy for the member countries. They explain that not only would individual governments have lost their autonomy over the use of seignorage to finance budget deficits but, since the factors of production were becoming more and more mobile, further constraints would manifest themselves as members become less capable of imposing tax rates that are markedly different from those of other members in the Union. Simply put, when governments are constrained to tax in the future, their ability to run current budget deficits is taken away (Bayoumi and Eichengreen, 1992).

Negative external effects

There is potential for negative spillover effects to other members if one or more members run large and prolonged budget deficits and accrue an unsustainable public debt. Consequently, there might be erosion in confidence if the public at large believes that the debt may be financed by printing money. Subsequent costs include severe strain on interest rates within the currency area and the erosion of international confidence in the unified currency. Member countries that previously had stable currencies would even experience more losses as a result.

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2.4 Review of Political, Institutional and Other Approaches to OCA Analysis

The political, institutional and other non-economic dimensions have often failed to feature prominently in a number of OCA analyses, and in most cases have simply been ignored. While most studies have focused on economic aspects of OCA, other areas such as politics, sociology, geography, globalization and security have, in most part, been set aside. Some scholars have even complained that OCA theory provides little explanation as to why some countries want to form a currency union. It is indeed important to note that there are various aspects of integrations, and OCA is just one of them. It is equally important to realize that other aspects of integrations, be they political, sociological or geographical may influence the decision processes in some regions to form monetary unions. The extent to which both economic and non-economic rationales influence the formation of currency unions may vary from country to country and region to region. Even more daunting is the fact that political maps and other non-economic dimensions differ markedly from country to country and region to region and may be quite difficult to capture, let alone operationalize.

This section looks at some literature that addresses the significance and roles played by non-economic elements in promoting regional integration, specifically economic integration. Studies have shown that the choices of exchange rate regimes within the context of OCA are influenced by

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economics as well as politics. There are, however, disagreements among scholars as to their relative importance and the way they should be operationalized (Willett, 2004). Cohen (2003) argues that there are simply too many permutations with regard to the many factors in OCA theory, so the role of politics in forming a currency union is paramount. Cohen divides these political factors into two categories. First, policies that are devised are clearly influenced by domestic distributional politics. As he puts it "the tug and pull of organized interest groups of every kind." He quotes Jeffry Frieden (1993) as saying "domestic distributional considerations are also central to the choice of exchange rate regime." Consequently, political reality dictates that attention be paid to who wins and who loses when decisions on the choice of exchange rate regimes are made. The second factor mentioned by Cohen pertains to the policy calculus that goes beyond mere macroeconomic performance. He explains that there are a multitude of political goals at the domestic level that "must weigh heavily as economic welfare in the strategic calculations of policymakers." A case in point would be that of political ramifications associated with the abdication of sovereignty on a number of policies, or the loss of a symbol such as a nation's currency when joining a monetary union. Cohen concludes that only when there are political incentives would policymakers firmly commit themselves.

Schuldt (2003) also discusses the emphasis that is often put on economic factors over political considerations on the dollarization debate for Latin America economies. He laments that the debates on this topic are focused

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mostly on economic considerations to the point of decreasing return. Although Schuldt sees an eventual inevitability of Latin America becoming dollarized in the long run due to globalization realities and pressures from the Northern hemisphere, he argues that at least in the short term, one needs to consider the importance of sociopolitical dynamics of individual countries, how various interest groups behave and the political influence they exert and an array of other factors. Willett (2004) captures the importance of political considerations even more succinctly when he argues that "the salience of economic effects is determined through the political process." He adds that traditional OCA theory focuses on aggregate economic efficiency without closely analyzing the ramifications at micro levels. Moreover, he suggests that in order to make OCA theory more relevant one needs to look at issues pertaining to distribution, to analyze the political influence of losers and gainers, to gauge which groups are organized and which are not, and consider the resulting policy biases.

Dellas and Tavlas (2003) also raise the issue of economic dominance in OCA analysis, arguing that political considerations have actually dominated economic criteria in explaining successful currency unions. Referring to the case of the euro area, they cite three benefits that are construed primarily to be of a political nature: (1) the creation of a currency that is to compete with the U.S. dollar in private markets and as reserve asset, and to further Europe's bargaining position and power in intergovernmental monetary negotiation; (2) the incentive of Germany's partner countries to recapture

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some influence in monetary matters, having abdicated their sovereignty in the EMS to the Bundesbank (De Grauwe, 1993); and (3) the creation of an important symbol (the euro) for ultimate merger at the political level. As already mentioned, political rationales associated with currency unifications are not necessarily the same in all regions. The need for political independence, stability and security have all figured prominently in the decision of the GCC leaders to form a monetary union among their six member states (Popescu and Mustafa, 2001). Buiter (1999) argues that although there are strong economic arguments for the U.K. to join the EMU, there are political and constitutional issues to be considered, for instance, the surrender of national sovereignty to supranational institutions such as the European Central Bank (ECB).

Feng and Genna (2003) argue that the formation of an economic union, a step towards a monetary union, requires there be reinforcement between homogeneity of domestic economic institutions and the process of regional integration. In the context of their study, economic institutions are represented by inflation, taxation, government regulation and openness. They refer to the integration process as the incremental development of the movement and exchange of goods, services, labor and capital among states, the existence and influence of a supranational agency that oversees economic relationships among states, in addition to the coordination of fiscal and monetary policies.

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They use Granger causality tests[19] on four cases of regional integration in the Americas, Asia and Europe.

The results by Feng and Genna show that the most successful case of integration – the European Union – shows a pattern of positive interaction between the variables of economic institutions and that of the integration process. The least successful case of integration, namely that of Latin America, was lacks a mechanism of influence between the two variables. Although the prospect for integration may indeed improve when member countries succeed in reducing the variance of their economic institutions; it does not necessarily follow that a successful monetary union will ensue. Institutional convergence and homogeneity are also important in promoting a currency union though not in all dimensions. Like a number of other OCA criteria, these need to be taken in conjunction with other considerations and need to be further explored.

Fiscal integration[20] is an important OCA criterion. In this paragraph, fiscal governance is briefly discussed in the context of a political/institutional analysis of an OCA. Hallerberg (2004) looks at fiscal governance in Europe from the end of Bretton Woods to EMU. The theme in his study suggests that budgetary outcomes are influenced by decision making processes that he terms *forms of fiscal governance*. The author lists four categories of fiscal

[19] Granger (1969) provides a useful definition of statistical causality and test using standard time series model. This test intuitively suggests that the past causes the future and that the future does not cause the past. Note that this is not causality in the standard sense of the word since precedence does not imply causation. Granger causality therefore should be interpreted strictly as precedence rather than causality in literal sense.

[20] Refer to section 2.a. under Fiscal Integration for definition and discussion on this criterion.

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governance. They include Fiefdom, Delegation, Commitment, and mixed Delegation and Commitment[21]. He concludes that the forms of governance matter in the harmonization of fiscal integration and that empirical evidence from Europe illustrates differences among the four models of fiscal governance. Additional findings by Hallerberg show that forms of fiscal governance change over time in European countries economic and monetary union is consistent with a rules-based form of fiscal governance, and in the case of EU, it has enhanced the fiscal performance and commitment of certain states such as Belgium, Finland, and the Netherlands.

Analyses of currency areas based exclusively on economic considerations are without doubt of great value. However, the inclusion of political, institutional and possibly other non-economic aspects in the analyses should provide a more comprehensive picture as to the readiness and feasibility of

[21] ***Fiefdom***: If the government faces a common pool resource problem which in practice permeates decision making is not addressed, then there is no incentive for policy makers to consider the implication of their spending decisions on the full tax burden. Consequently, spending by politicians is carried out in isolation from one another.
Delegation: Significant decision-making powers vested to the finance minister over public monies and emphasis is on improving the *discretion* of the finance minister in the budgetary process. It is unlikely to function when the ideological gap among cabinet members is great and it arises with two main parties that face each other in elections, or where there are two block of parties that are ideologically close.
Commitment: A group of agents with similar decision-making rights agree on a "fiscal contract" to commit themselves to strictly to budgetary norms – targets for budget aggregates set for one or more years. There are ranges of formal rules to maintain the fiscal contract among the political parties that make the initial agreements. It is more *rule-based* and multi-annual targets and sub-targets as well as rules to deal with unexpected shocks to avoid the breaking of initial agreements. It is most likely to function when the ideological distance among cabinet members is great. It arises in countries where political parties are not bunched together and where they traditionally run against one another in elections even if they are in a coalition government.
Mixture of Delegation and Commitment: Found in minority governments only and combines elements of both, It has elements of delegation in the budget deliberations that take place within the cabinet and elements of commitment in the "contracts" the government signs with one or more opposition parties in the parliament. It develops in a country s where the party system makes majority governments unlikely.

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regions to form monetary unions. Confining the analysis to a purely economic perspective may not explain why certain regions aspire to form monetary unions, for example. Furthermore, in order to understand the channels through which decisions are made with respect to monetary unions, the inclusion of other considerations including sociopolitical, geographical, and so on could provide more insights for OCA analysis. This proposal is not an easy undertaking by any means.

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Chapter Three: GCC Regional and Country Profiles, Charter, and Agreements

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Chapter Three: GCC Regional and Country Profiles, Charter, and Agreements

Section one of this chapter discusses the GCC regional and individual member country profiles. Section 2 states the GCC Charter and lists agreements that have been reached and implemented to date towards the formation of a six member monetary union.

3.1 GCC Regional and Country Profiles

Under the general profile we discuss major GCC characteristics and provide key regional economic and social indicators. We also provide key social and economic indicators under country profiles and describe economic, political and institutional characteristics of each country. Most indicators are based on one year data and are meant to provide a snapshot view of each member states rather a trend over time. All cited indicators are for the year 2003 unless stated otherwise[22].

3.1.1 GCC Regional Profile

The GCC countries economic structures are similar in many aspects. Common to all the six member states is the heavy reliance on hydrocarbon resources for both domestic and external economies. Although the extent of this dependence somewhat varies among them, it is nonetheless very significant in

[22] Certain key indicators such as the level of unemployment or public debt are not available in accessible data bases. If indicators are not available for year 2003, we include whatever year is available.

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all its members. On average, crude oil as a share of total export amounts to approximately 80% for the GCC countries, and for countries like Saudi Arabia and Kuwait this number is almost 90% (Jadresic, 2002). The biggest share of the GDP is also captured by the Hydrocarbon sector estimated at about 40% on average. The combined real GDP for all six member states is estimated at almost US$ 400 billion in 2003. The real GDP per capita is quite spread amongst the six member states with Qatar enjoying the highest at US$ 21, 500 and Oman the lowest at US$ 9,244 in 2003.

Other common economic features include the fact that all six currencies are de facto pegged to the US dollar. In most part, inflation rates and government expenditure in all six countries fluctuate with oil price in the world market. The six member states mostly rely on fiscal policy instruments in the form of spending to deal with shocks caused in large part by fluctuations in oil prices. Monetary and exchange rate policy instruments have been seldom used by the member states to deal with economic adjustment. The unpredictability of crude oil prices has made budgetary planning difficult since most government revenues are derived from the sale of crude oil in international markets. The common de facto peg to the US dollar has also prompted policy makers to let domestic interest rates link to US interest rates so as to limit capital outflow. Overall, the public sector heavily dominates the GCC economies, leaving little room for the private sector to grow. It is important to note that the dominance of the public sector varies from member to member.

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On average, trade among the GCC member states is estimated at mere 7% of their total exports (Jadresic, 2002) and even much less with regards to GDP. The abundance of hydrocarbon resources and the huge revenues derived from them are often attributed to policies that have overall failed to promote economic diversification. We need to point out that some member states, like the UAE and Bahrain have been promoting economic diversification at a faster pace then the rest of the member states. Economic diversification amongst the GCC countries is mostly concentrated in petrochemicals, energy-intensive industries and the service sector in some member states.

The significance of hydrocarbon as a source of revenue for the GCC countries can be appreciated by the sheer sizes of their combined reserves. GCC countries are estimated to be endowed with about 50% of proven world oil reserve, with Saudi Arabia alone capturing 25% of those reserves, estimated at 114 billions barrels and Kuwait 15% (CIA-Factbook, 2002). These countries also account for almost 15 percent of the world's proven natural gas reserves, but producing only 5 percent o global demand (Popescu and Mustafa, 2001). In the last few years however, major investments in exploration, production and liquefaction of natural gas have been taking place in the region with Qatar leading the way with tens of billions of dollars. These investments are already turning the GCC countries into major producers as well as exporters of natural gas.

Another common feature to most GCC countries is the size and structure of their populations. Except for Saudi Arabia (with a population of 25.8 million), the

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remaining five GCC member states have relatively small populations. While all six member states of the GCC rely on a large expatriate labor force, for countries like Kuwait, Qatar, and the UAE, the majority of their population is made up of non-citizens. In all six member states, the bulk of the indoginous labor force is employed by the public sector and the government bureaucracies estimated at 95% of the domestic labor force (Abed, Erbas, and Guerami, 2003). Additional common features amongst the GCC countries include similarities in culture and language.

Politically, the six member states of the GCC are hereditary monarchies. Some have bicameral chambers whose roles are mostly consultative rather than legislative. Kuwait and Bahrain have some viable opposition. Their parliaments have some legislative powers although the executive branches in these two countries have the larger say on government and state affairs. These countries have also judiciary branches that are often the extensions of their respective executive branches.

3.1.2 GCC Individual Country Profile

This section briefly looks at individual GCC country profiles. We use four main sources of information and they include The Economist Intelligence Unit Limited, Gulf Research Center GRC), the International Monetary Fund (IMF), and the CIA World Factbook. As already mentioned, all indicators are from 2003 estimates unless stated otherwise.

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Bahrain

Bahrain land area covers 703.6 sq km, about the size of Washington DC. The country population is estimated at 689, 418 of which 62% are locals and 38% expatriates. Annual population growth is estimated at 2.6%.

Bahrain is a constitutional monarchy with significant power still invested in the King. The country has a bicameral parliament and a judiciary. The crown Prince is the King's son and unlike Oman, succession to the throne is predetermined.

Bahrain real GDP is estimated at $9.6 billion, growing at 13.7%. Per capita real GDP is $13, 934. This country's economy is the most diversified in the GCC with the oil and gas sector capturing only 16.5% [23] of GDP. Other important sectors of the economy include manufacture, finance and real estate. The unemployment rate is 15.8% (1998 est). The country's FDI amounts to $517 million. Its budget deficit stands at $962.7 million (10% of GDP). Bahrain experienced a trade balance surplus in 2003 at 12.6% of the GDP. Total export amounts to $6.6 billion of which oil and gas amount to 70.9%. Saudi Arabia and the US are the top two main markets for non-oil exports that consist mostly of mineral products, metal base and textiles. Import is estimated at $ 5.0 billion with Japan and Saudi Arabia being the two top suppliers. Bahrain produces a modest amount of oil estimated at 43,000 barrels of oil per day.

Unlike most GCC countries, limited oil and gas reserves have provided incentives for Bahrain to promote its private sector and rely less on the

[23] Please note that for this indicator, as is the case for most indicators in this Chapter, the year is 2003 and the source is Gulf Research Center (GRC). Given that in other parts of this dissertation, such us under the analysis of the GCC structural convergence in Chapter 5, the year and source are different from those in this chapter. Thus, one would note some variations in these indicators.

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government sector. Lower government revenue has also put some limits to import dependency as compared to the other members of the region. For a numbers of years, other Gulf States, mostly Saudi Arabia, have provided aid to Bahrain and supplement its government revenue mostly in the form of crude oil, but at a much lower price than the prevailing price in the world market. Most of the crude oil is refined and re-exported in the form of petrochemicals. Unlike other GCC countries where a bulk of its workforce is employed by the public sector, the Bahrain service sector alone employed 68% of its workforce in 1990. As public expenditure became increasingly constrained in the 1980's, the government started placing great emphasis on the private sector's role in providing employment and growth. This country's attitude towards foreign investors has been considered by far the most progressive in the Gulf with very liberal foreign investment rules.

Kuwait

Kuwait covers a geographical area of 17,818 sq. km, about the size of the state of New Jersey. The country population stands at 2.55 million of which 37% are locals and 63% expatriates. Annual population growth rate is estimated at 5.2%.

Kuwait is a constitutional hereditary emirate with executive branch and unicameral elected national assembly, and a judiciary. The head of state, the Emir, rules through the council of ministers. The Emir, the prime minister, and key ministries are held by the members of the royal family. Although the Emir

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exerts extensive power and influence, the role played by the parliament and the influence it exerts over policies are more pronounced relative to the rest of the GCC countries.

Kuwait real GDP is estimated at $41.8 billion growing at 16.4% in 2003. The per capita real GDP is $16,392. The main GDP component is that of the oil and gas sector with a share of 46.6%. The unemployment rate is estimated at 2.1%. FDI is very small amounting to mere $67 million in 2003. The country has a budget surplus of $7.9 billion (19.1% of the GDP) and a trade balance estimated at 23.7% of the GDP. Total export amounts to $20.7 billion of which oil and gas account for 91.9%. Saudi Arabia and the UAE are the two main markets for non-oil exports which consist mostly of chemicals. Import amounts to $10.8 billion with the US and Japan being the two top suppliers. The current account balance is $8.652 billion (20.70% of the GDP) and daily oil production stands at 2.27 million barrels per day.

Like the rest of the GCC countries, and as the above indicators show, Kuwait depends heavily on the hydrocarbon sector. After the Iraqi occupation of 1990 – 91 and the subsequent massive financial burden of the war and reconstruction, the government liquidated a significant amount of its vast foreign assets and borrowed from international financial markets. Like most GCC countries, Kuwait faces a number of structural challenges that include reducing dependency on the oil sector, restricting spending, and increasing the role of the private sector. Volatile oil prices also pose significant challenges to stick to its budgetary plan. Privatization is a controversial issue in Kuwait with the government mostly in

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favor and parliament opposing it. The country's monetary policy options, like the rest of the GCC are very limited.

The Central Bank has no independence and like the other members of the GCC, the government policy is to maintain a nominal exchange rate peg to the US dollar. There are no capital controls. The domestic interest rates, set by the Central Bank, tend to move in line with the US interest rate so as to prevent investors from exploiting arbitrage opportunities. Similar policy is practiced in the other GCC countries. Like the rest of the GCC, inflation is often imported and reflects the price of crude oil in the world market.

Oman

Oman land area covers 212,460 sq.km and its population is estimated at 2.34 million of which 76% are locals and 24% expatriates. The annual population growth rate was estimated at 7.8% in 2003.

Oman is a Sultanate where the Sultan (the Ruler) has wide-ranging power and influence. The country has a bicameral consultative council system, namely the *Majlis al- Shoura* whose members used to be appointed by the Sultan, but are now elected by the people. The second chamber is that of the State Council and its members are appointed by the Sultan. These two chambers do not make or pass laws, but play advisory roles and make recommendations to the government. The government has also a judicial branch. The country's *Basic Law* which serves as a constitution, was promulgated in 1996. This document

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contains a number of provisions including the role of the government and its various branches and the code of succession to the King.

Oman's real GDP stands at $21.60 billion and grew at 6.3% in 2003. Per capita Real GDP is the lowest in the GCC standing at $9,244 during the same year. The main GDP component is the oil and gas sector and captures 41.7%. The unemployment rate is estimated at 17.2% (1996 est.). The Omani rial, like the rest of the GCC currencies, is pegged to the US dollar and this peg is the oldest amongst the GCC countries having lasted over three decades. The 2003 figures show that foreign direct investment (FDI) in non-hydrocarbon sectors was still very small, but of late, there has been a significant increase in FDI, mostly to hydrocarbon-related sectors such as aluminum, fertilizer, and tourism.

The country's budget surplus stands at $310 million (1.4% of the GDP), and a trade balance at $11.7 billion (22.5% of the GDP). Total export amounts to $11.7 billion of which oil and gas capture almost 80.0%. The UAE and Iran are the two main markets for non-oil exports and consist mostly of chemicals. Import is estimated at $ 6.6 billion with the UAE and Japan being the two top suppliers. The current account balance is at surplus in and estimated at $2.17 billion (10.05% of the GDP). Oman's daily oil production stands at 963,800 barrels per day in 2003.

Unlike most members of the GCC, Oman has limited oil resources although a significant amount of natural gas was discovered in the early 1990's. The gas sector has significantly developed since then and the country is now a major exporter of liquefied natural gas. Recent policy trends include the

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privatization of a number of public sectors, mostly utility-related such as water, electricity and telecommunication. Oman now allows 100% foreign ownership in most sectors. As mentioned earlier, there are concerted efforts in the country to diversify the economy that extends not only to hydrocarbon-related sectors, but also to the service and financial sectors. The private sector is still small, but has been growing in view of a number of liberal economic and diversification policies that have been adopted.

Oman fiscal deficits as well as inflations are often influenced by the world oil market. The country tends to import inflation when the oil prices are high an run large budget deficits when the oil prices are low, as was the case right after 1998 when the price of barrel of oil went down to a single digit for a while. The Central Bank pursues a fairly conservative monetary policy, constantly insuring that inflation is low. To absorb excess liquidity and finance state budget deficits, the Central Bank resorts to selling development bonds on behalf of the government. The government also issues treasury bills in order to regulate liquidity in the market, but not to help finance the government deficit.

Qatar

Qatar covers an area of 11, 437 sq. km; about the size of Connecticut and Rhode Island. The population of this country is 636,000 and consists mostly of expatriates and is growing at 2.9% annually.

Qatar is a constitutional Emirate with an executive branch and an appointed advisory council. Significant power is invested in the Emir who exerts extensive

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influence over government and state matters. The judiciary forms another branch of the government.

Qatar real GDP is estimated at $20.4 billion growing at 3.6%. The per capita real GDP is one of the highest in the world estimated at $21,500, owing to the combination of a small population and huge production of hydrocarbon resources, mainly natural gas. The main GDP component is the oil and gas sector and captures 57.6%. The unemployment rate stands at 2.7% (2001 est.). FDI amounts to $400 million[24]. The country's budget surplus stands at $1.1 billion (5.3% of GDP). Trade balance stands at $8.9 billion (43.9% of GDP). Total export amounts to $13.3 billion of which oil and gas accounts for 85.0%. Japan and South Korea are the top two main markets for non-oil exports that consist mostly of chemicals. Qatar's Import is estimated at $4.4 billion with the US and Japan being the two top suppliers. Current account balance is estimated at $4.15 billion (20.34% of GDP). While Qatar has a modest daily oil production of 864,200 barrels of oil per day, it produces 32.4 billion cubic meter of natural gas in 2001, ranking amongst the top three in the world. This country now allows 100 percent ownership in a number of sectors (except the hydrocarbon sector). The Emirate has also embarked in the privatization of the public sector but with limited scope.

[24] This figure pertains to non-hydrocarbon sector only. By all recent accounts, Qatar has been a beneficiary of billions of dollars in FDI directed in the development of gas fields and the down stream related activities. A closer look at this and other figures are found in relevant chapters.

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Saudi Arabia

Saudi Arabia is the largest country of the GCC and covers an area of 2.5 million sq. km, slightly more than one-fifth of the US. The Kingdom is also the most populated with 23.6 million inhabitants of whom 76% are locals and 24% expatriates. Population growth is estimated at 2.9% in 2003.

Saudi Arabia is a Monarchy with a council of ministers, a consultative council, and a judiciary. The Kingdom has a document that approximates a constitution and it is called *The Basic Law*. One of the major provisions states that *Sharia* law is considered to be the ultimate arbiter of government and state affairs. *The Basic Law* document is divided into five main chapters: System of Government (monarchy); Feature of the Saudi Family (the family is the kernel of Saudi society); Economic Principles; Rights and Duties; the Authorities of the State; and Financial Affairs. The consultative Council (Majlish al – Shura) stipulates that the King appoints the members and decide on their term limits.

Saudi Arabia real GDP is estimated at $214 billion and growing at 13.7% in 2003. The country's per capita real GDP is one of the lowest among the GCC member states at $9,460, slightly over that of Oman. The main GDP component is the oil and gas sector capturing 40.8%. The country has a budget surplus of $9.6 billion (4.5% of GDP). Trade balance stands at 12.1% of the GDP. Total export is recorded at $95 billion of which oil and gas accounts for 88.4%. The US and Japan are the top two main markets for non-oil exports. Import is estimated at $33.8 billion with the UAE and Japan being the two top suppliers. Current

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account balance stands at $22.27 billion (10.41% of GDP). Daily oil production in 2003 is estimated at 8.711 million barrels per day.

The largest expenditure component of the GDP is private consumption amounting to 37.9% of the GDP at current price (1997 est.) followed by government expenditure recorded at 27.4% of the GDP. Like other GCC countries, Saudi Arabia has used its massive revenues from the sale of crude oil over the years to finance its infrastructure. The private sector is very small and a modest privatization program has been undertaken by the Kingdom. However, recent laws have been enacted to allow 100 percent ownership of business in most sectors, including gas, power generation, water desalination, and petrochemicals. Saudi Arabia has also embarked on economic diversification from crude oil with focus on petrochemicals and energy-based sectors. Like all members of the GCC, both inflation and budget deficits reflect the crude oil price in the world market.

The UAE

The UAE covers an area of 83, 600 sq. km, about the size of Maine. The country's population is estimated at 4.04 million of which 20% are locals and 80% expatriates. Population growth rate stands at 7.6% in 2003.

The UAE consists of a federation of seven emirates. The executive branch includes a seven-member supreme council of rulers which elects the President and the Vice President. The legislative has a 40 selected member council. The role of this council is purely consultative and it reviews legislation referred to it by

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the Council of Ministers. There is also a judicial branch of the government consisting of five judges whose roles, among others, is to adjudicate between the emirates and federal government, and decide on the constitutionality of federal laws. Succession in each emirate is not clear.

The UAE is the second largest economy of the GCC, second only to Saudi Arabia with a real GDP of $79.81 billion growing at 12.5% in 2003. The Per Capita Real GDP is estimated at $19,751, the second highest in the region after Qatar. Despite the abundance of hydrocarbon resources, the UAE is second only to Bahrain amongst the GCC countries in terms of economic diversification. The main GDP components are as follow: oil and gas (31.9%), manufacturing (13.6%), insurance (6.2%) and real estate (10.6%). The unemployment rate is fairly small and amounts to 2.4%. The country's budget deficit is estimated at $3.7 billion (4.6% of the GDP) and its trade balance amounts to 25.2% of the GDP. Total export is $65 billion of which oil and gas account for 44.9%. Non-oil export is 55.1% and consists of chemicals, base metals, textiles and food stuffs. The US and Japan are the top two main markets for non-oil exports. Import stands at $45.7 billion with Japan and the US being the two top suppliers. The current account balance is estimated at $12.47 billion (15.6% of the GDP). The country's daily oil production stands at 2.57 million barrels of oil per day in 2003.

While the emirate of Abu Dhabi has the most oil, Dubai is the center for regional trade with growing importance that extends as far as the southern republics of the former Soviet Union. The mainstay for the Dubai trading system is re-exports with its foreign trade estimated at twice the value of its GDP. A

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number of new free trade zones have been launched with an aim to establish the emirate as a global center for trade in gold bullion, research and development of technology, and financial activities. FDI policy, and most specifically in real estate, is one of the most liberal in the region. Recently, the country has also embarked on the privatization of the utility sector and entered into joint ventures in power projects.

Table 3.1 below gives key indicators for the six member states of the GCC.

Table 3.1: GCC Selected Economic Indicators, 2003

	Real GDP (billions of US dollars)	Real GDP Per Capita (US dollars)	Population (Millions)	Overall Fiscal Balance (% of GDP)	Proven Oil Reserves (Billions of Barrels) [25]	Daily Oil Production (Millions of Barrels)	Current Account Balance (% of GDP)
Country							
Bahrain	9.60	13,934	0.69	10.00	0.13	0.04	5.52
Kuwait	41.80	16,392	2.55	19.10	97.68	2.27	20.70
Oman	21.60	9,244	2.34	1.40	5.70	0.96	10.05
Qatar	20.40	21,500	0.64	5.30	14.51	0.86	20.34
Saudi Arabia	214.00	9,460	23.60	4.50	261.70	8.71	10.41
UAE	79.81	19,751	4.04	4.60	80.31	2.57	15.60

Sources: Gulf Research Center and the World Fact Book, 2003

3.2 The GCC Charter and Chronological Rendition of Agreements towards a Common Currency

In May of 1981, six countries of the Arabian Gulf Peninsula ratified a charter that had earlier called for the establishment of the Cooperation Council for the Arab States of the Gulf. Later that same year, the member countries

[25] The oil reserves are 2002 estimates

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adopted an economic agreement that became a prelude to a comprehensive regional integration. In 1982, the goal of creating a unified currency was declared by all six member states. The 1982 currency unification agreement broadly stipulates that "The member states shall seek to coordinate their financial, monetary, and banking policies and enhance cooperation between monetary agencies and central banks, including an endeavor to establish a common currency in order to further their desired economic integration" (Jadresic, 2002). The overall charter stipulates that the GCC is a political, economic, and regional organization and lists the following basic objectives (OECD.org):

1. To effect co-ordination, integration, and interconnection among member states in all fields in order to achieve unity among them
2. To deepen and strengthen relations links and areas of cooperation now prevailing among their people in various fields
3. To formulate similar regulations in various fields that include:
    i. Economic and financial affairs
    ii. Commerce, customs and communications
    iii. Education and culture
    iv. Social and health affairs
    v. Information and tourism
    vi. Legislative and administrative affairs

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4. 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 co-operation by the private sector for the good of the people

Table 3.2 below gives a chronological listing of the main agreements that have been reached and steps that have been implemented by the GCC countries towards forming the regional monetary union in 2010.

Table 3.2: Implemented Steps and Projected Objectives Of the GCC Monetary Union

YEAR	STEPS IMPLEMENTED AND FUTURE OBJECTIVES
1983	Established a free trade zone
1999	Agreement on customs union
2000	Agreement to adopt a common exchange rate peg
2001	Accord on joint custom tariff of 5%
2002	US dollar is selected as an intermediate peg to all six currencies
2003	Joint customs tariff of 5% is implemented
2003	Formal adoption of the US dollar as an intermediate peg
2004	Agreement in principle on key convergence criteria that include size of the budget deficit, inflation rate, interest rates, foreign reserves, and the ratio of public debt to GDP
2007	Envisage a common market
2010	Projected implementation of the unified currency

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Some agreements towards adopting a GCC monetary union have been reached and implemented by all member states with little difficulty while others are yet to be implemented and face more challenges. The two main areas of disagreement are some aspects of macroeconomic convergence criteria and the role and structure of the incipient GCC Central Bank.

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Chapter Four: Literature Review and Critique on the GCC Monetary Union

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Chapter Four: Literature Review and Critique on the GCC Monetary Union

In this chapter we discuss and critique existing literature on the proposed GCC monetary union and various applications of OCA criteria. Most studies on this topic, with the exception of those by Laabas and Limam (2002) and Sturm and Siegfried (2005), discuss one or two OCA criteria and their application to a GCC monetary union. Some studies use a costs and benefits analysis approach to discuss the viability of this incipient monetary union without an empirical framework. Other studies, such as the one by Fasano and Wang (2001) analyze one aspect of GCC economic policy, namely the effects of oil revenues on spending amongst the six member states of the GCC with no reference to the monetary union implications. The discussion is mainly framed in two parts and starts with literature and subsequent critiques on a number of OCA criteria and the manner with which they have been applied to the GCC. The second part discusses alternative exchange rate regimes for the GCC countries. The basis of our discussion is to identify the areas of agreements and disagreements amongst these various studies and provide some critics of our own.

4.1 OCA Criteria

Few studies on the topic of the GCC monetary union have provided comprehensive analyses and empirical frameworks except those by Laabas

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and Limam (2002) and Sturm and Siegfried (2005). Laabas and Limam use a number of OCA criteria and apply them to the GCC. Sturm and Siegfried provide a broader discussion and use various indicators and existing policies such as trade patterns, economic structures, monetary, exchange rate, and fiscal policy to discuss the viability of the GCC monetary Union.

Degree of openness

Sturm and Siegfried (2005) suggest that the GCC is a rather open economy with average imports and exports reaching 48% of the GDP. Laabas and Limam (2002) also highlight the fact that GCC members are rather open economies based on the ratio of trade to GDP. Indeed, the high ratios of trade as a percentage of GDP for the GCC countries are due in large part to the high level of oil exports and heavy reliance on imported consumer and capital goods. While both studies acknowledge the insignificance of intraregional trade at below 10% of total trade, they fail to point out their measurement of the degree of openness has little relevance to the GCC monetary union. What matters is the degree of openness amongst the six member states; a measure captured by the extent of intra-regional trade.

Moreover, both studies fail to highlight the failure of intra-GCC trade to grow despite the de facto pegs to the US dollar that have in place for the last two decades. Instead, Sturm and Siegfried suggest a potential increase in intra regional trade once the six member states adopt a unified currency. It is arguable that if the common peg has failed to promote intra regional trade, little benefits

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would be added if the GCC countries adopt a common currency. Indeed, as further elaborated under Chapter 5 of this dissertation, the country economic structures and policies have contributed to low intraregional trade. While Jadresic (2002) proposes the removal of various distortions that have inhibited intra-regional trade in order to promote intra regional trade amongst the six countries, he nonetheless acknowledges that the benefits would still be minor.

Degree of goods market integration

All GCC studies are in agreement that there is a high degree of structural convergence amongst the six member given states, that the oil and gas sector heavily dominate these economies. Most of these studies, except that by Sturm and Siegfried (2005), fail to emphasize the likelihood of structural divergence in the region in the future. Sturm and Siegfried suggest that the current state of structural convergence of the GCC member states does not appear to constitute an impediment to a functioning monetary union. They further argue that this high degree of convergence could not simply be extrapolated into the future where the structure may start to diverge. Laabas and Limam (2002) use sectoral composition of the GDP to analyze this criterion for the GCC countries. As expected, both studies find the hydrocarbon sector to be the dominant sector in all six member states. Jadresic (2002), Al-Jasser and Al-Hamidy (2003), and Erbas et al (2001), Abed et al (2003) all agree on the existence of structural convergence amongst the GCC countries and suggest that this structural homogeneity would reduce the likelihood of asymmetric shocks.

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We argue in this dissertation that despite the fact the oil and gas sector still dominates the GCC economies, the pace and extent of economic diversification have already exposed some noticeable structural divergences. A case in point is the fact that the pace and extent of economic diversification for Bahrain and the UAE, and to a lesser degree Oman, are higher than those of Kuwait, Qatar and Saudi Arabia. These divergences would make monetary union more challenging in the long run as each member would require an individual policy response in case of shock[26]. It is important to note that while the policy responses may be similar, given the continued dominance of the hydrocarbon sector and the subsequent likelihood of symmetric shocks, the magnitude and timing of these responses may indeed differ. In addition, the fact that Bahrain and Oman are facing depletion of oil resources in the near future requires a closer analysis on this criterion and the potential implications in the future. The OCA analysis under Chapter 5 discusses this criterion more thoroughly.

Capital and labor mobility

As for the criterion of capital and labor mobility, Laabas and Limam (2002) provide no empirical basis in their analysis. They simply state that capital mobility amongst the GCC countries is restricted, and that due to some welfare factors, labor cannot move freely among them. Sturm and Siegfried (2005) discuss the GCC population particulars and labor market structure. However, the criterion of

[26] This discussion is included under both OCA economic analysis in Chapter 5 and political economy analysis under Chapter 6.

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labor mobility is not addressed by the authors. By all accounts, GCC nationals do not move within the region labor market although there are some cases of Omani and Bahraini skilled workers moving mostly to the UAE and Qatar. The GCC region is considered as having one of the world's highest rates of population growth estimated at 3.2% on average over the last decade (Sturm and Siegfried, 2005). While these countries do not announce their unemployment rates, the two authors suggest that this issue has become quite a challenge for the region with estimates ranging from 3% to 17%. Jadresic (2002) shares the same concern arguing that the rapidly increasing supply of labor is greater than the demand for labor due to the slow pace of economic diversification in most GCC countries.

In terms of the labor force structure, the GCC economies rely heavily on an expatriate workforce both in terms of skilled and non-skilled labor. As a result, in a number of these countries, the expatriate labor force far outnumbers the nationals. The extent of expatriate workforce in this region is manifested by the fact that the share of nationals in the total population is only 65% (Sturm and Siegfried, 2005). Another feature of the GCC labor market is that the private sector relies heavily on expatriate work force while the public sector mostly employs nationals. It is estimated that about 90% of the national labor force in GCC is employed in the public sector (Jadresic, 2002).

With regard to capital mobility and intraregional investment, GCC countries still impose different forms of capital controls on direct investment. These capital controls and restrictions differ from member to member with Saudi Arabia considered to be most restrictive and Bahrain the least restrictive. We

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need to point that the GCC financial systems are still relatively poorly developed in most countries, though some improvements have taken place in recent years (Sturm and Siegfried, 2005). The two authors point that although cross-border lending within the GCC has been permitted over the years, a genuine intra-regional GCC banking market has yet to emerge due to bureaucratic obstacles. Sturm and Siegfried also point that capital markets in the GCC have only recently expanded and vary significantly in terms of size. They add that a low degree of inward investment is also reflected in low rates of foreign direct investment with the ratio of FDI stock to GDP estimated at about 11% (2003), significantly lower than the world average of 23% or the average for either developed countries or developing countries estimated at 31% and 29% respectively.

Price and wage flexibility

Available studies on the GCC monetary union do not address the OCA criterion of price and wage flexibility, except that by Laabas and Limam (2002). Lack of data is often attributed to the failure to do so. The two authors simply state that prices and wages are rather rigid in the GCC countries and do not adjust frequently to accommodate shocks often triggered changes in crude oil prices. Assuming this is the case, and in view of the fact that this is common knowledge despite lack of data, they correctly conclude that the limited role of prices and wages as adjustment mechanism in GCC countries does not qualify the exchange rate as an alternative mechanism to prices, wages, or government

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expenditures. Like most criteria analyzed by the two authors, this one is also not empirically based.

Degree of commodity diversification

Laabas and Limam (2002) use the UNCTAD export concentration index to assess whether the GCC countries meet the OCA criterion of commodity diversification. While it is common knowledge that all GCC countries rely on hydrocarbon resources for their exports, there is a diverging trend amongst the members with countries like the UAE, Bahrain, and Oman diversifying their export base at faster pace than the rest of the member states. For instance, Bahrain has already implemented a number of policies to promote the private side of its market that has earned it a free trade agreement with the United States that was signed in September of 2004. Oman has been following in the foot steps of Bahrain in this regard and as result also signed a free trade agreement with the United States in January of 2006. The two authors fail to address this issue where some members are pursuing more liberalized economic policies than others and its potential to bring additional challenges toward a unified GCC currency as policy coordination could become more difficult.

Other studies including those by Jadresic (2002), Fasano and Wang (2001) simply acknowledge the significance of crude oil for the GCC countries export base and source of revenues. While Sturm and Siegfried (2005) also indicate the significant of the oil and gas sector for the GCC exports, their analysis and that by Jadresic (2002) provide additional indicators reflecting individual GCC

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member patterns of trade with other region of the world. Chapter 5 of this dissertation extensively analyzes the OCA criterion of the degree of commodity diversification using both export concentration and export diversification indexes. We also compare the GCC region with other oil producing countries in terms of this criterion.

Degree of policy integration

All existing studies on the GCC monetary union are in agreement that while the six member states have been able to successfully coordinate their monetary and exchange rates policy in the last two decades, they have not done so in terms of fiscal policy. Laabas and Limam (2002) suggest that the key policies that call for coordination in a monetary union already exist in the region. They cite the fact that monetary and exchange rate policies in the GCC are commonly centered around maintaining a wedge between domestic and foreign interest rates in order to stabilize the exchange rate and stem capital outflows or portfolio reallocation in favor of foreign assets. The two authors suggest that fiscal policy for the six member states reflect individual country needs but fail to elaborate.

Sturm and Siegfried (2005) conclude that the analysis of monetary and fiscal convergence in the GCC shows a significant degree of monetary convergence with overall low inflation rates in all member states and short-term interest rates co-moving in a close range. The authors attribute these results to the GCC currencies' long-standing alignment with a common external anchor, namely the US dollar. They add that this policy has resulted in a very high degree of intra-GCC exchange rate stability. Jadresic (2002), and Erbas and Guerami (2003)

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also come to the same conclusion. According to Sturm and Siegfried (2005), there is much less fiscal convergence amongst the GCC countries with available data showing the budget balance-to-GDP ratios as well as public debt levels varying significantly amongst the member states. The two authors suggest that the lack of fiscal convergence poses a serious challenge to the incipient GCC monetary union. This is a weak argument in view of the fact that in the last two decades a coordinated monetary and exchange policy has been successful for the GCC countries and in their particular case, the lack of fiscal convergence has yet to prove detrimental to their common peg. The GCC countries barely resort to monetary or exchange rate policy to deal with adjustments and often use fiscal policy instrument, specifically spending, to do so. The economic structure of the six member states, heavily dominated by the oil and gas sector, together with the fact the currency of denomination for the crude oil is the US dollar explains this phenomenon. Chapter 5 further explores this aspect of OCA theory on the GCC.

Exchange rates variability/G-PPP

Another OCA criterion analyzed by Laabas and Limam (2002) for the GCC monetary union is that of the G-PPP. The G-PPP approach to OCA analysis is an off-shoot of the exchange rate variability criterion introduced by Vaubel (1997). This approach theorizes that the long-run non-stationarity of the real exchange rate is the result of the non-stationarity of the fundamental determinants of real exchange rates, such as output and expenditure patterns.

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While the overall conclusion by the two authors on this criterion confirms some degree of co-integration for the GCC countries real exchange rate variability over time, the discussion as to how or why this is indeed the case is limited. Moreover, our analysis and critique of this finding, including questioning the relevance of this analysis given that no exchange rate adjustment has taken place in any of the GCC countries in the last two decades are included in Chapter 5 of this dissertation.

Other studies such as those by Abed et al (2003) Erbas et al (2001) examine alternative exchange rates for the GCC countries. While the former compare the dollar peg to a dollar – euro basket peg as alternative exchange rate regimes for the incipient GCC currency union, the later compare the dollar peg to SDRs. Both studies conclude that the dollar peg is more appropriate as it has generated credibility on the GCC fixed peg and maintain low inflation. These studies further explain that given the low economic diversification with heavy dependence on crude oil in the GCC countries, the six member states should be more concerned with external stability rather than competitiveness which the dollar peg has managed to achieve. Rutledge (May, 2006) on the other hand argues for a basket peg especially in view of the recent slide in the dollar against other major currencies, the advent of euro in 1999, and the pattern of trade of the GCC countries that weighs more with the euro zone and Asia rather than the US. So far, GCC officials have maintained the dollar peg.

In summary, existing studies on a GCC monetary union tend to agree on a number of OCA criteria. The main difference appears to be on the extent of the

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potential costs and benefits for this incipient monetary union. While there is across the board consensus on the fact that all GCC countries meet the OCA criterion of the degree of openness, these studies fail to emphasize the failure of intra-GCC trade growth over the last two decades despite an existing de facto peg by all the six GCC currencies to the US dollar. Moreover, only one measure of openness, namely total trade in terms of GDP, has been used to analyze the degree of openness for the GCC countries. Another point of agreement is that of structural convergence amongst the six member states. Some studies have nonetheless raised the potential for structural divergence in the future. Similar conclusions have been drawn and issues have been raised on the criterion of the degree of goods market integration, while the export base is overwhelmingly concentrated on the oil and gas sector, some members of the GCC have been diversifying their export sector faster than others.

Little analysis has been done on the OCA criterion of capital and labor mobility for the GCC countries. Non-availability of data and undeveloped capital markets have been the reasons for this. Nonetheless available discussion on this criterion suggests low capital and labor mobility within the GCC. There is also a consensus across all studies that while the GCC countries have been able to achieve convergent monetary and exchange rate policy, they have not done so for fiscal policy. Overall conclusions on the potential costs and benefits vary among available studies. Non-empirical studies tend to suggest more benefits than costs for the incipient GCC monetary union while empirical ones either suggest that neither costs nor benefits would be large, or are more cautious in

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their conclusions and suggest that the union first meet should other requirements for it to be viable.

Chapter 5 extends existing OCA studies on the GCC monetary union and includes seven important criteria that are cited in the conclusion of this chapter.

4.2 Alternative Exchange Rate Regime

A study by Abed et al (2003) examines alternative exchange rates for the GCC countries. They compare the dollar peg to a dollar – euro basket peg as alternative exchange rate regimes for the incipient GCC currency union. This study was an extension of a previous study by Erbas et al (2001) that examined whether pegging the GCC currencies to the SDR would improve external stability as compared to pegging these currencies to the US dollar. The model specification by Abed et al consists of an incipient GCC common currency being pegged to both the US dollar and the euro. Import elasticities are used to identify the main sources of instability for imports. The GCC external aggregates are estimated using the elasticities of their trade accounts. The regression specification consists of an estimation using first – difference where the dependent variable is some selected component of trade. The independent variables are also in difference form and consist of real exchange rates in terms of the dollar to the GCC; the euro-dollar basket to the GCC currencies; and the GCC, US, and euro GDPs. The estimation period is between 1987 and 2001.

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Overall, the results indicate a dollar bias reduces instability of trade for the GCC. As for the non-oil exports, the results are not statistically significant, but point to the fact trade stability would be improved under a basket peg with almost equal weights for the dollar and the euro. Abed et al (2003) conclude that in terms of external stability, the prevailing dollar peg of the GCC member states would have resulted in almost similar performance under a dollar-euro basket peg. Therefore, given these findings, the authors suggest that there are merits in the current GCC peg to the US dollar[27].

The study also analyzes the impact of the dollar peg and a euro-dollar basket peg on the competitiveness of the GCC non-oil exports. The authors acknowledge the fact that the six member states exports are not diversified and are mostly made up of dollar-denominated oil exports. Moreover, a significant amount of GCC financial wealth has been held in US dollars during the estimation period. Thus, the authors correctly point out that the main concern for the GCC in selecting the dollar peg has been driven mostly by external stability and the credibility of their exchange rate regimes rather than by competitiveness. Briefly, the findings on competitiveness suggest a switch of peg between the dollar and the euro, pegging only to the euro when the dollar appreciates relative to the euro, and peg to the dollar when the dollar depreciates against the euro. The authors acknowledge the difficulty inherent in the management of such an exchange rate regime. As a compromise between the policy objectives of stability and competitiveness, they suggest a peg to the dollar and the euro with

[27] Similar conclusion is drawn by Erbas et al (2001) using SDR rather than the euro.

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appropriate weights. By and large, the current dollar peg by the GCC countries has resulted in providing external stability and credibility of their exchange rate regimes without sacrificing competitiveness.

Recent increases in oil prices, the slide of the dollar against major currencies, and trade patterns with regions outside the GCC have prompted some in the region to re-evaluate the GCC exchange rate policies with more emphasis being put on a euro-dollar basket. While some argue that imported inflation is driven by the recent and sustained slide in US dollar against major currencies, others suggest that the current trend towards export diversification and promotion of foreign trade investment in the non-oil sectors among some GCC member states favor the current policy of pegging to the dollar. In addition, those who argue for maintaining the status quo argue that the dollar peg has served the GCC countries well both in terms of stability and credibility and this is important since the six member states have proposed to adopt a common currency in 2010.

The argument for changing the current GCC exchange rate regimes in favor of pegs to a basket of currencies suggest that the current pegs are not optimal given that the GCC countries import more from Asia and Europe than they do from the United States. In other words, imports from Japan and the euro zone are fueling inflation in the region as their currencies have been appreciating against the dollar to which the GCC currencies are pegged. Moreover, they suggest that after the advent of the euro in 1999, the GCC countries have a choice. In the early 1990s, after a period of a considerable dollar devaluation, many economists at the time engaged in speculation about the dollar's role as

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the world's de facto reserve currency. The American currency, nonetheless rebounded, and continued to play its role, partly because there was no viable alternative (Rutledge, May, 2006). This has changed according to Rutledge since the euro has now met the criteria often attributed to a currency that qualifies as a reserve. These criteria include a currency being backed by a large economy which itself has free flows of capital, and open and deep financial markets and low inflation. The euro zone, the author adds, has all these characteristics, and unlike the US, runs a current account surplus. Rutledge's argument leaves institutional flexibility that is more attributable to the US than it is to the euro zone. For this reason, and others, many countries still prefer to peg their currencies to the US dollar rather than the euro.

In summary, existing studies on the GCC monetary unions tend to agree on a number of OCA criteria. The main difference appears to be on the extent of the potential costs and benefits for this incipient monetary union. Furthermore, these studies do not consider certain anomalies to OCA theory that characterize the GCC region. For instance, little emphasis is put on the failure of intra-GCC trade growth over the last two decades despite an existing de facto peg by all the six GCC currencies to the US dollar. Moreover, only one measure of openness, namely total trade in terms of GDP, has been used to analyze the degree of openness for the GCC countries. Another point of agreement is that of structural convergence amongst the six member states. Some studies have nonetheless raised the potential for structural divergence in the future. Similar conclusions have been drawn and issues have been raised on the criterion of degree of good

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market integration, that while the export base is overwhelmingly concentrated on the oil and gas sector, some members of the GCC have been diversifying their export sector faster than others.

There is also a consensus across all studies that while the GCC countries have been able to achieve convergent monetary and exchange rate policy, they have not done so for fiscal policy. Non-empirical studies tend to suggest more benefits than costs for the incipient GCC monetary union while empirical ones either suggest neither costs nor benefits would be large, or are more cautious in their conclusions and suggest that the unions first meet other requirements for it to be viable.

The next chapter extends existing OCA studies on the GCC monetary union by focusing on seven economic criteria. While some of the criteria we analyze have already been studied by others, our analyses are more empirically based and focus on the last two decades, a period that has witnessed closer monetary and exchange rate policy coordination amongst the GCC member states. Among the criteria we analyze are the following. (1) Trade integration; a criterion we analyze over a twenty-year period. Unlike other studies, our analysis clearly shows the pairwise extent of trade intensity over time and provides some explanation as to why certain members trade more than others. (2) Degree of openness that we examine using a number of measurements including that of openness within the region. Existing studies have used the measurement of the overall degree of openness and fail to include the one that analyzes intraregional openness. (3) Degree of commodity diversification is used in our study not just to

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analyze existing situations in the six member states, but to examine these trends over time and discuss future implications for the GCC monetary union. (4) Like the criterion of the degree of commodity diversification, the criterion of degree of goods market integration is also used to identify trends over time and make some predictions as to its effects on the regional monetary union in the future. Unlike the study by Laabas and Limam (2002), we use two different indices for our analysis of this criterion and discuss the results not just in the context of the GCC, but also compared with other oil-producing countries. (5) The criterion of real exchange rates variability has already been used by Laabas and Limam (2002) to analyze the GCC monetary union. While the two authors analyze this criterion using data from the 1960s, our analysis focuses on the last two decades as no major exchange rate adjustment has taken place amongst the GCC countries during this period. Furthermore, our analysis provides a thorough explanation as to how and why the six member states have been able to successfully maintain a fixed peg for almost twenty years. (6) The criterion of business cycle synchronization is not empirically featured in current studies on the GCC monetary union granted few have discussed it. The findings on this criterion are critical as it shows whether the business cycle co-movements among the six member states are closely correlated or not. The added significance of this criterion is the fact the GCC member states are often exposed to symmetric shocks. (7) The fiscal convergence criteria is also discussed in our dissertation to show that despite clear divergence in fiscal policy harmonization,

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the GCC countries have been able to successfully maintain their fixed pegs and experienced exchange rates stability for two decades.

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Chapter Five: GCC Economic OCA Analysis

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Chapter Five: GCC Economic OCA Analysis

This chapter analyzes seven selected economic OCA criteria with the purpose of assessing the viability of the GCC member states as a functioning monetary union. Another part of this chapter looks at the implications on the incipient GCC currency union given the findings on the seven criteria that are analyzed. These criteria include trade integration, degree of openness, degree of commodity diversification, degree of goods market integration, exchange rate variability, business cycle co-movement, and the degree of fiscal integration. The rationales for the selection of these criteria are stated in Chapter 1 of this dissertation. A comparative analysis on the findings of some OCA criteria between the GCC countries on one hand and other monetary unions on the other hand is also included in this chapter.

5.1 Trade Integration

The extent to which trade is integrated in a given region is often referred to as intra-industry trade (IIT) intensity and various indexes are used to measure this criterion. Before discussing these indices and the subsequent findings on the GCC monetary union, a brief reminder on this OCA criterion is in order. A number of studies on trade integration and the OCA implications have been produced over the years. One of the most prominent studies on this topic is that by Frankel and Rose (1998) and known as the endogenous OCA theory. The

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two authors conclude that trade intensity need not be high before countries form a monetary union; rather, the intensity can significantly increase post monetary unification. Additionally, the two authors find that higher level of bilateral trade results in higher business cycle correlations.

Subsequent studies have produced a number of critiques on the methodology and the findings of Frankel and Rose. Chief among these critiques is the supposition by the two authors that their results are based on intra-industry trade without explaining the manner this may have occurred. To that end, this dissertation uses the Grubel and Lloyd (GL) index to assess the extent of trade intensity among the GCC member states. The rationale for using this index is that it differentiates between inter and intra industry trade. This is a key distinction in assessing whether countries are suitable partners to form a currency union. While inter-industry trade refers to a type of trade that is based on the Ricardo and Hecksher-Ohlin notion of comparative advantage, intra industry trade refers to trade taking place within an industry.

Before discussing the GL index and the resulting findings on the GCC intra-industry trade intensity, let's first look at two other indices that are often used to measure trade intensity between countries.

Bilateral Trade Intensity Index[1]

As mentioned above, Frankel and Rose (1998) implied intra-industry trade in their results that are based on the data of aggregate imports and exports for the 21 industrialized countries. Failing to distinguish between *inter* and *intra* industry

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trade may lead to erroneous conclusions and implications as to whether a group of countries could indeed be a viable monetary union. Extended discussion on this distinction can be found in Chapter 2 of this dissertation under the title *Trade Integration and Endogenous OCA Theory*. The index below has been used in text books and various studies to measure bilateral trade intensity. It does not, however, distinguish between *intra* and *inter* industry trade and uses aggregate exports and imports rather than confining them to a specific sector or industry.

$$T^{1}{}_{i,j} = \frac{1}{T}\sum_{t} \frac{X_{i,j,t} \oplus M_{i,j,t}}{Y_{i,t} \oplus Y_{j,t}} \quad , \qquad (5.1.1)$$

where $\mathbf{T^1_{i,j}}$ represents trade intensity between country **i** and country **j**. $\mathbf{X_{i,j,t}}$ denotes all goods exported from country **i** to country **j** in year **t**, $\mathbf{M_{i,j,t}}$ refers to all imports to country **i** from country **j**, $\mathbf{Y_{i,t}}$ and $\mathbf{Y_{j,t}}$ denote nominal GDP in country **i** and **j** respectively at time **t**.

Bilateral Trade Intensity Index[2]

This particular bilateral trade intensity index is used to observe whether the value of trade between two countries is greater or smaller than would be expected based on their importance in global trade (www.worldbank.org). It is defined as the share of one country's exports flowing to a partner country divided by the share of world exports going to the partner country and is calculated as follow:

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$$T_{i,j}^{\ 2} = \left(x_{i,j} / X_{i,t} \right) / \left(x_{w,j} / X_{w,t} \right), \qquad (5.1.2)$$

where $T^2_{i,j}$ denotes trade intensity between country **i** and country **j**. $x_{i,j}$ and $x_{w,j}$ represent the values of country **i** exports and world exports to country **j** respectively. $X_{i,t}$ and $X_{w,t}$ denote country **i** total exports and total world exports respectively. An index of more than 1 implies a bilateral trade flow larger than expected, given the partner country's significance in world trade. An index of less than 1 means a bilateral trade flow smaller than expected in view of the partner country's importance in global trade. Like $T^1_{i,j}$, this index does not distinguish between *inter* and *intra* industry trade and as such is not the best in analyzing bilateral trade intensity in the context of business cycles co-movements. This observation leads us to the next index that is used in this study to measure trade intensity amongst GCC member states.

Bilateral Trade Intensity Index[3]

In order to evaluate bilateral trade intensity while keeping in mind the effects on business cycle synchronization, a more appropriate index is the one that can make a distinction between *inter* and *intra* industry trade intensity. The benefits of differentiating the two types of trade has to do with the fact that policy coordination among potential or de facto members of a monetary union needs to be commensurate with intra-industry trade rather than inter- industry trade intensity. This observation is based on the argument that shocks tend to be

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symmetric amongst countries with high intensity intra-industry trade flows and asymmetric with high intensity inter-industry trade flows. Therefore, policy coordination amongst countries with higher intra-industry trade intensity is easier to achieve that would be otherwise. Given the importance of distinguishing between the two types of trade, the GL index has been selected to assess and measure trade intensity amongst the GCC countries.

The GL index measures the share of imports or exports (whichever is larger) that is covered by exports or imports of similar types of goods (or services). When the result of the GL index equals 1, this implies that trade between partners is 100% intra industry trade. On the other hand, if the result of the index is 0, then trade between partners is considered to be 100% inter-industry trade; reflecting Ricardo and Hecksher-Ohlin comparative advantage. The GL index of IIT intensity is calculated as follow:

$$T_{i,j}^{\ 3} = 1 - \frac{\left|X_{i,j,t} - M_{i,j,t}\right|}{X_{i,j,t} + M_{i,j,t}}, \qquad (5.1.3)$$

where $\mathbf{T^3_{i,j}}$ represents *intra* or *inter* industry trade, depending on the results. $\mathbf{X_{i,j,t}}$ and $\mathbf{M_{i,j,t}}$ denote exports and imports respectively of similar goods from country **i** to country **j** at time **t**.

To analyze the GCC trade intensity, we use manufactured goods based on *Standard International Trade Classification (SITC) Revision1* from UN COMTRADE Statistics from 1984 to 2003. *SITC Revision 1* groups similar manufactured goods, excluding non-ferrous merchandise. The basis for the

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selection of this specific classification has to do with the fact a number of manufactured goods under its grouping are produced by the GCC economies though not in large quantity or value. The results of GL index on the GCC bilateral trade intensity can be viewed in Table 5.1 below.

Table 5.1: GCC Bilateral Trade Intensity Results Based on GL Index - $T^3_{i,j}$, 1984-2003

YEAR	GCC INTRA-INDUSTRY TRADE	BAH OM	BAH KUW	BAH QAT	BAH UAE	BAH SA	OM SA	OM KUW	OM UAE	OM QAT
1984		0.658	0.525	0.505	0.964	0.367	0.199	0.970	0.382	0.606
1985		0.747	0.816	0.943	0.967	0.443	0.680	0.390	0.324	0.344
1986		0.519	0.827	0.679	0.450	0.556	0.983	0.980	0.416	0.603
1987		0.610	0.436	0.739	0.466	0.699	0.949	0.533	0.557	0.975
1988		0.644	0.577	0.558	0.836	0.727	0.782	0.897	0.621	0.756
1989		0.963	0.730	0.696	0.922	0.801	0.933	0.956	0.595	0.749
1990		0.938	0.957	0.170	0.605	0.944	0.732	0.740	0.538	0.588
1991		0.726	0.044	0.306	0.409	0.929	0.455	0.118	0.604	0.600
1992		0.770	0.338	0.455	0.631	0.989	0.675	0.637	0.645	0.773
1993		0.788	0.438	0.514	0.927	0.790	0.648	0.931	0.640	0.938
1994		0.532	0.423	0.500	0.750	0.285	0.720	0.761	0.707	0.918
1995		0.909	0.407	0.467	0.863	0.290	0.509	0.694	0.808	0.729
1996		0.687	0.437	0.327	0.939	0.833	0.635	0.782	0.778	0.994
1997		0.864	0.542	0.420	0.816	0.875	0.569	0.552	0.826	0.870
1998		0.645	0.460	0.524	0.770	0.911	0.751	0.729	0.714	0.743
1999		0.929	0.581	0.576	0.732	0.322	0.845	0.956	0.733	0.812
2000		0.739	0.623	0.436	0.638	0.184	0.916	0.730	0.707	0.487
2001		0.817	0.639	0.276	0.740	0.278	0.990	0.749	0.679	0.584
2002		0.821	0.837	0.418	0.824	0.942	0.902	0.967	0.780	0.518
2003		0.729	0.786	0.474	0.794	0.819	0.936	0.879	0.732	0.705
AVERAGE		0.752	0.571	0.499	0.752	0.649	0.741	0.748	0.639	0.715

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Table 5.1 (Cont'd): GCC Bilateral Trade Intensity Results Based on GL Index - $T^3_{i,j}$, 1984-2003

YEAR	GCC INTRA-INDUSTRY TRADE	KUW SA	KUW BAH	KUW QAT	KUW UAE	QAT SA	QAT UAE	UAE SA		GCC 20-YEAR Average
1984		0.235	0.709	0.579	0.725	0.146	n.a	n.a.		0.541
1985		**0.670**	**0.816**	**0.238**	**0.905**	**0.302**	**n.a**	**n.a**		**0.613**
1986		0.654	0.696	0.490	0.800	0.424	n.a	n.a.		0.648
1987		0.923	0.710	0.423	0.678	0.580	n.a	n.a.		0.663
1988		0.859	0.648	0.298	0.535	0.413	n.a	n.a.		0.654
1989		0.738	0.736	0.416	0.798	0.473	0.623	0.567		0.731
1990		**0.631**	**0.452**	**0.146**	**0.784**	**0.954**	**0.466**	**0.940**		**0.662**
1991		0.236	0.404	0.936	0.666	0.909	0.680	0.201		0.514
1992		0.448	0.136	0.417	0.617	0.664	0.771	0.213		0.574
1993		0.485	0.472	0.671	0.886	0.999	0.924	0.628		0.730
1994		0.450	0.423	0.791	0.879	0.959	0.833	0.800		0.671
1995		**0.384**	**0.410**	**0.737**	**0.612**	**0.206**	**0.898**	**0.739**		**0.604**
1996		0.374	0.541	0.769	0.841	0.122	0.700	0.709		0.654
1997		0.384	0.542	0.814	0.705	0.144	0.980	0.710		0.663
1998		0.383	0.460	0.998	0.706	n.a	0.797	0.721		0.644
1999		0.449	0.581	0.888	0.701	n.a	0.579	0.500		0.636
2000		**0.465**	**0.652**	**0.830**	**0.602**	**0.416**	**0.610**	**0.594**		**0.602**
2001		0.487	0.707	0.802	0.703	0.255	0.990	0.673		0.648
2002		n.a.	0.837	0.935	n.a.	0.685	0.759	n.a.		0.639
2003		**n.a.**	**0.786**	**0.772**	**n.a.**	**0.526**	**0.938**	**n.a.**		**0.617**
AVERAGE		**0.514**	**0.651**	**0.648**	**0.730**	**0.510**	**0.770**	**0.615**		**0.656**

Grubel-Lloyd Index results on the GCC manufacture goods coded as SITC Revision1 by the source
Data Source: UN COMTRADE Statistics database
Indices computed by the author

The overall GL Index results on GCC bilateral trade indicate a trend toward intra-industry rather inter-industry trade. Based on the twenty-year average and by excluding the data on missing years, the overall GCC index is

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above 0.500 at 0.656. Chronologically, the low end was in 1984 at 0.541 while the high end was 0.731 in 1989. These findings tell us that bilateral trade intensity amongst GCC countries can be characterized as being or leading toward intra rather than inter industry trade. Analyzing the data on a bilateral trading basis over two decades, the lowest average index is between Saudi Arabia and Kuwait at 0.514, while the highest is between Qatar and the UAE at 0.770.

However, and as is often common with OCA analysis, the results that are based on a single criterion are not enough to draw a definitive conclusion as to whether countries can form a monetary union. In the GCC case, granted the overall results of this index points toward intra industry trade, the fact that the manufacturing base for all six member states constitutes a fraction of their overall economies says little as to whether these countries can form a viable monetary union. Moreover, having looked at the data more closely, the results for the 16 pairs appear to be fairly erratic over the years with high level of fluctuations. Take for instance the case of Qatar and Saudi Arabia where in 1994 the GL index was quite high at 0.959 but sliding to 0.206 in 1995. While some country pairs have shown some degree of consistency in this regard, others have failed to do so.

Without considering the caveats, the findings on GL index shows some promising signs as to whether the GCC countries can form a monetary union. However, considering the caveat that the data on the manufacturing base of the economy for the GCC economies is fairly small, little real conclusion can be drawn from the results. In addition, the yearly erratic trends in a number of

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bilateral trades among the member states give good reason to pause until we match these results with those in other OCA criteria that are also analyzed in this chapter. Please note that between 1990 and 1991, bilateral trades among GCC countries might have been distorted by the effects of the first Gulf War that started in August of 1990; most specifically trade patterns between Kuwait and the rest of the member countries. Overall, this anomaly had a miniscule effect on the 20 year data amongst the six countries.

5.2 Degree of Openness

Highly open economies are predisposed to favor fixed exchange rates since changes in nominal exchange rates in these economies are not likely to result in major effects on real competitiveness (McKinnon, 1963). In other words, the importance of exchange rate as a policy instrument to deal with real shocks in highly open economies becomes marginalized. Therefore, when the economies of aspiring members of a monetary union exhibit a high degree of openness, the argument for a unified currency becomes strong. This argument is based on the notion that the tradable sector dominates the non-tradable sector in these economies. Thus, the higher the degree of openness, the more changes in international prices of tradable goods is likely to extend to the domestic cost of living and thus minimizing the potential for money and/or exchange rate illusion by workers (Mongelli, 2002).

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Over time, various indices of estimating the degree of openness have been developed. While the results of one index may show an economy is highly open, another may show the opposite, depending on data selection. The key is to identify the openness indices that are more relevant in analyzing possible monetary unification. In order to evaluate the degree of openness for the GCC economies, seven different indices are used and subsequent comparative assessments between them made as they relate to regional trade. We acknowledge that finding the "correct" measurement of openness is still an ongoing debate in the academic circle. Denzau and David (2006) explain that to date no measure has been devised that show how "open" an economy is or how much a country liberalizes its trade policies over time. They cite two major criticisms that permeate the various openness measurements. First, a number of these measurements lack theoretical guidance are simply driven by the availability of data (Pritchett, 1996). Second, the measurements that provide theoretical frameworks assume determinate links that cannot be validated unambiguously in the face of market imperfections, technological change, and externalities such as learning-by-doing (Rodriguez and Rodrik, 2001). Another potential issue that permeates most of the measurements in this dissertation is the fact that we have not disaggregated the real GDP growth for the GCC countries from growth that is simply driven directly and indirectly by oil prices. Indeed, high productivity for large parts of the GCC economies is driven by increase in crude oil prices in the world market. Having acknowledged these

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issues, the various measurements we use that include real GDPs are sensible to meet the objective of our OCA analysis for the GCC monetary union.

Additionally, this section compares some of the results for the GCC region to other incipient and realized monetary unions. Another important analysis undertaken in this dissertation within the framework of openness criteria is that of the direction of trade amongst the GCC countries. An extended discussion on the results of all the indices for the GCC countries and intra regional comparisons are found on subsequent parts of this section. The following seven indices (5.2.1 to 5.2.7) are used to measure the degree of openness for the GCC members' economies:

$$OP^{1} = \frac{X_{i,t} + M_{i,t}}{GDP_{i,t}}, \qquad (5.2.1)$$

where $\mathbf{OP^1}$ is the first index that measures the degree of openness, $\mathbf{X_{i,,t}}$ $\mathbf{M_{i,,t}}$ denote exports and imports (total trade) respectively of goods and services for country **i** at time **t**, and $\mathbf{GDP_{i,,t}}$ is the gross domestic product for country **i** at time **t**. The resulting index is captured in percentage form and the higher the percentage, the more open a given country is.

The second index used in this study measures the percentage of individual country exports within a region relative to its total exports. The third index does the same but from the imports perspective. The results of these indexes tell us whether aspiring members' regional exports and imports are significant when compared with their respective total exports and imports. The

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higher the percentage from these indexes, the higher the likelihood the members can form a viable monetary union. These two indices are more relevant in regional OCA analysis than **OP**^{1} since they focus on intra regional trade (openness) rather than on overall openness that is captured by **OP**^{1}. The intra regional exports and imports indices as percentages of total exports and imports respectively are measured as per the formulas below.

$$OP^{2} = \frac{IRX_{i,t}}{TX_{i,t}}, \text{ and} \qquad (5.2.2)$$

$$OP^{3} = \frac{IRM_{i,t}}{TM_{i,t}}, \qquad (5.2.3)$$

where **OP**^{2} and **OP**^{3} denote the percentages of exports and imports respectively relative to total exports and imports, $\mathbf{IRX}_{i,t}$ and $\mathbf{IRM}_{i,t}$ represent the value of exports and imports respectively of a member country **i** at time **t** that flow within a region while $\mathbf{TX}_{i,t}$ and $\mathbf{TM}_{i,t}$ denote aggregate exports and imports respectively for country **i** at time **t**.

The next two indexes are fairly similar to (5.2.2) and (5.2.3) except for the fact that the intra regional exports and imports for member countries are assessed in terms of their respective GDP's rather than total exports and imports. The significance of the next two indices is that they show the extent of exports and imports in relation to the economy as a whole. Some scholars, such as Eichengreen (1994) argue that the higher the trade intensity for a given

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country with a subset of other countries, the greater the savings in transaction costs associated with the use of a common currency. In view of this argument, the results from the next two indexes should tell us whether the GCC countries are good candidates for a monetary union. These two indexes are measured as shown below.

$$OP^{4} = \frac{IRX_{i,t}}{GDP_{i,t}} \quad \text{, and} \qquad (5.2.4)$$

$$OP^{5} = \frac{IRM_{i,t}}{GDP_{i,t}} \quad . \qquad (5.2.5)$$

Having discussed the five indexes that are used in this study to measure the degree of openness, let's now look at their results within the GCC context in the following tables. All data are collected from the IMF Direction of Trade Statistics and are from 1984 to 2003. The indices are computed by the author.

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Table 5.2: GCC Exports and Imports as % of GDP - OP[1] Between 1984 and 2003

YEAR	1984	1985	1986	1987	1988	1989	1990
	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP
COUNTRY							
BAHRAIN	191.161	191.581	183.496	189.739	172.806	186.246	179.204
KUWAIT	90.861	76.072	74.402	68.667	71.301	71.120	65.964
OMAN	64.950	69.185	64.226	59.209	74.404	69.898	60.215
QATAR	82.387	76.082	62.684	57.429	55.495	59.010	67.766
SAUDI ARABIA	72.554	59.413	54.359	58.029	59.865	59.766	65.529
UAE	78.561	95.118	79.351	86.229	79.858	77.340	98.408
GCC AVERAGE	**78.648**	**71.601**	**65.629**	**67.951**	**68.981**	**68.777**	**74.340**

YEAR	1991	1992	1993	1994	1995	1996	1997
	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP
COUNTRY							
BAHRAIN	180.626	181.090	164.831	153.630	152.467	164.155	148.550
KUWAIT	39.185	61.407	66.116	66.337	78.026	71.218	77.438
OMAN	70.132	73.086	73.919	74.358	73.691	74.110	75.857
QATAR	72.156	73.821	72.875	69.592	68.935	86.119	74.134
SAUDI ARABIA	65.229	61.386	53.464	49.145	54.443	56.153	54.096
UAE	105.331	112.988	111.155	106.229	101.017	101.947	116.617
GCC AVERAGE	**74.680**	**73.638**	**69.066**	**65.923**	**69.624**	**70.811**	**71.484**

YEAR	1998	1999	2000	2001	2002	2003	GCC TOT TRADE
	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	% OF GDP 20-YEAR AVERAGE
COUNTRY							
BAHRAIN	128.468	141.822	153.799	142.662	162.487	165.713	**166.727**
KUWAIT	74.164	69.606	70.553	70.873	69.378	71.846	**70.227**
OMAN	72.363	71.966	75.706	79.242	80.444	73.066	**71.501**
QATAR	80.719	70.364	83.588	82.441	76.254	89.480	**73.067**
SAUDI ARABIA	47.154	47.784	55.240	60.792	61.143	65.865	**58.071**
UAE	114.508	138.571	127.728	129.677	127.760	188.268	**108.833**
GCC AVERAGE	**66.932**	**70.307**	**73.862**	**77.973**	**77.670**	**90.212**	**72.405**

Data Source: IMF Direction of Trade Statistics
Intra-GCC Import as % of Total Import indexes are computed by the author

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The analysis of the findings are explained in terms of the of the 20-year average data from 1984 to 2003; the reader can nonetheless observe year by year variations during this period. Please note that due to the First Gulf War, the resulting indexes in the year 1990 and probably the year after might not be representative of real trends in the GCC region. This distortion is mostly specific to Kuwait being the country that was invaded by Iraq, and less so for the other five members of the organization. The twenty-year average for all members is not impacted in any significant manner as the result of this distortion.

The results in Table 5.2, based on the 20-year average of total trade as percentage of GDP and denoted by **OP**[1], show Bahrain to be the most open economy in the region scoring 166.727% with Saudi Arabia being the least open at 58.071%. The UAE is second to Bahrain at 108.833% while Kuwait, Oman, and Qatar all score in the low 70's. The GCC regional average over 20 years stands at 72.405%. Although the analysis here looks at total trade as share of GDP, it is sensible to assume that the differences in the findings from member to member are driven by the extent of export variability. In other words, while all GCC member states are affected by shocks related to oil prices, the effects on individual member states are different given existing differences in export diversification[28]. It is probably not surprising that Bahrain, being the GCC member state endowed with the least hydrocarbon resources exhibits the highest degree of openness among the regional members while Saudi Arabia being the highest producer, not only among GCC member states, but in the whole world,

[28] An extended analysis on the differing degree of economic diversifications amongst the GCC countries can be found under the criteria of degree of commodity diversification and degree of goods market integration below.

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scores the lowest on this index[29]. Based on 2003 data from The World FactBook, Bahrain daily crude oil production stood at a mere 40, 000 barrels while its proven reserve was estimated at 150,000,000 barrels. On the other extreme is Saudi Arabia with daily crude oil production of 8.71 million barrels and proven reserve estimated at 262 billion barrels during the same year. Even Oman, being a modest producer with daily production of 960, 000 barrels of crude oil and a proven reserve estimated at 5.70 billion barrels outweighs Bahrain by a huge margin[30]. The results on Table 5.2 are also calculated on five-year averages between 1984 and 2003 so as to check if there is any difference in trends and score ranks amongst the six GCC countries on this particular index. These findings are captured in Table 5.2a below.

Table 5.2a: GCC Exports and Imports as % of GDP - OP[1]
Five-Year Averages between 1984 and 2003

FIVE-YEAR AVERAGES	1984-1988	1989-1993	1994-1998	1999-2003
	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP	TOT TRADE % OF GDP
COUNTRY				
BAHRAIN	185.757	141.150	149.454	153.297
KUWAIT	76.260	46.534	73.437	70.451
OMAN	66.395	55.471	74.076	76.085
QATAR	66.816	57.324	75.900	80.425
SAUDI ARABIA	60.844	49.122	52.198	58.165
UAE	83.823	85.576	108.064	142.401

[29] An extended discussion on the issue of the effects of oil on the GCC economies and the resulting welfare society is discussed in Chapter 6.
[30] For more information on crude oil reserve and daily production of the GCC countries, please refer to Table 3X in Chapter 3 of this dissertation.

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The results, based on five-year averages, show the 1989-1993 average to be lower than the previous and later averages with the exception of The UAE. As for score ranking amongst the six countries, the findings on the five-year averages are similar to those of twenty-year average with Bahrain being the most open economy, followed by the UAE, and Saudi Arabia ranking the lowest except between 1989 and 1993 when it ranked higher than Kuwait. This finding validates the argument that Kuwaiti's data from which the results were based were outside the norm due to the First Gulf War.

The two other measures of openness used in this dissertation are those of intra GCC exports as percentage of total exports coded as **OP^2** and Intra GCC imports as percentage of total imports, coded as **OP^3**. The respective GCC results on these two indexes are shown on Table 5.3 and Table 5.4 below respectively. While it is common knowledge that little trade takes place amongst the GCC countries and that overall results may be known beforehand, our analysis under these indexes are not necessarily futile as they identify the extent of bilateral trade amongst GCC member states and attempt to explain why some trade more amongst themselves than others. Furthermore, our results could be used in extended studies that further examine the reasons behind some divergence in bilateral trade amongst the GCC countries. Nonetheless, the results below point to overall anemic intra regional trade.

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Table 5.3: Intra GCC Exports as % of Total Exports - OP[2], 1984-2003

YEAR	1984	1985	1986	1987	1988	1989	1990
	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP
COUNTRY							
BAHRAIN	19.138	17.926	18.354	16.217	6.473	6.733	5.365
KUWAIT	3.956	3.888	1.699	1.467	1.909	1.753	1.609
OMAN	4.203	3.805	5.712	6.113	6.426	7.197	6.479
QATAR	2.235	2.235	7.052	6.862	9.016	8.583	5.931
SAUDI ARABIA	4.247	5.216	6.489	7.001	6.501	7.821	6.653
UAE	3.573	3.573	5.190	4.552	5.743	4.971	3.797
GCC AVERAGE	**4.710**	**5.101**	**6.141**	**5.892**	**5.712**	**6.036**	**5.354**

YEAR	1991	1992	1993	1994	1995	1996	1997
	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP
COUNTRY							
BAHRAIN	6.245	6.501	8.357	8.312	8.884	8.168	7.606
KUWAIT	2.872	2.001	1.749	1.606	1.791	1.331	1.338
OMAN	7.170	9.311	10.745	11.460	11.819	11.902	11.645
QATAR	5.644	5.888	6.635	6.661	6.595	5.114	3.898
SAUDI ARABIA	6.712	6.034	6.536	6.737	7.181	7.163	7.524
UAE	4.497	5.989	7.120	7.623	6.718	6.172	6.075
GCC AVERAGE	**6.020**	**6.032**	**6.536**	**6.763**	**6.715**	**6.519**	**6.518**

YEAR	1998	1999	2000	2001	2002	2003		GCC 20-YEAR AV.
	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP		% TOTAL EXP
COUNTRY								
BAHRAIN	11.213	7.935	5.588	6.489	7.140	7.860		**9.525**
KUWAIT	2.001	1.860	1.170	1.570	1.573	1.453		**1.930**
OMAN	15.887	11.911	10.219	12.302	9.967	15.522		**9.490**
QATAR	4.733	3.737	5.710	4.022	6.370	4.844		**5.588**
SAUDI ARABIA	8.580	6.798	4.235	4.883	5.287	4.772		**6.319**
UAE	8.740	7.886	6.107	6.485	6.677	5.131		**5.831**
GCC AVERAGE	**8.219**	**6.714**	**4.904**	**5.474**	**5.762**	**5.262**		**6.019**

Data Source: IMF Direction of Trade Statistics
Intra-GCC Export as % of Total Export indexes are computed by the author

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Table 5.4: Intra GCC Imports as % of Total Imports - OP[3], 1984-2003

YEAR	1984	1985	1986	1987	1988	1989	1990
	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP
COUNTRY							
BAHRAIN	46.530	46.589	40.786	45.176	41.767	41.832	49.274
KUWAIT	2.182	1.918	3.579	5.796	7.696	7.564	3.610
OMAN	25.096	29.209	18.536	20.023	19.974	24.735	26.110
QATAR	8.479	9.356	10.189	10.177	11.713	11.972	8.627
SAUDI ARABIA	1.296	2.113	2.036	1.821	2.140	2.366	1.815
UAE	7.639	6.961	12.239	10.560	9.456	10.773	11.167
GCC AVERAGE	**6.331**	**7.899**	**7.992**	**8.458**	**8.274**	**9.413**	**9.707**

YEAR	1991	1992	1993	1994	1995	1996	1997
	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP
COUNTRY							
BAHRAIN	40.248	39.931	36.868	35.917	39.941	40.978	44.918
KUWAIT	1.940	1.762	7.339	9.061	9.684	9.577	10.438
OMAN	26.471	28.039	29.585	26.768	25.212	27.080	28.167
QATAR	10.046	10.611	14.389	13.982	14.399	10.190	12.457
SAUDI ARABIA	1.403	1.708	2.243	2.822	2.754	3.214	3.102
UAE	9.748	9.166	9.478	9.013	9.475	9.047	9.554
GCC AVERAGE	**8.264**	**7.896**	**9.268**	**9.870**	**9.780**	**10.048**	**10.598**

YEAR	1998	1999	2000	2001	2002	2003	GCC
	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	20-YEAR AV. % TOTAL IMP
COUNTRY							
BAHRAIN	24.468	23.047	23.367	27.290	24.820	29.526	**37.164**
KUWAIT	9.431	10.440	13.989	12.993	11.115	9.609	**7.486**
OMAN	29.920	31.945	33.438	32.924	33.504	29.215	**27.297**
QATAR	15.448	17.595	14.863	12.029	15.439	14.925	**12.344**
SAUDI ARABIA	3.361	3.888	2.919	2.874	2.568	2.507	**2.447**
UAE	10.111	6.954	10.105	9.687	9.681	5.271	**9.304**
GCC AVERAGE	**9.639**	**8.688**	**10.114**	**9.147**	**8.767**	**6.873**	**8.851**

Data Source: IMF Direction of Trade Statistics
Intra-GCC Import as % of Total Import indexes are computed by the author

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The findings on OP^2 and OP^3 are first explained in terms of 20-year average between 1984 and 2003. Subsequent to twenty-year average interpretation of these two indices, the results are also grouped in terms of five-year averages. The remarks on the effects of the First Gulf War on the findings are as relevant here as they are in previous analyses.

Table 5.3 shows that the 20-year average results on intra GCC exports as percentage of total exports illustrate that Bahrain scores the highest with 9.525% followed closely by Oman at 9.490%. Kuwait scores the lowest at 1.930%. The overall GCC average result stands at a mere 6.019%; a result that is also validated by an ECB study on the GCC that put it at around 5% (Sturm and Siegfried, 2005). The inconsequentiality of these results can be attributed to the extent the hydrocarbon sector permeates both domestic and external economies of the GCC countries. The main source of exports for the GCC countries is crude oil and almost all of it is exported outside the GCC region. On average, crude oil also accounts for almost half of GCC GDP and 80% of total export. For countries like Saudi Arabia and Kuwait this number is almost 90% (Jadresic, 2002). The heavy reliance on hydrocarbon resources for both the domestic and external economies of the GCC countries is analyzed by the OCA criteria of goods market integration and the degree of commodity diversification in subsequent parts of this chapter.

The results of Table 5.4 are based on intra GCC imports as a percentage of total imports and coded as OP^3. Given the 20-year average, Bahrain scores

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the highest at 37.164% followed by Oman at 27.297%. The lowest score is that of Saudi Arabia at 2.447% while the GCC average over 20 years stands at only 8.851%. Under this index, Bahrain's result stands out from the rest of the members of the GCC and is worthy of some elaboration. For this country, the high index of 37.164% can also be explained by its small endowment of hydrocarbon resources. Specifically, Bahrain has been a recipient of significant amount of crude oil over the years, from Saudi Arabia at a much lower price than those prevailing in the world market in the form of economic assistance. Bahrain in turn refines the crude oil received from Saudi Arabia adding much value to the final products. Some of the refined products are consumed domestically while the larger part is exported in the form of petrochemicals. Bahrain is indeed dependent on this grant that comes in the form of crude oil from Saudi Arabia and a large share of its exports consists of petroleum products made from refining the imported crude (www.cia.gov, 2004). The finding for Bahrain, specifically with regard to Saudi Arabia, is validated by the subsequent results on the GCC direction of trade that show the largest share of imports from the other GCC countries to Bahrain comes from Saudi Arabia while the largest share of exports from Saudi Arabia to other GCC members flows to Bahrain.

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Table 5.3a: Intra GCC Exports as % of Total Exports - OP[2]
Five-Year Averages between 1984 and 2003

FIVE-YEAR AVERAGES	1984-1988	1989-1993	1994-1998	1999-2003
	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP	GCC EXP % TOTAL EXP
COUNTRY				
BAHRAIN	15.621	6.640	8.837	7.002
KUWAIT	2.584	1.997	1.613	1.525
OMAN	5.252	8.180	12.543	11.984
QATAR	5.480	6.536	5.400	4.937
SAUDI ARAB	5.891	6.751	7.437	5.195
UAE	4.526	5.275	7.066	6.457

The results on five-year averages on intra GCC exports as percentage of total exports further help to assess whether based on this index, these economies are trading more or less at the same intensity over the years. Based Table 5.3a, Oman' exports to GCC have been showing an upward trend over the selected five-year averages even surpassing Bahrain in the last two. Once again, the lowest scores in all four divisions are is due to Kuwait.

Table 5.4a below captures the results for intra GCC imports as percentage of total imports in terms of five-year averages between 1984 and 2003.

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Table 5.4a: Intra GCC Imports as % of Total Imports – OP[3]
Five-Year Averages between 1984 and 2003

FIVE-YEAR AVERAGES	1984-1988	1989-1993	1994-1998	1999-2003
	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP	GCC IMP % TOTAL IMP
COUNTRY				
BAHRAIN	44.169	41.631	37.244	25.610
KUWAIT	4.234	4.443	9.638	11.629
OMAN	22.567	26.988	27.429	32.205
QATAR	9.983	11.129	13.295	14.970
SAUDI ARABIA	1.881	1.907	3.050	2.951
UAE	9.371	10.066	9.440	8.340

While overall Bahrain scores the highest under this measurement, its results appear to follow a downward trend. Oman's trend on the other hand is upward even surpassing Bahrain in the last five-year average results. Similar to the twenty-year average finding, Saudi Arabia scores the lowest under the five-year average. The main factor contributing to the Omani dynamic can be explained by the steady increase of imports to Oman from the neighboring UAE, specifically from the state of Dubai. This trend is also captured by the results on direction of trade amongst the GCC countries and can be viewed in the subsequent part of this section.

The continuing analysis of the openness criterion for the GCC region includes two other sub-criteria, namely intra GCC exports as percentage of total GDP and intra GCC imports as percentage of GDP. The results on the findings of the two indexes are shown on Table 5.5 and Table 5.6 and are coded as **OP[4]** and **OP[5]** respectively.

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Table 5.5: Intra GCC Exports as % of Total GDP - OP[4], 1984-2003

YEAR	1984	1985	1986	1987	1988	1989	1990
	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP
COUNTRY							
BAHRAIN	18.767	18.240	18.115	16.599	6.170	6.641	4.879
KUWAIT	2.299	1.885	0.702	0.652	0.776	0.789	0.710
OMAN	1.787	1.745	2.019	2.256	3.052	3.311	2.512
QATAR	1.463	1.287	2.887	2.512	3.112	3.311	2.654
SAUDI ARABIA	1.624	1.666	1.812	2.154	2.029	2.678	2.827
UAE	1.876	2.325	2.710	2.599	2.791	2.433	2.453
AVERAGE GCC	**2.159**	**2.187**	**2.261**	**2.355**	**2.211**	**2.497**	**2.563**

YEAR	1991	1992	1993	1994	1995	1996	1997
	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP
COUNTRY							
BAHRAIN	5.308	5.484	7.030	6.621	7.285	7.185	6.013
KUWAIT	0.216	0.473	0.649	0.626	0.873	0.588	0.666
OMAN	3.076	4.032	4.509	4.751	5.048	5.563	5.441
QATAR	2.662	2.790	3.082	2.878	2.983	2.483	1.899
SAUDI ARABIA	2.723	2.229	2.098	2.139	2.524	2.760	2.769
UAE	2.989	3.832	4.125	4.098	3.627	3.462	4.084
AVERAGE GCC	**2.709**	**2.533**	**2.568**	**2.610**	**2.823**	**2.891**	**2.960**

YEAR	1998	1999	2000	2001	2002	2003		GCC
	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP		20-YEAR AV. EXPORT % OF GDP
COUNTRY								
BAHRAIN	7.243	6.258	4.997	5.337	6.376	7.334		**8.594**
KUWAIT	0.806	0.810	0.593	0.755	0.705	0.651		**0.811**
OMAN	5.992	5.316	5.422	6.511	5.397	7.326		**4.253**
QATAR	2.248	1.876	3.727	2.464	3.548	3.173		**2.652**
SAUDI ARABIA	2.279	2.064	1.659	1.821	1.879	1.927		**2.183**
UAE	5.111	4.809	4.793	4.822	4.814	4.395		**3.607**
AVERAGE GCC	**2.974**	**2.680**	**2.468**	**2.638**	**2.668**	**2.693**		**2.572**

Data Source: IMF Direction of Trade Statistics
Intra-GCC Total Export as % of GDP indices are computed by the author

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Table 5.6: Intra GCC Imports as % of Total GDP - OP[5], 1984-2003

YEAR	1984	1985	1986	1987	1988	1989	1990
	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP
COUNTRY							
BAHRAIN	43.318	41.849	34.586	39.478	32.363	36.652	43.496
KUWAIT	0.715	0.529	1.184	1.405	2.359	1.974	0.788
OMAN	5.631	6.814	5.354	4.464	5.374	5.910	5.600
QATAR	1.434	1.732	2.216	2.118	2.458	2.447	1.986
SAUDI ARABIA	0.445	0.580	0.538	0.496	0.613	0.604	0.418
UAE	1.990	2.091	3.320	3.078	2.956	3.059	3.776
TOTAL GCC EXP	**2.076**	**2.269**	**2.303**	**2.367**	**2.505**	**2.579**	**2.569**

YEAR	1991	1992	1993	1994	1995	1996	1997
	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP
COUNTRY							
BAHRAIN	38.487	38.627	29.757	26.569	28.143	31.221	31.216
KUWAIT	0.615	0.665	2.131	2.480	2.835	2.589	2.886
OMAN	7.207	8.351	9.453	8.807	7.811	7.412	8.204
QATAR	2.510	2.804	3.802	3.689	3.414	3.828	3.167
SAUDI ARABIA	0.346	0.418	0.479	0.491	0.531	0.566	0.536
UAE	3.788	4.493	5.044	4.730	4.456	4.148	4.719
TOTAL GCC EXP	**2.453**	**2.499**	**2.760**	**2.698**	**2.698**	**2.659**	**2.763**

YEAR	1998	1999	2000	2001	2002	2003		GCC
	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP	INTRA-GCC IMPORT % OF GDP		20-YEAR AV. IMPORT % OF GDP
COUNTRY								
BAHRAIN	15.629	14.510	15.044	16.487	18.163	21.377		**29.849**
KUWAIT	3.197	2.720	2.774	2.962	2.729	2.600		**2.007**
OMAN	10.366	8.733	7.573	8.663	8.811	7.558		**7.405**
QATAR	5.134	3.549	2.722	2.548	3.174	3.578		**2.915**
SAUDI ARABIA	0.692	0.677	0.469	0.675	0.658	0.639		**0.544**
UAE	5.665	5.395	4.977	5.359	5.389	5.409		**4.192**
TOTAL GCC EXP	**2.964**	**2.640**	**2.381**	**2.724**	**2.750**	**2.683**		**2.567**

Data Source: IMF Direction of Trade Statistics
Intra-GCC Total Import as % of GDP indices are computed by the author

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On the intra GCC exports as a percentage of GDP, Bahrain scores the highest at 8.594% while Kuwait scores the lowest at only 0.811%. The GCC 20-year average is even much lower when compared to **OP[2]**, standing at only 2.572%. As for intra GCC imports as a percentage of the GDP, Bahrain scores the highest at 29.849%; most of it is from Saudi Arabia and reflects the transfer of crude oil of which it is the recipient. Saudi Arabia scores the lowest on this index at only 0.544% while the GCC average over 20 years stands at a mere 2.567%, much lower than the finding on **OP[3]**.

Table 5.5a: Intra GCC Exports as % of Total GDP - OP[4]
Five-Year Averages between 1984 and 2003

FIVE-YEAR AVERAGES	1984-1988	1989-1993	1994-1998	1999-2003
	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP	INTRA-GCC EXPORT % OF GDP
COUNTRY				
BAHRAIN	15.578	5.868	6.869	6.060
KUWAIT	1.263	0.567	0.712	0.703
OMAN	2.172	3.488	5.359	5.994
QATAR	2.252	2.900	2.498	2.958
SAUDI ARAB	1.857	2.511	2.494	1.870
UAE	2.460	3.166	4.076	4.727

The findings on five-year averages of intra GCC exports as percentage of total GDP index ranks Bahrain the highest although there is a marked downward trend between the first and second period. Kuwait one more time scores the lowest under this index. As expected, and similar to the twenty-year average findings, the results are also insignificant in the five-year average assessments

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Table 5.6a: Intra GCC Imports as % of Total GDP - OP[5]
Five-Year Averages between 1984 and 2003

FIVE-YEAR AVERAGES	1984-1988	1989-1993	1994-1998	1999-2003
	INTRA-GCC IMPORTS % OF GDP	INTRA-GCC IMPORTS % OF GDP	INTRA-GCC IMPORTS % OF GDP	INTRA-GCC IMPORTS % OF GDP
COUNTRY				
BAHRAIN	38.319	37.404	26.556	17.116
KUWAIT	1.238	1.235	2.797	2.757
OMAN	5.527	7.304	8.520	8.268
QATAR	1.992	2.710	3.846	3.114
SAUDI ARAB	0.535	0.453	0.563	0.624
UAE	2.687	4.032	4.744	5.306

The findings of Imports as percentage of GDP based on five-year averages are consistent with the twenty-year average results showing Bahrain with the highest score while exhibiting a downward trend, followed by Oman, with the lowest score registered by Saudi Arabia.

Our final two indices of openness measure the disaggregated trade flows for the individual members of the GCC in terms of aggregate GCC trade flows to other members of the Union. These two indices are calculated as shown below:

$$DT^{1} = \frac{IRX_{i,j,t}}{\sum_{j}^{n} IRX}, \text{ and} \qquad (5.2.6)$$

$$DT^{2} = \frac{IRM_{i,j,t}}{\sum_{j}^{n} IRM}, \qquad (5.2.7)$$

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where, DT^1 and DT^2 denote directions of bilateral exports and imports respectively as shares of aggregate regional exports and imports respectively. $IRX_{i,j,t}$ and $IRM_{i,j,t}$ denote intra regional exports and imports, respectively, from country **i** to country **j** at time **t**, and $\Sigma_i^n IRX$, $\Sigma_i^n IRM$ are regional aggregate exports and imports respectively. For year to year findings that are based on these two indexes and the subsequent twenty-year average between 1984 and 2003, please refer to Table 4 and Table 5 of the Appendix section. Before discussing the five-year averages on Table 5.7 and Table 5.8, let's first give the highlights of the findings based on the twenty-year average analysis.

Three findings based on the twenty-year average on the DT^1 index are in double digits and as such worth noting. First, the highest score is that of Saudi exports to Bahrain at 25.995%. As already explained by the results on previous indexes in this section, this particular finding reflect the transfer of crude oil from Saudi Arabia to Bahrain in the form of economic assistance. The second important finding is that of exports from the UAE to Oman accounting for 13.533% of GCC exports. The last finding is that of Saudi Arabian exports to the UAE accounting for 13.656% of aggregate GCC exports.

Two findings on the twenty-year average results on GCC bilateral imports as shares of aggregate imports index, DT^2, are worth noting as well. These results show that most of Bahraini GCC imports come from Saudi Arabia for the reason that has already been mentioned. The twenty-year average is 27.743% of its GCC imports as share of aggregate GCC imports emanating from Saudi Arabia. The second most important result is that between Oman and the UAE

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with the former imports estimated at 15.549% of the GCC aggregate from the later.

To validate the consistency of the terms of direction of trade amongst the GCC countries over the twenty-year time frame, five-year averages measurement is also used and can be viewed in Table 5.7 and Table 5.8 below. The results in both tables do not deviate from those based on twenty-year average, showing some consistency in the patterns. On the $\mathbf{DT}^{1}$ index on Table 5.7, as is the case on the twenty-year average findings, most Saudi exports flowing to GCC countries go to Bahrain, then followed by the exports from the UAE to Oman, and finally from Saudi Arabia to the UAE.

The findings on the $\mathbf{DT}^{1}$ index on Table 5.8 also validate the results on twenty-year average patterns with most GCC imports going to Bahrain comes from Saudi Arabia while most of Oman GCC imports emanate from the UAE.

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Table 5.7: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1]
Five-Year Averages between 1984 and 2003

	FIVE-YEAR AVERAGES	1984-1988 GCC COUNTRY EXPORT % OF GCC EXP	1989-1993 GCC COUNTRY EXPORT % OF GCC EXP	1994-1998 GCC COUNTRY EXPORT % OF GCC EXP	1999-2003 GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER				
BAHRAIN	KUWAIT	0.462	0.410	0.690	0.664
	OMAN	0.313	0.446	0.282	0.638
	QATAR	0.594	0.565	0.455	0.415
	SAUDI ARABIA	2.598	2.430	3.282	2.239
	UAE	12.904	1.607	1.093	1.553
KUWAIT	BAHRAIN	0.284	0.308	0.181	0.177
	OMAN	0.215	0.122	0.133	0.304
	QATAR	0.247	0.128	0.171	0.210
	SAUDI ARABIA	5.605	1.301	1.177	1.126
	UAE	1.701	0.660	1.059	1.139
OMAN	BAHRAIN	0.087	0.118	0.134	0.213
	KUWAIT	0.069	0.091	0.210	0.370
	QATAR	1.215	0.544	0.159	0.285
	SAUDI ARABIA	0.337	0.655	0.879	1.637
	UAE	4.294	6.710	9.084	9.873
QATAR	BAHRAIN	0.054	0.127	0.114	0.272
	KUWAIT	1.115	0.397	0.293	0.243
	OMAN	0.095	0.192	0.136	0.113
	SAUDI ARABIA	1.828	1.334	0.952	1.670
	UAE	0.982	2.155	1.680	3.978
SAUDI ARABIA	BAHRAIN	**34.122**	**30.679**	**20.760**	**18.417**
	KUWAIT	4.088	8.036	6.588	6.195
	OMAN	0.486	1.210	1.742	1.992
	QATAR	1.043	2.076	2.435	2.361
	UAE	**6.360**	**15.454**	**20.307**	**12.501**
UAE	BAHRAIN	1.144	1.078	1.257	1.327
	KUWAIT	2.510	0.752	2.168	3.158
	OMAN	**7.685**	**15.060**	**15.060**	**16.324**
	QATAR	2.140	1.504	2.081	2.639
	SAUDI ARABIA	5.414	3.838	5.023	6.308

Data Source: IMF Direction of Trade Statistics
GCC Country Exports as % of GCC Exports indexes are computed by the author

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Table 5.8: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT^2
Five-Year Averages between 1984 and 2003

	FIVE-YEAR AVERAGES	1984-1988 GCC COUNTRY IMPORTS % OF GCC IMP	1989-1993 GCC COUNTRY IMPORTS % OF GCC IMP	1994-1998 GCC COUNTRY IMPORTS % OF GCC IMP	1999-2003 GCC COUNTRY IMPORTS % OF GCC IMP
IMPORT FROM	**PARTNER**				
BAHRAIN	KUWAIT	0.235	0.161	0.194	0.196
	OMAN	0.092	0.117	0.138	0.212
	QATAR	0.102	0.139	0.128	0.297
	SAUDI ARABIA	**42.965**	**33.400**	**21.267**	**13.341**
	UAE	1.232	1.185	1.419	1.500
KUWAIT	BAHRAIN	0.514	0.273	0.809	0.730
	OMAN	0.066	0.088	0.216	0.371
	QATAR	1.197	0.405	0.334	0.265
	SAUDI ARABIA	3.677	3.890	7.230	6.812
	UAE	2.528	0.791	2.466	3.472
OMAN	BAHRAIN	0.336	0.437	0.291	0.634
	KUWAIT	0.232	0.119	0.137	0.302
	QATAR	0.092	0.194	0.141	0.113
	SAUDI ARABIA	0.493	1.215	1.806	1.984
	UAE	**15.344**	**15.065**	**15.496**	**16.292**
QATAR	BAHRAIN	0.086	0.380	0.428	0.459
	KUWAIT	0.154	0.137	0.173	0.230
	OMAN	1.007	0.539	0.147	0.245
	SAUDI ARABIA	0.397	1.388	2.013	2.591
	UAE	1.093	1.646	2.348	2.901
SAUDI ARABIA	BAHRAIN	2.728	2.540	3.215	2.465
	KUWAIT	3.976	1.396	1.171	1.239
	OMAN	0.341	0.654	0.909	1.613
	QATAR	2.255	1.463	1.080	1.497
	UAE	4.726	4.229	5.712	6.942
UAE	BAHRAIN	6.340	2.268	1.558	1.702
	KUWAIT	1.154	0.710	1.117	1.252
	OMAN	4.421	6.702	9.378	9.848
	QATAR	1.372	2.379	1.902	2.113
	SAUDI ARABIA	4.965	7.972	10.657	11.941

Data Source: IMF Direction of Trade Statistics
GCC Country Imports as % of GCC Imports indices are computed by the author

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Regional comparison

Table 5.9 below compares the degree of openness and intra regional trade intensity between the GCC, East Africa Community (EAC), West Africa Economic Monetary Union (WAEMU), and the Euro Area.

The findings, based on nine-year average data between 1995 and 2003 and the traditional openness index (total trade as % of GDP) show the GCC region to be the most open, scoring 94% on average. The Euro area comes second at 65%, followed closely by WAEMU with 64% and EAC scoring 48%. The high GCC score on this particular index reflects the effect of hydro carbon abundance that makes on average 80% of GCC exports and almost half of the regional GDP. The inherent minimally diversified economy of this region and the subsequent insignificant manufacturing bases, have resulted in the GCC countries exporting from and importing to most of their goods outside the region.

As for intra regional trade results, the GCC region scores fairly low. On intra regional exports as percentage of total exports, this region scores a mere 6.62% as compared to WAEMU with 12.30%, EAC 17.80%, and the Euro Area 49.90%. On the similar imports index, the GCC regional score is slightly higher than those of EAC and WAEMU at 10.88%, 9.60%, and 8.70% respectively. On this index, the Euro Area scores the highest at 49.50%. The simple conclusion to be drawn from this regional comparison is that although the GCC region scores very high on traditional openness index, for the openness indexes that matters the most to form a currency union (based on OCA conditionality), namely intra regional trade, its scores are very low.

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Table 5.9: Regional Trade Flows and Openness Comparison, 1995-2003

REGIONAL INTEGRATIONS	OVERALL OPENNESS AVERAGE 1995-2003	INTRA REGIONAL TRADE AVERAGE 1995-2003 AS % OF TOTAL		
		EXPORTS		IMPORTS
GCC	**94%**	**6.62%**		**10.88%**
BAHRAIN	151%	7.88%		30.93%
KUWAIT	73%	1.57%		10.81%
OMAN	75%	12.35%		30.17%
QATAR	7%	5.00%		14.15%
SAUDI ARABIA	56%	6.27%		3.02%
UAE	127%	6.67%		8.88%
EAC	**48%**	**17.80%**		**9.60%**
WAEMU	**64%**	**12.30%**		**8.70%**
BENIN	44%	4.70%		10.90%
BURKINA FASO	35%	10.10%		26.60%
COTE D'IVOIRE	75%	12.40%		1.00%
GUINEA BISSAU	66%	0.70%		13.40%
MALI	63%	2.20%		21.70%
NIGER	41%	6.30%		16.80%
SENEGAL	69%	15.40%		3.00%
TOGO	77%	17%		9.40%
EURO AREA	**65%**	**49.90%**		**49.50%**
AUSTRIA	91%	55.50%		64.30%
BELGIUM	151%	62.60%		59.30%
FINLAND	69%	32.30%		34.10%
FRANCE	50%	47.30%		52.10%
GERMANY	59%	42.70%		41.10%
GREECE	50%	37.90%		50.60%
IRELAND	161%	37.80%		19.80%
ITALY	51%	45.50%		49.60%
LUXEMBOURG	250%	73.80%		78.80%
NETHERLANDS	118%	60.20%		38.90%
PORTUGAL	69%	65.00%		67.30%
SPAIN	55%	60%		57.00%

Data Source: World Bank and World Developent Inicators data are used for openness calcuation
Intraregional trades are computed from IMF and Direction of Trade Statistics data
Note:The Euro Area intra regional trade is calculated from 1997-2003 while opnness is averaged from 1995-2002
GCC results are computed by the author while the rest have been sourced from Mburu Dissertation (2005)

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5.3 The Degree of Commodity Diversification

The next criterion analyzed in this dissertation is that of the degree of commodity diversification discussed in detail in Chapter 2. Before looking at this criterion within the GCC context, a brief recap on what it entails is in order. OCA theory suggests that a high degree of commodity diversification would insulate countries against a variety of shocks and thus minimize the need for frequent changes in the terms of trade through nominal exchange rate changes. In other words, countries that are highly diversified economically and have high degrees of trade flow amongst them are better suited to form a currency union than would be otherwise. This is the OCA argument that is advanced by Kenen (1969). Mongelli (2002) explains that highly diversified production and consumption, and similarity in imports and exports between countries, dilutes the potential effect of specific sectoral shocks.

Hallwood and McDonald (2000) also elaborate on this criterion and explain that economies with diversified industrial and export base, as is the case of a number of western European countries, should try to capitalize on the benefits of fixed exchange rates. The intuition is that given a high degree of industrial diversification, demand fluctuations and supply shocks at microeconomic level would tend to cancel each other out. Therefore, change in real exchange rates, through nominal exchange rates adjustment, is seldom required.

One important tool often used to assess this criterion is known as the *Hirschman-Herfindahl Index* (H-H). This index was originally designed to assess the extent of market concentration for firms and is calculated by summing the squares of the market shares of all firms within a market. The use of this index

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has been extended to various areas of economics and other disciplines. As far as this dissertation is concerned, the use of this index is based on UNCTAD computation of individual countries export concentration indexes. Specifically, the indices for the GCC countries are compared amongst themselves and against a host of other countries. In order to further understand the GCC degree of commodity diversification, the analysis of this criterion is extended to export diversification using UNCTAD indexes computed from a modified *Finger-Kreinin* measure of similarity in trade[31].

The choice of these two indexes to assess how the GCC countries fair under the OCA criterion of the degree of commodity diversification is based on the fact that all six GCC economies rely heavily on fossil fuel and that a significant amount of government revenues is derived form the exports of this resource.

The H-H Index – Export Concentration Index

The UNCTAD calculations of this index for individual countries are based on the United Nations Statistics Division (Comtrade database). The results of these indices are drawn from the UNCTAD Handbook of Statistics for 1996, 1997, 1999, 2000, 2002, and 2005. The number of products exported by country is at a three-digit level of SITC, Revision 2. This figure includes only those products that are greater than one hundred thousands dollars or more than 0.3 per cent of the country's total exports. The index has been normalized to obtain

[31] For additional information, please refer to article by Finger, J. M. and M. E. Kreinin (1979), "A measure of 'export similarity' and its possible use" in the Economic Journal, 89: 905-12.

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values ranking from 0 to 1 with zero implying no concentration and one reflecting maximum concentration. Below is the formula for the H-H index:

$$H_j = \frac{\sqrt{\sum_{i=1}^{239}\left(\frac{x_j}{X}\right)^2} - \sqrt{\frac{1}{239}}}{1 - \sqrt{\frac{1}{239}}}, \qquad (5.3.1)$$

where **Hj** is the country export concentration index, $\mathbf{x}_i$ is the value of exports of product **i**.

$$X = \sum_{i=1}^{239} x_i .$$

The number 239 is the number of products at the three digit level of SITC, Revision 2.

The Export Diversification Index

The data source for this index is also UNCTAD and the years are the same as in the case of the *H-H Index*. The export diversification index also ranges from 0 to 1 and reveals the extent of the differences between the structure of trade of the country and the world average. The index value closer to 1 indicates a bigger difference from the world average. This index is computed by measuring absolute deviation of the country share from world structure as follow:

$$S_j = \frac{\sum_i X\left|h_{i,j} - h_i\right|}{2}, \qquad (5.3.2)$$

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where S_j is a country export diversification index, h_{ij} is the share of commodity **i** in total exports of country **j**, and h_i is the share of commodity **i** in total world exports. As mentioned above, this index is a modified *Finger-Kreinin* measure of similarity in trade.

The results from the two indexes for the GCC countries for selected periods and their comparables are shown on Table 5.10 and Table 5.11 below with the former capturing the *H-H Index* findings and the latter the findings on the structure of exports.

Table 5.10: GCC and Comparables *H-H* Index, 1980-2003 - H_j

YEAR	1980	1990	1995	2000	2003
GCC COUNTRY					
BAHRAIN	0.790	n.a	0.629	0.510	0.700
KUWAIT	0.732	0.915	0.940	n.a	0.635
OMAN	0.922	0.884	0.765	0.792	0.672
QATAR	0.934	n.a	0.731	n.a	0.588
SAUDI ARABIA	0.942	0.747	0.743	0.792	0.737
UAE	0.870	n.a	0.619	n.a	0.494
NON-GCC COUNTRY					
ALGERIA	0.820	0.567	0.551	0.576	0.598
BRAZIL	0.148	0.101	0.088	0.089	0.088
KOREA, REPUBLIC OF	0.085	0.103	0.148	0.157	0.154
NIGERIA	0.948	n.a	0.897	0.996	0.962
NORWAY	0.311	0.334	0.532	0.300	0.423
RUSSIA	n.a	n.a	n.a	0.286	0.312
TURKEY	0.264	0.117	0.274	0.093	0.090
VENEZUELA	0.674	0.785	0.521	0.623	0.798

Data Source:UNCTAD HANDBOOK OF STATISTICS, 1996,1997, 1999, 2000, 2002, 2005
Export Concentration Indexs are calculated by UNCTAD

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The results on the export concentration index are of no surprise. Overall, all six GCC economies score far above 0.500 between 1980 and 2003, except for the UAE that has shown some marked improvement under this index over the selected periods. Nonetheless, the trend, over time, for Kuwait, Oman, and Qatar appear to be toward a more diversified export base while Bahrain's index appears to have gone up in 2003 after showing a downward trend from 1980 to 2000. These results may be somewhat misleading since the diversification momentum is still within the hydrocarbon related sectors, namely the increase in exports of liquefied natural gas (LNG)[32]; specifically for Oman and even more so for Qatar since the latter exports more LNG than oil in terms of dollar value. As for the UAE, the increase in export concentration can be mostly attributed to re-exports rather than exports although their non-oil export base is also characterized by a high energy input. Examples of these sectors include aluminum smelter plants and petrochemicals and have exhibited marked improvement over the years[33]. Nonetheless, as stated earlier, while individual results differ owing to varying degrees of export variability that in turn could be attributed to some variations in economic structures amongst the member sates of the GCC, the mean result of 0.638 in 2003 under this index reflects a high dependence on hydrocarbon resources for exports.

Algeria is a major oil producing country as well. While its concentration was too high in 1980, it appears to have leveled off since then. This could be due

---

[32] The GCC countries jointly account for 42% of global oil reserves and 23% of global natural gas reserves and produce 22% and 6.5% respectively (ECB Occasional Paper Series, No. 31/June 2005). Qatar ranks third in the world in terms of natural gas export and captures 5% of world reserve (www.cia.gov, 2004). Oman has equally made stride in the export of LNG in the last decade although its capacity is well below that of Qatar.

[33] The next OCA criterion on the GCC countries that is discussed in this chapter elaborates on the six member states sectoral composition.

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to its decreased capacity to produce crude oil, although other factors such as its increase in export of natural gas may have some bearing. While countries like Russia and Norway are considered to be major oil producers, their respective export concentration indexes are below average, reflecting more diversified export base. Nigeria (another major oil producer) index has remained constantly very high since 1980; Venezuela's appear to take an upward trend, reflecting a less diversified export base over time. Chart 5.1 below gives the graphical representation of the export concentration indices for the GCC countries and three other selected countries for the year 2003.

Chart 5.1: GCC and Selected Countries Export Concentration Indices - 2003

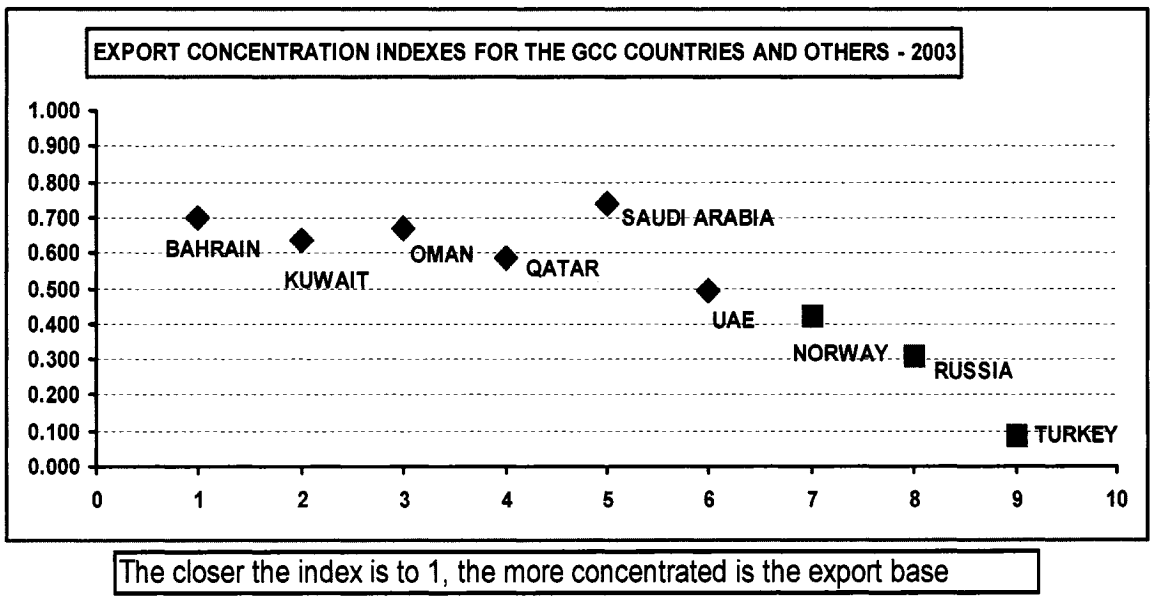

Table 5.11 below shows the results of export diversification index which is another proxy for the degree of commodity diversification criterion.

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Table 5.11: GCC and Comparables Export Diversification Index, 1980-2003 - S_j

YEAR	1980	1990	1995	2000	2003
GCC COUNTRY					
BAHRAIN	0.768	n.a	0.865	0.806	0.724
KUWAIT	0.695	n.a	0.914	n.a	0.765
OMAN	0.735	0.835	0.835	0.758	0.720
QATAR	0.794	n.a	0.868	n.a	0.757
SAUDI ARABIA	0.757	0.846	0.858	0.858	0.806
UAE	0.732	n.a	0.744	n.a	0.638
NON-GCC COUNTRY					
ALGERIA	0.732	0.859	0.887	0.870	0.690
BRAZIL	0.556	0.528	0.517	0.496	0.447
KOREA, REPUBLIC OF	0.660	0.771	0.437	0.727	0.378
NIGERIA	0.771	n.a	0.906	0.914	0.616
NORWAY	0.488	0.609	0.637	0.663	0.657
RUSSIA	n.a	n.a	n.a	0.662	0.677
TURKEY	0.734	n.a	0.636	0.573	0.536
VENEZUELA	0.710	0.792	0.769	0.792	0.792

Data Source:UNCTAD HANDBOOK OF STATISTICS, 1996,1997, 1999, 2000, 2002, 2005
Export Diversification Indexs are calculated by UNCTAD

The results from the export diversification index tend to mimic those from the *H-H Index*. There are a few cases, however, where these indexes show some divergence and worth noting. For instance, while in 2003 the UAE export concentration index was 0.498; its export diversification was 0.638. The findings for Kuwait on the other hand are opposite those for the UAE, scoring 0.635 on the export concentration index in 2003 and 0.765 on export diversification index. As for Nigeria, the findings are also opposite to those from the UAE, with the export concentration index scoring higher than export diversification during the same year. These differences simply different export structures. An important observation on both indexes is that being a major oil producing country does not automatically mean a highly concentrated export base although it appears to

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indicate a less diversified export base; a point validated by the cases of Russia and Norway. In other words, given the list of countries above, while not all major oil producing countries appear to have high concentration export indexes, they tend to have high export diversification indexes implying that oil still accounts for a major share of structure of trade for these countries as compared to non-oil producing ones.

At first glance, the trend for GCC countries on the degree of commodity diversification appears somewhat encouraging; specifically if one looks at export concentration indexes. For most of the six countries, the trends of their respective indexes appear to be downward since 1980; this suggests higher commodity diversification. Two important factors are likely key in contributing to this trend and are also mentioned under the *H-H* findings, namely an increase in exports of LNG (another fossil fuel product), and in the case of the UAE, an increase in re-exports, granted with other exports of energy intensive products as already mentioned. To sum up, what this pattern suggests is that commodity exports by the GCC countries are still driven by the export of hydro carbon resources, their immediate derivatives such as LNG and petrochemicals, and energy- intensive products. For instance, primary aluminum production by the GCC countries as a share of global production has steadily increased in the past three decades from 0.9 percent to 4.9 per cent in 2005 and is projected to reach 10 per cent by year 2010 (Gulf News, April 2006). Chart 5.2 below gives the graphical representations of the export diversification indexes for the GCC countries and three other selected countries in year 2003.

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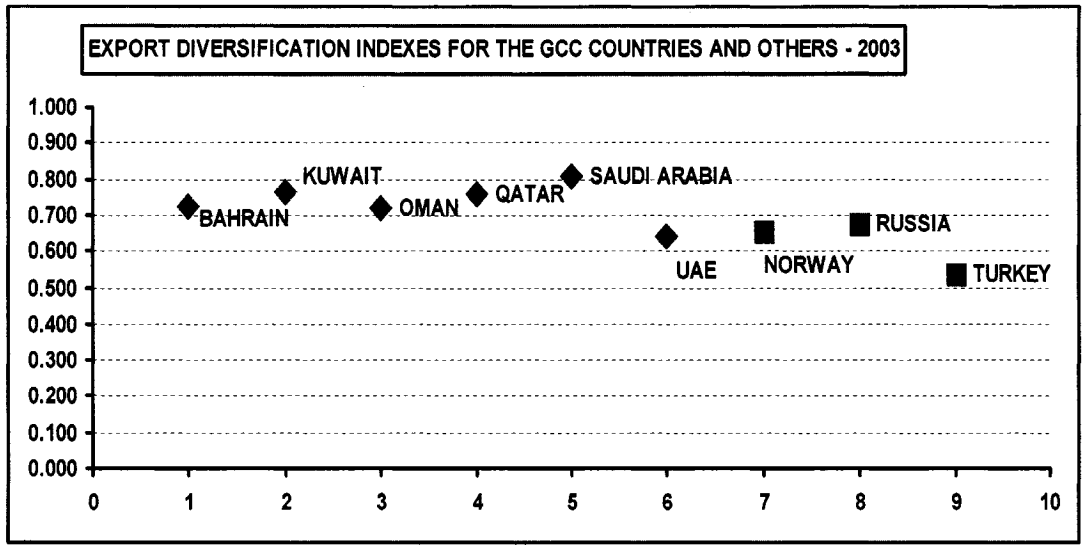
Chart 5.2: GCC and Selected Countries Export Diversification Indices - 2003



The closer the index is to 1, the less diversified is the export base and the bigger the difference from the world average

Given high export concentration and diversification indices and an indication of the dependency on hydrocarbon resources, the GCC economies are often exposed to terms of trade shocks from the fluctuation in the world oil market. Nonetheless, these countries have been able to sustain their respective exchange rate pegs over time and adopt a monetary policy that does not use the exchange rate as an instrument to mitigate shocks. Instead, with adjustment operates mainly through government expenditure instruments (Laabas and Limam, 2002). This is a unique situation where countries with poorly diversified export bases and barely trade among each others, are nonetheless able to maintain and sustain their exchange rate pegs over time. It is indeed anathema to OCA theory and specifically to the criteria of the degree of trade intensity, the degree of commodity diversification, the degree of goods market integration, and some other recent OCA conditionality that these countries have yet to meet. An

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extended discussion on this situation is included in the analysis of exchange rate variability below with special attention paid on the role of oil.

In sum, looking purely at the results of both export concentration and export diversification indexes and conforming to the pre-requisite of OCA theory, the GCC countries have yet to meet the criterion of commodity diversification due to their heavy reliance on the hydrocarbon sector and as such, based solely on this prerequisite, these countries are not ready to form a monetary union.

5.3 The Degree of Goods Market Integration

One of the OCA criteria is that of the degree of goods market integration. It suggests that countries that share similarities in production structures are likely to produce symmetric terms-of-trade shocks that in turn would render the effectiveness of exchange rate policy almost obsolete (Dellas and Tavlas, 2003). Thus, these countries are considered to be better candidates to form a currency union as compared to those with divergent production structures (Mundell, 1961). The OCA pre-requisite for similarity in production structures implies that given an incidence of supply or demand shocks and the speed with which the economy adjusts, taking into account the policy responses to shocks, are the same across countries, then the need for independent policy is minimized and the net benefits from joining a unified currency might be higher (Mongelli, 2002).

In this section, we look at the extent of similarity, or lack thereof for the GCC countries production structures; an analysis that assesses whether a group of countries meet the criteria of goods market integration and subsequently a viable monetary union. In this dissertation we use the GCC countries sectoral

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compositions in terms of GDP as a proxy to ascertain the similarity in production structures. Table 5.12 below shows these shares from 1992 to 2003. Please note that despite the lack of data in some sectors and years, the findings are good enough to assess this criterion.

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Table 5.12: GCC Sectoral Composition as Percentage of GDP, 1992-2003

GCC COUNTRIES	BAHRAIN				KUWAIT			
YEAR	1992	1996	2000	2003	1992	1996	2000	2003
SECTOR								
(1) Hydrocarbon	**21.400**	**19.444**	**23.600**	**16.500**	**35.962**	**52.22**	**46.000**	**46.247**
(2) Non-Hydrocarbon	**78.600**	**80.556**	**76.400**	**83.500**	**64.038**	**47.78**	**54.000**	**53.753**
Manufacturing	14.300	19.544	16.500	12.200	12.500	11.714	16.000	7.200
Finance & Real Estate	19.800	21.200	23.000	23.500	18.000	10.700	14.300	11.000
Trade, Hotels & Restaurants	18.000	15.800	13.700	**n.a**	15.100	8.400	9.400	**n.a**
Transport & Comunication	10.800	9.127	9.500	**n.a**	6.500	4.148	7.400	**n.a**
Construction	7.400	4.911	5.400	**n.a**	5.000	2.610	3.500	**n.a**
Others*	8.300	9.974	8.300	47.800	6.938	10.211	3.400	35.553
(1) + (2)	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**

GCC COUNTRIES	OMAN				QATAR			
YEAR	1992	1996	2000	2003	1992	1996	2000	2003
SECTOR								
(1) Hydrocarbon	**50.900**	**41.961**	**48.300**	**41.200**	**35.800**	**33.200**	**60.429**	**60.424**
(2) Non-Hydrocarbon	**49.100**	**58.039**	**51.700**	**58.800**	**64.200**	**66.800**	**39.571**	**39.576**
Manufacturing	4.285	4.783	5.300	8.300	11.600	1.200	5.437	4.981
Finance & Real Estate	0.000	6.440	9.300	9.300	11.400	12.700	7.275	7.322
Trade, Hotels & Restaurants	16.100	16.300	17.800	**n.a**	6.600	7.300	5.800	5.037
Transport & Comunication	6.900	7.700	10.500	**n.a**	3.100	3.600	3.103	3.374
Construction	3.722	2.711	4.000	**n.a**	0.000	0.000	3.604	5.395
Others*	18.094	20.105	4.800	41.200	31.500	42.000	14.352	13.467
(1) + (2)	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**

GCC COUNTRIES	S. ARABIA				UAE			
YEAR	1992	1996	2000	2003	1992	1996	2000	2003
SECTOR								
(1) Hydrocarbon	**39.863**	**38.922**	**41.487**	**41.477**	**47.300**	**37.100**	**29.940**	**22.569**
(2) Non-Hydrocarbon	**60.137**	**61.078**	**58.513**	**58.523**	**52.700**	**62.900**	**70.060**	**77.431**
Manufacturing	10.400	10.900	12.700	10.100	9.200	11.600	15.453	15.718
Finance & Real Estate	5.700	5.100	5.700	10.600	10.200	13.200	15.315	15.636
Trade, Hotels & Restaurants	8.300	8.300	8.900	**n.a**	11.700	13.700	11.815	12.100
Transport & Comunication	7.500	7.367	8.200	**n.a**	6.200	7.100	7.564	8.970
Construction	10.300	10.300	11.600	**n.a**	9.800	9.400	7.545	7.303
Others*	17.937	19.111	11.413	37.823	5.600	7.900	12.368	17.704
(1) + (2)	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**	**100.000**

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The overall findings on the GCC sectoral composition between 1992 and 2003 still reflect the preponderance of the hydrocarbon sector in most GCC economies with limited contribution from trade, financial and real estate. The share of the hydrocarbon sector to GDP ranges from slightly over 60% for Qatar in 2003 to just over 16% for Bahrain during the same year. Although these results are also confirmed by Laabas and Limam (2002) who conclude that the similarity in production structures would entail symmetric shocks that in turn favor common policy response, the two authors fail to discuss or elaborate on what appear to be a diverging trend amongst some members of the GCC on this particular criterion. While the oil sector has indeed been dominant in all the GCC economies over the years, the pattern of economic diversification varies amongst the member states with some member economies moving toward more diversifications than others; a potential for asymmetric shocks and different policy responses could arise in the future should this trend persist.

The diverging pattern under this criterion is exemplified by the trend in Bahrain and the UAE, and to a lesser extent, Oman. While Bahrain has been poorly endowed with hydrocarbon resources for over two decades, it has adopted a more vigorous policy of economic diversification with emphasis on the financial sector and to a lesser degree on the manufacturing sector as compared to most GCC countries. The UAE is even more unique in this case. This country has pursued meaningful economic diversification policies despite its large endowment of crude oil reserves and a production capacity to match. While between the year 2000 and 2003 most GCC countries' share of the hydrocarbon sector was skewed by higher oil prices in the world market since the slump in

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1998, the UAE share of the hydrocarbon sector to GDP has steadily gone down relative to that on non-hydrocarbon sector with more and more share being captured by the manufacturing, financial and real estate sectors. Although Oman's GDP shares of these two sectors were still in single digits in 2000 and 2003, the trend appears to be of a lesser share of hydrocarbon sector to GDP with manufacturing taking the lead in the non-hydrocarbon sector. Looking at the 2003 sectoral shares, the manufacture, financial and real estate parts are well over 10% for Bahrain and the UAE while they are just about 10% for Saudi Arabia.

While the potential for diverging sectoral compositions amongst the GCC economies exists given the current trends, the possibility to bridge the gap is there as most manufacture goods in the GCC countries are based either almost entirely on hydrocarbon inputs such as petrochemicals, or energy-intensive sectors such as aluminum smelting and fertilizer plants. Given that all the GCC economies, with the exception of Bahrain, rely heavily on hydrocarbon resources, the possibility exists to develop a manufacturing sector that is based on fossil fuel inputs, and as such creating a regional economy which is more diversified, though with similar production structures in the foreseeable future. This trend would allow the GCC economies not only to eventually meet the OCA criterion of goods market integration, but that of commodity diversification as well, and hence promote the chances for unified regional currency.

This study acknowledges that hydrocarbon resources are finite and the development of an industry that is purely based on these resources is limited in time frame though the medium-term benefits in terms of broadening an export

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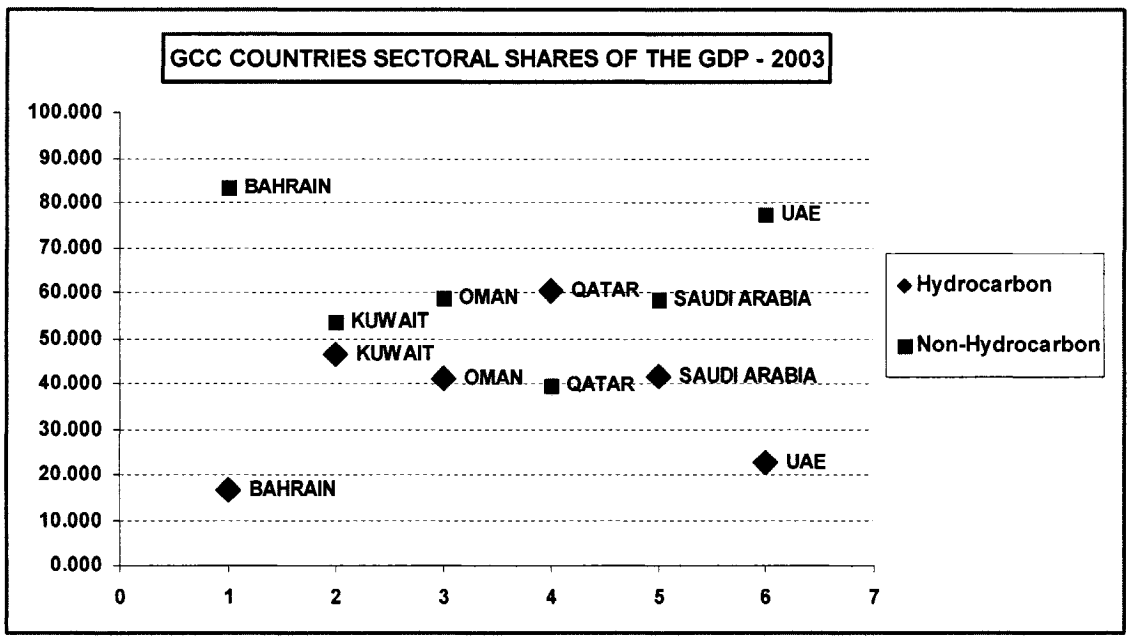
base with added value goods, job creation, and increase in skills and knowledge is not to be discounted. The economies of scale resulting from the development of these sectors would also spill to other sectors such as financial services and other related areas. Chart 5.3 below shows the sectoral share of hydrocarbon and non-hydrocarbon sectors of the six GCC economies.

Chart 5.3: GCC Countries Sectoral Percentage of GDP - 2003



Data sources include Annual Reports from the various GCC countries Central Banks and monetary agencies. These reports are from years 1997, 2000, 2003, and 2005.
Sectoral compositions as shares of GDP's are computed by the author

The above prognosis of the recent GCC sectoral composition trend and the potential divergence in the future is discussed by Sturm and Siegfried (2005) in the ECB Occasional Paper Series on the GCC. The authors acknowledge that the differences in economic structures of GCC countries may increase in the future in the course of further economic diversification. They explain that while all

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GCC countries have declared that economic diversification and the reduction of their dependency on oil is a major goal of economic policy, the speed and direction of diversification differs from country to country with crude oil reserve depletion working as an incentive for countries like Bahrain and Oman. The two authors also suggest the possibility of more diversified and heterogeneous GCC economies in the next 20 to 30 years.

5.4 Real Exchange Rate Variability/G-PPP Approach

The next OCA criterion analyzed for the GCC countries is that of real exchange rates variability. Laabas and Limam (2002) have already analyzed this criterion in the GCC context. This dissertation briefly discusses their methodology, findings and elaborates on policy analysis and other elements that explain the GCC successful peg rates over the years. Before doing so, let's first briefly recap what exchange rate variability and the G-PPP approach to OCA entail. Vaubel (1977) was the first to examine the degree of exchange rate variability (deviations from relative PPP) as an OCA criterion. Bayoumi and Eichengreen (1997) also examine the degree of exchange rate variability to assess whether this criterion is indeed justified by the OCA properties as had been suggested by Vaubel. The findings on both studies are discussed in Chapter 2 of this dissertation.

The theoretical foundation underpinning this criterion suggests that countries that show lower exchange rate volatility amongst them are better suited to form a monetary union than would be otherwise. The presence of low

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exchange variability amongst countries is supposed to reflect a reasonable degree of symmetric behaviors for the key macroeconomic variables both in terms of changes in magnitude and speeds of adjustment, and such justifying a common currency or fixed pegs. The same theoretical foundation on which real exchange rate variability is based was co-opted by Enders and Hurn (1997) under the name of G-PPP. The G-PPP approach to OCA analysis theorizes that the long-run non-stationarity of the real exchange rate is the result of the non-stationarity of the fundamental determinants of real exchange rates, such as output and expenditure patterns.

Laabas and Limam (2002) use the G-PPP approach to test the feasibility of a GCC monetary union. While the overall conclusion by the two authors confirms the co-integration of the GCC countries real exchange rates variability over time, little analysis is given that explain the factors behind the results. Another issue we raise with regard to this study is its lack of focus, specifically the failure to distinguish between the pre 1980s period and the post 1980s period. While the GCC countries were characterized by high inflations moving in non-parallel fashions before the 1980s, this pattern started changing in early 1980s as the six member states started adopting a similar monetary policy centered on pegging their respective currencies to the US dollar. One more critique we have is on the relevancy of the application of the G-PPP criterion on the GCC as these countries had successfully adopted fixed exchange rate pegs for almost two decades. Although the attempt by the authors to explain real exchange variability in terms of inflation differences is correct, it is nonetheless immaterial since in the last two decades, the peg has not been affected and is

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expected to experience a different pace of development. Nonetheless, this dissertation discusses the model and the findings by Laabas and Limam.

We briefly discuss below the G-PPP approach by Laabas and Liman as they use it to analyze GCC monetary union. An extended replica of the analysis can be found under the appendix section of this dissertation. To test whether an equilibrium relationship exists between the different bilateral real exchange rates, the two authors present the following model:

$$RER_{12t} = \alpha_0 + \beta_{13} RER_{13t} + - - - - - - - - - - + \beta_{1n} RER_{1nt} + \varepsilon_t \ ,$$

(5.5.1)

where,

$\mathbf{RER_{1it}}$ is the real exchange rate between the base country and country **i** in period **t**.

$\boldsymbol{\alpha_0}$ is the constant term in the model.

$\boldsymbol{\beta_{ij}}$ denotes the parameters of the co-integrating vector and represents the linkages among the economies in a currency area.

$\boldsymbol{\varepsilon_t}$ is simply a white noise disturbance term.

For the GCC currency area, the real exchange rate series are constructed by the authors using two alternative base countries, namely the Kingdom of Saudi Arabia (KSA) and the United States of America (USA). While the two authors reason that the choice of KSA is based on its economic size (being the largest amongst the GCC countries), and the potential dominance of this country in forming a successful GCC monetary union, they fail to elaborate on their argument. Saudi Arabia may indeed be the largest economy of the GCC

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countries, but other member states' economic indicators such as GDP per capita[34] or the extent of economic diversification fair far better than those of the KSA. These gaps, together with the fact that little trade takes place amongst the GCC countries leave Saudi Arabia with limited economic influence or leverage over the rest of the member states. Moreover, Saudi Arabia's political influence over the rest of the GCC countries cannot be considered as far-reaching to the extent this country could be play the role of a hegemonic power. Laabas and Limam's second choice of a base currency is that of the USA. The authors rightly reason that this choice is based on the fact that a tight relationship exists between the GCC currencies and the US dollar.

The real exchange rate used in this model is defined as follows:

$$RER_t = \frac{S_t P_t^*}{P_t}$$

where,

$\mathbf{S_t}$ denotes the nominal exchange rate expressed as the number of national currency units for one unit of the currency of the base country.

$\mathbf{P^*_t}$ and $\mathbf{P_t}$ are the consumer price indices in the base and home country respectively.

The indices for the consumer prices and real exchange rates for both the USA and the GCC countries have been obtained by the authors from the IFS CD ROM and the IMF (2002) and the data are from 1960 and 1999. A logarithmic

[34] Please refer to Chapter 2 Table 1 for selected indicators.

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function of the real exchange rate as defined above is used for this computational purpose.

As alluded to before, the two authors find moderate fluctuations amongst the six GCC currencies and suggest that the member states common choice of pegging their currencies to the US dollar led to this result. They add that similar pattern exists between the variation of the nominal dollar rates and those of the GCC currencies. Vis-à-vis the US dollar, they find the coefficient of variation[35] to be almost the same for all the GCC currencies at 0.11 except for the Omani riyal which fluctuates less than other GCC currencies, at 0.06. Chart 1 provides a graphical representation of the six GCC exchange rates against the US dollar for the period between 1969 and 2004.

The success of the GCC fixed exchange rate pegs and their ensuing stability have been established by other studies including those by Sturm and Siegfried (2005), Abed et al (2003), and Erbas et al (2001). Sturm and Siegfried (2005) state that "*The degree of nominal exchange rate stability among GCC countries in the past two decades is remarkable and probably unparalleled in the world economy*" (p.35). Like Laabas and Limam, the two authors attribute this success to the long-standing common orientation of the GCC countries' exchange rate policies towards the US dollar.

[35] Both of them are statistically insignificant with Oman's coefficient being less so.

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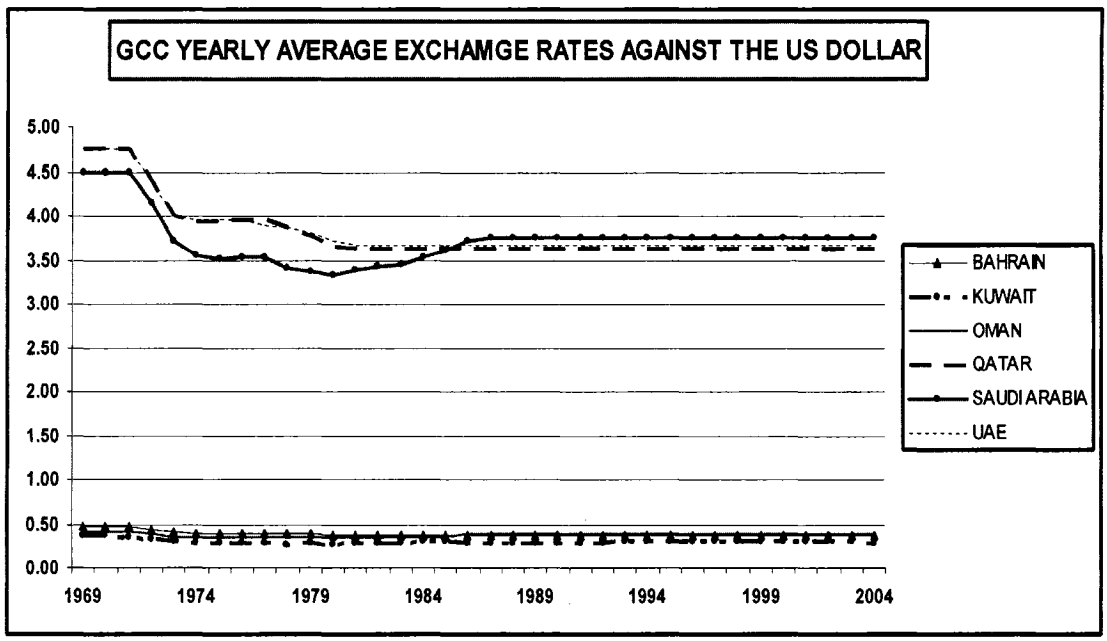
Chart 5.4: GCC Exchange Rates against the US Dollar 1969 - 2004



Data Source: IMF/ IFS

The results in terms of the real exchange rates are expectedly different. Indeed, the authors find the coefficient of variation for real exchange rates to be almost double that of nominal exchange rates. The results from the ADF stationarity test are shown in Table 1 of the Appendix section. The inclusion of data between 1960s and 1970s, a period that was characterized by double-digit and non-converging inflation rates and uncoordinated monetary and exchange rate policy have to a great extent contributed to these results. Sturm and Siegfried (2005) explain that higher case of inflation rates in the last two decades have induced an appreciation of the real effective exchange rates of some member states of the GCC countries such as the Kuwaiti dinar, the Qatari riyal and the UAE dirham. Nonetheless, this real appreciation has, in most part, not

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resulted in a loss of competitiveness or an expanding current account deficit, they add.

The next section analyzes various factors that have contributed to the successful fixed pegs and the ensuing stability of the GCC exchange rates in the last two decades despite cases of recessions that tend to be triggered by significant fall in oil prices in the world market.

5.5.1 The GCC Successful Peg: Structural Convergence and Policy Analysis

The GCC countries' exchange rate stability and their successful fixed pegs since the early 1980s are rooted in part in the similarity of their economic structures. This similarity and the goal by the member states to form a monetary union in 2010 have facilitated the adoption of similar monetary and exchange rates policy. Most OCA studies analyze countries with some degree of exchange rate flexibility and try to predict how it would work under fixed exchange rates. The GCC case is rare in a sense the six member states have successfully pegged their currencies to the US dollar in the last two decades. Given this case, we explain how fixed exchange rates have worked and what factors have contributed to their success. As stated before, the main factor underlying the structural convergence has to do with the heavy reliance on hydrocarbon resources for both domestic and external economies for the six member states. While the extent of this dependency varies among these countries, this sector

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still dominates all the six economies with diversification to other sectors often reflecting its performance.

GCC structural convergence

A number of macroeconomic indicators for the GCC countries paint a picture of a high degree of structural convergence. Hydrocarbons as a share of GDP, the sheer dominance of the public sector in the economy, sources of government revenues, overall trade patterns within the GCC and other countries; all show reasonable degrees of similarity. The GCC macroeconomic indicators mirror both the types of economic policies and the fact that these countries heavily depend on the oil and gas sector. In order to capture the similarities amongst the GCC countries' economic structures and the extent of hydrocarbon resources dependency, some selected economic indicators as presented by Sturm and Siegfried (2005) are shown on the Table 13 below.

Table 5.13: Oil Dependency of the GCC and its Member Countries

	BAHRAIN	KUWAIT	OMAN	QATAR	S. ARABIA	UAE	GCC
Oil as Share of							
GDP*	25.70	45.90	43.10	56.80	34.90	28.10	36.00
Govt. Revenue**	73.00	91.50	78.40	64.20	80.60	75.30	79.30
Exports***	66.70	83.80	64.50	34.50	65.50	38.80	66.70

Sources: European Central Bank (ECB), Arab Monetary Fund (AMF), GCC central banks, Internationa Mnetary Fund (IMF), and Institute of International Finance (IIF)

* Oil and gas sector's share of GDP as a % in 2001
** Oil revenue/total government revenue as a % (include gas revenue for Bahrain) in 2000
*** Oil and oil products' share of total exports as a % in 2004

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The three economic indicators above testify to the GCC countries' heavy dependency on the hydrocarbon sector. While oil and gas are significant components to the GCC economies, the degree of significance vary among the six member states. For instance, the indicators above show that on average, oil contribution to the GCC governments revenues amounts to almost 80% ranging from 91.5% for Kuwait to 64.3% for Qatar[36]. Similar patterns can be observed under the other two indicators. Indeed, the pace of economic diversification of some members, more specifically Bahrain and the UAE, and to a lesser degree Oman, is faster than the rest of the member states.

Nonetheless, the hydrocarbon sector is still predominant across all six member states. Sturm and Siegfried (2005) refer to a finding by the Arab Monetary Fund (AMF) that shows oil and gas sectors contributing more than one-third of total GCC output. The two authors also point to the fact that over 80% of public services are financed by oil revenues, a situation that magnifies the share of GDP that depends directly and indirectly on oil and gas revenues to over 50% of the total. In contrast, merely 10% of GDP is generated by manufacturing and a meager 4% by the agriculture sector, they add. Theoretically, this similarity in economic structure is supposed to limit the potential for asymmetric shocks and as such minimize the need for exchange rates adjustment[37].

There are a number of problems that are associated with the high contributions from oil and gas sector to the GCC countries overall exports and government revenues. To mention a few, the volatility in oil prices exposes these

[36] Please note the indicators above are for the oil sector alone and do not include natural gas which is now the main source of government revenues and constitutes the biggest share of exports for Qatar.

[37] The subsequent OCA criterion analyzed under this section is that of business cycles co-movements for the GCC countries.

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countries to the instability in current account balances and a government budget balances. In addition, this situation makes both consumption and revenue-smoothing rather challenging. These problems are particularly pronounced given the fact that there is no personal income tax, general consumption or value-added tax in any of these countries (Sturm and Siegfried, 2005). Nonetheless, the GCC countries have been able maintain their de facto pegs to the US dollar for almost twenty years.

Another common feature to GCC countries is the marginal contribution of the private sector to their respective economies. The large government sector in concert with the high level of dependency on oil and gas revenues for government budgets have limited the growth of the private sector. Sturm and Siegfried (2005) explain that while oil companies are nationalized to ensure government control of this critical sector, government spending on large infrastructure projects has significant influence on the development of the non-oil sector. Volatility in oil price therefore affects the growth of private sector as well. The public sector in the GCC countries extends to major services and industrial sectors such as health, telecommunication, utility, petrochemicals and so forth. However, recent trends in the region have witnessed a number of utilities and telecommunication companies being privatized. The current GCC average of government services contribution to GDP amounts to 25% and are also the main sources of employment for nationals (Sturm and Siegfried, 2005).

Another similarity amongst the GCC countries economic structure is that of trade patterns. The results from Table 5.14 below showing the source of GCC imports are also provided by Sturm and Siegfried (2005)

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Table 5.14: GCC Imports Sources and Patterns - 2003

	BAHRAIN	KUWAIT	OMAN	QATAR	S. ARABIA	UAE	TOT. GCC
Import-to-GDP ratio (%)	69.90	38.90	37.70	38.90	23.60	64.70	34.90
Source of Imports*							
Other GCC	35.80	9.60	27.80	14.90	2.50	2.70	5.90
EU	24.40	34.10	21.70	35.50	31.10	33.60	31.90
United States	11.40	14.50	6.20	12.20	9.30	6.50	8.60
Japan	7.80	10.10	17.10	10.50	7.60	6.70	8.00
Asia (excl. Japan)	10.70	17.80	15.60	17.20	26.90	36.40	28.80

Sources: European Central Bank (ECB), IMF DOT's and World Economic Outlook (WEO)
* As percentage of total imports

The overall results in the table above show the main import source for the GCC countries is the EU with a share of about 30% of total imports. One exception is the UAE whose largest share of imports comes from Asia with the EU a close second. The share of imports from the US is below 10% while the intra-GCC imports, as already discussed, stands at about 6%. Table 5.15 below is also provided by the two authors and shows the destination and patterns of GCC countries' exports.

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Table 5.15: GCC Exports Destinations and Patterns – 2003

	BAHRAIN	KUWAIT	OMAN	QATAR	S. ARABIA	UAE	TOT. GCC
Export-to-GDP ratio (%)	83.90	54.80	56.20	72.00	45.90	79.10	55.80
Destination of Exports*							
Other GCC	5.90	1.50	10.60	4.80	4.80	5.10	4.90
EU	3.70	10.40	2.20	2.10	15.70	7.60	10.70
United States	3.60	11.90	3.30	1.70	20.70	2.20	11.70
Japan	1.30	22.00	16.20	46.00	15.40	26.10	20.30
Asia (excl. Japan)	8.10	49.20	59.40	36.60	32.10	31.40	34.20

Sources : European Central Bank (ECB), IMF DOT's and World Economic Outlook (WEO)
* As percentage of total exports

The largest share of the GCC countries exports is destined to Asia with the exception of Saudi Arabia that exports about 20% of its total exports to the United States. As already stated, while the GCC counties heavily trade with other regions, intra regional is very small accounting for a mere 6 to 7% of total trade and even less so in terms of the GDP. The low intensity intra-GCC trade has remained so despite the successful adoption of fixed pegs to the US dollar in the last two decades.

The GCC countries economic indicators discussed above illustrate how important the oil and gas sectors are to their economies. By and large, trade patterns amongst the GCC countries are characterized by little intra-GCC trade and heavy trade with Asia. The overall GCC countries heavy reliance on crude oil for both their domestic and external economies together with the fact that the

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currency of trade for this commodity is the US dollar have made the adoption of similar monetary and exchange rate policy over the years rather not challenging.

GCC policy analysis

As already alluded to, the GCC countries nominal exchange rate stability and the overall successful fixed pegs over the last two decades are primarily attributed to the long-standing common approach of their exchange rate policies vis-à-vis the US dollar. This fact has been pointed in a number of studies including those by Erbas et al (2001), Jadresic (2002), Laabas and Limam (2002), and Abed et al (2003). The policy of choosing the US dollar as a common external anchor has resulted in a number of outcomes and includes limited intra-GCC currency fluctuations despite cases of recessions, low inflation rates and similar interest rates for the six countries. In addition, this policy has brought credibility to the GCC exchange rates. The focus of our policy analysis is on the GCC inflation rates and interest rates over the last two decades.

Inflation

The GCC countries have not only experienced relatively low inflation rates in the last two decades. Furher, these inflation rates have been noted to move in somewhat parallel fashions during this period (Sturm and Siegfried, 2005). According to the authors, inflation has seldom exceeded 5% with exceptions of a few cases experienced in exceptional years[38]. They add that last two decades of

[38] Kuwait experienced some increase in inflation in 1990 due to the reconstruction the country had to undertake after the Iraqi invasion. While the UAE inflation rates were consistently higher than the rest of the GCC countries in the mid 1980s and the first half of the 1990s due to its rapid development, Qatar went through the same phenomenon in the mid-1990s due to dynamic and high growth in the natural gas sector.

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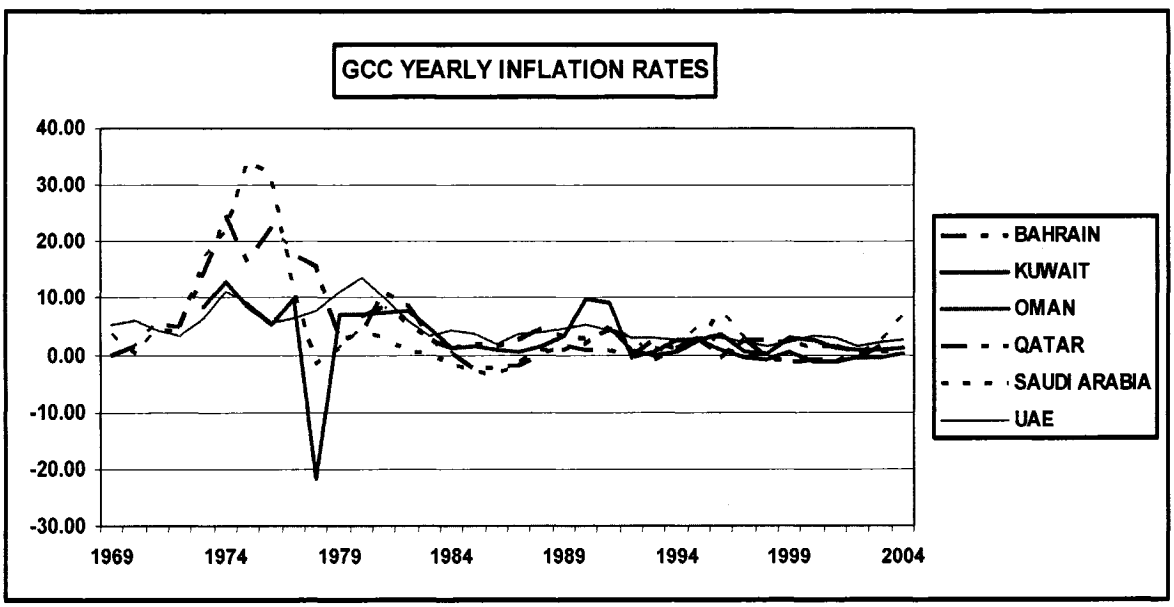
price stability since the mid-1980s were preceded by much higher inflation rates in the 1970s, a point that is also mentioned by Laabas and Limam (2002). Many, including Jadresic (2002) attribute these results to the dollar pegs that have proven to be an effective and long-lasting exchange rate arrangement. As shown in the chart below, unlike the 1970s, the 1980s started witnessing lower and more converging inflation rates amongst the GCC countries.

Chart 5.5: GCC Inflation Rates 1969 - 2004



Data Source: World Development Indicator
Note that Kuwait data are from 1973; Oman from 1991, and Qatar 1980

Sturm and Siegfried (2005) find that in the course of the last two decades, the UAE experienced the highest inflation on average at 3.7% while Saudi Arabia and Oman the lowest at 0%[39]. This difference seems to have narrowed even

[39] The inflation rate figures are from Sturm and Siegfried (2005).

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further and became less volatile in the past 10 years, they add. Nonetheless, they observe that the recent hikes in crude oil prices have increased the gap and fluctuation ranging from 0.8% in Oman to 3.5% in Qatar in 2004. The varying magnitude in inflation rates amongst the six countries do not appear to be the result of different economic development or monetary policy, but rather a reflection of the dissimilar pace of development (Sturm and Siegfried, 2005). These sporadic high inflation rates could be attributed to Balassa-Samuelson effects and especially in the case of the UAE. In fact, the results of higher inflation rates in some members at times have not led to loss of competitiveness or increases in current account deficits and the expected pressure on nominal exchange rates.

The above outcomes are attributed to two main factors. First, where inflation rates have been a little higher, there has been high productivity growth. This is exemplified by the case of the UAE where the pace of economic diversification has been much higher in comparison with other member states. The second factor is that crude oil dominates the GCC countries foreign trade and the price and demand of this commodity is not impacted by domestic price changes.

The overall conclusion is that the high degree of inflation convergence amongst the GCC countries at persistent low levels over the last two decades are attributed, among other reasons, to the successful peg of the six currencies to the US dollar. Indeed, the choice by the GCC countries of an external anchor for monetary policy has been credible and produced desirable results in terms of anchoring inflation expectations and importing monetary stability from the anchor

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economy (Sturm and Siegfried, 2005). Another factor pointed by the authors that appears to have promoted low inflation rates has been the relatively little lending by the GCC countries central banks to their respective governments.

In fact, the GCC countries hardly use monetary policy instrument to accommodate budget deficits or address other economic adjustments. With monetary policy aimed at maintaining a stable exchange rate and controlling inflation, fiscal policy has been used by the GCC countries as the primary instrument to achieve the objectives of growth and employment (Fasano and Iqbal, 2003). This point is also highlighted by Jadresic (2002), and Laabas and Limam (2002) in their respective studies. When crude oil pries are low, these countries use fiscal expenditure by drawing on foreign reserves when oil prices are high (Sturm and Siegfried, 2005).

Interest Rates

According to Sturm and Siegfried (2005) the co-movements of the GCC countries interest rates have been similar in terms of range in the last decade. The converging pattern of interest rates reflects those of inflation rates over the last twenty years. This pattern owes to the policy of linking their currencies closely to the US dollar. The actual pegging of the GCC currencies to the US dollar has also required their interest rates to trail closely the movement of the US interest rates (Rutledge, 2004) so as to limit capital outflow. Sturm and Siegfried (2005) observe that the this policy has resulted in the GCC interest rates mimicking US interest rates in the last two decades, showing relatively low spread between the two. The close link between the GCC interest rates and

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those of the US has added to the credibility of the exchange rate peg policy. Sturm and Siegfried (2005) also observe that whenever there is an increase in the interest rate spread between the GCC countries and the US, it tends to be influenced by a fluctuation in crude oil prices. They note that this is particularly so for Saudi Arabia where low oil prices often result in a wider spread.

An important point highlighted by Sturm and Siegfried (2005) is that the six member states are normally characterized by short-term credit relations. For instance, long-term interest rates for ten-year bonds do not exist on a comparable basis. Therefore, in terms of comparative analysis and due to the availability of data, the two authors use three-month deposit rate for both the US and the GCC countries. As is the case for inflation and already alluded to above, there are times when higher degree of variations exists amongst the GCC countries interest rates[40]. Examples given by the authors include the case of post Iraqi invasion of Kuwait in the early 1990s, change in interest regulations in Oman in the second half of 1990s and for Qatar its interest rate was fixed until 1991 liberalization of its interest rate.

To sum up, the stability of the GCC exchange rates and the successful peg to the US dollar over the last two decades are mainly attributed to the similarity in economic structures of the six economies, the fact that the commodity that provides these countries with their sources of revenues and dominates their economies is traded in the currency to which all six currencies are pegged, and the GCC countries common goal of eventually adopting a

[40] The spread between the highest and lowest rate was highest in 1993 with 4.1% percentage point. While Kuwait had the highest interest rate of 7.1%, Bahrain had the lowest at 3.0%. The lowest spread was in 1995 at 0.8% with 6.5% in Kuwait and 5.7% in Bahrain (Sturm and Siegfried, 2004).

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common currency. Together, these factors have promoted similar monetary and exchange rate policy and facilitated its coordination amongst its members.

The adoption of a de facto peg to the US dollar by the GCC has resulted in a number of outcomes among that are limited intra-GCC currency fluctuations and overall low inflation rates that tend to move in parallel fashion. Little fluctuation in exchange rates means little profit in forward and futures markets for the currencies, and the probable non-existence of these markets. This makes it harder to speculate against the currencies. Moreover, the choice of the US dollar as an external and common anchor for monetary stability, together with the successful use of foreign reserves to pre-empt speculative attacks have lent significant credibility to the GCC monetary policies.

5.5 Business Cycle Synchronization (BCS) and Shocks

The next criterion we analyze for the GCC monetary union is that of the BCS and shock. Briefly, the BCS property suggests that countries that seek to form a monetary union should display a high degree of similarity in their business cycles and shocks. Given a high degree of synchronicity in business cycles amongst countries, the cost of giving up the possibility of using counter-cyclical monetary policy is minimized (Darvas and Szapary, 2004). Although countries may face similar shocks, the speed and nature of policy responses may affect the magnitudes and trends of business cycle correlations.

The BCS criterion is analyzed by computing the real GDP growth over a given time horizon. The resulting correlation coefficients are used to examine the

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degree of business cycle co-movements. While the correlation results are supposed to provide a basis for the examination of the BCS and possible conclusions as to whether a set of countries are potentially good candidates for a monetary union, they do not tell us anything about policy responses and the speed of adjustment. For the purpose of this study, we use the analysis of temporal variation in the synchronization of business cycles that often involves multiple periods or sub-periods. Specifically, our computed correlation matrices include the following: (1) Annual real GDP after taking the first difference of its logarithm[41], (2) Two-year real GDP growth, (3) Three-year real GDP growth, and (4) Ten-year rolling window[42] real GDP growth using Hodrick-Prescott (HP) filter[43].

The rationale for using three time horizons and a ten-year rolling window to compute the GCC business cycle correlation coefficients is to assess whether there are consistent patterns or lack thereof among them and provide relevant analysis accordingly. Existing literature on BCS has provided little discussion as to what time horizon is relevant in computing the correlation coefficients (Artis, 2003). Nonetheless, the choices of four different time horizons in our study should reveal some patterns for the GCC region. Unlike most studies on the EMU where some break points such as the year the common currency was

---

[41] The difficulty with a one-year time frame analysis is that it fails to capture the medium term synchronization of business cycles and shocks. Furthermore, in order to gauge the costs of giving up differential policy responses, one needs to look at the correlations over an extended period of time so as to allow for policy lags to be captured. The one-year time frame results are more relevant for automatic stabilization rather than a more effective policy response. The reason is that this time frame may be capturing mostly short-term synchronization and possibly idiosyncratic shocks.

[42] Rolling windows measure cross-correlations averages for a given period, i.e. ten years. While the results do not reflect changes in business cycle patterns, the sustainability of cycles convergence by using this type of computation (Artis, 2003).

[43] The HP filter has been used in a number of similar studies. It allows for the trend itself to shift so as to offer the user the possibility to assess how far this feature is allowed to come through the data (Artis, 2003)

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adopted to assess the pattern of trade and business cycle co-movements before and after exists, no such significant break point exists for the GCC since 1981 when the six member states agreed to work towards a monetary union.

One graphical representation is included under this section showing the business cycle co-movements trends using a three-year real GDP growth. A similar graph, using a ten-year rolling window with HP filter can be found in the Appendix section under Chart 1. In both cases Saudi Arabia is used as the base country simply because of its economic size. Table 5.16 below shows the four BCS correlation matrices mentioned above, using IMF/IFS real GDP data from 1970 to 2004 and estimated at constant price of 1990. The correlations are computed by using pairwise correlations between a pair of GCC countries RGDP growth rate.

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Table 5.16: GCC BCS Correlation Matrices

Table 16a: GCC One-year RGDP Growth Correlations

	BAHRAIN	KUWAIT	OMAN	QATAR	SAUDI ARABIA	UAE
BAHRAIN	**1.000**					
KUWAIT	0.022	**1.000**				
OMAN	0.192	-0.130	**1.000**			
QATAR	-0.255	0.248	-0.357	**1.000**		
SAUDI ARABIA	**0.438**	-0.166	-0.159	0.244	**1.000**	
UAE	**0.623**	-0.202	-0.057	-0.149	**0.692**	**1.000**

Table 16b: GCC Two-year RGDP Growth Correlations

	BAHRAIN	KUWAIT	OMAN	QATAR	SAUDI ARABIA	UAE
BAHRAIN	**1.000**					
KUWAIT	-0.012	**1.000**				
OMAN	0.122	-0.213	**1.000**			
QATAR	**-0.445**	0.187	**-0.492**	**1.000**		
SAUDI ARABIA	**0.496**	-0.206	-0.247	0.226	**1.000**	
UAE	**0.716**	-0.315	-0.042	-0.168	**0.791**	**1.000**

Table 16C: GCC Three-year RGDP Growth Correlations

	BAHRAIN	KUWAIT	OMAN	QATAR	SAUDI ARABIA	UAE
BAHRAIN	**1.000**					
KUWAIT	-0.062	**1.000**				
OMAN	0.178	-0.288	**1.000**			
QATAR	-0.384	0.131	**-0.645**	**1.000**		
SAUDI ARABIA	**0.625**	-0.236	-0.267	0.148	**1.000**	
UAE	**0.741**	-0.357	0.009	-0.126	**0.869**	**1.000**

Table 16d: GCC Business Cycles (HP-Filtered) Pairwise-Correlations

	BAHRAIN	KUWAIT	OMAN	QATAR	SAUDI ARABIA	UAE
BAHRAIN	**1.000**					
KUWAIT	0.146	**1.000**				
OMAN	-0.081	-0.098	**1.000**			
QATAR	**-0.425**	-0.001	-0.267	**1.000**		
SAUDI ARABIA	**0.551**	-0.150	**-0.402**	0.042	**1.000**	
UAE	**0.454**	-0.384	-0.155	-0.034	**0.601**	**1.000**

Data source: IMF/IFS from 1970 to 2004
Computed in Eviews and transferred to Excel by the Author

Our analysis first identify consistent and significant correlations pattern amongst the four matrices. Second, we provide an overview analysis

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encompassing all four matrices. And third, we draw some conclusions and raise questions based on the findings. Please note that like almost literature on this criterion, we do not have a clear threshold of the magnitude of the business cycle correlation coefficient. For the purpose of this analysis, we will focus on any magnitude of +/- 0.400 and discuss any other pertinent trends.

The most unusual observation is that of the overall low magnitudes of most of the correlation coefficients in the four matrices. Moreover, a number of pairwise correlation coefficients have negative signs implying overall diverging patterns. Finally, there seems not to be a discernable pattern in terms of the magnitudes of the correlation coefficients amongst the four matrices except for the signs. The fact that all six GCC economies are supposed to be impacted by symmetric shocks due to their heavy dependency on the hydrocarbon sector makes these findings somewhat puzzling. Before attempting to provide some rationale behind these findings, let's first see what they tell us.

The highest correlation coefficients are between Saudi Arabia and the UAE and this is consistent in all four matrices. The highest correlation between the two countries is 0.869 under the three-year RGDP growth while the lowest one is under the ten-year rolling window using HP filter at 0.601. The other high correlation coefficients observed are those between Bahrain and the UAE with the biggest magnitude of 0.741 under the three-year RGDP growth and the lowest at 0.454 under the ten-year rolling window using HP filter. Other significant observations, and somewhat expected, are those between Bahrain and Saudi Arabia with the highest magnitude of 0.625 under the three-year RGDP growth matrix and the lowest under the one-year RGDP growth matrix at

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0.438[44]. The final interesting observation across all four matrices is the consistent negative correlation coefficients between Oman and Qatar, Bahrain and Qatar, and to a lesser degree between Oman and Saudi Arabia. As for Kuwait, the largest correlation coefficient magnitude at the negative end is -0.384 between her and the UAE under the ten-year rolling window using HP filter, and on the plus sign with Qatar at 0.248 under one-year RGDP growth matrix.

Except for the findings between Saudi Arabia and the UAE and to a lesser degree Bahrain and those two countries, the results, overall, do not appear to be significant. Given these results, the monetarist preference of steady monetary growth would be difficult to implement. The case of Bahrain and Saudi Arabia is less complicated as the economy of the former tends to rely on the performance of the later. The case of large correlation coefficient between Saudi Arabia and the UAE is different since the UAE economy is much more diversified than that of Saudi Arabia. Using ten-year rolling window for three-year RGDP growth, Chart 6 below shows less pronounced business cycle co-movement gaps in the later five years[45].

[44] The Bahraini economy has for years depended on Saudi grants of crude oil that it refines, consumes domestically and exports.
[45] The same patterns are observed using HP filter as shown under Chart 1 of the Appendix section.

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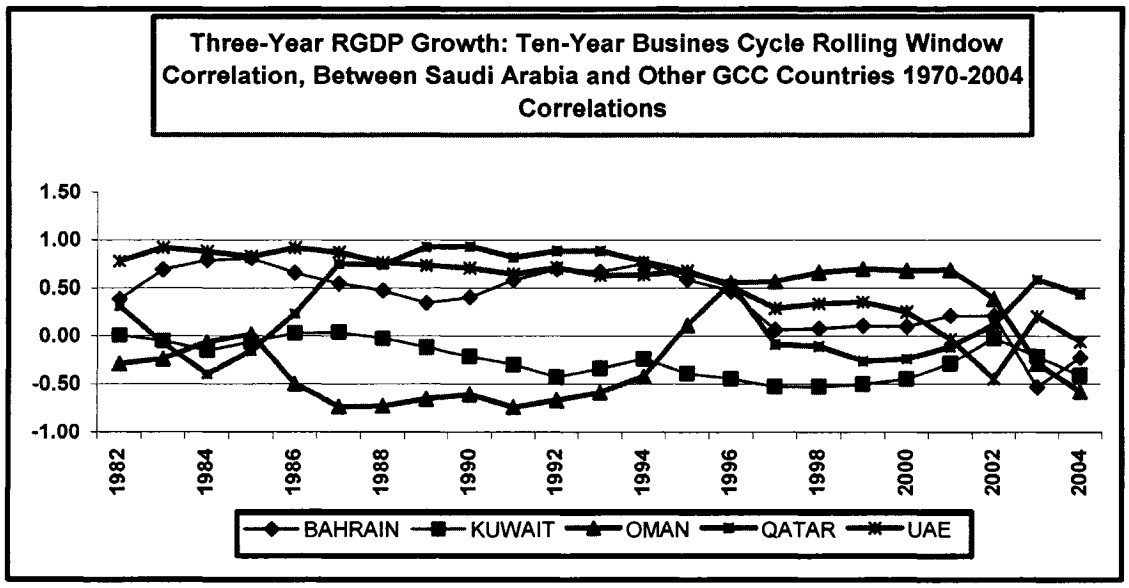
Chart 5.6: Three-Year GCC RGDP Growth: Ten-Year Rolling Window Correlations



Data source: IMF/IFS from 1970 to 2004

The GCC countries correlation coefficients average for one-year real GDP growth is slightly higher than the two and three-year averages. Overall, the magnitudes of three averages are very small as shown on the Table 5.17 below. We compare the GCC average results to those of Europe not because that Europe is the most attractive benchmark, but rather because the GCC countries have turned to the European experience and received advice from the EMU for their incipient monetary union. For the Euro Zone on the other hand we observe an opposite trend with a smaller magnitude for the one-year average and higher for the two and three-year averages. The low correlation coefficients for the GCC countries are somewhat puzzling since all six member states tend to experience symmetric shocks often caused by fluctuations in oil prices.

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Table 5.17: GCC and Euro Zone Average Business Cycles Correlations

Correlation Coefficients of Real GDP growth	Av. The GCC Countries 1970 to 2004*	Av. Eurozone 1965 to 2004
One-Year Growth	0.066	0.465
Two-Year Growth	0.027	0.510
Three-Year Growth	0.022	0.518

* Our computation starts form 1970 due to Lack of previous years data
The GCC correlations are computed by the Author while the Euro average are computed by Willett, Permpoon, and Wihlborg (2006)

Possible explanations include the facts that the extent and speed of fiscal response to shocks varies from one country to another, and the pace and degree of economic diversification are also different. It has become clearer in recent years that while hard fixes of the exchange rate can be expected to impose substantial discipline over monetary policy and inflations, the same is not necessarily the case for fiscal policy (Willett, Permpoon, and Wihlborg, 2006). It could therefore be misleading to draw strong conclusions on whether the GCC countries are a viable monetary union based solely on these results.

The case of the GCC is rather different from the usual analysis of OCA. As discussed under the exchange rate variability criterion, a number of factors, including similarity in production structure and degree of commodity diversification that are characterized by the dominance of the oil and gas sector, have allowed these countries to rely on fiscal rather than monetary or exchange rate policy instruments for adjustment, and as such facilitate the coordination of monetary and exchange rate policy that over the last two decades have resulted in successful fixed pegs. In other words, even though our findings suggest little

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business cycle co-movements, the GCC countries could still be considered as a viable, probably not optimal, monetary union.

5.6 Fiscal Convergence Criteria

The last OCA criterion we analyze is that of macroeconomic convergence with an emphasis on fiscal policies amongst the GCC countries. The OCA theory suggests that a higher level of fiscal integration between two areas increases their ability to smooth out diverse shocks through endogenous fiscal transfers. For the purpose of this study, and due to limited data availability, we analyze two macroeconomic convergence indicators: budget deficit/surplus as % of GDP and the ratio of the change in expenditure over revenue[46]. Inflation rate and interest rate criteria have already been discussed under the criterion of real exchange rate variability and are not repeated here. Other important indicators such as gross public debt as % of GDP are not analyzed though references from other studies are cited. Note that the GCC country fiscal indicators should be taken with some degree of caution since the six member states tend to be less than forthcoming with data in this area. The available data allow us to observe some trends from which we base our conclusion. The second part of our discussion focuses on comparing and contrasting the GCC agreed to, but yet to be implemented, macroeconomic convergence criteria to those of EMU.

As observed from Table 18 below, the data range from 1975 to 2002. Please note that overall the 1970s were characterized by high oil prices. By all accounts,

[46] The ratios of change in expenditure over revenue are computed by Fasano and Wang (2001) and their data sources are from GCC countries national statistics.

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including that by Sturm and Siegfried (2005), in the 1970's GCC countries exhibited budget surpluses resulting from high oil prices. Table 18 below gives the average between 1975 and 1980 and shows Kuwait with the largest budget surplus at 41.8% while Bahrain, Oman, and the UAE show either a modest surplus or deficit. The data for Saudi Arabia and Qatar are not readily available from secondary sources. Overall, between 1975 and 2002, and for Saudi Arabia in the later years, Oman and Bahrain have constantly recorded budget deficits in almost all the selected periods, though with varying magnitudes. The patterns for the ratio of the change in expenditure over revenue seem not to converge except slightly between 1998 and 2000.

While overall the 1970s are characterized as a period of high budget surpluses for the GCC countries following significant increases in oil prices, the 1980s marked the transition to deficits, and a similar trend is observed in the 1990s (Sturm and Siegfried, 2005)[47]. The magnitudes of the budget balance-to-GPD ratios are nonetheless quite different among the six member states. While the underlying components of the budget deficits – government revenue and expenditure exhibit high degree of co-movements (Sturm and Siegfried, 2005), the ratio change in expenditure over revenue do not necessarily follow the same pattern. Using co-integration and error-correction modeling, Fasano and Wang (2001) find that while spending is driven by revenue from oil, suggesting a pro-cyclical expenditure policy to changes in oil revenues, the timing, extent, and rules of spending differ and thus resulting in somewhat different patterns. For instance, for decades, Kuwait has implementing a policy that came to be known

[47] Kuwait appears to be an exception showing mostly budget surpluses in the later years.

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as oil stabilization funds in order to mitigate the pressure on government to overspend in times of growing revenues by channeling a major portion of the increase in oil revenue away from the budget (Fasano and Wang, 2002). Other members of the GCC have not adopted a similar policy by allowing the instability in crude oil prices in the world market to dictate their spending policy.

Another macroeconomic convergence criterion is that of public debt. According to Sturm and Siegfried (2005), available data show that the ratio gross of public debt to GDP in GCC countries seems to vary significantly and reflect differing paths of fiscal policies pursued by the member states over the last two decades. In 2002, Saudi Arabia had the highest debt-to-GDP ratio among the GCC countries at over 80% while the UAE had the lowest at below 10% (Sturm and Siegfried, 2005). In sum, although the GCC country expenditure tends to be driven by revenues from oil, the extent and timing of spending vary. This pattern is also reflected in their respective budget balances.

As referenced earlier under the BCS criterion, lack of fiscal policy coordination among the GCC countries over the last two decades has not affected their fixed pegs to the US dollar despite times of severe negative oil shocks as was the case in 1998. The fall in oil price brought some recessions in the region but the member states did not adjust their exchange rate pegs to the US dollar. Rather, the governments resorted to fiscal policy to deal with the shock. Indeed, there was no need for exchange rate adjustment as over 80% of their exports at the time were crude oil while the rest were mostly hydrocarbon-based goods such as petrochemicals. On average, the dependence on crude oil for exports leveled off after 1998, but the increase in price in recent years

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appears to be reversing this trend in most GCC countries as the income from its sales far outweighs non-hydrocarbon export incomes.

Table 5.18: GCC Macroeconomic Convergence Indicators

	Average form to	1975 1980	1980 1986	1986 1990	1990 1994	1994 1996	1996 1998	1998 2000	2000 2002
Bahrain									
	Deficit (-) or Surplus as % of GDP	-0.30	0.71	-4.92	-3.86	-3.65	-4.22	-2.73	n.a.
	Inflation Rates	13.04	3.21	-0.26	0.98	1.02	0.54	-0.79	-0.80
	Ratio change in expenditure/revenue*	0.90	-7.60	1.30	-1.50	0.40	-0.30	0.20	n.a.
Kuwait									
	Deficit (-) or Surplus as % of GDP	41.48	5.99	n.a.	n.a.	-3.40	1.77	4.45	19.34
	Inflation Rates	2.64	4.35	3.25	4.25	2.93	1.46	1.88	1.57
	Ratio change in expenditure/revenue*	0.70	-0.90	-15.80	-2.00	0.20	-0.70	0.00	n.a.
Oman									
	Deficit (-) or Surplus as % of GDP	-1.59	-8.22	-9.24	-7.98	-7.67	-3.95	-6.52	n.a.
	Inflation Rates	n.a.	n.a.	n.a.	n.a.	1.26	-0.15	-0.52	-0.95
	Ratio change in expenditure/revenue*	0.50	7.20	0.00	-1.70	0.00	0.10	0.20	n.a.
Qatar									
	Deficit (-) or Surplus as % of GDP	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.	n.a.
	Inflation Rates	1.13	4.06	3.04	2.19	3.90	4.26	2.15	1.12
	Ratio change in expenditure/revenue*	0.60	0.10	0.10	-0.90	0.80	-0.20	0.10	n.a.
Saudi Arabia									
	Deficit (-) or Surplus as % of GDP	n.a.	n.a.	n.a.	n.a.	n.a.	-3.06	-4.85	n.a.
	Inflation Rates	13.53	0.05	-0.15	1.70	2.22	0.31	-0.94	-0.67
	Ratio change in expenditure/revenue*	0.90	0.50	0.50	1.20	0.40	0.20	0.40	n.a.
UAE									
	Deficit (-) or Surplus as % of GDP	0.64	n.a.	n.a.	0.10	-0.14	0.19	n.a.	n.a.
	Inflation Rates	8.96	6.13	3.97	3.64	2.78	2.27	2.37	2.60
	Ratio change in expenditure/revenue*	1.00	0.20	0.50	0.20	2.20	1.50	0.30	n.a.
	Change in average crude oil prices**	234.80	-65.00	62.20	-30.60	27.70	-35.80	116.00	n.a.

Data source: IMF/IFS. Indices computed by the author
*Indices provided by Fasano and Wang (2001)
** By Fasano and Wang (2001) based on average nominal price of UK Brent, Dubai, and West Texas Intermediate

In 2004, the six member states agreed in principle on key macroeconomic convergence criteria that include the size of the budget deficit, inflation rate, interest rates, foreign reserves and the ratio of public debt to GDP. These criteria have yet to be implemented. Table 5.19 below draw a comparison between the

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GCC agreed criteria and those of the EMU. The reasons we select the EMU for comparison are already discussed above.

Table 5.19: EMU vs. GCC Macroeconomic Convergence Criteria

EMU vs. GCC Macroeconomic Convergence Criteria

	EMU Criteria	GCC Agreed Criteria
Average rate of inflation over the previous 12 months	Must not exceed by more than 1.5 percentage points of the three best performing member states	Weighted average of the six countries plus 2%
Budget deficit	Should not exceed 3% of the GDP	Should not exceed 3% of the GDP although some flexibility will be allowed to account for wild fluctuations in states revenues
Gross public debt	Should not exceed 60% of the GDP	Should not exceed 60% of the GDP
Interest rates	Average of the lowest six countries plus 2%	Average of the lowest of the six countries plus 2%

Table 5.19 above shows that the GCC countries have adopted two EMU macroeconomic convergence criteria, namely public debt and interest rates while giving themselves more flexibility on inflation rates and budget deficit. It is sensible to conclude that the leeway under the later two criteria reflects different fiscal policies among the six member states despite the fact most of their revenues come from oil.

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Chapter Six: Rentier Societies, Asymmetric Hydrocarbon Reserves, and the Future of the GCC Monetary Union

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Chapter Six: Rentier Societies, Asymmetric Hydrocarbon Reserves, and the Future of the GCC Monetary Union

In Chapter 2 of this dissertation we discuss the significance of the political dimension in OCA analysis. Mintz (1970) suggests that the political will to integrate is the most important condition in forming a monetary union. He argues that political will promotes compliance with joint agreements, sustains cooperation on economic policies in a union, and promotes institutional convergence. Tower and Willett (1976) argue that successful currency areas would be those with a reasonable degree of compatibility in preferences toward growth, inflation, and unemployment and considerable ability by policy makers in trading-off between objectives. Cohen (2003) also discusses the significance of political consideration in monetary unions. He laments that there is a tendency for many analysts to simply focus on economic gains and losses associated with monetary unions with little or no regard for political considerations. He suggests that ultimately, a common currency is about "the exercise of power and the ability of a national community to control its own affairs." (pp, 222)

Political economy of OCA analysis has many facets. One aspect of analysis is in terms of domestic politics and interest groups in member states that aspire to form a monetary union. Willett (2004) explains that domestic politics, the size and influence of various interest groups whose benefits could be impacted by a currency union could either facilitate or hinder the formation of monetary union. Another dimension would be to analyze monetary unions with respect to institutional and legal frameworks such as the extent of

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independence that is accorded to central banks or the harmonization of laws amongst de facto or potential member states. Commercial and labor laws for instance have implications on intra regional trade, capital movement, regional direct investment, and the movement of labor. One could also analyze one simple entity such as government bureaucracy and its effects on the monetary union.

For the purpose of this dissertation, we use qualitative analyses to examine the effects of the GCC countries as rentier states and rentier societies and the implications on the future of their monetary union. Our discussion is framed in two parts. We first examine the region in the context of the resource curse and rentier state literature. Second, we proceed to analyze the potential effects of rentier states of the GCC on current economic structure and eventually on their incipient monetary union. With regards to the effects of the monetary union, we specifically discuss the implications on fiscal integration and overall prospects for structural divergence in view of the fact that some member states are running out of hydrocarbon resources while others are still endowed with abundant reserves.

6.1 The GCC Countries as Rentier Societies

The literature on rentier states and the resource curse tends to overlap. In many studies the latter has been used to explain the former. One of the major characteristics of highly rentier states is that their economies tend to be heavily commodity-based. Moreover, as is the case for the GCC countries,

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economic rent-seeking behaviors spill over to the society as a whole. It is important to note that within the GCC, the extent of both rentier state and society varies substantially from member to member with some states where hydrocarbon resources are in abundance exhibiting more of these characteristics than in those that are running out of this resource. Another important characteristic of rentier states is that often, the concentration of resource rent is mostly in the hands of a limited number of people which translates the control of the rent into both a source of political power and corruption (Fouquin et al, 2006). Regarding rentier societies, specifically in the case of the GCC, the states have generally promoted welfare policies that have extended rent-seeking behaviors to the society as a whole. This dissertation does not examine the rationales underpinning these policies; rather we examine their implications in the formation of a monetary union. In order to do so, we first define rent seeking and then discuss the concept in the context of the resource curse literature with the GCC countries being the focus of our study.

There are some variations in the manner with which scholars define economic rent. The main factor underlying these variations is the extent or the source of the revenues that promote rent-seeking behaviors. Eifert et al (2003) define economic rent as the additional amount paid (above what would be paid for the best alternative use) for something whose supply is limited either in nature or because of human ingenuity. They add that seeking economic rents by creating artificial limitations is a growing business and is more prevalent in oil-based economies. Ross (2001) explains that rentier

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states draw a significant fraction of their revenues from external rents; the literature is sorted into two categories. The first category includes those who put forward the theory that oil wealth makes states less democratic. The second category suggests that oil wealth causes governments to do a less than desirable job in promoting economic development. These two arguments are often conflated. Ross (2001) also suggests that governments in oil-rich countries always do a poor job in promoting economic development. This argument is rather too inclusive given the fact countries like Norway and the UAE have been able to promote economic diversification granted their huge endowment of petroleum resources.

Marktaner and Nasr (2006) use a path-analytical approach to examine the distortionary channels that the primary resources curse takes directly and indirectly on economic, social, and political variables in the Middle East. They list multiple channels and in the case of an oil curse they list income inequality, low industrial development, and decrease in capital formation, slow demographic transition, and promotion of autocratic governance. They further argue that the oil resource curse in the Middle East has inhibited economic diversification and developing an export-oriented manufacturing base. This dissertation does not examine oil resources endowment and their effects on democracy. Rather, we focus our analysis on the GCC monetary union given that its member states having been classified as rentier states.

Some scholars have correctly suggested the effects that are associated with resource curse could be minimized provided effective institutions are in place to do so. Mehlum et al (2002) argue that what matters for a resource-

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abundant country to avoid a resource curse is the quality of institutions. They claim that the presence of rent–seeking in a country is not the main issue in trying to explain resource curse since rent seeking is present in many countries to various degrees. The main reason for diverging experiences insofar as growth is concerned amongst resource-abundant countries is thus the quality of institutions. They show in their findings that natural resources push aggregate income down when institutions are what they term *grabber friendly*[48]; a case where rent-seeking activities and production activities are competing. Where rent seeking and production are complementary activities, institutions are termed *producer friendly*[49]. Grabber friendly institutions are characterized by weak rule of law, high risk of expropriation, malfunctioning bureaucracy and corruption in the government. In short, their main finding suggests that resource curse applies in countries with grabber friendly institutions but not countries with producer friendly institutions.

Mehlum et al (2002) also argue that *Dutch Disease*[50] alone does not explain resource curse since it is difficult to understand why crowding out of traded goods sector should be so much stronger in countries with a certain institutional quality. They cite Botswana, Canada, Australia, and Norway as examples of countries where Dutch Disease has failed to materialize despite the abundance of natural resources. Ross (1999) explains that the Dutch

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[48] They easily divert scarce entrepreneurial resources out of production and into unproductive activities as a result of natural resource abundance.

[49] Producer friendly institutions in rich-resource countries attract entrepreneurs into production that causes higher growth.

[50] Dutch Disease often occurs when boom in resource exports can produce economic stagnation (Ross, 1999). The two main effects attributed to Dutch Disease, as described by Ross, are the appreciation of a state's real exchange rate caused by the sharp increase in exports and the tendency of a booming resource sector to draw capital and labor away from a country's manufacturing and agricultural sectors, raising their production costs.

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Disease argument looked quite promising in the early 1980's in explaining the failures of resource-exporting countries. However, recent research has found weakness in this explanation as it pertains to developing states, and that governments often have the means to offset the impact of Dutch Disease when they deem necessary. Jeffrey Sachs and Andrew Warner (1995) show a high ratio of natural resources exports to GDP in 1971 had abnormally slow growth rates between 1971 and 1989. Leite and Weidman (1999) also provide empirical evidence that shows wealth of natural resources translating into lower growth mostly through rent-seeking activities and corruption.

In general, Ross's (2001) argument that oil and mineral wealth tend to make states less democratic and the findings by Jeffrey Sachs and Andrew Warner (1995) and Leite and Weidman (1999) that explain low growth in terms of resource abundance have merit. However, it is important to point out that for a number of oil producing countries, when world oil prices are quite high as has been the case in recent years, these countries experience high growth granted most, if not all of it in oil-related sectors. This has been the case for the GCC countries and a number of oil-producing countries in recent years as high oil prices are sustained in the world market[51]. Indeed, quite often, high oil prices have generally led to policies of economic liberalization being marginalized amongst the GCC countries. Net resource exporters often quickly abandon domestic policy reforms after enjoying resource windfall gains and thus further injecting uncertainties into integration schemes (Fouquin et al, 2006). The overall results for the GCC countries have been

[51] Please note that the growth rates that are driven by increase in oil prices in the world market should be viewed as trends rather than cyclical

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little economic diversification, an export-base skewed towards petroleum, and continued rent-seeking behaviors both at state and society levels. Stevens (2005) argues that large inflows of foreign-exchange revenues accrued to oil producing countries when prices are high should overcome capital shortage and lack of investment. The author adds that there is strong evidence that the reverse is true and that large revenues derived from oil damage the economic base of a country.

Having discussed the overall effects of rentier states and generally concurred with the classification of the GCC countries not only as rentier states, but also as rentier societies, we proceed to examine their effects on the formation of the GCC monetary union.

6.2 Rentier Societies and the Viability of the GCC Monetary Union

In this section we focus our analysis on fiscal integration and the overall prospect for structural divergence in view of the fact that some member states are more rapidly running out of hydrocarbon resources. Please note some of the discussion in this section may overlap with those of the OCA analysis of fiscal integration, degree of commodity and goods market integration, degree of trade integration, and structural convergence. While these criteria are analyzed in previous sections in terms of their economic effects on the GCC monetary union, under this section they are examined in the political economy context, and more specifically in terms of rentier states.

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Rentier Societies and the Impact on the GCC Fiscal Integration

Our analysis of GCC fiscal integration suggests that the six member states have yet to harmonize their fiscal policies and for that matter have little incentive to do so. We further argue that the structural anomalies of the GCC countries and their successful pegs to the US dollar in the last two decades provide little reason to coordinate their fiscal policies. This argument is advanced assuming that all six member states are still heavily depend on petroleum sector for their respective economies. Our OCA analyses on some criteria show that some GCC member states are becoming more diversified than others. With the exception of the UAE where oil reserve is still in abundance, Bahrain, and to a lesser extent Oman, are running out of oil reserves that can be produced economically. In the event that these countries cease to depend on petroleum the question then arises as to whether the other member states would be willing to share their resources and allow for fiscal transfers to sustain these two economies or assist them in the event of major shocks. OCA theory also suggests that a higher level of fiscal integration between two areas increases their ability to smooth out diverse shocks through endogenous fiscal transfers. These transfers are expected to originate from a low-unemployment region to a high unemployment area. Another point we need to note is that as oil production for some member states such as Bahrain and Oman decline the size of the private sector may increase. This is changes have already been observed in Bahrain where the private sector plays a prominent role in the economy. However, the decline in oil reserve does not guarantee an automatic shift towards a more market

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oriented economy unless policies that promote economic diversification and liberalization are undertaken even when oil prices are high.

Considering the fact that Saudi Arabia is the largest economy amongst the GCC countries and the biggest producer of crude oil in the world is facing severe structural, rather than lack of aggregate demand unemployment problems, it begs the question whether this country would be willing to share its resources with other members who are expected to run out of resources in the near future. Fouquin el al (2006) argue that natural resources may shape the perception of policy-makers politically. The authors assert that natural resources are often viewed as natural and strategic capital stock to be used solely for domestic disposal rather than for other members in integration schemes. They add that such conduct would weaken deep integration which requires some asymmetric burden-sharing between rich and poor members. It is indeed seldom for countries to share their natural resources with other countries although there are examples of price subsidies by producing countries to other friendly countries. For instance, Saudi Arabia sells a share of its crude oil production to Bahrain at lower prices than those prevailing in the world market while Iraq used to do the same for Jordan. Other forms of assistance could simply be fiscal transfer from rich members to members that face financial challenges. It is conceivable that as richer GCC members face unemployment pressure and fiscal constraint, they could reduce these price subsidies to other members that are endowed with less or no oil resources of their own.

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The above scenario is more likely to occur given the fact that so far, with the exception of the UAE, the GCC member states that are endowed with abundant crude oil reserves have failed to diversify their economies, and continue to pursue policies that promote rent-seeking at state and society levels. Furthermore, combining the fact that this region has one of the highest birth rates in the world and in a country like Saudi Arabia where unemployment level is estimated at double digits causing political and social unrest, one could easily foresee a situation where member states focus their resources domestically with little political will to share them with other members. Fouquin et al (2006) explains that in integration schemes amongst industrialized countries as is the case for Norway in the European Economic Area, Canada in the US-Canada FTA as well as in South-North integration (Mexico in NAFTA), experiences with resource-abundant countries have been limited to "shallow schemes" without common policies. They add that in these cases resource-abundant countries have been hesitant to acquiesce to deeper integration and limited themselves to simple free trade areas as is the case of Norway and the EU.

Rentier Societies and the Impact on the GCC Structural Convergence

We document in Chapter 5 in the analysis of OCA criterion of business cycle synchronization that the GCC countries have failed to meet this criterion and yet have been able to successfully maintain fixed pegs over the last two decades. We explain that number anomalies such as similarity in production structure with heavy dependence on hydrocarbon sector and a small private

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sector have allowed the six member states to maintain low exchange variability amongst them and keep the de facto pegs to the US dollar. We further explain that these anomalies have substantially limited the use of monetary policy instrument or exchange rate adjustments to respond to shocks or deal with other forms of imbalances in their economies. Rather, they have mostly resorted to fiscal policy to do so. As observed in the analyses of a number of OCA criteria analyses in Chapter 5, the GCC economies are mostly external economies. Fouqin et al (2006) explains that in general, resource-abundant countries are world market oriented. The authors reason that this fact has resulted in the integration scheme for the GCC countries to be ineffective in promoting intra regional trade.

Our analysis as far as the GCC countries are concerned is to attempt to look into the future of the GCC monetary union in view of new dynamics that have already been manifested in the region. We argue that a combination of factors including the fact that Bahrain and Oman oil reserves are depleting faster than other members of the GCC, Bahrain and the UAE becoming much more diversified economically than the rest of the GCC, and the failures to stamp out policies that promote rent-seeking at state and society levels, variations in business cycle co-movements as an OCA criterion amongst the six member states could become more relevant in the future. Specifically, as those member states with less or no oil could be forced to liberalize their economies faster and further and make use of other policy instruments rather than constantly resort to fiscal intervention to deal with shocks and address other imbalances in their economies.

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To sum up, although our economic OCA analyses have concluded that the anomalies that characterize the GCC countries have facilitated the adoption of fixed pegs for their respective currencies, produce stable exchange rates, and could potentially make the GCC monetary union a reality, granted not optimal, these anomalies are not there to stay. The fact that some members are running out crude oil reserves at a much faster pace than others; a situation that would put some constraints on using fiscal policy instrument, and the potential for low business cycle co-movements becoming more relevant, and all in view of the fact that overall, little economic diversification is taking place with governments continuing to pursue welfare policies that promote rent-seeking at state and society levels, the future of the GCC monetary union may not be viewed as a fait accompli ipso facto. This is not to say the six member states could not reverse these trends. More economic liberalization that would phase out the preponderance of the state as an economic agent in promoting the private sector, an economic diversification policy that is geared toward comparative advantage sectors, the political will of richer members to allow fiscal transfers to less rich members to assist them in times of shocks, and the adoption of social policies that move the GCC countries form rentier states and rentier societies to more productive countries could all change the dynamics in the region and thus make the GCC monetary union a potentially viable entity.

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Chapter Seven: Conclusion and Implications

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Chapter Seven: Conclusion and Implications

In this study, we use OCA analysis to assess the feasibility and readiness of the GCC countries to use a common currency. After reviewing and critiquing existing studies, improving upon previous analyses, and extending our analyses to additional OCA criteria, we conclude that the GCC countries could form a monetary union, granted not an optimal one.

We find that from a traditional OCA analysis perspective, the GCC countries are a major anomaly. They have successfully maintained fixed pegs among themselves for two decades despite an environment of relatively high capital mobility and at the same time fail to meet a number of OCA criteria. Most significantly, intra regional trade has not grown in the last two decades and has remained negligible. Overall, the GCC countries have also failed to meet the OCA criteria of goods market integration and of commodity diversification. Moreover, as we document in our study, there is little synchronization of their business cycles or harmonization of their fiscal positions and all member states have faced substantial export instability while their real exchange rates remain closely related and share the same stochastic trends. The closely related real exchange rates imply an equilibrium relationship between the different bilateral GCC real exchange rates that are also characterized by relatively low inflation rates that move in a similar fashion. In view of these findings, it is arguable that to some degree, OCA theory is not applicable to the case of the GCC monetary union.

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We argue that the main reason why these failures to meet OCA criteria have not undermined the operation of fixed rates within the GCC is that to a great extent, their economies do not conform to the market-oriented models that implicitly underlie traditional OCA analysis. The GCC economies depend heavily on the oil and gas sector with a relatively small private sector. Furthermore, while the economic mobility of their citizens is low, heavy use of guest workers provides a substantial element of flexibility to their economies.

The GCC countries exposure to substantial export variability owes to common shocks to the global oil market, thus reducing the need for differential adjustments within their individual economies. Moreover, their access to high levels of oil revenues has reduced concern about short or medium run financial positions. The greatest potential cost of fixed exchange rates is that a country might have to adopt severely contractionary monetary policy in order to defend its currency in the face of an incipient payment deficit. In market-oriented economies, this would generate high unemployment in the absence of a highly flexible labor market. For the GCC countries, their domestic private market sector is quite small relative to the public sector, implying that there would be a number of other ways to cushion the effects of restricted monetary policy. As a consequence, domestic monetary policy can pursue exchange rate adjustment in relative freedom from concern regarding possible effects on private sector unemployment and output growth.

The political economy analysis we have undertaken examines whether the rentier nature of the GCC countries and societies could pose challenges for the future of their monetary union. This analysis has been undertaken while keeping

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in mind that member states such as Bahrain and Oman are running out of petroleum reserves. We conclude that this possibility could potentially pose serious challenges for the future of the monetary union as their economies become structurally divergent and rich member states become hesitant to share their resources. In this scenario, and unlike the current situation where all member states enjoy relatively large petroleum reserves and mostly use fiscal policy to deal with shocks and other economic imbalances, the OCA criteria of business synchronization and that of fiscal integration would become relevant.

We now draw some implications based on the findings of our study. While the GCC countries can afford to maintain their fixed pegs, enjoy exchange rates stability, and mostly rely on fiscal policy instrument to deal with shocks and other aspect of economic imbalances, this can only continue if all member states are still endowed with substantial hydrocarbon resources. However, as discussed some countries are running out of this resource and pose potential challenges for the monetary union. In order for the incipient GCC monetary union to remain viable, economic liberalization that reduces the role of states and promotes that of the private sector is a must. Furthermore, social and economic policies need to be framed in manners that move the GCC countries from being rentier societies to being more productive economies. Finally, economic diversification that reshapes the GCC countries from overall dependence on crude oil and natural gas with special focus on areas of comparative advantage would expand the region's economic base, reduce the problem of unemployment faced by some member states and thus reduce political pressure on richer members to share their resources through fiscal transfer when there might be demands to do so.

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Appendix

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Appendix

The first step taken by Laabas and Limam to analyze the behavior of the GCC countries' exchange rates was to test whether the real exchange rates in these countries are in fact non-stationary[52]. A formal test of Dickey Fuller[53] (1979) and the Phillips Peron [54](1988) confirm that the GCC real exchange rates are indeed not stationary. The results of these two tests for the GCC and the two base countries are shown on Table 1. These results indicate that both nominal and real exchange rates are not stationary. The findings also indicate that the null hypothesis that the data generation process contains a unit root in the exchange rate data cannot be rejected. The test is however rejected at 5% level

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[52] A series is considered **stationary** when the mean, variance, and autocorrelations can usually be well approximated by sufficiently long time averages based on a single set of realization (Enders, 2004). **Stationarity is** often associated with **auto regressive process** (AR) in time series. AR is one of the techniques used to deal with serial correlation in time series, in which nearby error terms in a regression model are (or appear to be) correlated (Davidson and MacKinon, 2004). **Non-stationarity** therefore entails evolving events where model and processes differ. **Non-stationarity** can either consists of regular persistent changes known as *stochastic trends* or sudden unanticipated large changes known as *structural breaks*. A non-stationary time series is said to be integrated to order one, or I(1) if the series of its first differences , $\Delta y_t = y_t - y_{t-1}$, is **I(0)**. More generally, a series is said to be *integrated to order*, or **I(d)**, if it has to be differenced *d* times before the I(0) result is obtained (Davidson and MacKinon, 2004).

[53] A series is **I(1)** if it contains a **unit root**; a term that comes from the fact that the random walk process would also include a lag operator. The distributions of estimators and test statistics associated with I(1) regressors may be quite different from those associated with regressors that are I(0) and indeed **non-stationarity** tends to have economic implications (Davidson and MacKinon, 2004). The authors explain that it is therefore important to be able to detect the presence of unit roots in time series, often by the **unit root tests** in which the null hypothesis states that the time series has a unit root and the alternative is that it is I(0). The most widely used test is that the **Dickey-Fuller tests**, or **DF tests.**

[54] Peron (1989) develop a formal procedure to test for unit roots in the presence of a structural change at time period
$t = \tau + 1$ (Enders, 2004). Under this test once may consider the null hypothesis as a unit root process with a one time jump in the level of the sequence in period $t = \tau + 1$ while the alternative hypothesis is trend stationary with a one-time jump in the intercept (Enders, 2004). According to Enders, the **Phillips Peron test** improves on the **DF test** since under the latter test, to test for unit roots in the presence of structural break involving splitting the sample in two parts and using DF tests on each part. The problem with this procedure, as Enders explains, is that the degrees of freedom for each of the resulting regression are diminished. In addition, one may not know when the beak point actually occurs. As such, it is preferable to have a single test based on a full sample the author explains. This is where the **Phillips Peron test** becomes useful.

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when applied to the first differences of the nominal and real exchange rates. Based on the findings from these two tests, the authors conclude that both series are integrated of order one.

Table A1: ADF Stationary Tests for the GCC Exchange Rates

Country	BASE COUNTRY : USA				BASE COUNTRY : KSA			
	Nominal		Real		Nominal		Real	
	Level	1st Differences	Level	t Differenc	Level	1st Differences	Level	1st Differences
Bahrain (66-98)	(-)1.20	(-)3.69*	(-)0.52	(-)2.61*	(-)0.40	(-)2.59*	(-)0.65	(-)4.09*
Kuwait (72-98)	(-)0.80	(-)4.16*	(+)0.87	(-)5.27*	(+)0.08	(-)5.30*	(-)0.60	(-)3.34*
Oman (60-99)	(+)0.12	(-)3.74*	(-)1.10	(-)3.23*	(+)1.27	(-)4.27*	(-)0.38	(-)7.00*
Qatar (79-99)	(-)1.30	(-)3.54*	(+)0.78	(-)2.62*	(-)0.58	(-)2.35*	(-)1.89	(-)2.04*
KSA (63-99)	(-)0.75	(-)3.66*	(-)1.22	(-)2.14*	-	-	-	-
UAE (73-99)	(-)1.32	(-)3.61*	(+)1.36	(-)3.58*	(-)0.57	(-)3.15*	(-)0.53	(-)3.06*

Computation and findings by Laabas and Limam (2002)

The next phase of test conducted by the two authors is that of co-integration analysis. They use the Johansen (1991, 1995) approach[55] to estimate and test the co-integration relationships. To determine the number of co-

[55] The explanation under this footnote comes from Enders (Second Edition, p348-54, 2004). The **Johansen** approach is simply a multivariate generalization of the DF test (Enders, 2004). The number of distinct co-integrating vectors can be obtained by checking the significance of the characteristic roots of the rank of matrix, π. The rank of a matrix is equal to a number of its characteristics roots that is different from zero. Given a matrix π and ordered **n** characteristic roots such that $\lambda_1 > \lambda_2 > \text{----} > \lambda_n$. If the variables in $\mathbf{x}_t$ (the (n.1) vector $(x_{1t}, x_{2t}, \text{---}, x_{nt})'$ are not co-integrated the rank of π is zero and all these characteristic roots will equal to zero. In practice only the estimates of π and its characteristics roots can be obtained. However, the test for the number of characteristic roots that are not significantly different from unity can be conducted using two test statistics of $\lambda_{trace}(r)$ and $\lambda_{max}(r, r+1)$. When the appropriate values of r are clear, these statistics are simply referred to as λ_{trace} and λ_{max}. The first statistic tests (λ_{trace}) tests the null hypothesis that the number of distinct co-integrating vectors is less than or equal to r against general alternative. When all $\lambda_i = 0$, then λ_{trace} equals to zero. The second statistic (λ_{max}) tests the null that the number of co-integrating vectors is r against the alternative of $r + 1$ co-integrating vectors. Here also, if the estimated value of the characteristic root is close to zero, λ_{max} is going to be small.

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integrating equations both trace and maximum eigenvalue tests are used. While the trace statistic tests the null hypothesis of ***r*** co-integrating relations against the alternative ***k*** co-integrating relations, the maximum eigenvalue statistic tests the null hypothesis of ***r*** co-integrating relations against the alternative of ***r + 1*** relations. The lag length of the Vector Autoregressive (VAR) model that underlines the long-run relationships given by equation (1) is determined so as to estimate the parameters of the co-integrating relationships. The reason is to make estimation possible and error terms roughly white noise. The small sample size and missing data restrict the author to experiment with high-order VAR models. They reason that in this study VAR (1) appears to fit the available data reasonably well and that the errors terms of the model also behave fairly well.

Based on the Johansen approach, Table 2 shows the findings by Laabas and Limam on the tests for the number of co-integrating vectors, in terms of maximum eigenvalue, λ_{max}; trace, λ_{trace}, statistics, and the corresponding eigenvalues, λ. According to the trace test result as shown in Table 6, there exists up to three co-integrating vectors while the maximum eigenvalue test suggests four. The authors conduct these tests at 90 per cent significance level. The fact that these results are not in agreement prompts the authors to reconstruct the tests using instead 95 per cent critical values given by Osterwald-Lenum (1992). Under this test, the λ_{max} **and** λ_{trace} critical values for ***r = 3*** are 21.07 and 31.52 respectively. The authors thus accept the hypothesis that three co-integrating vectors or less exist in this case. Additional observations by the authors show that the 95 per cent significance level λ_{max} test accepts the null of

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***r* = 2** given the fact that the 95 per cent critical value in this case 27.14; a value that is higher than the computed value of 25.48.

Table A2: Testing and Cointegration Results

λ_{trace}				λ_{max}				
H0	H1	Statistcs	90% Critial Value	H0	H1	Statistcs	90% Critial Value	λ
r = 0	r > 0	196.36	97.17	r = 0	r = 1	101.44	25.51	0.995
r <= 1	r > 1	94.92	71.66	r = 1	r = 2	39.63	21.74	0.876
r <= 2	r > 2	55.29	49.91	r = 2	r = 3	25.48	18.03	0.739
r <= 3	r > 3	29.80	31.88	r = 3	r = 4	16.29	14.09	0.576
r <= 4	r > 4	13.51	17.79	r = 4	r = 5	8.51	10.29	0.361
r <= 5	r > 5	5.00	7.50	r = 5	r = 6	5.00	7.50	0.231

Computation and findings by Laabas and Limam (2002)

In view of the findings discussed above, Laabas and Limam (2002) conclude that there are two co-integrating vectors. The estimates of the co-integrating vectors, **β**, and the associated adjustment coefficients vectors, **α**, are shown in Table 3. The **β** coefficients are interpreted as long-term elasticities while the **α** coefficients can be viewed as adjustment coefficients indicating the speed of adjustment toward long-term equilibrium.

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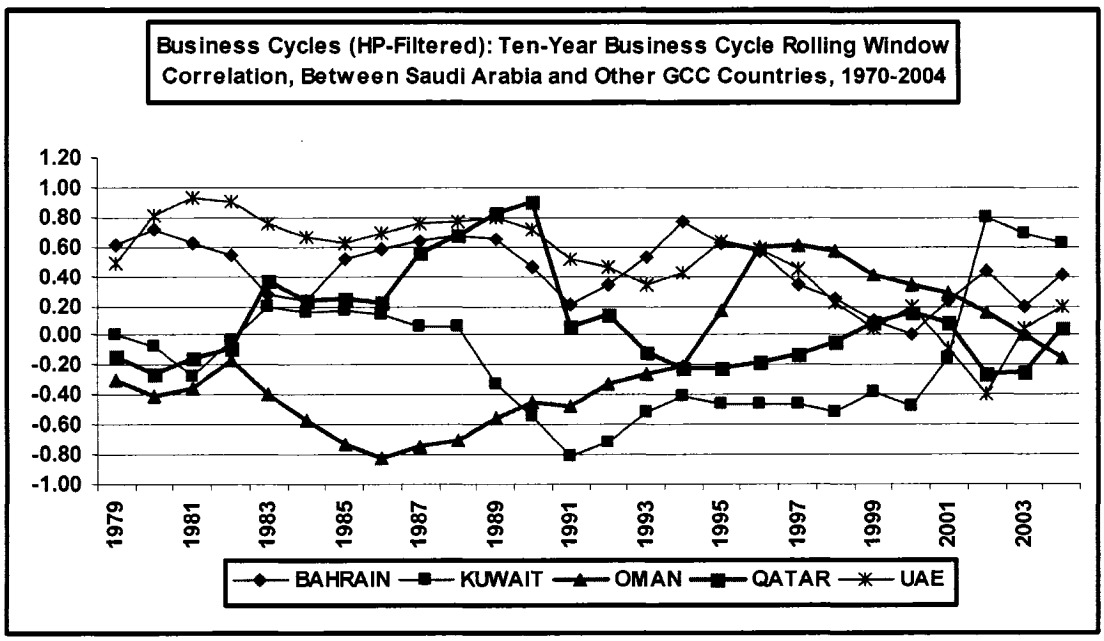
Table A3: Cointegrating and Adjustment Vectors

	Constant	Bahrain	Kuwait	Oman	Qatar	S. Arabia	UAE
β_1	-1.609	-0.458	-0.188	-0.019	1.302	1.000	-1.952
α_1	-	-0.28	-0.166	-0.006	-0.119	-0.419	-0.058
		(-7.733)	(-2.281)	(-0.024)	(-4.243)	(-13.350)	(-1.124)
β_2	1.884	-0.307	1.566	-0.579	-0.645	1.000	-1.470
α_2	-	-0.057	-0.047	0.626	0.01	0.130	0.173
		(-1.826)	(-0.760)	(3.121)	(0.397)	(4.837)	(3.881)

Computations and findings by Laabas and Limam (2002)
* The Coimtegrating vectors are normalized so that Saudi Arabia's exchange rae is the reference
T-values are in parentheses

Chart A1: Business Cycles (HP-Filter): Ten-Year Rolling Window Correlations



Data source: IMF/IFS from 1970 to 2004

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Table A4: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1] Between 1984 and 2003

	YEAR	1984	1985	1986	1987
		GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER				
BAHRAIN	KUWAIT	0.360	0.355	0.328	0.303
	OMAN	0.366	0.360	0.333	0.308
	QATAR	0.733	0.722	0.668	0.617
	SAUDI ARABIA	2.501	2.463	2.278	2.104
	UAE	16.662	16.411	15.182	14.020
KUWAIT	BAHRAIN	0.426	0.302	0.090	0.248
	OMAN	0.265	0.275	0.144	0.206
	QATAR	0.384	0.396	0.126	0.137
	SAUDI ARABIA	9.384	8.960	3.392	3.157
	UAE	3.032	2.894	0.494	0.896
OMAN	BAHRAIN	0.100	0.098	0.069	0.072
	KUWAIT	0.036	0.021	0.028	0.054
	QATAR	1.060	1.144	1.311	1.123
	SAUDI ARABIA	0.187	0.262	0.302	0.388
	UAE	3.202	3.933	3.941	4.437
QATAR	BAHRAIN	0.005	0.004	0.088	0.070
	KUWAIT	0.949	0.819	1.080	1.019
	OMAN	0.006	0.005	0.276	0.107
	SAUDI ARABIA	1.448	1.248	2.091	1.619
	UAE	0.391	0.337	1.421	1.401
SAUDI ARABIA	BAHRAIN	38.843	35.533	29.869	35.156
	KUWAIT	2.648	2.460	3.758	5.029
	OMAN	0.231	0.387	0.462	0.674
	QATAR	0.615	0.954	1.220	1.018
	UAE	2.038	4.360	9.194	6.881
UAE	BAHRAIN	1.155	1.251	0.773	1.076
	KUWAIT	1.589	1.722	1.881	2.891
	OMAN	0.235	0.254	13.832	10.715
	QATAR	3.633	3.936	1.045	0.947
	SAUDI ARABIA	7.508	8.135	4.300	3.331

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Table A4: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1]

Between 1984 and 2003 (Cont'd)

	YEAR	1988	1989	1990	1991
		GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER				
BAHRAIN	KUWAIT	0.962	0.844	0.334	0.176
	OMAN	0.197	0.173	0.095	0.346
	QATAR	0.231	0.203	1.458	0.416
	SAUDI ARABIA	3.645	3.198	2.334	1.867
	UAE	2.244	1.969	0.550	2.025
KUWAIT	BAHRAIN	0.356	0.391	0.279	0.176
	OMAN	0.186	0.228	0.154	0.015
	QATAR	0.189	0.211	0.135	0.019
	SAUDI ARABIA	3.134	3.032	1.509	0.097
	UAE	1.188	0.950	0.765	0.161
OMAN	BAHRAIN	0.094	0.150	0.084	0.069
	KUWAIT	0.205	0.232	0.009	0.010
	QATAR	1.434	1.458	0.935	0.093
	SAUDI ARABIA	0.548	0.671	0.764	0.527
	UAE	5.958	5.302	4.598	6.248
QATAR	BAHRAIN	0.104	0.155	0.134	0.110
	KUWAIT	1.708	1.139	0.322	0.044
	OMAN	0.079	0.221	0.204	0.246
	SAUDI ARABIA	2.734	1.637	1.024	1.007
	UAE	1.362	2.195	2.532	2.204
SAUDI ARABIA	BAHRAIN	31.211	31.748	37.837	30.714
	KUWAIT	6.547	7.282	4.301	13.141
	OMAN	0.677	0.961	1.641	1.213
	QATAR	1.407	2.845	2.659	1.486
	UAE	9.329	12.418	17.354	16.707
UAE	BAHRAIN	1.465	1.289	1.153	0.948
	KUWAIT	4.466	2.247	0.372	0.274
	OMAN	13.390	12.366	12.199	14.482
	QATAR	1.136	1.322	0.987	1.311
	SAUDI ARABIA	3.798	3.163	3.254	3.856

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Table A4: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1] Between 1984 and 2003 (Cont'd)

	YEAR	1992 GCC COUNTRY EXPORT % OF GCC EXP	1993 GCC COUNTRY EXPORT % OF GCC EXP	1994 GCC COUNTRY EXPORT % OF GCC EXP	1995 GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER				
BAHRAIN	KUWAIT	0.285	0.412	0.717	0.855
	OMAN	0.465	1.148	0.353	0.161
	QATAR	0.456	0.294	0.475	0.463
	SAUDI ARABIA	2.179	2.570	3.743	3.686
	UAE	1.380	2.112	0.997	1.088
KUWAIT	BAHRAIN	0.285	0.412	0.175	0.252
	OMAN	0.075	0.136	0.130	0.160
	QATAR	0.112	0.162	0.155	0.219
	SAUDI ARABIA	0.710	1.155	1.232	1.658
	UAE	0.482	0.943	0.930	1.112
OMAN	BAHRAIN	0.138	0.148	0.128	0.134
	KUWAIT	0.017	0.189	0.234	0.207
	QATAR	0.108	0.128	0.118	0.125
	SAUDI ARABIA	0.632	0.682	0.747	0.804
	UAE	8.375	9.027	9.359	8.878
QATAR	BAHRAIN	0.113	0.120	0.144	0.128
	KUWAIT	0.143	0.336	0.307	0.340
	OMAN	0.156	0.132	0.091	0.198
	SAUDI ARABIA	1.645	1.356	1.077	0.881
	UAE	1.845	1.999	1.999	2.014
SAUDI ARABIA	BAHRAIN	29.272	23.823	22.839	21.709
	KUWAIT	8.006	7.449	6.689	6.855
	OMAN	1.043	1.193	1.393	1.984
	QATAR	1.903	1.489	1.735	2.329
	UAE	15.262	15.528	16.248	19.813
UAE	BAHRAIN	0.967	1.032	1.512	1.304
	KUWAIT	0.393	0.472	2.095	2.290
	OMAN	17.503	18.751	17.657	13.504
	QATAR	1.691	2.211	2.108	1.784
	SAUDI ARABIA	4.340	4.577	4.613	4.864

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Table A4: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1] Between 1984 and 2003 (Cont'd)

	YEAR	1996 GCC COUNTRY EXPORT % OF GCC EXP	1997 GCC COUNTRY EXPORT % OF GCC EXP	1998 GCC COUNTRY EXPORT % OF GCC EXP	1999 GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER				
BAHRAIN	KUWAIT	0.621	0.564	0.694	0.620
	OMAN	0.223	0.434	0.238	0.278
	QATAR	0.546	0.371	0.421	0.432
	SAUDI ARABIA	3.190	2.412	3.378	3.008
	UAE	1.069	0.917	1.392	1.363
KUWAIT	BAHRAIN	0.158	0.167	0.154	0.154
	OMAN	0.115	0.120	0.137	0.248
	QATAR	0.153	0.157	0.171	0.195
	SAUDI ARABIA	1.066	0.884	1.046	1.245
	UAE	0.855	1.107	1.292	1.416
OMAN	BAHRAIN	0.117	0.146	0.143	0.169
	KUWAIT	0.169	0.191	0.246	0.273
	QATAR	0.198	0.129	0.223	0.231
	SAUDI ARABIA	0.787	0.946	1.110	1.196
	UAE	7.820	9.165	10.197	9.880
QATAR	BAHRAIN	0.097	0.105	0.094	0.092
	KUWAIT	0.313	0.283	0.221	0.170
	OMAN	0.178	0.090	0.120	0.144
	SAUDI ARABIA	0.893	0.919	0.989	0.901
	UAE	1.417	1.241	1.727	1.892
SAUDI ARABIA	BAHRAIN	22.638	20.602	16.012	15.985
	KUWAIT	5.880	6.630	6.886	5.900
	OMAN	1.517	1.916	1.901	1.990
	QATAR	2.658	2.763	2.690	2.207
	UAE	23.320	24.227	17.927	19.642
UAE	BAHRAIN	1.099	1.196	1.176	1.152
	KUWAIT	1.834	2.316	2.306	3.007
	OMAN	12.727	13.613	17.800	16.442
	QATAR	1.635	1.432	3.444	2.496
	SAUDI ARABIA	4.721	4.805	6.112	7.393

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Table A4: Direction of Bilateral GCC Exports as % of Aggregate GCC Exports - DT[1]

Between 1984 and 2003 (Cont'd)

	YEAR	2000	2001	2002	2003	20-YEAR AVR.
		GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP	GCC COUNTRY EXPORT % OF GCC EXP
EXPORT TO	PARTNER					
BAHRAIN	KUWAIT	0.706	0.672	0.665	0.658	**0.557**
	OMAN	0.305	0.471	0.902	1.233	**0.419**
	QATAR	0.455	0.240	0.351	0.599	**0.508**
	SAUDI ARABIA	2.140	2.037	2.016	1.995	**2.637**
	UAE	1.389	1.657	1.686	1.668	**4.289**
KUWAIT	BAHRAIN	0.174	0.179	0.182	0.196	**0.238**
	OMAN	0.198	0.460	0.292	0.323	**0.193**
	QATAR	0.194	0.168	0.301	0.191	**0.189**
	SAUDI ARABIA	1.221	1.132	1.021	1.012	**2.302**
	UAE	0.977	1.133	1.091	1.080	**1.140**
OMAN	BAHRAIN	0.169	0.202	0.283	0.239	**0.138**
	KUWAIT	0.416	0.334	0.331	0.498	**0.185**
	QATAR	0.250	0.249	0.392	0.305	**0.551**
	SAUDI ARABIA	0.000	2.488	2.283	2.219	**0.877**
	UAE	9.756	9.791	11.781	8.157	**7.490**
QATAR	BAHRAIN	0.216	0.355	0.336	0.361	**0.142**
	KUWAIT	0.124	0.209	0.377	0.334	**0.512**
	OMAN	0.092	0.077	0.113	0.142	**0.134**
	SAUDI ARABIA	1.441	1.804	2.191	2.010	**1.446**
	UAE	6.429	2.795	5.002	3.770	**2.199**
SAUDI ARABIA	BAHRAIN	18.064	18.627	18.958	20.454	**25.995**
	KUWAIT	6.980	6.471	5.841	5.784	**6.227**
	OMAN	1.570	2.016	2.299	2.083	**1.358**
	QATAR	2.089	2.177	2.629	2.702	**1.979**
	UAE	10.495	10.648	10.913	10.807	**13.656**
UAE	BAHRAIN	1.302	1.342	1.366	1.474	**1.202**
	KUWAIT	3.558	3.298	2.977	2.948	**2.147**
	OMAN	16.926	17.929	17.165	13.159	**13.533**
	QATAR	2.568	2.128	2.978	3.028	**2.091**
	SAUDI ARABIA	6.721	6.231	5.625	5.570	**5.146**

Data Source: IMF Direction of Trade Statistics
GCC Country Exports as % of GCC Exports indexes are computed by the author

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Table A5: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT^2

Between 1984 and 2003

	YEAR	1984	1985	1986	1987
		GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP
IMPORT FROM	PARTNER				
BAHRAIN	KUWAIT	0.143	0.139	0.276	0.271
	OMAN	0.121	0.117	0.067	0.072
	QATAR	0.141	0.137	0.056	0.077
	SAUDI ARABIA	55.859	54.080	33.697	39.451
	UAE	1.235	1.196	1.129	1.178
KUWAIT	BAHRAIN	0.283	0.231	0.470	0.540
	OMAN	0.044	0.025	0.027	0.054
	QATAR	1.147	0.896	1.167	1.115
	SAUDI ARABIA	1.507	2.124	3.331	5.089
	UAE	2.086	1.025	2.032	3.163
OMAN	BAHRAIN	0.442	0.430	0.327	0.306
	KUWAIT	0.320	0.328	0.141	0.204
	QATAR	0.008	0.007	0.271	0.107
	SAUDI ARABIA	0.279	0.463	0.454	0.671
	UAE	16.449	24.219	13.581	10.657
QATAR	BAHRAIN	0.074	0.074	0.056	0.048
	KUWAIT	0.131	0.169	0.136	0.150
	OMAN	0.000	1.367	1.287	1.117
	SAUDI ARABIA	0.000	0.000	0.000	0.923
	UAE	1.103	1.093	1.129	1.036
SAUDI ARABIA	BAHRAIN	2.106	4.257	2.118	1.919
	KUWAIT	4.514	5.208	3.663	3.454
	OMAN	0.225	0.313	0.297	0.386
	QATAR	2.334	2.258	2.259	1.772
	UAE	5.510	6.144	4.644	3.644
UAE	BAHRAIN	12.920	8.668	4.337	3.555
	KUWAIT	1.790	1.311	0.534	0.981
	OMAN	3.868	4.698	3.870	4.413
	QATAR	1.013	1.457	1.535	1.532
	SAUDI ARABIA	2.092	4.698	6.272	5.609

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Table A5: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT^2 Between 1984 and 2003 (Cont'd)

	YEAR	1988 GCC COUNTRY IMPORT % OF GCC IMP	1989 GCC COUNTRY IMPORT % OF GCC IMP	1990 GCC COUNTRY IMPORT % OF GCC IMP	1991 GCC COUNTRY IMPORT % OF GCC IMP
IMPORT FROM	PARTNER				
BAHRAIN	KUWAIT	0.346	0.416	0.306	0.004
	OMAN	0.083	0.146	0.084	0.076
	QATAR	0.101	0.165	0.148	0.134
	SAUDI ARABIA	31.738	32.033	40.634	37.312
	UAE	1.421	1.373	1.266	1.151
KUWAIT	BAHRAIN	1.048	0.977	0.306	0.004
	OMAN	0.181	0.224	0.009	0.011
	QATAR	1.658	1.213	0.361	0.017
	SAUDI ARABIA	6.333	6.849	2.101	1.139
	UAE	4.335	2.393	0.371	0.303
OMAN	BAHRAIN	0.174	0.167	0.095	0.382
	KUWAIT	0.164	0.221	0.154	0.017
	QATAR	0.070	0.214	0.204	0.272
	SAUDI ARABIA	0.597	0.930	1.637	1.339
	UAE	11.814	11.973	12.171	15.994
QATAR	BAHRAIN	0.178	0.236	0.349	0.506
	KUWAIT	0.184	0.224	0.149	0.023
	OMAN	1.266	1.411	0.933	0.113
	SAUDI ARABIA	1.061	0.914	1.483	1.526
	UAE	1.103	1.408	1.083	1.593
SAUDI ARABIA	BAHRAIN	3.238	3.074	2.297	2.268
	KUWAIT	3.042	3.230	1.656	0.118
	OMAN	0.484	0.649	0.762	0.582
	QATAR	2.653	1.743	1.124	1.223
	UAE	3.686	3.368	3.572	4.684
UAE	BAHRAIN	2.221	2.314	2.865	2.460
	KUWAIT	1.153	1.012	0.840	0.196
	OMAN	5.257	5.133	4.588	6.900
	QATAR	1.321	2.338	2.778	2.677
	SAUDI ARABIA	6.156	7.182	8.938	7.880

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Table A5: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT[2] Between 1984 and 2003 (Cont'd)

	YEAR	1992	1993	1994	1995
		GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP
IMPORT FROM	PARTNER				
BAHRAIN	KUWAIT	0.038	0.041	0.186	0.229
	OMAN	0.140	0.138	0.124	0.141
	QATAR	0.126	0.123	0.153	0.148
	SAUDI ARABIA	32.641	24.380	22.319	23.265
	UAE	1.079	1.056	1.608	1.502
KUWAIT	BAHRAIN	0.038	0.041	0.925	1.019
	OMAN	0.017	0.176	0.227	0.217
	QATAR	0.131	0.302	0.326	0.392
	SAUDI ARABIA	1.737	7.623	6.342	7.293
	UAE	0.448	0.439	2.228	2.636
OMAN	BAHRAIN	0.472	1.068	0.342	0.169
	KUWAIT	0.076	0.127	0.126	0.168
	QATAR	0.158	0.123	0.088	0.208
	SAUDI ARABIA	1.058	1.110	1.348	2.077
	UAE	17.743	17.445	17.076	14.132
QATAR	BAHRAIN	0.508	0.301	0.298	0.474
	KUWAIT	0.125	0.166	0.164	0.143
	OMAN	0.113	0.123	0.122	0.131
	SAUDI ARABIA	1.343	1.672	1.658	1.465
	UAE	1.886	2.262	2.243	2.053
SAUDI ARABIA	BAHRAIN	2.430	2.630	2.773	3.081
	KUWAIT	0.792	1.182	1.310	1.071
	OMAN	0.641	0.634	0.722	0.842
	QATAR	1.835	1.388	1.146	1.014
	UAE	4.839	4.684	4.907	5.600
UAE	BAHRAIN	1.539	2.162	1.748	1.705
	KUWAIT	0.538	0.964	0.989	0.845
	OMAN	8.490	8.398	9.051	9.291
	QATAR	2.058	2.045	2.127	2.319
	SAUDI ARABIA	7.712	8.148	9.298	11.533

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Table A5: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT^2

Between 1984 and 2003 (Cont'd)

	YEAR	1996 GCC COUNTRY IMPORT % OF GCC IMP	1997 GCC COUNTRY IMPORT % OF GCC IMP	1998 GCC COUNTRY IMPORT % OF GCC IMP	1999 GCC COUNTRY IMPORT % OF GCC IMP
IMPORT FROM	PARTNER				
BAHRAIN	KUWAIT	0.189	0.197	0.170	0.172
	OMAN	0.127	0.156	0.143	0.172
	QATAR	0.116	0.121	0.104	0.105
	SAUDI ARABIA	24.940	24.270	11.541	11.660
	UAE	1.314	1.372	1.298	1.311
KUWAIT	BAHRAIN	0.674	0.664	0.766	0.692
	OMAN	0.184	0.205	0.247	0.277
	QATAR	0.374	0.334	0.244	0.190
	SAUDI ARABIA	7.807	7.365	7.344	6.588
	UAE	2.193	2.729	2.545	3.358
OMAN	BAHRAIN	0.242	0.464	0.238	0.282
	KUWAIT	0.125	0.129	0.137	0.252
	QATAR	0.193	0.097	0.121	0.146
	SAUDI ARABIA	1.649	2.052	1.907	2.020
	UAE	13.837	14.579	17.858	16.689
QATAR	BAHRAIN	0.467	0.437	0.465	0.482
	KUWAIT	0.182	0.185	0.188	0.217
	OMAN	0.144	0.138	0.201	0.192
	SAUDI ARABIA	2.109	2.266	2.566	2.464
	UAE	1.955	1.687	3.801	2.787
SAUDI ARABIA	BAHRAIN	3.652	2.841	3.728	3.359
	KUWAIT	1.275	1.042	1.155	1.390
	OMAN	0.856	1.014	1.113	1.214
	QATAR	1.068	1.082	1.091	1.006
	UAE	5.646	5.661	6.745	8.254
UAE	BAHRAIN	1.723	1.080	1.536	1.522
	KUWAIT	1.022	1.304	1.426	1.581
	OMAN	8.501	9.815	10.230	10.028
	QATAR	1.695	1.462	1.906	2.113
	SAUDI ARABIA	10.406	10.487	11.560	12.815

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Table A5: Direction of Bilateral GCC Imports as % of Aggregate GCC Imports - DT^2

Between 1984 and 2003 (Cont'd)

	YEAR	2000	2001	2002	2003	20-YEAR AVR.
		GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP	GCC COUNTRY IMPORT % OF GCC IMP
IMPORT FROM	PARTNER					
BAHRAIN	KUWAIT	0.198	0.191	0.194	0.227	0.197
	OMAN	0.175	0.196	0.275	0.240	0.140
	QATAR	0.246	0.378	0.358	0.399	0.167
	SAUDI ARABIA	13.457	12.961	13.220	15.407	27.743
	UAE	1.513	1.457	1.487	1.732	1.334
KUWAIT	BAHRAIN	0.805	0.716	0.710	0.727	0.582
	OMAN	0.431	0.324	0.321	0.500	0.185
	QATAR	0.141	0.223	0.403	0.368	0.550
	SAUDI ARABIA	7.959	6.891	6.235	6.388	5.402
	UAE	4.057	3.512	3.178	3.256	2.314
OMAN	BAHRAIN	0.316	0.456	0.875	1.238	0.424
	KUWAIT	0.205	0.445	0.283	0.324	0.197
	QATAR	0.095	0.074	0.110	0.142	0.135
	SAUDI ARABIA	1.627	1.952	2.231	2.091	1.375
	UAE	17.546	17.359	16.655	13.211	15.549
QATAR	BAHRAIN	0.519	0.255	0.375	0.662	0.338
	KUWAIT	0.221	0.179	0.321	0.211	0.174
	OMAN	0.233	0.226	0.281	0.292	0.484
	SAUDI ARABIA	2.382	2.318	2.806	2.983	1.597
	UAE	2.928	2.266	3.178	3.344	1.997
SAUDI ARABIA	BAHRAIN	2.440	2.169	2.152	2.203	2.737
	KUWAIT	1.392	1.205	1.090	1.117	1.945
	OMAN	0.000	2.409	2.216	2.227	0.879
	QATAR	0.000	1.922	2.339	2.220	1.574
	UAE	7.664	6.636	6.004	6.151	5.402
UAE	BAHRAIN	1.583	1.765	1.800	1.842	2.967
	KUWAIT	1.114	1.207	1.164	1.193	1.058
	OMAN	10.113	9.480	11.431	8.189	7.587
	QATAR	1.239	1.611	1.437	4.164	1.941
	SAUDI ARABIA	11.967	11.340	11.648	11.934	8.884

Data Source: IMF Direction of Trade Statistics
GCC Country Imports as % of GCC Imports indices are computed by the author

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