::Solutions::

Problem Set #4: Due end of class November 6, 2018

You may discuss this problem set with your classmates, but everything you turn in must be your own work.

1. Suppose that Home is initially at an equilibrium when it is hit by a consumer confidence crisis (the $C(\ )$ function shifts down). Use the IS-LM-FX model to answer the following questions. Assume that home has a floating exchange rate. Use diagrams to support your answer.

   (a) Show how the consumption shock affects the interest rate, the exchange rate, and output.

   > See the figures at the end.

   (b) Explain how the consumption shock affects the countrys trade balance.

   > The trade balance rises. This comes from two sources. The exchange rate depreciates (which leads the real exchange rate to depreciate) which makes the TB rise (more exports). The decreases in home income makes the trade balance rise (buy fewer imports).

2. Suppose that Home is initially at an equilibrium when the Foreign country increases its interest rate. Use the IS-LM-FX model to answer the following questions. Assume that home has a floating exchange rate. Use diagrams to support your answer.

   (a) Show how the change in i^* affects the interest rate, the exchange rate, and output.

   > See the figures at the end.

   (b) Explain how the change in i^* affects the countrys trade balance.

   > The increase in FR depreciates the currency. This leads to a real depreciation and the trade balance rises. This shifts the IS curve out.

3. Suppose that the home country has a fixed exchange rate. The economy is initially in an equilibrium in which the exchange rate is at its desired level. Suppose the foreign country raises its interest rate. Use the IS-LM-FX model and use diagrams to support your answer.

   (a) How should the home central bank respond to the change in i^*?

   > The central bank will contract the money supply to raise the home interest rate so that it meets i^*.

   (b) How doe the interest rate, the exchange rate, and output change?

   > See the figures at the end.

   (c) Explain how the trade balance changes.

> The exchange rate has not changed, so that does not influence the trade balance. The home country is poorer, so that increases the trade balance (fewer imports). [This shifts IS out a bit.]

4. Consider a country with no initial wealth that exists for two periods. The country can produce 100 units of output in the first period and 120 units of output in the second period. The country can borrow or lend on world markets at a world real interest rate of 5 percent. The household has the utility function $u = \min\{c_0, c_1\}$.

   (a) Solve for the level of gross national expenditure in both periods.

   > The budget constraint is
   > $$c_0 + \frac{c_1}{1.05} = 100 + \frac{120}{1.05}$$
   > The household wants $c_0 = c_1 = c$, so $c = 109.756$.
   > $GNE = 109.756$ in each period.

   (b) What is the current account balance (and all of its components), and what is the financial account balance in each of the two periods?

   > $TB_0 = 100 - 109.756 = -9.756$, $TB_1 = 10.244$, $NFIA_0 = 0$, $NFIA_1 = -0.488$, $CA_0 = -9.756$, $CA_1 = 9.756$, $FA = 9.756$, and $FA_1 = -9.756$.

5. Germany has the production function $q_G = 30k_G^{1/3}$, where q is output per worker and k is capital per worker. Brazil has the production function $q_B = 15k_B^{1/3}$.

   (a) If $k_G = 1000$ and $k_B = 900$, which country has a higher output per capita?

   > Germany has a higher output per capita (300) compared to Brazil (144.8).

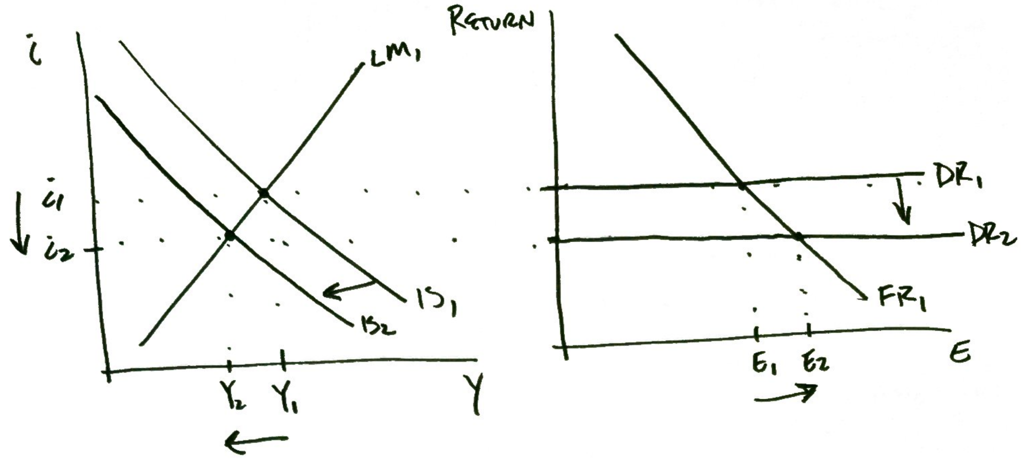
   (b) Would you expect to see Germany investing in Brazil or Brazil investing in Germany? Explain your answer.

   > $r_G = 10 \times 1000^{-2/3} = 0.01$ and $r_B = 5 \times 900^{-2/3} = 0.054$, so I would expected Brazil to invest in Germany's capital.

   (c) Suppose Germany country imposed a tax on foreign interest payments of 5 percent. Would this change your answer to part (b)? Explain your answer.

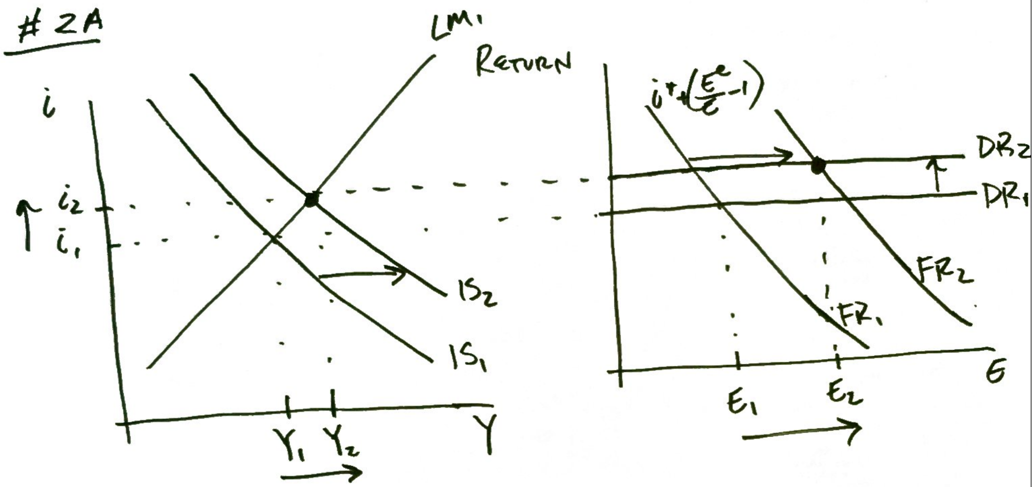
   > The after tax return on Brazil's investment in Germany would be approximately $0.01 - 0.05 = 0.05$, which would make Brazil no longer interested in investing in Germany country.
   > Since the tax is only on foreign interest payments, Germans would invest in Germany and Brazilians would invest in Brazil.

#1A



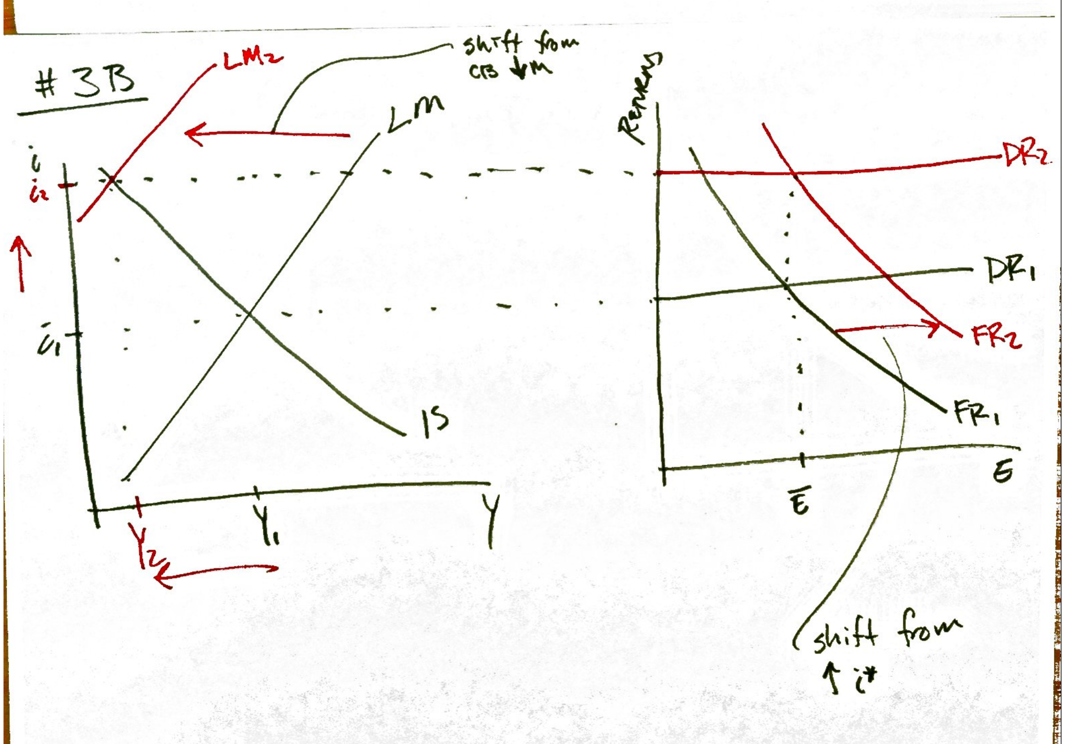
i
i_1
i_2
LM_1
IS_1
IS_2
Y_2
Y_1
Y
RETURN
DR_1
DR_2
FR_1
E_1
E_2
E

#2A



LM_1
RETURN
i
i_2
i_1
IS_2
IS_1
Y_1
Y_2
Y
$i^* + \left(\frac{E^e}{E} - 1\right)$
DR_2
DR_1
FR_2
FR_1
E_1
E_2
E

#3B



LM_2
shift from CB ↓M
LM
RETURN
i
i_2
i_1
IS
Y_2
Y_1
Y
DR_2
DR_1
FR_2
FR_1
$\bar{E}$
E
shift from ↑i^*