As a result of speculative attacks, the central bank’s foreign exchange reserves (F) are depleted by the speculators. Such a transfer of foreign exchange reserves from the central bank to the speculators is called a “capital flight.” The capital flight implies that the monetary base (MB) falls sharply at the time of the crisis. To see why, recall that on the asset side the monetary base is equivalent to the sum of foreign exchange reserves and the government bond holdings on the central bank’s balance sheet (B):

$$\text{MB} = F + B$$

At the time of a currency crisis, F falls sharply, while B rises only gradually. As a result, the monetary base sharply falls and so does the money supply. This money contraction implies an upward shift of the LM curve in Figure 1.a. Consequently, the interest rate rises from $i_1$ to $i_2$ and the output falls from $Y_1$ to $Y_2$. However, the rising interest rate does not appreciate the home currency in Figure 1.b. The reason is that, this currency is subject to inflation expectations, which cause depreciation expectations and shift the FR curve upward. A rise in the domestic interest rate then at best weakens depreciation but does not remove depreciation.
ANSWER 2.

This question is about the central bank’s credibility as the inflation stabilizer. Thus, the central bank’s credibility is high when the past inflation is low. From the 1st generation crisis model, there is a connection between inflation and fiscal spending. To be precise, the central bank in that model extends credit to the government through purchases of the government bonds. Therefore, the government which runs a fiscal deficit and cannot sell bonds to the private sector or foreign buyers is the cause of inflationary policy. For this reason, the central bank’s credibility is enhanced by the fiscal surplus and hurt by the fiscal deficit.

ANSWER 3

A lack of credibility of the central bank is summarized by a rise in the expected rate of depreciation in the uncovered interest rate parity (UIP):

\[ i = i^* + \Delta E^*/E. \]

In other words, a lack of credibility increases the expected return on foreign assets or the FR curve. This simply implies that the central bank that wishes to continue a fixed exchange rate system has to raise the domestic interest to compensate for the rise in expected rate of depreciation, regardless of the level of the foreign interest rate.

Consider an example of the crisis in the European Monetary System in 1992. At the time the central bank of Germany raised the interest rate, and the Bank of England has an obligation to follow by raising the pound interest rate in order to fix the pound with the German mark. From the perspective of the U.K., these events are displayed in Figure 3 below.

In Figure 3.b, the FR curve shifts twice. First, it shifts from FR_1 to FR_2, because of the rise in the foreign interest rate (in German mark). Next, it shifts from FR_2 to FR_3, because of a lack of credibility or a rise in the expected rate of depreciation. To maintain the fixed exchange rate E_1, the central bank in the U.K. must raises its interest rate to shift the DR curve upward from i_1 to i_2. This policy is essentially a money contraction, which shifts the LM curve in Figure
3.a upward. As a result, the output in the U.K. drops from $Y_1$ to $Y_2$. This drop in output is considered the cost of defending a peg.

If the central bank has high credibility, the FR will shift only once, from $FR_1$ to $FR_2$. In that case, the central bank will raise the interest rate only slightly to $i_3$. Output will fall from $Y_1$ to $Y_3$, which is still higher than $Y_2$.

**ANSWER 4.a**

Yes, the peg is credible and the central bank will continue the peg. The reason is that, the cost of defending the peg is lower than the benefit ($1\%<3\%$ and $2\%<3\%$), regardless of the credibility of the peg. Therefore, investors anticipate that the central bank will defend the peg. The central bank will contract the money supply to raise the interest rate in order to defend the peg.

**ANSWER 4.b**

In this case, it is impossible to determine whether the peg is credible or not, and hence we have two equilibria.

(i) *If the peg is credible*, the cost of pegging ($2\%$) is smaller than the benefit ($3\%$). Thus, the country will *maintain the peg*. The central bank contracts the money supply, similar to part (a). The investors then will validate their expectations that the peg is credible.

(ii) *If the peg is not credible*, the cost of pegging ($5\%$) is larger than the benefit ($3\%$), and thus, the country will *leave the peg*. The investors then will validate their expectations that the peg is not credible.

We do not know which equilibrium will be realized. Either way the investors will validate their expectations about credibility of the peg. For this reason, we refer to this type of crisis as a “self-fulfilling” crisis.

**ANSWER 5**

*Potential benefits* from forming a new currency area for this group of 6 gulf countries depend on the degree of market integration, in the goods market, the capital market and the labor market. To evaluate the optimality of a new currency area, we can partition the world into 4 blocs: (1) the U.S. dollar zone; (2) the euro zone; (3) this proposed new currency area; and (4) the rest of the world. If the degree of integration among these countries become higher than that with the U.S. and that with the euro zone, they will be better off by forming a new currency. Thus, we can compare various measures of market integration among them vs. market integration with the U.S. dollar zone and market integration with the euro zone.
1. The degree of integration in goods market can be measured by the volume of trade within the currency area vs. trade outside the currency area. If these countries further diversify trade in the future, their reliance on trade with the U.S. dollar zone may drop to the point where trade within the currency area becomes larger than trade with the U.S. dollar zone.

2. The degree of integration in the capital market can be measured by the real interest rate differentials within the currency area vs. with other zones. With financial globalization, this aspect of market integration likely meets the criterion for the optimum currency area earlier than other aspects of market integration.

3. The degree of integration in the labor market can be measured by the size of migrant workers and the barriers to labor mobility imposed by the migration laws. The language barriers among these gulf countries are small since they all use Arab language. Although cultural barriers remain, their cultural frictions are likely smaller than frictions among the euro zone members due to similarities in cultural background including religions.

Potential costs from a new currency area are: (1) the cost of losing monetary independence; (2) the cost of currency risks.

1. The cost of losing monetary independence can be high if these countries have different kinds of shocks. Today they are still main oil exporters, but in the future Bahrain and the United Arab Emirates will likely become oil importers. Although such changes will increase the volume of oil trade within the zone and deepens goods market integration, they will make shocks asymmetric across countries. Thus, the cost of using one single currency with one interest rate policy for all member countries will be high in the future. However, they will be able to reduce the cost of losing monetary independence by encourage labor mobility and fiscal transfer across member countries.

2. The cost of currency risks comes from fluctuations of their exchange rate against the dollar, which is currently the currency of denomination in the crude oil market. However, they will be able to reduce this cost by setting export price of oil in their new currency instead of the dollar.