

### Problem Set 3

Due **5pm on** Monday, March 29. "Box-in" your answers to the algebraic questions.

#### 1. Policy under Fixed Exchange Rates

Suppose the economy is given by the following set of equations.

- (1)  $Y = \bar{\alpha}[\bar{A} + \bar{X} - \bar{I}\bar{M} + (n + v)\bar{q} - bi]$  <IS curve>
- (2)  $i = -\left(\frac{1}{h}\right)\left(\frac{\bar{M}}{\bar{P}}\right) + \left(\frac{k}{h}\right)Y$  <LM curve>
- (3)  $i = -\left(\frac{1}{\kappa}\right)[(\bar{X} - \bar{I}\bar{M} + \bar{F}\bar{A}) + (n + v)\bar{q}] + \bar{i}^* + \left(\frac{m}{\kappa}\right)Y$  <BP=0 curve>

1.1 Draw a graph of initial equilibrium, where the goods and money markets are in equilibrium, as is the balance of payments. Assume that  $m/\kappa < k/h$ .

1.2 Show what happens if the government cuts the *tax rate*, both immediately, and over time, assuming no sterilization.

1.3 At the new equilibrium, what is true about (i) the level of output; (ii) the level of investment; (iii) the real exchange rate; and (iv) the trade balance.

1.4 Redraw 1.1, and show the impact of a monetary contraction, both immediately and over time. Assume over time, capital flows are sterilized.

1.5 Explain why the process you lay out in 1.4 occurs.

1.6 Answer 1.4 if capital flows are not sterilized.

#### 2. Policy under Floating Exchange Rates

- (1)  $Y = \bar{\alpha}[\bar{A} + \bar{X} - \bar{I}\bar{M} + (n + v)q - bi]$  <IS curve>
- (2)  $i = -\left(\frac{1}{h}\right)\left(\frac{\bar{M}}{\bar{P}}\right) + \left(\frac{k}{h}\right)Y$  <LM curve>
- (3)  $i = -\left(\frac{1}{\kappa}\right)[(\bar{X} - \bar{I}\bar{M} + \bar{F}\bar{A}) + (n + v)q] + \bar{i}^* + \left(\frac{m}{\kappa}\right)Y$  <BP=0 curve>

2.1 Now assume the economy described above under a floating exchange rate regime.

Show what happens if the government cuts government spending.

2.2 Explain your answer to 1.1.

2.3 Now examine a monetary expansion from initial equilibrium, carefully distinguishing between initial impact, and the effect over time.

2.4 Explain why monetary policy has a larger effect in this open economy as opposed to

that in a closed economy.

2.5 What is the balance of payments at the beginning (i.e., are reserves increasing, decreasing, or constant)? What is the balance of payments after a monetary expansion?

3. Consider the Mundell-Fleming model, under fixed exchange rates, and perfect capital mobility.
  - 3.1 Show graphically what happens if the foreign interest (considered exogenous) rises, immediately.
  - 3.2 Assume sterilization **is attempted**; what happens to output, interest rates, real exchange rate, and foreign exchange reserves. Show graphically what happens.
  - 3.3 Show what policies are available to the policy authorities if they wish to avoid foreign exchange decumulation.
  - 3.4 Instead of a foreign interest rate increase, suppose exports autonomously decline. Show what happens immediately.
  
4. Consider the Mundell-Fleming model, under floating exchange rates, and perfect capital mobility.
  - 4.1 Show graphically what happens if the foreign interest (considered exogenous) rises, immediately.
  - 4.2 Assume sterilization **is attempted**; what happens to output, interest rates, real exchange rate, and foreign exchange reserves. Show graphically what happens.
  - 4.3 Show what policies are available to the policy authorities if they wish to avoid an exchange rate change.
  - 4.4 Instead of a foreign interest rate increase, suppose exports autonomously decline. Show what happens immediately.