

Financial Integration and Crises

May 31st, 2023

Instructions: no calculators are allowed

Short Questions: Answer 2 out of 4

Long Questions: Answer 2 out of 2

You have one hour and 45 minutes to complete the exam. The maximum number of points is 50.

Short questions (6 marks for each question)

- 1 Explain the channels through which quantitative easing stimulates the economy and discuss the extent to which it is an inflationary policy option.
- 2 Discuss the paradox of toil and the paradox of flexibility explaining the mechanism through which these paradoxes arise.
- 3 Any country with a debt to GDP ratio above 90% could be subject to a sovereign debt crisis. Discuss the previous claim by referencing to the Calvo sovereign debt crisis model.
- 4 Is monetary policy effective at the zero lower bound? What are the policy options once the economy reaches the zero lower bound.

Long Questions (19 points for each question)

SUDDEN STOP

Consider a two-sector, representative agent small open economy with endowments of tradables (Y_T) and nontradables (Y_N). The households in this economy solve the following intertemporal problem:

$$\text{Max } \gamma \log C_{T,1} + (1-\gamma) \log C_{N,1} + \beta \gamma \log C_{T,2}$$

Subject to:

$$C_{T,1} + p_{N,1} C_{N,1} = Y_{T,1} + p_{N,1} Y_{N,1} - b_2 + b_1 R$$

$$C_{T,2} = Y_{T,2} + b_2 R$$

$$b_2 \geq -\kappa (Y_{T,1} + p_{N,1} Y_{N,1})$$

where $\kappa > 0$ is a constant parameter, $C_T(C_N)$ denotes the consumption of tradables (non-tradables), p_N is the relative price of nontradables in terms of tradables, R is the gross constant real interest rate in units of tradables and b is the one period bond traded with the rest of the world. In what follows you can assume that $b_1 = 0$

- Determine the equilibrium conditions for the tradables and non-tradables goods markets and the optimal intratemporal allocation between tradables and non-tradables consumption. (3 marks)
- Consider first the scenario in which the credit constraint never binds. Determine the consumption function for tradables and the relative price of non tradables under this scenario for the case in which $\beta R = 1$ and the endowment of non-tradables is time invariant. (3 marks)
- Consider a shock to the endowment of tradeable in period 1 $Y_{T,1} > 0$ from $Y_{T,1}$ to $Y_{T,1}^{new} < Y_{T,1}$. Determine the size of the shock to $Y_{T,1}$ for which the borrowing constraint binds. (8 marks)
- Determine the equilibrium allocation of consumption for tradables and the relative price of non-tradables in period $t=0$ under the scenario that the constraint binds following the shock in (c) and compare it with what you got in part (b). (5 marks)

DEBT AND DELEVERAGING (idiosyncratic risk)

Consider a two-country endowment economy in which households' preferences are specified as follows. For the home economy

$$\sum_{t=0}^{\infty} \beta^t \log C_t$$

while for the foreign economy we have

$$\sum_{t=0}^{\infty} \beta^{*t} \log C_t^*$$

where C_t and C_t^* denote, the home and foreign consumption at time t and β, β^* represents the home and foreign subjective discount factor, with $\beta^* < \beta$. There is a risk-free bond expressed in units of the consumption good that is traded between the two economies. The total world endowment of the consumption good is denoted by Y^W : the home economy receives Y while the foreign economy Y^* with $Y^* < Y$ (i.e., there is idiosyncratic risk). The period budget constraint for the home and foreign economy are then given by:

$$\begin{aligned} B_t &= (1 + r_{t-1})B_{t-1} + Y - C_t \\ B_t^* &= (1 + r_{t-1})B_{t-1}^* + Y^* - C_t^* \end{aligned}$$

where $B > 0$ denotes credit position and $B < 0$ denotes debit position. Agents in each economy face a borrowing limit of the following form:

$$\begin{aligned} 0 &> B_t(1 + r_t) > B^{High} \\ 0 &> B_t^*(1 + r_t) > B^{high} \end{aligned}$$

a) Compute the steady state equilibrium for home, foreign consumptions and the world interest rate for this economy. (Hint: keep in mind that the foreign economy is relatively impatient, $\beta^* < \beta$, and as such it will face the borrowing limit in the steady state). (5 marks)

b) Consider now the following experiment in which the debt limit is reduced from B^{high} to B^{Low} . Determine the new steady state and discuss how it differs from the one computed in part (a). (6 marks)

c) Consider now the transition between the old and the new steady state. Assume that the transition takes only one period and determine the short-run values for home, foreign consumption and the world interest rate. Under which conditions the world interest rate can be negative? Suppose that the total endowment does not change but the endowment of the foreign economy decreases while the one of the home economy increases. $Y^W = Y' + Y'^*$ with $Y < Y'$ and $Y^* > Y'^*$. How does that affect the world interest rate in the transition? (8 marks)