14.54 International Economics
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Problem Set 6
(Due Dec 7th)

Question 1: **Output Stabilization Policies**

Imagine the US economy operates at its full employment output, but a shock hits the economy temporarily. As a result output can reach a level different from its long run full employment value.

The policy maker wants to stabilize output at its full employment level and therefore will try to offset temporary changes in the level of output. Different kinds of shock can be offset using different policy tools. In this problem you are required to analyze the type of instrument that is more appropriate to offset each kind of shock.

Analyze the following cases using the IS-LM-UIP framework.

1. In this economy money demand suddenly decreases. What is the impact of this shock on the interest rate, the exchange rate and output? Without government intervention what would happen to exchange rate, interest rate and output in the long run? How can the government offset the shock to output using monetary policy? How can the government offset the shock to output using fiscal policy? Which of the two types of interventions should the government choose? Why?
2. Imagine that sudden news about future productivity growth trigger an increase in private investment. What is the impact of this shock on the interest rate, the exchange rate and output? Without government intervention what would happen to exchange rate, interest rate and output in the long run? How can the government offset the shock to output using monetary policy? How can the government offset the shock to output using fiscal policy? Which of the two types of interventions should the government choose? Why?

Question 2: **Exchange Rate Overshooting**

Imagine the US economy is described by the following characteristics.

In the short run prices are perfectly sticky, but they fully adjust in the long run to accomodate monetary shocks.

The output of the economy is fixed at its long-run level $Y = 12.5$.

Money demand is described by the following equation:

$$\left(\frac{M}{P}\right)^D = \frac{Y}{i}$$

where i is the US interest rate.

Money supply is initially fixed at $M^S = 1000$ and the initial price level is $P = 2$.

The economy is open and in particular we are interested in the exchage rate of the dollar vis-a-vis the euro. The relationship between interest rates and the current and expected exchange rates is described by the standard Uncovered Interest Parity condition.

$$i = i^* + \frac{E^e - E}{E}$$

The Euro-area interest rate is $i^* = 0.04$ and markets believe the future exchange rate to be $E^e = 1$.

1. Draw a graph like the one you saw in class relating the current exchange rate and the US interest rate
2. Add to this graph a quadrant and draw on this quadrant the relationship between real money balances and the US interest rate (like you saw in class).
3. What is the equilibrium current exchange rate?
4. Consider an expansionary monetary intervention that raises the money supply to 2000. As stated above, prices are fixed in the short run. If output doesn't adjust, what is the short run response of the interest rate to this monetary policy intervention? What is the long run impact on the exchange rate (E^e)? Draw the UIP curve given the new expectation about the exchange rate. Given this new UIP curve, what is the short-run response of the exchange rate to the monetary expansion. What is the response of the exchange rate and interest rate once prices have fully adjusted to the monetary shock?
5. What would happen if the monetary expansion was only temporary (i.e. the money supply was reduced to 1000 after a short period of time)?

Question 3: **Policy Announcements**

Consider again a similar setup as in problem 2. We are looking for SHORT qualitative answers for this problem.

Imagine the central bank announces an increase in the money supply to take place at a specified future date.

Describe the exchange rate movements depending on the following differences in the speed of price adjustment:

1. Imagine prices are very flexible and start adjusting immediately after the announcement and they are already fully adjusted to the monetary expansion by the time the money supply is increased.
2. Imagine prices partially adjust after the announcement, but at the time of the monetary expansion they are still below their long run level.
3. Imagine prices are very sticky and they don't start adjusting until the policy is implemented.