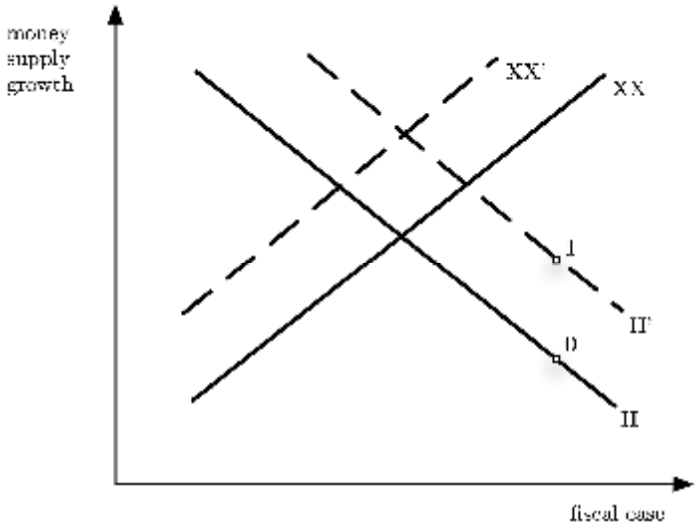
**Suggested answers to Problem Set 5**

## Question 1

The United States begins at a point like 0 after 1985, where it is in internal balance but there is a large current account deficit. In the short run, monetary expansion (an upward shift in the point to 1) moves the economy toward the goal of a greater current account surplus, but also moves the economy out of internal balance toward overemployment. The expenditure-reducing policy of reducing the budget deficit (represented by a leftward shift in the point), used in tandem with an expenditure-switching monetary expansion, can restore external balance while maintaining internal balance. Moving the economy into a zone of overemployment puts pressure on the price level, which ultimately reverses the short-run effect of monetary expansion on the real exchange rate by an upward shift in both the II and XX to II' and XX' respectively.




## Question 2

Fiscal expansion in Germany and Japan would have appreciated the currencies of those countries and diminished the bilateral U.S. trade deficits with them, as desired by American officials. On the other hand, monetary expansion in these countries would have worsened the U.S. current account since the dollar would have appreciated relative to the deutsche mark and the yen. Our two-country models suggest that U.S. output would have fallen as a result. (These effects would differ, of course, if the United States altered its policies in response to policy changes in Germany or Japan. For example, if the United States expanded its money supply with the expansion in either Germany or Japan there

would be no bilateral effects. If the United States contracted fiscal policy as Germany or Japan expanded fiscal policy there would less of an effect on output in each country.)

**Question 3**

One can construct a matrix analogous to Figure 19A-1 in the text to show the change in inflation and the change in exports for each country in response to monetary policy choices by that country and by the other country. Export growth in a country will be greater, but inflation will be higher, if that country undertakes a more expansionary monetary policy, given the other country's policy choice. There is, however, a beggar-thy-neighbor effect because one country's greater export growth implies lower export growth for the other. Without policy coordination, the two countries will adopt over-expansionary monetary policies to improve their competitive positions, but these policies will offset each other and result simply in higher inflation everywhere. With coordination, the countries will realize that they can both enjoy lower inflation if they agree not to engage in competitive currency depreciation. For example, we can have

| | | Foreign | |
|---|---|---|---|
| | | Expansionary MP | No change |
| Home | Expansionary MP | (ΔEx, Δπ), (ΔEx*, Δπ*)<br>(0.5%, 1%), (0.5%, 1%) | (3%, 2%), (0%, 0%) |
| | No change | (0%, 0%), (3%, 2%) | (1%, 0.8%), (1%, 0.8%) |

| | | Foreign | |
|---|---|---|---|
| | | Expansionary MP | No change |
| Home | Expansionary MP | (0.5*, 0.5*) | (1.5, 0) |
| | No change | (0, 1.5) | (1.25, 1.25) |

**Question 4**

a. In May 2003, Gordon Brown, Britain's Chancellor of the Exchequer, announced that the UK would postpone joining the Euro. At the heart of that decision were five tests that the UK should pass before joining. The first three tests are:
i. Are business cycles and economic structures compatible so that Britain can live permanently with euro interest rates?
ii. If problems emerge, is there sufficient flexibility to deal with them?
iii. Will joining the euro promote higher growth and stability?
(There are two other tests that have to do with London as a financial center and whether the UK will keep attracting foreign capital).
Discuss the rationale behind the three tests above. Do they make sense? Regarding test iii, would you expect joining the Euro to have a permanent effect on growth and stability?

*This question refers to the criteria for Optimal Currency Area. The main idea is the better economic integration makes it less costly to give up the exchange rate or makes it*

*easier to maintain fixed exchange rate and share monetary policy. Economic integration refers to whether the economies involved have well correlated business cycles. Even if the shocks are not well correlated, countries could live under common currency if there is enough flexibility – capital and labor mobility, a lot of trade, or a federal fiscal policy. Each of these channels would facilitate macroeconomic stabilization in a country above or below EU-wide economic performance.*
*Regarding the permanent effect of joining the monetary union, one could make one of two arguments. One argument is that since EMU membership is a monetary phenomenon, in the long run it should have no effect. The opposite argument is that the EMU might promote investment, more efficient allocation of capital funds and thus stimulate growth (temporarily or permanently).*

(b) Last year, output growth was -0.2% in Germany and 4.5% in Greece; Inflation was 1.2% in Germany and 3.5% in Greece. The three-month nominal money market rate in the eurozone was 2 percent. Based on these numbers, discuss whether a common monetary policy is appropriate and why.

*The key point here is to compare (ex-post) real interest rates: Germany is 2-1.2=0.8%. Greece is 2-3.5=-1.5%. So, monetary policy is expansionary in high inflation countries. Then, observe that this leads to more output growth in Greece than in Germany. This further triggers even more inflation in Greece and deflation in Germany. This example is important because many argue that the common economic and currency area would facilitate economic integration and convergence, but in this case we see that a common monetary policy in fact does not necessarily lead to convergence.*

**Question 5 – Italy under EMU and the Growth and Stability Pact**
a. Explain why it would be beneficial for a country like Italy (with a history of inflation and loose fiscal policy) to be a member of a monetary union with Germany. What could the disadvantages be?
*Italy benefits because it gives up its monetary policy to the hands of a central bank with conservative reputation regarding inflation. The disadvantage is that Italy has to rely on the European Central Bank for monetary policy, thus it looses an important policy tool for macroeconomic stabilization. Moreover, the common monetary policy dictated by the ECB might not be appropriate for the Italian economy.*

The Italian economy has been in recession for some time now. Remember that Italy is a member of the European Monetary Union (EMU), so it does not have a currency of its own.
b. If Italy is in a recession, what policy tools are available to bring the economy back to full employment? Assume the recession is not due to structural issues. Describe this policy in the AA/DD framework.
*We know that with fixed exchange rates, monetary policy is not available. Thus Italy can only do a fiscal expansion. This means a shift out of the DD curve. Because of the fixed exchange rate system, this policy has to be accompanied by an outward shift of AA curve, leading to even larger output expansion.*

c. What adverse effects might such policy have? (Hint: think of prices and exchange rates).
*Observe that in the long run adjustment, prices will increase (adjusting to increased output) causing a real appreciation. This policy would worsen the competitivity of Italian products on the European market (ie. worsen Italy's current account deficit).*

In addition, Italy has to comply with the conditions of the Growth and Stability Pact (in practice, this means that it needs to maintain a fiscal deficit lower than 3% of GDP).

d. Suppose Italy were to run large and persistent budget deficits. Why might this action be a threat to a common currency arrangement?
*Budget deficits typically increase output. If Italian output is persistently kept above its full-employment equilibrium (the 'if' statement is important), there will be inflation. Persistent inflation coming from a large member of the currency union could have adverse effects on other members, by contributing to depreciation of the euro and spreading inflation to their economies, and perhaps by instigating a tighter EMU-wide monetary policy and, hence, output contraction outside of Italy.*
*The currency union might be endangered for several reasons: (a) the extent to which Italy's profligacy depresses political support for membership; (b) the possibility of a threat of default or suspension of payments by the Italian government (and the consequent pressure on the ECB to monetize the debt at that point, since Italy is "too big to fail"); or (c) the increase in EU-wide interest rates (as the possibility of an Italian default increases) endangers economic growth and stability throughout the region.*

e. Under what circumstances might Italy's large and persistent budget deficits not be a threat to the currency arrangement? (Note that Italy is a large economy, so it would probably be incorrect to assert that Italy is too small to matter.)
*If Italy were persistently below its full-employment equilibrium, budget deficits would not be inflationary, but might actually enhance stability of the currency union. A useful example is actually that of Germany, who have been running persistent budget deficits since unification of East and Western Germany. This spending is not necessarily inflationary, since they are seeking to support and develop the East, and in fact is probably in the long-term interest of the EMU. Another possible argument is that financial markets may rate Italian debt differently from Irish debt, so that it carries a different premium, endangering EU-wide rates much less.*

f. How do you view the rules of the Growth and Stability Pact given your analysis above? Has the Stability and Growth Pact been upheld so far? Why or why not?

*The Growth and Stability Pact does not allow Italy to pursue expansionary fiscal policy. This means that in case of recession Italy will have no policy tool for stabilization. On the other hand, the Growth and Stability Pact ensures that members of the monetary union maintain fiscal discipline and collaborate for the conservative reputation of the union. Furthermore, the GSP implies that member governments should instead stimulate their economies through policies to increase productivity and eliminate market rigidities and not through short-lived, inflationary policies that give only temporary comfort.*

*In effect, both France and Germany exceeded the 3% budget deficit threshold just a few years after the SGP was implemented, but although they have been criticized for doing so, none of the penalties have been imposed. The SGP hasn't been enforced either because there is a consensus that is it too constraining or because although policy-makers still believe in its principles, they do not have the power to punish the two biggest members of the EU/EMU. In the first case, people might have realized that sometimes large budget deficits are okay, and that the SGP should be enforced only when it seems that countries are behaving irresponsibly. In the second case, France and Germany are behaving irresponsibly and should be punished, but they are too big and powerful to let that happen.*

**Question 6**

For each of the following, indicate whether the statement is true, false, or uncertain, and explain why in one or two sentences. No credit will be given for a response without an explanation.

a. Ireland's economy has boomed in the past decade, with incomes growing far faster than the EU average (Note: assume this is an indisputable fact). Based on what we have learned about foreign exchange and money markets under fixed exchange rates, we would expect that membership in the EMU will inevitably come at the cost of high inflation in Ireland.

*False or Uncertain. We know from fixed exchange rate theory that inflation rates should equalize across states that share a peg or a currency. Figure 20-2 in the text illustrates the dramatic inflation convergence within six original members of the EMU, showing the power of this inflation convergence. Why is there inflation convergence? In Chapter 15 we talked about a long run model of inflation based on PPP. There the text notes that in the long run the price level is essentially a function of money supply relative to money demand. To the extent that the growth rate of the money supply is common EU-wide (it is), and that money demand growth across the EU is similar (because of, say, similar rates of economic growth and economic integration) then the rate of price growth should be similar across countries. To the extent that growth in money supply and demand are expected to be similar, expected inflation will also converge.*

*In the late 1990's, however, we see Ireland blipping up well above the other members. This is probably a consequence of their boom (implying that EU-wide interest rates are "too low" for Ireland). As long as there are barriers to exchange of goods, people or capital there will be room for local conditions to influence prices. Since Europe is not perfectly integrated (think of distance and language as transaction costs) Ireland's inflation can deviate somewhat from the EMU average, especially in the short run.*

b. Canada and the US are each other's largest trading partner, with more than $1.2 billion of goods and services crossing the border every day (Note: assume this is an indisputable fact). Therefore, from a purely economic standpoint, Canada and the US probably form an optimal currency area.

*False or uncertain. Economic integration is only one of two important considerations in optimum currency theory. There is also the economic stability loss from giving up exchange rate and monetary policy. Chapter 20 visualizes this trade-off in two schedules, the GG and LL schedules, as illustrated in Figure 20-6. So long as Canada needs or*

*desires independent monetary policy (i.e., because of different fiscal policies or external shocks) the USA and Canada will not necessarily be an optimal currency area.*

c. From India's perspective, freedom of international capital movement in and out of the country is only sustainable if the central bank sacrifices either exchange rate stability or an activist monetary policy.

*True. This is known as the 'Impossible Trinity', or sometimes as the 'Trilemma'. Countries want (i) free capital flows, (ii) stable exchange rates, and (iii) independent monetary policy. Unfortunately, these are mutually inconsistent policies (remember question 4 on PS 4). Only two can be sustained at the same time. We already know that you have to give up independent monetary policy if you want to maintain a fixed exchange rate and allow the free flow of capital. If we tried to exercise monetary policy, it would be perfectly offset by an inflow or outflow of capital. (You should be able to show this clearly, by the way.) The only way you can have both a stable exchange rate and be able to use monetary policy is to restrict capital flows in and out of the country. Then you can change interest rates while maintaining your peg, since investors cannot sell off or buy up your country's currencies or securities.*