Lecture 16 - Recommended Problems

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☆☆ Chapter 20, Problem 3

Policy choices when the real exchange rate is "too high" and the nominal exchange rate is fixed. An overvalued real exchange rate is a rate such that domestic goods are too expensive relative to foreign goods, net exports are too small, and by implication the demand for domestic goods is too low.

This leads to difficult policy choices for the government and central bank. The equations that describe the economy are:

- The IS curve:

$$Y = Y \left(\frac{\bar{E}P}{P^*}, G, T, i^* - \pi^e, Y^* \right)$$

- The Phillips curve for the domestic and the foreign economy:

$$\pi - \bar{\pi} = \frac{\alpha}{L} (Y - Y_n)$$

$$\pi^* - \bar{\pi}^* = \frac{\alpha^*}{L^*} (Y^* - Y_n^*)$$

In the text and in this question, we are going to make two critical assumptions. These are explored in parts (a) and (b). Then we move to the analysis of the policy options when a country is experiencing an overvalued exchange rate.

a. We are going to assume that the foreign economy is always in medium-run equilibrium. What are the implications of that assumption for foreign output and foreign inflation?

b. We are going to assume that the domestic and foreign economies share the same anchored value for the level of expected inflation denoted $\bar{\pi}$ and $\bar{\pi}^*$. What is the implication of that assumption once both the domestic and foreign economies are both in medium-run equilibrium?

c. Draw the IS-LM-UIP diagram for the case where the domestic country has an over-valued nominal exchange rate. What is the key feature of that diagram? Under fixed exchange rates without a devaluation, how does the economy return to its medium-run equilibrium?

d. Draw the IS-LM-UIP diagram for the case where the domestic country has an overvalued nominal exchange rate. Show how the economy can return to its to medium-run equilibrium when a devaluation is a policy choice.

e. Recall that the assumption has been made that the interest rate parity holds so $i = i^*$ at all times. Compare the returns on the domestic bond and the returns on the foreign bond in the period of the devaluation. Will bond holders continue to believe there is a completely fixed nominal exchange rate? If bond holders believe another devaluation is possible, what are the consequences for domestic interest rates?

☆☆ Chapter 20, Problem 4

Modeling an exchange rate crisis. An exchange rate crisis occurs when the peg (the fixed exchange rate) loses its credibility. Bond holders no longer believe that next period's exchange rate will be this period's exchange rate. the uncovered interest rate parity equation used is the approximation:

$$i_t \approx i_t^* - \frac{E_{t+1}^e - E_t}{E_t}$$

Period	i_t	i_t^*	E_t	E_{t+1}^e
1		3	0.5	0.5
2		3	0.5	0.45
3		3	0.5	0.45
4		3	0.5	0.5
5	15%	3	0.5	0.4
6		3	0.4	0.4

a. Solve the uncovered interest rate parity condition for the value of the domestic interest rate in period 1.

b. In period 2, the crisis begins. Solve the uncovered interest rate parity condition for the value of the domestic interest rate in period 2.

c. The crisis continues in period 3. However, in period 4, the central bank and government resolve the crisis. How does this occur?

d. Unfortunately, in period 5, the crisis returns bigger and deeper than ever. Has the central bank raised interest rates enough to maintain uncovered interest rate parity? What are the consequences for the level of foreign exchange reserves?

e. How is the crisis resolved in period 6? Does this have implications for the future credibility of the central bank and the government?