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Perspectives on the GCC Monetary Union

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Abstract
The Gulf Cooperation Council (GCC) countries in 2001 proposed to establish the Gulf Monetary Union (GMU) by 2010. As we know it did not happen; however, negotiations have never been stopped and they plan to establish it in the near future. In the meantime authors have been busy in analyzing the feasibility (viability) of the GMU. This is a review article about the proposed GMU. It starts with the review of basic premise of the convergence criteria. It also reviews the studies on business cycle and shocks synchronization of the GCC countries. Researchers (based on their empirical evidence) differ in their opinions whether the GCC countries are yet to form the GMU.
Keywords: business cycle, convergence, GMU, shock synchronization, SVAR

1. Introduction

The Gulf Cooperation Council (GCC) is a regional integration formed in 1981 by six oil exporting countries (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates) of the Arabian Gulf. When the GCC was formed, the countries in it aspired for a monetary union which is an economic union with a single common currency. This is because, as we know now, the highest form of a regional integration is a monetary union. Such aspiration seemed to be implanted before the formation of the GCC in 1981. El Kuwaiz (1988) reported that a futile attempt was taken in the period 1975 – 78 by the four GCC countries (Bahrain, Kuwait, Qatar and the UAE) to form a monetary coordination that would result in a common Gulf currency to be named as Gulf Dinar.

With the creation of the GCC in 1981, the members agreed to enhance cooperation between monetary agencies and central banks, including an endeavor to establish a common currency in order to further their desired economic integration. However, there was little progress in the next two decades towards the intended integration process that would have paved the way to a common currency. In the meantime euro, the official currency of the euro zone (the European Union), was introduced in the beginning of 1999. This seemed to serve as a new impetus for the heads of the GCC countries. They met in Muscat (Oman) in December 2001 to lay down some concrete steps to launch a single currency in the beginning of 2010. Among the intended steps were to achieve high level of harmonization in all economic policies (fiscal, monetary, banking, and budgetary) among the member states.

The GCC countries, except Kuwait, maintained *de facto* fixed exchange rates against the dollar for a long time (Khan, 2009). To facilitate the monetary integration process, they have opted to maintain *de jure* pegged exchange rates against the US dollar from 2003. They also agreed to eliminate all tariff and non-tariff barriers of intra-GCC trade and from 2003 started to treat any good as a national product as if it is produced by any GCC member state. Moreover, based on agreements among the GCC countries in 2001, a common tariff was introduced in 2003 that includes a common external customs tariff and common custom regulation.

As a part of the economic agreement, the GCC countries launched the common market from the beginning of 2008. Due to the common market there is virtually no restriction on the mobility of goods, national labor and capital among the member countries. This shows their intent and we may say that since 2001 much progress has been made toward achieving the goal of the GCC monetary union. There have also been some unanticipated setbacks that may have contributed to the failure in establishing the GMU by 2010 as was originally planned. In 2007 Kuwait unilaterally moved from the dollar peg to an undisclosed currency basket. Oman in 2006 and the UAE in 2009 pulled out of the proposed monetary union. However, as we understand there have been ongoing negotiations to bring them back to the union and launch the common currency soon.

This is a review article about the viability of the GCC monetary union (GMU) in relation to the theory of optimum currency area (OCA). By now a good number of papers have been written about the different aspects of the GCC monetary union. In this review I only concentrate on the viability or feasibility of the proposed GMU. In doing this I review the empirical results obtained and conclusion made. In some cases I provide theoretical background to

understand the empirical results and other cases when conclusions are based on discussions and tables, I provide some econometric evidence to support or refute the conclusions.

The rest of the paper is organized as follows. Section 2 briefly reviews the theory and some empirical results of the OCA. This forms the background discussions for the GMU. Initial writings on the GMU focused on convergence criteria as laid in the OCA literature. Thus, section 3 reviews this literature. Sections 4 and 5 review the most recent writings on the viability of the GMU that have concentrated on computing and analyzing the business cycles and shocks synchronization. Section 6 concludes the paper.

2. A Brief Review of the OCA

Consider an area consists of two or more countries and they are closely integrated through international trade and factor movements. This area would be called an optimum currency area (OCA) if a single currency among its members which can be pegged or fluctuate only in unison against the rest of the world. The economic integration achieved through single currency has since been termed as currency or monetary union. The pioneers of the OCA (Mundell,1961, along with McKinnon, 1963, and Kenen,1969) have identified crucial criteria that economies must poses to form an OCA. These criteria are: wage (price) flexibility and labor mobility criteria (Mundell); the degree of openness (trade) and the size of an economy criteria (McKinnon); and the similarity of economic structures between two economies, the degree of product diversification and the level of fiscal integration criteria (Kenen). They have argued that the economies forming a currency union would be in better position to absorb the asymmetric shocks if these criteria are met. Thus these criteria are seen as a prerequisite to form a monetary union. For the next two decades till 1990s most writers on OCA have continued to analyze these criteria and have elaborated the costs and benefits associated with the currency or monetary union (Dellas and Tavlas, 2009).

The costs and benefits of the monetary union have continually been evaluated. An extensive review of the costs and benefits of monetary union is now available in Santos Silva and Tenreyro (2010), Asonuma, et al., (2012), and Frankel (2013), among others. Obviously, by definition an individual member of a monetary union would not have autonomy in monetary policy. This is important because even under the monetary union an individual member country of the union would have different price, wage, and productivity structure that may require its own monetary policy to address its own economic problems. However, once in a monetary union the country would be unable to address it under the monetary union. Thus, the main cost of the monetary union would come from the loss of autonomy in monetary policy and along with it the loss of the exchange rate policy of the individual member countries. Moreover, once in a monetary union common fiscal constraints would be imposed that would limit the ability of the national governments to conduct their fiscal policies.

However, the consensus is that benefits would outweigh costs. Most important benefits include: (1) the improvements resulting from the integration of goods, services and factors markets; (2) the elimination of the exchange rate risk for trade flows among the monetary union members; (3) the reduction of the transaction costs; and (4) the saving on international reserves because they will not be required to have international reserves for transactions with the currency area. Alesina and Barro (2002) have emphasized the added gains inherent in monetary union that by coordinating monetary and fiscal policies, the monetary union would bring a greater monetary and price stability which is considered as the prerequisite for economic growth.

At the turn of the century, most writers on OCA have started to quantify the beneficial impacts of monetary union on trade and growth. Rose (2000) presented the first systematic (seminal) empirical study to quantify the impact of currency union on trade and his version of a gravity equation is reproduced in equation (1) for reference.

$$\ln X_{ij} = \beta_0 + \beta_1 \ln(Y_i Y_j) + \beta_2 \ln(\frac{Y_i Y_j}{Pop_i Pop_j}) + \beta_3 D_{ij} + \gamma CU_{ij} + \delta V(e_{ij}) + \mathrm{B}' Z_{ij} + u_{ij} \quad (1)$$

where X_{ij} is the value of bilateral trade between countries i and j, Y is the real GDP, Pop is population, D is the distance between countries (hence a gravity model), $V(e)$ is the volatility of bilateral exchange rate, Z is a vector of other dummy variables (specified in Rose, 2000) that include contiguity (common land border), regional trade agreement, common nation, common language, common nation, common colonies, colonization of country i by country j and vice versa, and u is the error term. However, the main variable in equation (1) is CU which is the common currency dummy (that is, countries use the same currency is assigned 1 and zero otherwise). Thus, the coefficient γ estimates the impact of currency union on trade flows. Using 186 countries, dependencies and territories with 33903 observations and different specifications he has obtained an incredibly large positive impact of currency union on trade and concluded that the "countries with the same currency trade over three times as much with each other as countries with different currencies" (Rose 2000, p. 17).

Persson (2001) immediately showed his skepticism to this very large (more than 300 percent) impact of currency union on trade and questioned the econometric methodology used by Rose (2000). Subsequently many studies reestimated the trade impact of currency union on trade by addressing the econometric issues found wanting in Rose (2000) study (Rose and van Wincoop, 2001, Alesina et al., 2002, Rose and Stanley, 2005, Barro and Tenreyro, 2007, and Frankel, 2008, among others). Some of these studies found the positive impact of currency union on trade but not as large as found in Rose (2000) and some studies even found no trade impact. Rose (2009) has categorically rejected the hypothesis that the currency union has no trade effect by performing a meta-analysis using twenty-six recent studies on European countries and found that the EMU has increased trade inside Eurozone by at least 8% (and could be as large as 23%). After reviewing the literature on trade impact of currency union, S-Silva and Tenreyro (2010) have interesting observation that may be relevant to the GMU. They contend that countries which are geographically close, speaking the same language, and share former colonial links are more likely to form a currency union.

Some other studies (Baldwin, 2006, Kelejian et al., 2011, among others) have used a version of gravity model (1) to estimate the impact of trade flows when the exchange rate volatility is eliminated in a monetary union. The argument is that member countries in a monetary union would eliminate exchange rate variability among the members and that would stimulate trade and economic growth. This means one would expect a significant negative estimate of δ in equation (1). Most of the empirical studies mentioned above found an impact ranging between 5 to 10%. This beneficial trade and growth impact of a monetary union would be in the back of the mind of the proponents of the GMU.

3. Issues of Convergence

Economic convergence or simply convergence is an important issue in the OCA literature. Convergence indicates structural similarities between economies. If the economies aspiring for a monetary union meet the set out convergence criteria, it is argued that they would be able to absorb the asymmetric shocks hitting these economies. This section reviews whether the GCC countries fulfill the convergence criteria. The GCC member countries have agreed to five convergence criteria as a first step towards to form their monetary union. They are interest rates, reserves, inflation rates, fiscal balance, and public debt. These criteria are in accord with the traditional theory of the OCA and in the OCA literature in general.

It is thought that convergence would be easily achieved if economies are integrated. Based on this idea some earlier studies investigated the state of integration of the GCC countries. For example, Dar and Presley (2001) studied the state of economic integration among the GCC countries measured by the volume of intra-GCC trade. We should mention that the GCC countries are a kind of homogenous unit. On the social side they speak one language and share a similar culture and tradition. On the economic side, they are all oil-exporters and their economies evolve around this oil sector. They have similar production, consumption, and development structures. As mentioned they all export oil and majority of their imports (including raw materials and most of the consumption items) come from outside the GCC countries. Thus, traditionally these countries have low intra-GCC trade. Thus, as recognized by Dar and Presley (2001), it is not surprising that there is a low level of integration measured by the intra-GCC trade. Laabas and Limam (2002) suggested that the GCC countries would achieve more intra-GCC trade by launching the GCC monetary union. Schaechter (2003) has emphasized for indirect benefits rather than direct benefits of the GMU which are still expected to be relatively small because of the insignificant intraregional trade among the GCC countries. According to him, the significant indirect benefits should come from the reinforcement of their present attempt of diversifying the economy, enhancing fiscal discipline across the membership and facilitating appropriate investment decisions across the GCC countries. However, the most important benefit would come from the financial and money markets integration. Financial and money market integration would increase the efficiency of the financial services which in turn would promote the growth of their non-oil GDP sector that they desperately in need (Schaechter, 2003).

Darrat and Al-Shamsi (2005) performed cointegration analysis between GCC countries' real GDP, inflation rates, financial markets, monetary policies, and found that these variables are cointegrated. This means the GCC countries share a common long-term trend, that is, their economic activities are linked through financial markets and monetary policies and only the socio-political differences preventing them to form a monetary union. Based on some ad-hoc arguments Echchabi et al. (2011) believe that the GCC monetary union will bring many benefits to the GCC countries.

Buiter (2008) has offered the most dismal view. He finds no overwhelming economic reason for the GMU, but he finds overwhelming political arguments against the union: "Without anything approaching the free movements of goods, services, capital and persons among the six GCC member countries, the case for monetary union is mainly based on the small size of all GCC members other than Saudi Arabia, and their high degree openings. Indeed, even without the creation of a monetary union, there could be significant advantages to all GCC members, from both an economic and security perspective, from greater economic integration, through the creation of a true common market for goods, services, capital, labor and from deeper political integration" (Buiter 2008, p. 43). He brings a serious economic argument against the union using the example of the distortionary inflation tax (seigniorage). Because of the lack of the

sufficient-distortionary taxes in the GCC countries, seigniorage could be the sources of revenues for these governments and with monetary union they would loose this opportunity. He has argued that different national inflation rates among the GCC countries may be optimal, thus there is no case for the union.

Other writers are more or less in favor of union and find integration is already in place. For example, Espinoza et al. (2010) find non-negligible integration by examining the regional financial integration in the GCC countries using capital flow data, interest rates, and equity prices. Sedik and Willams (2011) find that the GCC equity markets are not immune from global financial shocks and they find that spillovers from the US and regional markets impact significantly the GCC equity markets. Some others have suggested that monetary integration is also in place (Fasano, 2003 and Nakibullah, 2011). The GCC countries use different indirect monetary policy instruments (such as open market operations using treasury bills and government development bonds, foreign exchange swap operations and repos, central bank certificates of deposits, reserve requirements) to manage their liquidity which is limited by their prevailing exchange rate regime and free capital mobility. They pursue a common goal of price stability by sterilizing the impact of international reserves (influenced mainly by oil price) on their monetary base to stabilize the domestic prices.

Rutledge (2008) has compared six of the European Monetary Union's Maastricht convergence criteria of exchange rates, foreign reserves, interest rates, inflation rates, fiscal deficits and debt with the GCC countries. Using the sample period 1980 – 2006, he finds that only two criteria of exchange rate stability and interest rate convergence will be easy to achieve in the long run which is not surprising given their exchange rate arrangement. Though the exchange rates of Bahrain, Qatar, Saudi Arabia and the UAE in 1980s and 1990s were officially (*de jure*) pegged to the Special Drawing Rights (SDR), they were effectively (*de facto*) fixed to the US dollar. From 1986 the Omani riyal has officially been pegged to the US dollar. Kuwait had maintained fixed but adjustable exchange rate between Kuwaiti dinar and a weighted basket of currencies; however, the dollar greatly dominated in the currency basket. They (including Kuwait) opted to maintain official or *de jure* pegged exchange rates against the US dollar in 2003 as a first step to their proposed monetary union. Given the exchange rates arrangement these countries have, it is not surprising that the criteria of exchange rate stability and interest rate convergence would easily be achieved as is evidenced in Rutledge (2008).

Exchange rate stability and interest rate convergence are almost guaranteed. Next we look at the inflation rates convergence. As mentioned above it is one of the five convergence criteria agreed by the GCC countries in the Muscat meeting of 2001 and it is probably most important criteria for the GCC countries because the main stated monetary policy goal of the GCC counties is the price stability. The studies mentioned above have not analyzed this criterion properly. Here we look at this criterion more closely. Figure 1 shows the CPI inflation rates for the period 1976 – 2013. It shows that inflation has been low within the GCC countries, except early years and the spikes around 2008. Differences of inflation rates among the GCC countries are also evident from figure 1.

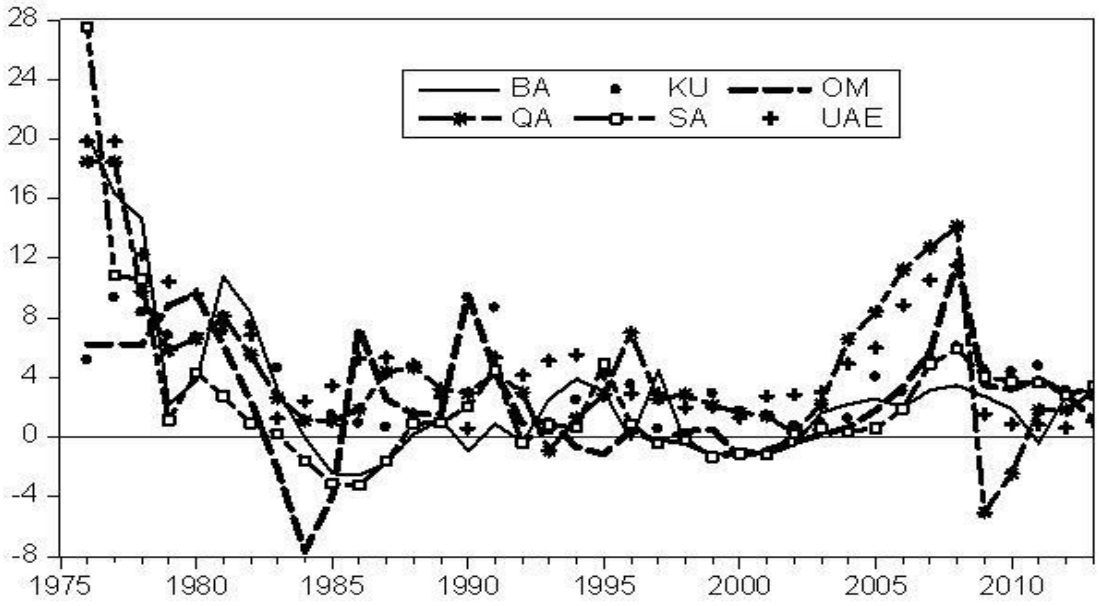

Figure 1. Inflation rates of the GCC countries, 1976 – 2013

It is clear from figure 1 that the GCC countries have experienced episodes of high cross-sectional variation in inflation rates. Though there is an indication of convergence of inflation rate at the end of the sample, the question of long-run convergence of the inflation rates of the GCC countries remains relevant. Thus we test the long-run convergence of the

GCC inflation rates. Recently Phillips and Sul (2007) have suggested a test (log-t test) of long-run convergence. The Phillips and Sul's log-t test is performed here to test the log-run convergence of the GCC inflation rates. They have recommended to use the Hodrick-Prescott (1997) filter (or HP filter) to filter out the cyclical component of a series and then work out with the filtered or trend component of the series to construct transition factor for each country and year (h_{it}) as follows:

$$h_{it} = \frac{\mu_{it}}{\frac{1}{n}\sum_{i=1}^{n}\mu_{it}} \tag{2}$$

where μ_{ij} in equation (2) is the filtered or trend component of a series of a country i at time t. The transition path (h_{it}) of inflation rates for each GCC country is plotted in figure 2. Figure 2 shows two prominent blips at the end of both 1980s and 1990s. The inflation rates of Kuwait and the UAE at the end of 1980s were substantially above the GCC mean while the inflation rates of Bahrain and Saudi Arabia were substantially below the GCC mean. Along with Qatar, the inflation rates of the UAE again at the end of 1990s were substantially above the GCC mean whereas the inflation rates of Oman and Saudi Arabia were substantially below the GCC mean. This has caused a substantial cross-section variance blips at the end of 1980s and at the end of 1990s as we see in figure 3. The cross-sectional variance for each year is shown in figure 3 and it is constructed using the transition factors (h_{iij}) of six countries.

One interesting feature of the cross-sectional variance shown in figure 3 is that starting around the mid 1980s, cross-sectional variances of the GCC countries over the time have trending downward though there was a break at the trend in the mid-90s. Instead of this casual description, we perform the Phillips and Sul's (2007) log-t test to see whether the GCC inflation rates are converging.

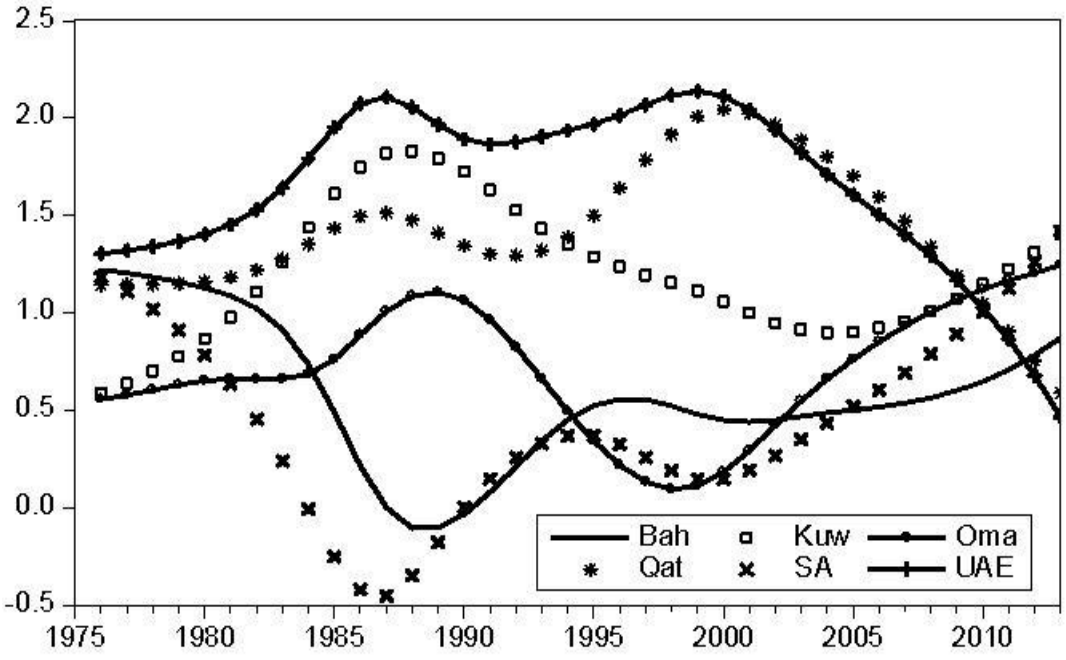

Figure 2. Transition paths of the GCC inflation rates

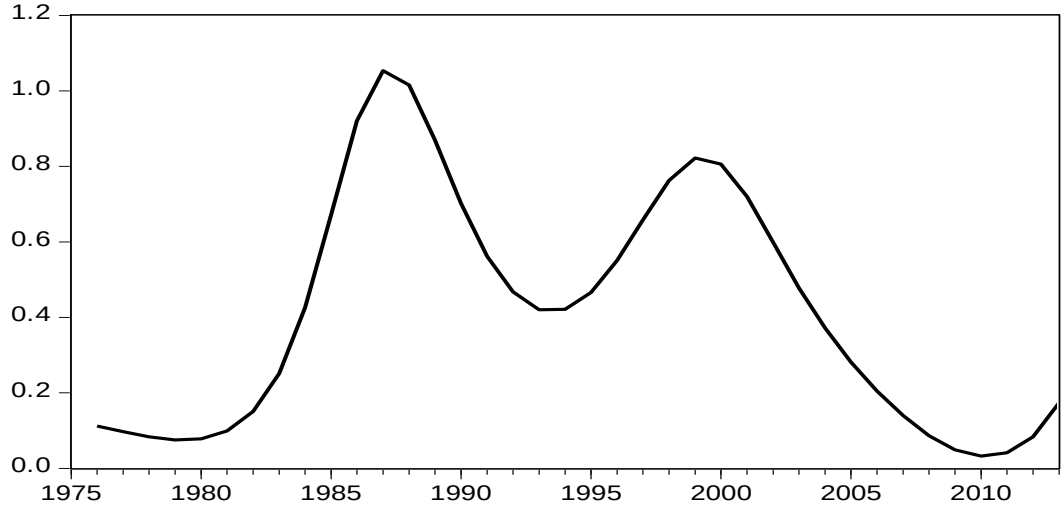

Figure 3. Cross-sectional variance of the GCC inflation rates

The Phillips and Sul test for convergence recommends trimming at least 20% of the sample at the origin. Following their suggestion we start the sample in 1985. The test results are presented in table 1. The dependent variable (DEP) in table 1 is DEP = –log(var) – 2log(log(t)) and the explanatory variable is log(t). Because the DEP is based on the negative log of the variance series, a significant positive coefficient on log(t) is evidence of convergence. Results in table 1 show that for the period 1985 – 2013 not only the coefficient of log(t) is positive but it is highly statistically significant indicating convergence. If we ignore the formal log(t) test as in table 1 and we look at figure 3, the cross-section variance for the last decade has been declining all the way to the end of the sample, though there is a little hint of reversion at the end. This suggests the inflation convergence criterion (considered as the most important criterion as far as the GCC countries are concerned) should not be a problem in forming the GCC monetary union.

Table 1. Inflation convergence test results, 1985 - 2013

DEP = –log(var) – 2log(log(t))			
Variable	Coefficient	HAC Standard Error	Probability
Constant	–5.049	1.552	0.003
log(t)	1.238	0.541	0.030

The other two agreed convergence criteria of fiscal balance and public debt have special characteristics for the GCC countries as their fiscal balances are directly related to the oil revenues which fluctuate with the world oil price. Because of their wide variances of oil resources and sizes one expect the imbalances to vary and would not be stumbling block for the GMU. There is hardly any econometric study analyzing this criterion (see informal discussion in Al-Turki, 2007).

4. Business Cycle Synchronization

In assessing the feasibility of the GMU researchers have been examining the symmetry of the external shocks that these countries experience and by examining the business cycle synchronization. This section reviews empirical evidence based on business cycle synchronization.

Researchers have been using the Hodrick-Prescott (1997) filter to separate cyclical and trend components of a time series in order to study business cycles synchronization (see, for example, Al-Turki, 2007 and Ben Arfa, 2012). Once the cyclical components are obtained, correlations of the cyclical components are calculated. Positive significant correlation of the cyclical components is an indication of business cycle synchronization. The idea is that if the business cycles of the member countries are well synchronized macroeconomic policies would be most effective in absorbing the asymmetric shocks (Karras, 2006). One of the concerns of the monetary union is the loss of monetary autonomy. However, it is argued that if business cycles are well synchronized, convergence criteria are easily met and the loss of monetary autonomy does not pose a significant problem to a member country of a monetary union.

Al-Turki (2007) and Ben Arfa (2012) have applied this approach for the GCC countries. Al-Turki's (2007) has decomposed logarithms of real GDP of the GCC countries for the period 1980 – 2005 into trend and cyclical components using the HP filter and has computed the correlations of cyclical components. His results are not very supportive for the business cycles synchronization of the GCC countries for the whole sample period. Frankel and Rose

(1998) have pointed out that the business cycle synchronization may increase over time with the level of integration within a monetary union. The GCC countries are yet to announce the date of their integration but they have been taking steps toward it. Al-Turki (2007) has detailed many economic and structural changes that the GCC countries have undergone after the Gulf (Kuwait) war in 1990 – 1991. One of the changes all these countries have been trying to reduce dependence on oil and diversify their economies; that is their economic policies have been geared to accelerate the growth of the non-oil sector. Al-Turki (2007) has presented some evidence of such changes especially after the mid-nineteen nineties and have calculated correlation for the period of 1993 – 2005. He finds that business cycles of the GCC countries were synchronized for the period 1993 – 2005.

Ben Arfa (2012) has studied the business cycle synchronization of four GCC countries (Bahrain, Kuwait, Qatar and Saudi Arabia) using real GDP for the period 1970 – 2007. He has offered no explanation of excluding the other two GCC countries. His results show that only Bahrain business cycle is correlated with other three GCC countries and has concluded that there is no business cycle synchronization of the GCC countries. Ben Arfa's (2012) has extended data to 1970s that seemingly improved the degrees of freedom; however, the early data in the sixties and seventies on GCC countries are not reliable (Summers and Heston, 1991).

5. Shock Synchronization

Researchers have also assessed the viability of actual or potential monetary union by identifying the structural shocks from a structural vector autoregressive (SVAR) models popularized by Blanchard and Quah (1989). Shocks are symmetric if structural shocks are positively correlated. With symmetric shocks it is more likely that a group of countries to form a monetary union. Bayoumi and Eichengreen (1992) used Blanchard and Quah's method to study the EMU. Abu-Qarn and Abu-Bader (2008) is one of the first studies used this method for the GCC countries. They and most other studies (see for example, Al-Turki, 2007 and Ben-Arfa, 2012) on GCC countries have used two variables cases.

To understand how this method works, let X_t is the vector of two dependent variables [ordered y_t , p_t]

where y_t and p_t are logarithm of real GPD and price level (GDP deflator) and they are first difference stationary. An infinite moving average representation of these variables can be written as:

$$\Delta X_t = \left(A_0 - A_1 L - .... - A_p L^P\right) u_t \Rightarrow \begin{bmatrix} \Delta y_t \\ \Delta p_t \end{bmatrix} = \sum_{k=0}^{\infty} L^k \begin{bmatrix} a_{11}(k) & a_{12}(k) \\ a_{21}(k) & a_{22}(k) \end{bmatrix} \begin{bmatrix} u_{st} \\ u_{dt} \end{bmatrix} \tag{3}$$

where L is the lag operator and u_t is the vector of independent white noise structural supply and demand shocks [ordered u_{st} , u_{dt}]. In order to identify these structural shocks, researchers first estimate the reduced form VAR as:

$$\Delta X_t = B_1 \Delta X_{t-1} + B_2 \Delta X_{t-2} + ... + B_i \Delta X_{t-i} + e_t \tag{4}$$

where e_t is the vector of supply and demand residuals [ordered e_{st}, e_{dt}] from an estimated reduced form VAR model (4) and B 's in equation (4) represent 2x2 matrices of estimated coefficients from the VAR. Then using the idea that the VAR residuals e_t are composites of the pure innovations or structural shocks u_t as $e_t = Cu_t$ where

$$C = \begin{bmatrix} c_{11}(0) & c_{12}(0) \\ c_{21}(0) & c_{22}(0) \end{bmatrix}. \tag{5}$$

Once C matrix is identified, structural shocks are easily recovered as $u_t = C^{-1} e_t$. Four restrictions are needed to identify the four elements of the C matrix. Three of these restrictions are related to the variances and covariances of the structural shocks u_t and the fourth restriction coming from the standard macro aggregate demand and aggregate supply model. Following Blanchard and Quah (1989), the demand shocks are assumed to have only temporary effects on output but have permanent effects on prices. On the other hand, supply shocks have permanent (or long-run) effects on both output and prices. These assumptions imply $\sum_{k=0}^{\infty} a_{12}(k) = 0$ in equation (3).

Abu-Qarn and Abu-Bader (2008) have used a SVAR model to analyze the potentiality of a GCC monetary union. They have used two variables SVAR model to identify the structural shocks in real GDP and the price level (GDP deflator) and have determined whether these shocks are symmetric or asymmetric. They find that supply shocks are asymmetric (no significant positive correlations) but demand shocks are in general symmetric. Asymmetric supply shocks are considered as the better indicators of costs of forming a monetary union. Based on this result and other empirical evidence such as non-synchronous short-run and long-run movements in real GDP of the countries, they conclude that the GCC countries are not yet ready to form a successful monetary union. Their results may have influenced by the choice of the sample period. Their data for some of the GCC countries extended to 1960s and the sample period for all

GCC countries ended in 2003. Summers and Heston (1991) in creating their world data series ignored GCC countries because they found their data in the sixties and the seventies are not reliable. Al-Turki (2007) has also used real GDP and GDP deflator to identify structural shocks using a SVAR model. His evidence, especially for the later period of 1993 – 2005, on both counts of (supply and demand) shocks correlations and business cycles synchronization, offers support for the GMU.

Some researchers have emphasized the importance of breaking the GDP of the GCC countries into oil and non-oil GDP because of their heavy dependence on oil and external shocks affect these two components differently. For example, Louis et al. (2012) have used this approach using SVAR models as in Abu-Qarn and Abu-Bader (2008) and find that non-oil aggregate supply shocks are weakly symmetrical across the GCC countries. However, neither the aggregate demand nor aggregate supply shocks (as in Abu-Qarn and Abu-Bader, 2008) are symmetrical between the GCC countries. Based on these results they favor for the GMU.

Benbouziane et al. (2010) generate shocks in a different approach (multivariate threshold autoregression). Based on their shock analysis they divide the GCC countries into two sub- groups where Bahrain, Oman, and the UAE are in one group and Kuwait, Qatar, and Saudi Arabia are in another group. They conclude that the GCC countries are still far from forming the GMU.

Ben-Arfa (2012), using two variable SVAR model by excluding Oman and the UAE from the GCC countries, finds that supply shocks are asymmetric while demand shocks are symmetric and has concluded the GCC countries are not ready to form the GMU. Kandil and Trabelsi (2012) have constructed four variables (ordered as world real output, domestic output, real exchange rates, and the price level) SVAR model using sample period of 1980 - 2006. Based on calculation of shocks synchronization, they conclude that the GCC countries are still far from forming a monetary union. They also suggest (based on their results) that Qatar, Saudi Arabia, and the UAE have potential to take a lead in fostering a currency area. Similar to Kandil and Trabelsi (2012), Alshehry and Slimane (2013) construct a four variable SVAR model with world real GDP, real GDP, real effective exchange rate (REER) and price levels (GDP deflators) of the GCC countries using the sample period 1970 - 2010. They impose the obvious structural restriction that world real GDP is not affected by the other three variables in the model in the long run. They also impose the restrictions that domestic (GCC) real GDP is not affected by the domestic demand and monetary shocks in the long run. Finally, the monetary shocks do not affect any real variables in the model in the long run. They calculate correlation of various shocks (including demand and supply shocks) and also report the results of variance decomposition. They find that the correlations of large number of shocks are asymmetric (negative) which implies that the GCC are far from forming the GMU; however, contradictorily their variance decomposition results favor for the GMU.

6. Conclusion

The formation of the EMU has served as a catalyst in forming monetary or currency union in many parts of the world. It is reported that before the creation of the GCC in 1981, some members of the GCC aspired to establish a common currency. However, concrete steps were taken at the 2001 meeting in Oman so that GMU could be formed in 2010. As we know now that it did not happen; moreover, Oman and the UAE pulled out of the plan. Once the plan of the proposed GMU announced, researchers have been busy in discussing and analyzing the viability of the GMU.

This paper has reviewed some aspects of the GMU. In particular, the paper considers the convergence criteria in the areas of exchange rates, interest rates, and inflation rates. Exchange rates among the GCC countries have remain stable which is even remarkable given these countries have relatively open capital accounts. Because of their fixed exchange rates against the US dollar, interest rates of the GCC countries have moved broadly in parallel with the US interest rates and there is a narrow spread across the GCC countries. Historically, inflation rates remain low and under control though at times some of them experienced higher inflation; for example, Qatar and the UAE experienced a higher inflation rates in recent times compared to other GCC countries. A formal test of convergence for inflation rates shows convergence. Thus, the GCC countries more or less have met those criteria agreed in 2001.

It is argued that if business cycles and structural shocks are synchronized among the members of a monetary union, the loss of monetary autonomy would be minimal in forming a monetary union. Thus, the paper also reviews the empirical works on business cycles and structural shocks synchronization of the GCC countries. Results are mixed whether the GCC countries have been experiencing symmetric or asymmetric shocks. Thus, there is no consensus among the researchers whether the GCC countries are ready to form the GMU. However, this should not discourage to form the GMU because synchronized shocks are achieved with more integration.

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