

Problem Set 4

Due *in lecture* on Monday, April 26th. Be sure to put your name on your problem set. Put “boxes” around your answers to the algebraic questions.

1. Textbook Chapter 10, Numerical problem 3.
2. Textbook Chapter 11, Numerical problem 1.
3. Textbook Chapter 11, Analytical problem 4.
4. Suppose you are given the real side of an open economy as:

$$Y = AD$$

$$AD \equiv C + I + G + X$$

$$C = a_0 + bY_d$$

$$Y_d \equiv Y - T + F$$

$$T = tY$$

$$F = FT_0$$

$$I = e_0 - dR$$

$$G = GO_0$$

$$X = g_0 - mY + m_w Y_w - n \left(\frac{EP}{P_w} \right)$$

$$\left(\frac{EP}{P_w} \right) = q_0 + vR$$

Where the LM curve is given by $R = \frac{\mu}{h} - \left(\frac{1}{h} \right) \left(\frac{M_0}{P} \right) + \left(\frac{k}{h} \right) Y$

- 4.1. Solve for the open economy IS curve (Y as a function of R).
- 4.2. Solve for equilibrium income.
- 4.3. Draw the IS-LM diagram, showing slopes, and intercepts.
- 4.4. Show algebraically (using total differentials) what happens to income if foreign income rises *exogenously*. What is the intuition for this result?
- 4.5. Suppose U.S. policymakers decide that the US trade deficit is becoming too large. Will restrictive monetary policy to reduce GDP work to reduce the trade balance? Explain your answer *algebraically*. Can you suggest a better macroeconomic policy that will not depress GDP, but will reduce the trade balance?

5. Recall that the real exchange rate relationship

$$\frac{EP}{P_w} = q + vR$$

Stands in for this underlying relationship:

$$\frac{EP}{P_w} = \left(\frac{E_{LR} P}{P_w} \right) \left[\frac{(1-\gamma)}{\Theta} R - \frac{\overline{R_w}}{\Theta} \right] + \frac{E_{LR} P}{P_w}$$

Which relies upon UIP, the condition that expected returns expressed in a common currency are the same in the two countries.:

$$R - R_w = - \frac{\Delta E_{+1}^e}{E} \equiv - \frac{E_{+1}^e - E}{E} \quad < UIP >$$

Suppose instead of this condition, American assets required a risk premium, ρ , to be held, perhaps because they are viewed as more risky than foreign assets (or less risky, when $\rho < 0$):

$$R - \rho - R_w = - \frac{\Delta E_{+1}^e}{E} \equiv - \frac{E_{+1}^e - E}{E}$$

5.1. Work out what the new expression for the real exchange rate/interest rate equation.

5.2. What is the impact on the IS curve of an exogenous rise in ρ ?

5.3. What is the impact on US GDP of an exogenous rise in ρ ?

5.4. What would happen to the price of imported goods?