14.02, Spring 2003
Problem Set 4: Open economy IS-LM

Posted: Wednesday October 22.
Due: Wednesday October 29 in class.

1. True/False

State whether each of the following statements is True or False, and justify your answer in 2-3 sentences and/or a simple diagram.

(a) A country with a fixed exchange rate is unable to use fiscal policy to change the level of output (Y)

(b) In an open economy IS-LM model with flexible exchange rates, a cut in taxes always leads to an increase in Y, an appreciation of the exchange rate and an increase in investment.

(c) If the IS curve is very flat, an increase in the domestic money supply causes a small depreciation of the exchange rate, and has a large effect on output.

(d) In an open economy IS-LM model with flexible exchange rates, a decrease in the budget deficit (either by decreasing G or by increasing T) always leads to a decrease in the trade deficit as well, as long as the Marshall-Lerner conditions[1] hold.

(e) If two economies have a fixed exchange rate, net capital flows between these two countries must be equal to zero.

(f) The fact that interest rates affect the exchange rate in the open economy IS-LM model tends to make the IS curve flatter than it would be if interest rates only affected demand through investment (again, assume the Marshall-Lerner conditions hold).

(g) If the exchange rate between two countries is fixed in the current period, the interest rate in the two countries must be the same, assuming there is perfect capital mobility.

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[1] Recall that the Marshall-Lerner conditions are the algebraic conditions under which an exogenous increase in ε causes $NX = X - \varepsilon IM$ to increase.

2. Monetary policy shocks

Assume there are only two economies, Europe and the United States. The price level in both Europe and the US is constant and equal to 1. So the real exchange rate ε is always exactly the same as the nominal exchange rate E.

[NOTE: For the purposes of notation, when answering this question you should use an asterisk (*) to denote a European economic variable. (eg. US output is given by Y, while the output of Europe is denoted by Y*, etc.)].

Assume that the US behaves according to the basic open economy IS-LM model developed in Chapter 20 of the Blanchard (ie. the IS, LM and UIP equations on page 422 of the textbook).

(a)   Explain why E = 1/E*.

Denote the initial exchange rate by E_0, initial US output by Y_0 etc. The European Central Bank decides to increase interest rates (i*) by an amount Δ by reducing the money supply M*/P*. (ie i* increases from i^*_0 to $i^*_0 + \Delta$).

(b)   Assume that the exchange rate between Europe and the US is floating (flexible). Show using an open economy IS-LM diagram what happens to the US economy following the increase in i*. [HINT: You will need to shift two different curves in the diagram]. State what happens to US interest rates, consumption, investment and the trade balance.

Note that, when undertaking this exercise, you should for simplicity assume European output (Y*) remains constant. You should also assume there is no change in expected future exchange rates.

(c)   Following on from part (b): Now assume that, when i* increases by Δ, there is a decline in European output also (ie. Y* falls to a level below Y^*_0). How would this change your answers in part (b)?

(d)   Following on from part (b): Now imagine that, rather than allowing the exchange rate to move, the US wanted to maintain the exchange rate E_0 that existed before the increase in i*. Show in a diagram what Fed would have to do in the financial market to achieve this.

(e)   Following on from part (d): Show in a diagram how, in theory, government spending (rather than interest rates) could be used to return the exchange rate to E_0? Can you think of any practical real-world difficulties in using fiscal policy rather than monetary policy to shift the exchange rate (HINT: think about the time it would take for policy to have an effect)?

3. Fixed exchange rates: fair or foul?

Consider the following extract from a recent Reuters news article:

> *US Treasury Secretary John Snow told lawmakers in a letter earlier this month he wanted to see China move to a more flexible exchange rate "now" and promised he would keep up pressure on Beijing to do so.*
>
> *In the letter to senators, dated September 12 and a copy of which was obtained by Reuters, Snow reiterated his view that intervention in currency markets should be kept to a minimum.*
>
> *"It is clear to me that China should move toward greater flexibility in its exchange rate," said Snow's letter. "I would welcome a move toward greater flexibility now."*
>
> *Snow was responding to a request from Democratic senators Charles Schumer and Evan Bayh and Republican senators Elizabeth Dole and Lindsey Graham to investigate whether China's pegged exchange rate is harming the US economy.*
>
> *The bipartisan group said China's artificially weak currency makes Chinese exports cheap, undermining US producers' sales abroad and leading to job losses in the beleaguered US manufacturing sector.*

(a)   Explain in terms of the open economy IS-LM model why these politicians believe China's fixed exchange rate might be harming the US economy.

(b)   Can you think of some reasons why <u>China</u> might benefit from moving to a more flexible exchange rate?

4. Labor markets

In recent years, the US unemployment rate has increased from 4% to 6%.

(a)   If the number of employed people in the US has fallen from 160m to 156m over the same period (these are not the correct numbers, just an example), what has happened to the number of unemployed people? What has happened to the size of the labor force?

In response to rising unemployment, two economists suggest alternative schemes for helping out the jobless.

(b)   The first economist suggests a 'back-to-work' scheme, in which unemployed workers who find and hold a job are given a $1000 grant by the government. Using the model in Chapter 6, what effect will this scheme have on 'z' (the catchall variable that captures shifts in the wage setting curve)? Show in a diagram how the equilibrium unemployment rate would change following the introduction of such a scheme.

(c)   The second economist suggests a 'help-the-poor' scheme, in which unemployment insurance payments are increased to lift the unemployed out of poverty. As you did in part (b), what effect will this scheme have on 'z'? Show in a diagram how the equilibrium unemployment rate would change following the introduction of such a scheme.

(d)   Discuss the relative merits of these two schemes. Is one scheme necessarily 'better' than the other?