Exam 3. Econ520. Spring 2015

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UNC

Instructions:

- Answer all questions.
- Clearly number your answers. Write legibly.
- Do *not* write your answers on the question sheets.
- *Explain* your answers – do not just state them.
- *Show* your derivations – do not just state the final result.
- Do not refer to any notes or books. You may use a calculator.
- The total time is 75 minutes.
- The total number of points is 100.

1 Short Questions

1. [10 points] Suppose we have 2 countries (North and South) that produce 2 goods (A and B). Goods are produced from labor only. One worker in the South produces 10 units of A or 20 units of B. One worker in the North produces 30 units of A or 60 units of B.

   Which country has a comparative advantage in which good?

   Suppose these 2 countries open up bilateral trade. What would happen? Explain.

2. [15 points] Suppose 2 economies are identical, except for their money growth rates. In country A, the money growth rate is a constant 2%, while in country B it is a constant 5%.

   Which country would you expect to have the higher values of nominal interest rate, real interest rate, and output? Explain your answer.

2 AS/AD Model

Recall the equations for the AS/AD model:

- AS: $P = (1+m)P^e F(1 - Y/L, z)$.
- AD: $Y = C(Y - T) + G + I(Y, i)$ with $M/P = YL(i)$.

Consider an economy starts in the medium-run equilibrium where $P = P^e$. The economy is hit by a shock to aggregate demand, such as a reduction in G.

1. [15 points] Graph the short and medium run effects of this shock. Explain.

2. [20 points] Now suppose the Central Bank attempts to counteract the shock through a monetary expansion. However, the policy affects AD only with a lag. Illustrate how this can lead to an overshooting of output (Y rises above Y_n) and additional inflation.
   This is easiest to graph if you assume that the monetary expansion only takes effect when the economy has reached the medium run equilibrium described in part 1.

3 Open Economy IS/LM Model

Recall the model equations:

$$IS: Y + C(Y - T) + I(Y, i) + G + NX\left(Y, Y^*, P/\left[EP^*\right]\right) \tag{1}$$

$$LM: M/P = YL(i) \tag{2}$$

$$UIP: E = \frac{1+i}{1+i^*}E^e \tag{3}$$

Fixed exchange rate (so that $E = E^e = \bar{E}$).

1. [10 points] Graph the equilibrium and explain how you find the equilibrium point $\left(\hat{i}, \hat{Y}\right)$.
2. [10 points] Explain what would happen if the central bank attempted to expand the money supply.
3. [20 points] Consider a coordinated expansion of money supplies in both countries (home and foreign). What would happen to domestic output, interest rate and trade balance. Graph and explain.

End of exam.

4 Answers

4.1 Short Questions

1. Nothing would happen. No country has a comparative advantage in either good. The autarky prices in both countries would be 2:1. With trade, the specialization of production would be indeterminate, but it would not affect total output or consumption.

2. I would expect both countries to be identical, except for a difference in inflation rates of 3%. Of course, the nominal interest rate in B would be higher than A's, again by 3%, so that the real interest rates are the same.

   Intuition: The essence of the Philips curve discussion is: unanticipated changes in M have real effects, but anticipated changes in M do not. Any constant inflation will be anticipated and contracts will be adjusted accordingly.

   In the context of the AS curve: it slopes upwards in P/P^e. When $P = P^e$ it is vertical.

4.2 AS/AD Model

1. We did this in class. AD shifts left. See 1. The short run is II. The medium run is III.

2. Assume that the Fed's stimulus kicks in when the economy is already at III. This is a right shift in AD. The short run equilibrium is at IV. The medium run is back at I.

4.3 Open Economy IS/LM Model

1. UIP fixed $i = i^*$. IS then determines Y and LM determines M. Graphing i against Y, IS is downward sloping for the usual reasons (I depends on i).

2. A monetary expansion would attempt to shift LM. That would lower $i < i^*$, which would lead to capital outflows. The central bank would have to sell foreign exchange. The money supply would contract until we are back at point I.

3. A coordinated expansion would lower i and i^*. The LM curve could shift out and the new equilibrium would be at II. Output expands because the lower interest rate raises I. The change in NX is ambiguous because outputs (and thus imports) rise in both countries.

End of answers.

Figure 1: AS-AD Model

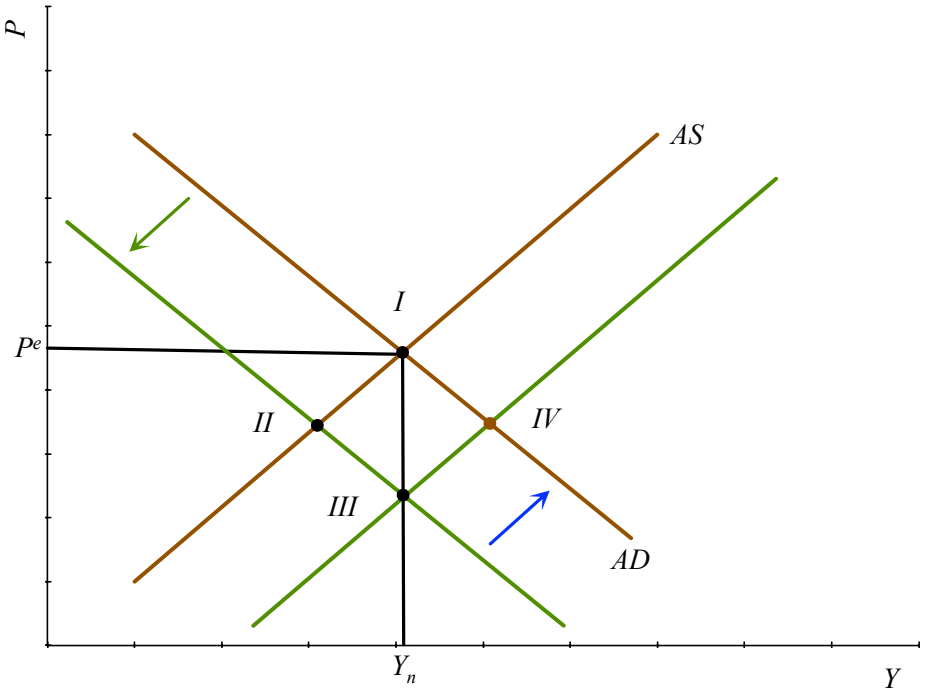

Figure 2: Open Economy IS/LM Model