

# 14.54 International Economics

## Final Exam

December 2005

*You have two and a half hours. Answer questions 1 and 2 and choose two short questions.*

1. Consider the model of borrowing and lending that we have seen in class. There is a country with income  $(y_1, y_2)$  who can borrow at the given world interest rate  $r = 10\%$ .

Suppose the preferences of the consumers of the country are given by

$$\log c_1 + \beta \log c_2$$

where

$$\beta = \frac{1}{1 + 10\%}.$$

Suppose country 1 has an initial debt with the rest of the world, i.e.

$$b_0 = -50$$

this debt is due at the beginning of date 1 and the contractual interest rate is  $r_0 = 10\%$ .

The budget constraint for the country is:

$$\begin{aligned} b + c_1 &= y_1 + (1 + r_0) b_0, \\ c_2 &= y_2 + (1 + r) b. \end{aligned}$$

Suppose:

$$y_1 = 55, y_2 = 105.$$

(i) Derive the optimal consumption at date 1.

(ii) Define the trade balance and the current account balance. Show that the country is running a trade surplus and the current account is zero.

Suppose the IMF is considering two programs: (1) a debt-relief program and (2) a subsidized lending program. Program 1 involves reducing the value of the initial debt to

$$b_0 = -40.$$

Under program 2 the IMF would subsidize borrowing by the country by allowing the country to borrow at a zero interest rate  $r = 0$  ( $r_0$  remains equal to 10%). The proposers of program 2 argue that the effects of program 1 and program 2 will be the same because they both involve a reduced financial burden of 10 (save 10% interest on 50 millions of debt or have 10 millions of debt forgiven).

(iii) What are the effects of Program 1 on the trade balance and on the current account balance of the country? Show that the country now will run a current account *deficit*. Explain.

(iv) What are the effects of Program 2 on the trade balance and on the current account balance of the country? Do you agree with the proposer of program 2?

(v) Compute the effects of Program 1 and 2 on the consumption of country. Do you think the country prefers program 1 or program 2?

(vi) Argue, informally, that if we extend our model to a setting with multiple goods, both programs will lead to a real *appreciation* of the domestic currency. Which program will lead to a bigger appreciation? Why?

2. Consider the open economy IS-LM-UIP model we have seen in class. For this question, if you are not sure about the algebra you should be able to give a qualitative answer using graphic arguments.

Consumption and investment are given by

$$\begin{aligned} C &= 0.8Y \\ I &= I_0 - 20i \end{aligned}$$

where  $I_0$  is a constant and  $i$  is the interest rate. For simplicity, there are no taxes. Government spending is given by  $G = 10$ . Net exports are given by

$$NX = 10 - .3Y + 2\epsilon,$$

where  $\epsilon$  is the real exchange rate.

The money demand equation is given by

$$M = .5Y - 20i,$$

money supply is equal to  $\bar{M} = 18$ .

Suppose prices at home and abroad are given and equal to

$$P = P^* = 1,$$

the expected exchange rate is given by

$$\bar{E}^e = 1$$

the foreign interest rate is

$$i^* = 10\%.$$

Remember that the UIP takes the form

$$1 + i = (1 + i^*) \frac{\bar{E}^e}{E}.$$

(i) Suppose  $I_0 = 0$ . Derive output, the interest rate, the exchange rate, the trade balance ( $NX$ ). (Hint: try  $i = 10\%$ ).

We will consider the effect of an "investment boom".

(ii) Suppose there is an exogenous increase in private investment, namely  $I_0$  is now equal to 4.2. What happens to the IS curve? What happens to output and the interest rate?

(iii) What happens to the exchange rate and to the trade balance? Explain.

(iv) Suppose the country wants to avoid an appreciation of the currency. What monetary policy intervention (i.e. what  $\bar{M}$ ) can restore the initial nominal exchange rate? What fiscal policy (i.e. what  $G$ ) achieves the same objective?

(v) Compare the monetary and fiscal policies described in (iv) in terms of their effects on output and on the trade balance.

3. Short questions. Answer two questions of your choice.

(a) After the default of Russia the spreads on emerging market bonds increased, that is, it was more expensive for emerging markets to borrow. Russia didn't receive a big bailout from the IMF or the US. Some argue that this shows that the moral-hazard story has it right: less bailouts imply more market discipline. What do you think?

(b) China high savings rate is helping to keep the real exchange rate undervalued and is helping China sell goods to the rest of the world. Comment.

(c) The central banker says: "We have 150 millions in foreign reserves and we are losing 5 millions per week. At this rate we should be able to defend the currency for at least the next six months." Is the central banker right?

(d) The US trade representative is complaining: "Due to the inflationary monetary policy in your country your exchange rate has been steadily devaluing for a long time. This makes it impossible for the US to export in your country." What is wrong with this line of argument?