

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.