Problem Set 3

Due in Lecture on Wednesday, April 1st. "Box in" your answers to the algebraic questions.

1. Policy under Fixed Exchange Rates in the IS-LM-BP=0 model

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

(13) \[ Y = \alpha[\bar{A} + EXP - IMP + (n + v)q - bi] \] <IS curve>

(13') \[ i = \frac{\bar{A} + EXP - IMP + (n + v)q}{b} - \left(\frac{1}{b} - c(1-t) + \frac{m}{h}\right)Y \] <IS curve>

Where \( \bar{A} = CO - bTA + bFT + IN + GO \)

(14) \[ i = \frac{\mu}{h} - \left(\frac{1}{h}\right)\left(\frac{M}{P}\right) + \left(\frac{k}{h}\right)Y \] <LM curve>

(15) \[ i = -\left(\frac{1}{\kappa}\right)(EXP - IMP + KA) + (n + v)q + \bar{i} + \left(\frac{m}{\kappa}\right)Y \] <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 \( m/k > k/h \).

1.2 Show what happens if the government decreases government spending by \( \Delta GO \), both immediately, and over time in the absence of central bank sterilization. Note, the money base changes by an amount equal to the change in foreign exchange reserves,

(16) \[ \Delta MB = \Delta Res = BP = -ORT \]

1.3 Answer 1.2, assuming the central bank sterilizes changes in official reserves. 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 in the IS-LM-BP=0 model

Suppose the exchange rate is floating.

2.1 Assume the economy described above is under a floating exchange rate regime. Show graphically what happens if the government decreases government spendings.
2.2 Explain your answer to 2.1.
2.3 Now examine a monetary contraction 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.

3. Shocks under Floating Exchange Rates in IS-LM-BP=0

3.1 Suppose foreign income falls. Further assume the foreign country is large relative to the home country, so that the impact on the home country can be represented as a reduction in $\overline{\text{EXP}}$. Trace out the impact on the home economy, using a graph.
3.2 Could the home economy offset the impact of the foreign income shock using monetary policy? If yes, show how the proposed policy would operate, graphically.
3.3 Could the foreign country seek to nullify the impact of the home country’s monetary policy?

4. Purchasing power parity

In the following questions, show your work.
Consider absolute purchasing power parity, in logs (i.e., where lowercase letters denote logged values of uppercase letters):

$s_t = p_t - p^*_t$

4.1 Explain what happens to the exchange rate if the foreign price level falls by 5%.
4.2 Suppose only relative PPP holds, $s_t = p_t - p^*_t - \kappa$. Answer again 4.1.
4.3 If relative PPP holds, what must be true when US inflation is 3% and foreign inflation is -2%?