Homework Assignment #3

Answer Keys

**Question 1:**
Using appropriate diagrams, show why and how the exchange rate sometimes *overshoots* (or *undershoots*). You must clarify what kind of assumption(s) we have to make. Argue the movements of the variables for both the short- and long-terms if necessary. Just showing diagrams with arrows does not lead to the full point. Discuss what you draw in the diagrams.

See your lecture notes.

**Question 2:**
A group of macroeconomists (called the “new classical macroeconomists”) believe in perfect flexibility in both nominal wages and prices. They also assume that agents (i.e., “people”) form rational expectations. There is another group of people, called New Keynesians, who believe that wages and prices can be rigid for some time period though they also believe in the rational expectations. Using the AS-AD diagram, show how they differ in terms of the effect of macroeconomic policies on the aggregate output. When drawing diagrams, label the graphs properly and discuss the movement carefully. Make sure you present assumptions for this model.

See your lecture notes.

**Question 3:**

a. The temporary decrease in the money supply to $300 lowers real balances, raises the interest rate, and causes the nominal and real exchange rates to appreciate. This effect is depicted by an upward shift of the money supply schedule.

b. The interest parity line shifts down when the money supply schedule shifts in. This causes a larger initial appreciation of the currency than if the money supply change were temporary because the permanent change in the money supply changes the expectation on the exchange rate.
c. The long-run value of the U.S. price level is 75. The U.S. interest rate is still 7 percent in the long run. The dollar/pound exchange rate is 1.5 (in order to return to the same real exchange rate of \(2 \times 50/100 = 1\), we need the exchange rate to appreciate to 1.5 since \(1.5 \times 50/75 = 1\)).

d. Over time, as the price level falls the money supply line shifts out, eventually returning to its original position. The price level steadily falls towards its new level, real balances first fall and then return to their original level, and the exchange rate appreciates, at first overshooting its long-run level and then depreciating back to 1.5 dollars/pound.

<Graduate students only>

**Question 4:**

See lecture notes.

**Question 5:**

Problem 9 in Ch. 15. Assume that there is change in the expected exchange rate.

In our discussion of short-run exchange rate overshooting, we assumed real output was given. Assume instead that an increase in the money supply raises real output in the short run. How does this affect the extent to which the exchange rate overshoots when the money supply first increases? Is it likely that the exchange rate undershoots? (Hint: In Figure 15-12a, allow the aggregate real money demand schedule to shift in response to the increase in output.)

If an increase in the money supply raises real output in the short run, then the fall in the interest rate will be reduced by an outward shift of the money demand curve caused by the temporarily higher transactions demand for money. In the figure below, the increase in the money supply line from \((M_1/P)\) to \((M_2/P)\) is coupled with a shift out in the money demand schedule from \(L_1\) to \(L_2\). The interest rate falls from its initial value of \(R_1\) to \(R_2\), rather than to the lower level \(R_3\), because of the increase in output and the resulting outward shift in the money demand schedule. Because the interest rate does not fall as much when output rises, the exchange rate depreciates by less: from its initial value of \(E_1\) to \(E_2\), rather than to \(E_3\), in the diagram. In both cases we see the exchange rate appreciate back some to \(E_4\) in the long run. The difference is the overshoot is much smaller if there is a temporary increase in \(Y\). Note, the fact that the increase in \(Y\) is temporary means that we still move to the same IP curve, as LR prices will still shift the same amount when \(Y\) returns to normal and we still have the same size M increase in both cases. A permanent increase in \(Y\) would involve a smaller expected price increase and a smaller shift in the IP curve (Do you know why?).