Determining the Exchange Rate of the Common GCC Currency under a Fixed Exchange Rate Regime

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In 2003, the Gulf Cooperation Council (GCC) countries pegged their exchange rate against the dollar and with the expectation of forming a common currency or currency union by 2010. The current exchange rates are fixed for all the six GCC countries, except Kuwait. Kuwait exchange rate is pegged to a basket of currencies. There are two economic characteristics that are common for these six countries. The first is the oil sector dominates the local economy and export market. Second, the labor market is dominated by the expatriate labor. The standard criteria for determining the Optimal Currency Area (OCA) is the macroeconomic stability in the face of real or nominal shocks. Ideally, the exchange rate regime chosen should yield external and internal stability, preserve monetary credibility, international competitiveness, and reduce balance sheet risks and transaction costs (IMF, 2008). Given the degree of variability of the GCC country economies, it is extremely difficult to determine the exchange rate without affecting some of those stability characteristics. In this paper, a variable exchange rate for the GCC countries was constructed using the Special Drawing Rights (SDRs) nominal exchange rate. We use an Ordinary Least Square (OLS), one-way and two way fixed effect models having the country specific and time effects along with the variable exchange rates. The estimated unit value of the proposed GCC common currency is equivalent to 0.293 dollars. This exchange rate is relatively higher compared to the existing currency exchange rates among the GCC countries.

Field of research: Financial Econometrics

1. Introduction

Economic and socio-cultural relationships among the Arab Gulf Countries represent a significant indispensable force for economic integration. In November 1981, the leaders of Bahrain, Kuwait, Oman, Qatar, Saudi Arabia and United Arab Emirates (known as GCC countries) have signed a charter for economic integration. Since then, many policy and action measures were put in-place to achieve the broader economic goal of economic integration. A policy decision was taken in 1999 to establish Custom Union (CU) by 2005. The Muscat Summit (December 2001) was a landmark that transferred the efforts from cooperation to integrity stage, where a resolution was adopted to ratify the economic pact among the GCC countries. The Muscat Summit economic pact includes implementation of common custom tariff, adoption of a single currency by 2010 and pegging individual GCC member country currencies against the dollar until a single

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currency is formed. In an effort to realize integrity among the countries, results from previous policies and actions were reviewed in time to time to recognize the current status, potential implications in the economies (inter and intra trade, balance of payment, labor mobility) and new policies and actions that are need to achieve the set goals.

Moreover, the GCC countries have many ingredients that are necessary for the establishment of monetary union, including political will, which is crucial to achieve the GCC monetary union and to overcome the potential obstacles that may arise during the implementation. In addition, the nature of the similarity of political system, resources and economic structures, development goals, as well as geographical location as a contiguous common border countries have strengthen the need for economic integration . Also, there are other common factors such as a unit of history, religion and language which are shared by all the GCC countries.

The existence of a monetary union could lead to the creation of new economic bloc that potentially can have a significant power in the regional and global arenas, as it owns large reserves of oil and gas in the world. The single currency can results a strong sustained economic growth and will reflect positively on the level of bilateral trade within the territory of the monetary union. Further, it will also support the trade between the GCC and other countries outside block. Potentially, the common currency will enhance the competitiveness of goods and services that are produced in the region. Consequently, the economic benefits from a single currency and economic block will lead to political influence in the world and in particular in the Arab world as new political force in the region. In this paper, an exchange rate for the common GCC currency was determined using the SDR nominal exchange rate as a common currency between US dollar and other existing GCC country currencies. We use an OLS, one-way and two way fixed effect models having the country specific and time effects along with the variable exchange rates.

2. Literature Review

A common currency is related to more than one geographic, political and economic regions or boundaries. Determining exchange for multiple currencies in a region had begun with the pioneer work of Mundell (1961), who attempted to illustrate the international adjustments that were needed in adopting a common currency under a fixed exchange rate. According to Mundell (1961) the prerequisite for a common currency is the perfect factor mobility within the region, while McKinnon (1963) believes that the openness of economy is the necessary condition for an adoption of Optimum Currency Areas (OCA). Buiter (1995) is with the opinion that the perfect capital mobility is the precondition for forming a common currency. The literature in OCA is very much focused on applicability of precondition and the factors that are likely to constitutes factor mobility in a region (McKinnon,1963; Kenen, 1969; Grubel, 1970; Giersch, 1973; Corden, 1973; Ishiyama, 1975; Melitz, 1995). The exchange rate of the OCA can have

a variety of implications on economic and financial status of the countries or boundaries. As such, the OCA has to fall in an area that could minimize those implications or imbalances on the existing exchange rate. In order to reduce such imbalances exchange rate of OCA is fixed. Kenen (1969, p. 41) suggested that in an "optimum currency area, within which the exchange rates should be pegged immutably."

Following McKinnon's (1963) work, many studies were done to examine the impact of adopting a common currency on trade balances (Kenen, 1969) and inflation (Mundell, 1997). Bofinger (1994) has examined the impact of a negative demand shock in segment of a country's production output. Bofinger (1994) found if the price of this particular good decreases in one country compare to the other, then the exchange rate adjustment becomes an inappropriate instrument to adopt a common currency. In such circumstances, the economies with diversified production and trade potentially off-sets the implications of one product to another (Kenen, 1969). As a result, shocks from adopting a common currency is widely dispersed across the economy, with less impact on the macroeconomic forces. Some of the recent studies have focused on the endogeneity issues and found that OCA likely to increase the trade among the member countries (Corsetti and Pesenti, 2002; De Grauwe and Mongelli, 2005).

The formal adoption of a common EU currency union came into effect in 1979 through an Exchange Rate Mechanism (ERM) system. Initially not all the countries joined the currency union. ERM set a fixed exchange rate for European Currency Units (ECU) based on basket of selected member country currencies with fluctuation margins. There was a gradual decline in the fluctuation margin over the time. The GCC countries are yet to formulate a comparable ERM system in the region to regulate the monetary policy. In the absence of such system, there were three potential instruments to determine the exchange rate of the common currency. The OCA can be pegged against the single-currency, basket of two-currencies and multi-currency basket. Abed et al. (2003) have estimated exchange rate for GCC common currency against the dollar (pegged against single currency) and currency of two baskets (dollar and euro) to bring the external stability to the member countries. The author's have found that two basket pegged currencies perform better than single pegged currency.

The broader objective of having a common currency is to make the participating member country or countries better-off with the OCA. However, it would be difficult to make all the participating member countries to be better-off because of their inter-dependency of trade and other social and geographical linkages. Potentially, the countries under the OCA ends-up in a zero sum game with gainers and losers within a common currency union. Laabas and Limam (2002) have examined the readiness of GCC countries to establish a common currency union and concluded that the member countries were not in a position to form a currency union as the fundamental macroeconomic factors were not converging to fulfill the necessary precondition to form a currency union. However, Ricci (1997, p.33) concluded that "it is impossible to find a rule of thumb for the identification of an optimum currency area" as some countries may benefit from stronger economic base or position. Some of the other studies that have attempted to examine the exchange rate for the OCA have concluded that it is impossible to estimate the OCA, as the preconditions do not qualify for formation of a

common currency. However, Frankel and Rose (1997 and 1998) argued that preconditions may not satisfy at ex ante, but criteria may converge at ex post as a result of increase trade among the member countries. The dissimilarities of all the countries in the block do not preclude to estimates an OCA for a region at ex ante, given the possibility to accommodate country specific factors in the estimation. After examining the impact of pegging the individual GCC currencies against the U.S. dollar and SDR, Erbas et al. (2001) have found that pegging the currencies against the nominal SDR likely to improve the stability of exchange rates among the GCC currencies. However, as the oil is traded with U.S. dollars and oil revenue is used for pay for the imports and dollar peg is likely to bring more stability in exports, imports and trade balances rather than the SDR peg (Erbas et al., 2001).

3. Data and Methodology

One of the key problems of using the available currency exchange rate data is that the majority of the GCC currencies are pegged against the U.S. dollar. In order to estimate the exchange of the common GCC currency against the dollar, there has to be variability in the dependent and independent variables. As a result, it is not possible to use the dollar as the common dependent variable in the estimation. However, during the study period (1995-2006), the GCC countries experience variability in the exchange rate against the SDR. Similarly, U.S. dollar has the flexible exchange rate with SDR as well. The dependent variable is estimated as the exchange rate of U.S. dollar against the SDR, while the independent variable was estimated as the exchange rate of respective GCC member countries existing exchange rate against the SDR. The SDR is composed of Euro, British pound, Japanese yen and U.S. dollar.

This study is based on 1) Frankel and Rose's (1997 and 1998) assumption that the preconditions may converge at ex post; and it not possible to make every GCC country better-off with the participation of the common currency. With these assumptions, all the macroeconomic factors that are likely to be affected with the OCA could be excluded in the estimation. We focus on the existing exchange rate against the SDR of the member countries considering country specificity. The proposed models are as follows:

$$Y_{it} = \beta X_{it} + \varepsilon_{it} \qquad\qquad (1)$$

where Y_{it} is the exchange rate of a common currency (US\$/SDR) at time t and X_{it} is the exchange rate (currency/SDR) of the members country i at time t with respective to the common currency. The error term ε_{it} is the error for country (i) at time (t). In the above model (1) the error term is assumed to be Independently, Identically Distributed (IID). However, since the countries are not similar to each other, error term (ε) may differ or heterogeneous. To account for country specificity, the error term can be decomposed into country effect (μ_i) and other unexplained effects (σ_{it}). With this argument, the second model is specified as follows:

$$Y_{it} = \alpha + \beta X_{it} + \mu_i + \sigma_{it} \qquad (2)$$

However, our study extended over 12 years and there is a possibility that the time varying effect may have a bearing in the model (2). As a result the error term does not meet the criteria for IID. The third model is specified to capture the time varying effect.

$$Y_{it} = \alpha + \beta X_{it} + \mu_i + \upsilon_t + \tau_{it} \qquad (3)$$

where (υ_t) is the time varying effect and τ_{it} is the error component of the model with zero mean and constant variance. Yet, the true nature of the model is unknown whether the member countries are homogenous or not and the impact of time varying effect. If the member countries are homogenous and the time varying effect is negligible, then a random effect model can be used to estimate the OCA and if not a fixed effect model is more appropriate. In the two-way panel data models (3), Hausman test are commonly performed to determine the specificity (fixed or random effect) of the model.

The exchange rate data were collected from International Monetary Fund (IMF) publication. The IMF collects the exchange rate data on all the currencies in the world on a daily basis. In this study we used the January monthly average daily exchange rate as the annual exchange rate for the study period. The summary statistics of the data is presented in Table 1. These exchange rates are nominal exchange rates. De Grauwe (1994) suggested that in the long run, nominal exchange rates are unlikely to affect the real exchange rate and money (quantity and price) should not be used to correct the differences that may arise due to adoption of a common currency.

Table 1: Currency Units per SDR

	U.S. Dollar	Bahrain Dinar	Kuwaiti Dinar	Omani Rial	Qatar Riyal	Saudi Arabian Riyal	U.A.E. Dirham
Mean	1.404	0.528	0.421	0.540	5.111	5.261	5.156
Minimum	1.253	0.471	0.385	0.482	4.559	4.697	4.600
Maximum	1.524	0.573	0.445	0.586	5.548	5.716	5.598

Source: IMF Publications 2007.

Almost all the GCC currencies have shown low to moderate variation in exchange rates. It may be due to the fixed exchange rate between the dollar and GCC currencies. Between 1995 and 2006, the U.S. dollar has depreciated about 1.29 percent against the SDR and a similar change was observed among Bahrain Dinar, Kuwaiti Dinar and Omani Rial. The Kuwait Dinar showed the highest depreciation (3.6%) while the Saudi Arabian Riyal shows lowest depreciation (1.15%) against the SDR.

4. Results and Discussion

The results from models (1), (2) and (3) are presented in Table 2. The models were estimated using STATA econometric software. The first two models r-squared values are 58.9% and 55%, respectively, while the third model's fixed effect (within) r-square was 58.8%. All three models fit reasonably well within comparable r-squared values. The model (3) was tested for appropriate form of the model (fixed or random effects) using the Hausman specification test. The Chi-square value of the test is 92.94 with the probability of Prob>chi2 is zero (0.000). The Hausman test statistics results indicated that a fixed effect model was more appropriate and we estimated a fixed effect model. The estimated coefficients have expected sign for the exchange rate coefficient in all three models. The estimated coefficients and their respective standard errors have almost identical values in the three models that were estimated, indicating that a consistent parameter exchange rate for the common currency. The exchange rate coefficient was positive and significant in all three models. The value of the exchange rate coefficient is 0.294 in model (1) and 0.293 in models (2) and (3). This indicates that a unit value of the proposed GCC common currency is equivalent to 0.293 dollars. During the study period, the mean exchange rate for one US$ is equal to 0.376 Bahrain Dinar, 0.299 Kuwait Dinar, 0.384 Omani Rial, 3.640 Qatar Riyal, 3.747 Saudi Arabian Riyal and 3.672 U.A.E. Dirham.

We believe this study provides a sound starting point for future research to determine the exchange rate for OCA and potentially a basis for examining the implications on macroeconomic variables given the OCA exchange rate. The Unified Gulf Currency lead to an increase the confidence of the currency rates and reduce the pressure of speculation in financial activities, facilitate trade exchange interface and a factor of the success of the free-trade area, which will have positive effects on economic growth.

Table 2: Estimated Coefficients

Variable	Coefficient		
	Model 1	**Model 2**	**Model 3**
Exchange Rate	0.294*	0.293*	0.293*
	(0.029)	(0.030)	(0.03)
Intercept	-	-0.105	0.573*
		(0.157)	(0. 086)
Adj R-squared	58.9%	55.0%	[a]58.8%

* indicates significance at the .05 level and the values in parenthesis are standard errors.

5. Conclusion

In this paper, we estimated the exchange rate for the common GCC currency under the assumption that the ex post condition for a common currency are likely converge after the introduction of the common currency. The estimated GCC common currency exchange rate is equivalent to 0.293 dollars. The exchange rate is very close to the exchange rate of Qatar Riyal, Saudi Arabian Riyal and U.A.E. Dirham. This exchange can be used as the basis to examine the implications of formation of common currency.

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