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Monetary Coordination Amongst the
Gulf Cooperation Council Countries

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Abstract

This paper assesses the desirability of coordinating monetary policies, both in general for a currency area and with particular reference to the Gulf Cooperation Council (GCC) countries. It discusses a number of important aspects of the functioning of the GCC economies, with a particular focus on factors that influence the money supplies of these economies. Some regression results are presented that provide insights on the transmission mechanism of monetary policy in the GCC countries and on the degree of similarity between their inflation and output tradeoffs, which is relevant to the successful functioning of a currency area.

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Summary

This paper assesses the desirability of coordinating monetary policies in general for a currency area and in particular for the Gulf Cooperation Council (GCC) countries. It discusses the basic analytical framework for the analysis of monetary policy in small open economies, which provides insights into the costs and benefits of joining a currency area. The major cost is the limitation on the use of discretionary monetary policy to achieve internal balance because of the balance of payments constraint, which dictates that wage and price trends must be adjusted to maintain external balance. The major benefits of currency area formation are an enhancement of the attractiveness of money and an improvement in the efficiency of resource allocation.

The paper discusses several aspects of the functioning of the GCC economies, focusing on factors influencing the supply of money in these countries. Data on rates of inflation and monetary growth are examined for the purpose of comparing measures of the dispersion of the individual member countries' inflation rates and money supply growth rates before and after the establishment of the GCC. The paper also presents some regression results that provide insights into the transmission mechanism of monetary policy and into the degree of similarity between inflation and output trade-offs in the GCC countries, since this similarity is relevant to the successful functioning of a currency area.

The paper concludes that several steps have been taken to promote coordination and integration among member countries since the establishment of the GCC. Progress has been made in the unification of tariff schedules, and the free movement of goods originating in the GCC countries is already in effect. Since divergent monetary trends would lead to external imbalances, there is a need for monetary coordination among the member countries. Indeed, this need is recognized by the GCC countries, and they are working toward coordination of financial policies, including bank regulations, exchange arrangements, and budgetary procedures.

I. Introduction

Over the last few years there has been a great deal of discussion of the role of monetary policy in open economies and the need for policy coordination amongst countries. A considerable amount of literature on the subject currently exists, so that it is not possible to do justice to the literature within the confines of the present short article. This paper will adopt an eclectic approach, focussing essentially on those strands of the literature that are especially relevant to analyzing the desirability of coordinating monetary policies, both in general for a currency area and with particular reference to the Gulf Cooperation Council (GCC) countries. It should be pointed out, however, that even a limited task such as this is subject to various difficulties. The reasons for this are, first, that the analytical frameworks that currently exist have not been designed with the structure of the GCC economies specifically in mind, and second, that attempts to address empirical questions are constrained or compromised by the extent and quality of the data that are available. Hence, although this paper attempts to focus systematic attention upon the most significant issues, its analysis must necessarily be viewed as tentative in character.

Some definitions are useful at the outset. The term "currency area" is used in this paper to refer to a territory within which there is a common monetary unit. This will obviously be the case if there is a common currency, but essentially the same conditions prevail if there are different currency units with irrevocably fixed exchange rates between them, provided that no restrictions on the conversion of one unit into another are present. The term "optimum currency area" refers to a group of countries for which it is optimal that internal adjustment occur with exchange rates fixed, while external adjustment (between member countries and nonmember countries) may occur through exchange rate variation. The term currency area is commonly defined to be identical with what Corden (1972) has characterized as "complete exchange rate union" or "monetary integration." It is "an area within which exchange rates bear a permanently fixed relationship to each other even though the rates may--in unison--vary relative to nonunion currencies," and one which is characterized by "the permanent absence of all exchange controls, whether for current or capital transactions, within the area." 1/ The basic idea in the optimum currency area literature is that the optimal choice between fixed and flexible exchange rates is not independent of the economic characteristics of the countries in question, and the analysis recognizes that there are both costs and benefits involved in choosing either fixed or flexible exchange rates.

Section II discusses the basic analytical framework that has been developed for the analysis of monetary policy in small open economies, which provides insights into the costs and benefits of joining a currency area. The major cost is that the use of discretionary monetary

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1/ Corden (1972), p. 2.

policy to achieve internal balance is limited because of the balance of payments constraint, which dictates that wage and price trends must be adjusted to maintain external balance. It is also argued that the major benefits of currency area formation are that the attractiveness of money is enhanced and the efficiency of resource allocation is improved. In addition, this section focuses on the insights provided by the litera- ture on the characteristics that make it desirable or optimal to form a currency area.

Section III discusses a number of important aspects of the func- tioning of the GCC economies, with a particular focus on factors that influence the money supplies of the GCC countries. Data on rates of inflation and monetary growth are then examined for the purpose of comparing measures of the dispersion of the individual member countries' inflation rates and money supply growth rates before and after the establishment of the GCC.

Section IV presents some regression analysis that provides insights on the transmission mechanism of monetary policy in the GCC countries and on the degree of similarity between their inflation and output tradeoffs, which is relevant to the successful functioning of a currency area. Section V provides some concluding observations.

II. Monetary Policy and the Balance of Payments Constraint in an Optimum Currency Area

The effectiveness of using monetary policy to influence macroeco- nomic conditions is a controversial and widely debated topic. On the one hand, some economists contend that if domestic labor and product markets respond slowly to shifts in the economic environment, giving rise to disequilibrium situations in which supply and demand are not always equal, there is scope for monetary policy to stabilize the economy. On the other hand, other economists argue that countercyclical monetary policy cannot be effective in influencing employment and out- put, based on models in which economic agents are rational and do not make systematic errors in anticipating the behavior of the monetary authorities. A key issue in this debate is whether or not prices are free to adjust rapidly so that markets clear continuously as economic participants respond to whatever changes in monetary policies they come to anticipate.

In addition to focusing on the effectiveness of monetary policy in the context of rational expectations, developments in monetary theory have also focused on the issue of wage-price rigidity and its implica- tions for active monetary policy in the context of an open economy. One common result in this literature is that the greater is the openness of the economy, the more difficult it is to affect the real economy through active monetary policy. The effectiveness of monetary policy depends crucially on whether money "spills out" directly and rapidly through the

capital account of the balance of payments, and on the strength of the effects on the current account of changes in the relative price of traded and nontraded goods.

In the analysis of the open-economy aspects of monetary policy, exchange rates and the balance of payments are sometimes discussed as a separate compartment of monetary policy. "International" financial policy is taken to be concerned with capital flows in the balance of payments, with official intervention in exchange markets, with holdings by the goverment of international reserve assets, and with the choice between a fixed or flexible exchange rate regime. "Domestic" monetary policy is considered independently of international complications and is taken to be concerned with, for example, interest rate changes, open-market operations, and the supply of commercial bank reserves. However, as the monetary approach to the balance of payments emphasizes, there is no valid way to segregate the "external" and "domestic" aspects of national monetary policy for separate analysis.

The monetary approach to the balance of payments (MABP) uses the money-supply process and the money-demand function as the central theo-retical relationships around which to organize the analysis of the balance of payments. 1/ In the framework of the monetary approach, the balance of payments position of a country is considered to be a reflec-tion of decisions by the residents to accumulate or to run down their stocks of money balances. For a small country which has prices and income given and which adheres to a fixed exchange rate, the money supply is endogenous; increases in the domestic supply of money beyond the level demanded will find an outlet in the balance of payments. In essence, MABP argues that international money flows are a consequence of stock disequilibria--differences between desired and actual stocks of international money--and as such are inherently transitory and self-correcting. A nonzero official settlements balance allows the money stock to change until the demand for and supply of money are equalized, and when the money market is in equilibrium, the official settlements balance returns to zero.

It is frequently argued in the MABP literature that a devaluation provides no lasting remedy for a balance of payments deficit unless the growth rate of domestic credit is cut. The argument is that by raising domestic prices, a devaluation creates a temporary excess demand for money which is met by an inflow of reserves. But once the excess demand is satisfied and stock equilibrium is achieved, the balance of payments will return to a deficit if the growth of domestic credit exceeds the growth of demand for high-powered money. Indeed, the phenomenon of periodic devaluations in which reserves are built up just after one devaluation, to be drawn down before the next, has been experienced by

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1/ Two useful anthologies of the monetary approach to the balance of payments are Frenkel and Johnson (1976) and International Monetary Fund (1977).

many developing countries which have desired to maintain fixed parities but have also attempted to use the money supply for short-run domestic stabilization purposes. 1/

Thus, the key insight from the MABP literature, as it bears on the issue of currency areas, is that countries that desire to avoid periodic exchange rate changes must be prepared to sacrifice their autonomy to use monetary policy in pursuit of their domestic stabilization objectives. The literature on optimal currency areas has combined this insight from the MABP literature with various perspectives on the types of characteristics that make it desirable for a group of countries to sacrifice their monetary autonomy.

In his pioneering article on optimum currency areas, Mundell (1961) suggested that the issue depended on the degree of factor (capital and labor) mobility. He argued that regions or countries featuring high factor mobility should join together in a single currency area or a multicurrency area with fixed exchange rates, whereas those areas whose factors are relatively immobile should adopt flexible exchange rates vis-a-vis each other. Because factor mobility between countries alleviates the need to use domestic policy instruments for relieving conditions of excess or insufficient demand for output or employment, the costs of subordinating national monetary policies to the common regional monetary policy in order to maintain fixed exchange rates within a currency area are lowered by increased factor mobility.

McKinnon (1963) added the insight that the cost of sacrificing monetary autonomy also depends on the openness of the countries. Flexible exchange rates basically set the price level in terms of domestic output, whereas fixed exchange rates set it in terms of foreign goods. Thus, the greater the extent to which domestic consumers buy mostly foreign goods, the stronger will be their preferences for holding assets and doing the accounting in terms of foreign goods unless domestic money is made stable in relation to the consumption basket via fixed exchange rates. In this sense, exchange rate flexibility in a small, open economy may reduce the "moneyness" of the currency. In addition, the more open is the economy, the less effective will monetary policy be in achieving domestic stabilization objectives under flexible exchange rate, so the less costly will it be to sacrifice monetary autonomy. This is because the more open an economy, the less likely it is that there will be money illusion or that workers will agree to contracting their pay in domestic-money terms. When money illusion

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1/ While in the long run it is useful to view the exchange rate as the relative price of national outputs, in the short run it is more useful to view the exchange rate as the relative price of national monies. Markets for output--for goods and services--adjust slowly relative to asset markets. The exchange rate is determined, along with interest rates, in the short-run equilibration process of financial markets, for given supplies of domestic and foreign assets.

declines and domestic residents get into the habit of calculating the impact on real variables of changes in the exchange rate, there will also be a decline in the effect on domestic output or other important real variables of a given change in the exchange rate.

Frenkel (1975) has emphasized that another criterion for the choice of a partner for monetary integration should be the extent of similarities of preferences toward the "desired" or the "tolerable" rate of inflation. His argument is that prospective members of the union should possess common tastes concerning the common course of inflation, because monetary integration results in an automatic transmission of inflation throughout the integrated domain. Only when inflationary preferences are similar would one expect countries to remain willing to subordinate their national monetary policies to the common regional policy in exchange for the benefits of a monetary union.

III. Economic Convergence and Coordination of Monetary Policy Among GCC Countries

The Gulf Coorperation Council (GCC) is a political and economic group that was established in 1981, comprising Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, and the United Arab Emirates. The Unified Economic Agreement of May 1981 provided for the establishment of a Gulf Common Market with free movement of goods, services, capital, and labor among member countries, and of a common external tariff on imports from other countries. Furthermore, it calls for coordination of member countries' fiscal, monetary, and banking policies in an effort to issue a common currency and to establish a common policy for the investment of the financial reserves of the GCC countries. Progress has been made toward closer economic cooperation among the member countries. Under an agreement reached in 1983, the GCC countries began the process of tariff harmonization and the free movement of goods originating in the GCC countries is already in effect, and the Gulf Investment Corporation has been established to undertake joint ventures with the private sector in member countries.

Economic activity in the GCC countries is heavily influenced by the public expenditures, which are financed almost entirely by oil revenues. The balance of payments is characterized by the predominance of the petroleum sector's export earnings, and by payments abroad for non-oil imports. The rate of growth of these economies fluctuated around a rising trend between 1974 and 1982 when the modern physical infrastructure and several major oil-related projects were being completed. During the past few years, however, economic activity slowed down considerably due both to the sharp declines in oil production and prices, and to a slackening of non-oil activity largely brought about by a reduction in government expenditures.

Based on the oil wealth, the GCC countries have made considerable economic progress in the last two decades. The oil sector itself has been extensively developed and diversified. The non-oil sector has also benefited from the oil boom, as well as from generous incentives and subsidies. Financial sectors have grown with the accumulation of financial wealth and the rising requirements for internal financial intermediation, and have been encouraged by governments seeking economic diversification. Given the minimal controls on capital mobility, these policies have led domestic residents to invest a substantial portion of their portfolios offshore, so that monetary aggregates do not reflect the total money balances held by residents. 1/

In the highly open GCC economies, government domestic expenditure is the main determinant of private sector activity and the pace of monetary expansion. Most receipts from oil exports accrue directly to the governments in the form of taxes or royalty payments, and the initial impact on the money supply of increased oil export earnings, which would tend to increase the banking system's net foreign assets, is offset by a corresponding increase in government deposits. It is only when the governments spend their increased revenues domestically that the money supply expands. This is the essence of the "domestic budget balance" approach, in which the components of the monetary survey identity are rearranged to emphasize that the inflow of foreign exchange from oil exports is translated into increases in domestic liquidity only to the extent that the governments use their higher revenues to increase their domestic expenditures. 2/ Thus, the main transmission mechanism through which fluctuations in oil earnings affect domestic prices and non-oil output is the government budget, and given the openness of these economies, any excess liquidity is quickly translated into demand for foreign goods, services, and assets.

The rapid expansion of government expenditures since the mid-1970s has shaped the development of the financial sectors of these economies. In the absence of a sufficiently large and well-developed financial sector at the time when government expenditures began to rise sharply, several specialized credit institutions were created to channel concessional financial resources to the private sector. Although bank credit to the private sector has so far been less important than the subsidized credit from the specialized credit institutions, it is likely to acquire greater importance as expansionary impulses emanating from the public sector diminish owing to the reduction in government expenditures.

1/ For example, the offshore banking units in Bahrain have substantial involvement in trading in the currencies of the other GCC countries.

2/ See Morgan (1979) and Goldsbrough (1985).

Some of the GCC countries have moved in the direction of providing the banking system with additional domestic investment outlets in order both to reduce the proportion of foreign assets held in the banks' portfolios and to develop secondary markets, which might permit the monetary authorities to undertake open-market operations. The introduction of the Bankers' Security Deposit Accounts (BSDA) scheme in Saudi Arabia in 1984 represents a notable development in this regard. The BSDA scheme permits commercial banks to place funds with the Saudi Arabian Monetary Agency in the form of 91-day deposits at a predetermined discount rate. Commercial banks' holdings of BSDA rose significantly in 1985-86, and the scheme has evolved into a useful monetary policy instrument. The aim of the scheme is to discourage the buildup of foreign assets by banks and to regulate the money supply in the short run by mopping up excess liquidity, thereby promoting exchange rate stability. Additional domestic investment outlets would also assist the domestic banking system in assuming a larger role in financing the private sector investment that is expected to play a relatively more important role in the future.

Exchange rate stability depends on the convergence of economic performances of the countries in a currency area, but particularly of their relative price trends. If countries agree to maintain stable nominal exchange rates amongst themselves but at the same time allow price divergences to continue, their real exchange rates, as measured by relative national prices or costs expressed in a common numeraire, will also diverge. Thus, under a system which emphasizes nominal exchange rate stability, real exchange rates could get more out of line, and could remain out of line for longer periods, than under alternative arrangements where exchange rate adjustments occur regularly as a result of either political decisions or market forces. Numerous studies indicate that when exchange rate changes are justified by differences in relative economic performances, such as differences in inflation rates, attempts to defer the exchange rate changes too long can result in costly distortions in the allocation of resources. In the search for stable exchange rates, the main efforts in the short and medium term must be concentrated on the convergence of prices, and monetary policy may be used to prevent unfavorable inflation differentials.

In this context, it may be interesting to review price and monetary developments in the GCC countries, focusing in particular on the extent to which national inflation rates and money supply growth rates have converged in recent years. Table 1 reports the national inflation rates in the six GCC-member countries. It should be emphasized at the outset that these data need to be interpreted with due caution. One important reason for caution is that the consumer price index has been used to measure inflation rates, whereas an index more heavily weighted with tradable goods and services would show more convergence. In addition, the quality of the consumer price data may be limited for some of the countries.

Table 1. Gulf Cooperation Council: Consumer prices, 1977-85

(Annual change in percent)

	1977	1978	1979	1980	Average 1977-80	1981	1982	1983	1984	1985	Average 1981-85
Bahrain	17.7	15.0	2.2	3.8	9.7	11.3	8.9	3.0	0.3	-2.0	4.3
Kuwait	9.9	8.7	7.1	6.9	8.2	7.3	7.8	4.7	1.2	1.4	4.5
Oman	6.4	6.4	9.3	10.0	8.0	6.4	2.6	-3.0	-3.5	-3.0	-0.1
Qatar	20.0	10.0	6.0	6.8	10.7	8.5	5.7	2.7	1.1	2.0	4.0
Saudi Arabia	11.3	11.2	1.9	4.2	7.2	2.5	1.0	0.3	-1.6	-3.0	-0.2
United Arab Emirates	22.0	13.0	11.0	10.0	14.0	8.0	7.0	-2.0	-4.0	-1.0	1.6
Arithmetic average	14.6	10.7	6.3	7.0	9.6	7.3	5.5	0.9	-1.1	-0.9	2.3
Standard deviation	6.2	3.1	3.7	2.7	2.5 1/	2.9	3.1	3.0	2.3	2.2	2.2 1/
Difference between highest and lowest rate	15.5	8.6	9.1	6.2	6.8 1/	8.8	7.9	7.7	5.2	5.0	4.7 1/

Source: IMF, Research Department data files, based on national data sources wherever possible.

1/ Based on the period averages for the six countries.

The top six rows of the table show the inflation rates of the individual countries during periods prior to and since the establishment of the GCC in 1981, while the seventh row shows the average inflation rate. The two bottom rows provide alternative measures of the dispersion in the inflationary performance within the GCC, notably the standard deviation in the distribution of annual inflation rates around the community average, and the difference between the highest and lowest inflation rates. The data indicate that inflation rates have been, on average, more similar in the period after the creation of the GCC than before. For example, in 1977 there was a difference of close to 16 percentage points between the lowest inflation rate, for Oman, and the highest inflation rate, for the United Arab Emirates. Since 1977, inflation has decelerated everywhere and generally more so in the high inflation countries, and the lowering of both the average inflation rate and the standard deviation around it continued through 1985. The indicators of divergence reached their minimum in 1985, when the difference in inflation rates for the highest inflation country and the lowest inflation country was 5 percentage points.

In contrast to the apparent convergence of inflation rates, differences between the rates of monetary expansion among the GCC countries do not seem to have narrowed. Table 2 indicates that the average rate of broad money growth among the GCC countries has been trending downward. Nominal broad money increased sharply in each of the six countries in 1980 and 1981, attributed in large part to the effects of the second round of oil price increases, but has decelerated from 1982 onwards. Nevertheless, the bottom two rows of the table suggest that the dispersion of broad money growth rates among the GCC countries has not declined. On average, standard deviations and differences between the highest and lowest rates of monetary expansion were greater in 1981-85 than in 1978-80. Even in 1985, when the community average rate of monetary expansion was about 6 percent, the difference between the highest and the lowest rates of monetary growth was 15 percentage points.

Table 3 provides data on the rate of increase of the real money supply, which is often considered a more reliable indicator of monetary conditions than the expansion of the nominal money supply. When the nominal money supply is divided by a price index, the deflated monetary variable combines features of monetary policy with the induced actual price developments. As the table indicates, however, deflating the broad money supply with the consumer price index produces measures of real monetary expansion which are also at least as widely dispersed during 1981-85 as during 1978-80. For example, whereas the difference in real monetary expansion between the highest and lowest country was 13 percentage points in 1980, it increased progressively to 36 percentage points in 1984 before declining to a still relatively high 20 percentage points in 1985.

Table 2. Gulf Cooperation Council: Broad Money, 1977-85

(Annual change in percent)

	1977	1978	1979	1980	Average 1977-80	1981	1982	1983	1984	1985	Average 1981-85
Bahrain	17.0	13.2	2.4	27.2	14.9	29.2	15.3	8.0	-1.8	9.1	12.0
Kuwait	29.8	23.2	17.4	24.8	23.8	35.4	8.1	4.4	3.0	-1.2	9.9
Oman	24.8	11.7	7.0	32.1	18.9	38.8	28.4	21.8	16.3	14.3	23.9
Qatar	31.9	15.4	9.6	17.0	18.5	41.7	14.6	-0.9	22.0	9.2	17.3
Saudi Arabia	49.5	29.6	13.5	23.7	29.1	33.9	19.5	4.6	6.3	0.9	13.0
United Arab Emirates	-7.2	13.1	3.8	29.3	9.7	23.6	15.6	8.0	28.8	6.2	16.5
Arithmetic average	24.3	17.7	8.9	25.7	19.1	33.7	16.9	7.6	12.4	6.4	15.4
Standard deviation	18.8	7.1	5.8	5.3	6.7 1/	6.5	6.7	7.7	11.9	5.7	5.0 1/
Difference between highest and lowest rate	56.8	17.9	15.1	15.2	19.3 1/	18.0	20.2	22.7	30.7	15.4	14.0 1/

Source: IMF, Research Department data files, based on national data sources wherever possible.

1/ Based on the period averages for the six countries.

Table 3. Gulf Cooperation Council: Real Broad Money, 1977-85

(Annual change in percent)

	1977	1978	1979	1980	Average 1977-80	1981	1982	1983	1984	1985	Average 1981-85
Bahrain	-0.6	-1.6	0.1	22.5	5.1	16.0	5.9	4.9	-2.1	11.3	7.2
Kuwait	18.0	13.3	9.7	16.7	14.4	26.1	0.3	-0.2	1.7	-2.6	5.1
Oman	17.3	4.9	-2.1	20.1	10.1	30.5	25.2	25.5	20.6	17.8	23.9
Qatar	9.9	4.9	3.4	9.5	6.9	30.5	8.4	-3.5	20.6	7.1	12.6
Saudi Arabia	34.3	16.5	11.4	18.7	20.2	30.6	18.3	4.2	8.0	4.1	13.0
United Arab Emirates	-24.0	0.1	-6.5	17.6	-3.2	14.5	8.1	10.2	34.2	7.3	14.8
Arithmetic average	9.2	6.4	2.7	17.5	8.9	24.7	11.0	6.8	13.8	7.5	12.8
Standard deviation	19.8	7.2	6.9	4.4	8.1 1/	7.5	9.1	10.3	13.7	6.9	6.6 1/
Difference between highest and lowest rate	58.2	18.1	17.8	13.0	23.4 1/	16.1	24.9	29.0	36.3	20.4	18.8 1/

Source: IMF, Research Department data files, based on national data sources wherever possible.
1/ Based on the period averages for the six countries.

In considering these data, it should be emphasized that the conver-
gence of money supply growth rates may not be desirable when differences
in rates of income growth or other factors lead to divergent rates of
money demand growth. Similar rates of money supply growth would not
guarantee the success of a currency area, and moderately divergent rates
of money supply growth are not necessarily a cause for strong concern.

IV. Money Supply and Output in the GCC Countries

One of the most important conditions for the success of a currency
area is that there be a reasonable degree of compatability between
member countries' attitudes toward inflation and unemployment and their
abilities to trade-off between these objectives. This is because the
requirement of long-run balance of payments equilibrium under fixed
exchange rates imposes constraints on domestic macroeconomic policies.
As an extreme example, a nation with a low tolerance for unemployment
and strong wage and price pressures from labor unions and concentrated
industries would make a poor partner for a country with a low tolerance
for inflation and high productivity growth; in this case the possible
strains associated with different attitudes toward inflation and unem-
ployment would be intensified by the differences in inflation-output
trade-offs. But even for countries with similar attitudes toward infla-
tion and unemployment, strains on a currency area could arise if some of
the member countries had more favorable output-inflation relationships
than others, since the latter countries would be able to keep their
rates of inflation down to the common regional level only by tolerating
lower levels of output than they would experience if they were free to
adjust their exchange rates and adopt their preferred positions on their
Phillips curve. 1/

The apparent similarities between the economic structures and
ideologies of the GCC countries suggest that the advantages of the
currency area should strongly outweigh the disadvantages. More speci-
fically, the fact that the GCC countries are all highly open economies
dominated by oil would appear to suggest that they all face similar
trade-offs between inflation and output, and therefore have little to
lose from pursuing similar monetary policies.

In recent years, however, the nature of the trade-off between
inflation and output has come under increasing scrutiny, and it has been
argued that the trade-off in fact depends on the conduct of monetary

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1/ The Phillip's curve is sometimes expressed as a relationship
between unemployment and inflation and at other times between output and
inflation. Because employment and output are highly correlated, no
major differences arise in the analysis. But in view of the large
number of expatriate workers in the GCC countries, it may be more appro-
priate to focus on inflation or unanticipated money and output, as is
done in this paper.

policy. In particular, it has been argued that whereas inflation rates respond to both the anticipated and unanticipated components of monetary growth, output responds mainly to the unanticipated component of money growth. And in addition, it has been suggested that differences across countries in the responsiveness of output to unanticipated money growth may reflect different degrees of money supply variability. 1/

To examine the empirical relationship between fluctuations in real output and in unanticipated monetary growth, actual monetary growth must be decomposed into anticipated and unanticipated components. As in Barro (1978), anticipated monetary growth is represented by the predicted values from an estimated monetary growth equation and the residuals of this equation are taken to be the unanticipated component of monetary growth. Next, these residuals are used as explanatory variables in an equation that explains real output growth.

The money growth equation that was estimated is of the following form:

$$(1) \quad DM_t = \alpha_0 + \alpha_1 \, DEF_{t-1} + \alpha_2 \, DM_{t-1} + \alpha_3 \, DM_{t-2} + \varepsilon_t,$$

where DM_t is money growth, DEF_t is the ratio of the fiscal deficit to GDP, and ε_t is a random error term. Thus, the residual measure of unanticipated money growth is a measure of the amount of money growth that cannot be explained on the basis of past rates of money growth and the fiscal deficit ratio. The equation was estimated by ordinary least squares for each of the GCC countries using annual data for the period 1965 to 1985. The results are reported in Table 4. The degree of systematic behavior in money growth captured by this specification varies widely across countries. R^2 ranges from over 0.6 for Saudi

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1/ Lucas (1973) and Sargent and Wallace (1975) have argued that a Phillips curve relating output to unexpected inflation can be derived from models in which there are rational expectations, competitive markets, and information asymmetries. In these models, it is postulated that the individual's economic decisions depend on relative prices but that economic agents cannot always distinguish between contemporaneous relative and general price movements because of imperfect information. Given the possibility of confusion between aggregate and relative price changes, an increase in monetary growth will cause an increase in output to the extent that agents attribute part of the general price change to a relative price change. An implication of these models is that in countries that have erratic monetary growth, agents are likely to attribute price increases to general inflation rather than to relative price shifts, so that money supply increases will not cause large fluctuations in output. Thus, differences in the variability of monetary growth among different countries could explain differences in the responsiveness of output to unanticipated monetary growth.

Table 4. Estimates of the Money Growth Equation [1]

Country	α_0	α_1	α_2	α_3	R^2	S.E.E.	Q(5) [2]	VRM [3]
Bahrain	0.07 (1.29)	18.94 (2.21)	0.11 (0.49)	0.31 (1.33)	0.28	0.11	3.89	1.18
Kuwait	-0.06 (0.92)	0.73 (2.80)	0.08 (0.36)	0.32 (1.61)	0.41	0.10	2.78	0.97
Oman	0.17 (2.41)	1.78 (0.63)	0.20 (0.84)	-0.00 (0.02)	0.06	0.13	5.99	1.79
Qatar	0.11 (1.94)	0.26 (1.80)	0.25 (1.07)	-0.02 (0.10)	0.27	0.12	3.51	1.49
Saudi Arabia	0.06 (1.40)	0.00 (0.36)	0.97 (3.82)	-0.28 (1.14)	0.63	0.10	1.33	1.10
U.A.E.	0.13 (1.48)	-0.13 (0.38)	0.12 (0.51)	0.33 (1.21)	0.10	0.23	7.41	5.27

[1] Absolute t-statistics in parenthesis.

[2] The critical value of the χ^2 distribution with five degrees of freedom at the 5 percent level of significance is 11.1.

[3] The implied variance of unanticipated money growth, measured in percentage points.

Arabia to less than 0.1 for Oman. The Box-Pierce Q statistic reported
in column 7 of Table 4 indicates that for none of the countries is there
evidence of serial correlation in the residuals. The variance of these
residuals is thus taken to measure the variance of unanticipated money
growth, and is reported in the last column of Table 4.

The real output equation that was estimated is of the following
form:

$$(2) \quad DY_t = \beta_0 + \beta_1 RM_t + \beta_2 RM_{t-1} + \beta_3 RM_{t-2} + \beta_4 DY_{t-1} + n_t,$$

where DY_t is real output growth, RM_t is unanticipated money growth, and
n_t is a random error term. The results of this estimation are contained
in Table 5. The proportion of the variance in real output growth
explained by this specification also varies widely across the six coun-
tries. The model suggests that the response of output growth to unan-
ticipated monetary disturbances should be positive in the short run, but
negative values of the β coefficients, indicating a dampening of the
impact effects, are consistent with the model as long as they occur for
the higher lags of RM. The coefficient β_1, or the impact effect of
unanticipated monetary disturbances, has the expected positive sign in
all of the countries. The peak effect of an unanticipated monetary
disturbance on real output growth, denoted χ, is presented in the last
column of Table 5. The estimates of the money growth and output growth
equations suggest that both the variance of unanticipated money and the
real output response to unanticipated money growth have varied across
the GCC countries. It is thus quite conceivable that the responsiveness
of output to unanticipated money growth, and hence the inflation-unem-
ployment trade-offs, would become more similar among the GCC countries
if greater monetary coordination produced more similar patterns of
variability in monetary growth.

V. Concluding Observations

It would not be warranted to draw strong conclusions from the
empirical analysis of this paper, particularly in light of both the
possible sensitivity of the empirical results to the functional forms of
the regressions and concerns about the quality of the data. One notable
feature of the data is that the monetary aggregates do not reflect the
deposits that domestic residents hold in offshore banking units, which
are relatively large for most of the GCC countries. Nevertheless, the
empirical findings raise some relevant issues. The success of a
currency area depends on avoiding the problems caused by differing rates
of inflation among the members of the currency area, and it has been
emphasized that such problems can arise if the member countries differ
substantially with respect to the slopes of their Phillips curves, their
rates of productivity growth, or the preferences of their governments

Table 5. Estimates of the Output Growth Equation 1/

Country	β_0	β_1	β_2	β_3	β_4	R^2	S.E.E.	Q(5) 2/	χ
Bahrain	0.06 (3.21)	0.27 (2.02)	0.08 (0.62)	0.35 (2.80)	-0.03 (0.13)	0.45	0.05	11.72	0.70
Kuwait	0.01 (0.83)	0.07 (0.29)	-0.09 (0.51)	0.04 (0.24)	0.39 (1.41)	0.14	0.07 :	4.30	0.07
Oman	0.06 (2.20)	0.59 (4.27)	0.09 (0.46)	-0.08 (0.55)	0.27 (0.96)	0.61	0.07	6.67	0.68
Qatar	0.03 (1.34)	0.28 (1.70)	-0.07 (0.39)	0.07 (0.40)	0.11 (0.35)	0.23	0.08	1.66	0.28
Saudi Arabia	0.02 (0.87)	0.07 (0.35)	-0.01 (0.05)	0.10 (0.55)	0.54 (1.78)	0.33	0.08	1.32	0.17
U.A.E.	0.02 (1.19)	0.09 (1.44)	-0.03 (0.46)	0.02 (0.33)	0.55 (2.38)	0.41	0.06	4.63	0.09

1/ See note in Table 4.
2/ See note in Table 4.

between unemployment and inflation. These differences explain why, in the absence of coordination of monetary policies, inflation rates in the member countries will in general not be equal.

Since the establishment of the GCC, several steps have been taken to promote coordination and integration among member countries. Progress has been made in the unification of tariff schedules, and the free movements of goods originating in the GCC countries is already in effect. Steps have also been taken toward equalizing utility rates and prices of petroleum products for consumers in member countries. The commitments in the trade field will prohibit the use of tariffs and quantitative restrictions as policy measures for achieving balance of payments adjustment. At the same time, the commitment to regional monetary integration will limit the use of the exchange rate as a policy instrument because the exchange rates of the GCC countries will bear a permanently fixed relationship to each other and may vary relative to nonunion currencies only in unison.

Given the constraints against the use of trade restrictions and exchange rates as policy instruments, as well as the highly open nature of the GCC economies, the task of insuring the consistency of internal goals with the balance of payments constraint is an essential responsibility for the monetary authorities. Divergent monetary trends would lead to external imbalances, which would be corrected through offsetting movements in foreign reserves and output. In this respect, there may be scope for greater monetary coordination amongst the GCC countries, particularly in light of the finding that the differences between the rates of monetary expansion among member countries apparently have not narrowed in recent years. Indeed, this has been recognized by the GCC countries, and the member countries are presently working toward coordination of financial policies, including bank regulations, exchange arrangements, and budgetary procedures.

References

Barro, Robert J., "Unanticipated Money, Output, and the Price Level in the United States," Journal of Political Economy, Vol. 86 (August 1978), pp. 549-80.

Corden, Warner Max, Monetary Integration, Essays in International Finance No. 93 (Princeton, New Jersey: Princeton University, 1972).

Fleming, J. Marcus, "On Exchange Rate Unification," The Economic Journal (London), Vol. 81 (September 1971), pp. 467-76.

Frenkel, Jacob A., "Reflections on European Monetary Integration, "Weltwirtschaftliches Archiv, Vol. 111 (1975), pp. 216-21.

Frenkel, Jacob, and Harry G. Johnson (eds.), The Monetary Approach to the Balance of Payments, Allen and Uniwin, London (1976).

Goldsbrough, David J., "Fiscal Policy, the Exchange Rate, and Relative Prices in Nigeria" (Washington: International Monetary Fund), unpublished manuscript (1985).

International Monetary Fund, The Monetary Approach to the Balance of Payments (Washington, 1977).

Ishiyama, Yoshihide, "The Theory of Optimum Currency Areas: A Survey," Staff Papers (Washington: International Monetary Fund), Vol. 22 (July 1975), pp. 344-83.

Johnson, Harry G., and Alexander K. Swoboda, eds., The Economics of Common Currencies: Proceedings of the Madrid Conference on Optimum Currency Areas (London: Allen and Unwin, 1973).

Lucas, Robert E., "Some International Evidence on Output-Inflation Tradeoffs," American Economic Review, Vol. 63 (June 1973), pp. 326-34.

McKinnon, Ronald I., "Optimum Currency Areas," American Economic Review (Nashville, Tennessee), Vol. 53 (September 1963), pp. 717-25.

Montiel, Peter, and Iqbal Zaidi, "Cross-Regime Tests of the Lucas Supply Function in Developing Countries" (Washington: International Monetary Fund), IMF Working Paper, WP/87/28 (1987).

Morgan, David R., "Fiscal Policy in Oil Exporting Countries, 1972-78," Staff papers (Washington: International Monetary Fund), Vol. 26 (March 1979), pp. 55-86.

Mundell, Robert A., "A Theory of Optimum Currency Areas," American Economic Review (Nashville, Tennessee), Vol. 51 (September 1961), pp. 657-65.

Mussa, Michael, "A Monetary Approach to Balance-of-Payments Analysis," Journal of Money, Credit and Banking (August 1974), pp. 331-51.

Sargent, Thomas J., and Neil Wallace, "Rational Expectations, the Optimal Monetary Instrument and the Optimal Money Supply Rule," Journal of Political Economy, Vol. 83 (April 1975).

Tower, Edward, and Thomas D. Willet, The Theory of Optimum Currency Areas and Exchange Rate Flexibility, Special Papers in International Economics No. 11 (Princeton, New Jersey: Princeton University, 1976).

Whitman, M., "Global Monetarism and the Monetary Approach to the Balance of Payments," Brookings Papers on Economic Activity, No. 3 (1975).