

HOMEWORK 9. Due Monday April 19.

1. Obstfeld-Rogoff 5.2 (note that this is a bit of a “trick-question” since there isn’t a single solution to the problem, explain why that is).
2. Obstfeld-Rogoff 5.3 (parts a and c).
3. Assume that 2 agents live for 2 periods in an economy with perfect Arrow-Debreu markets and no storage. Assume that the endowment of the first agent is  $y_0 = 1, y_1 = 2$  and that the endowment of the second agent in period 0 is  $y_0^* = 1$  and in period 1 his or her endowment is  $y_1^* = 3$  in the “good state”  $g$ . In the “bad state”  $b$  the endowment of the second agent is  $y_1^* = 1$ . Assume that the good state happens with probability  $1/2$ . Assume each agent maximizes a utility function

$$\log(C_0) + E_0 \log(C_1) .$$

- a) Find the period 0 prices of the Arrow securities that pays out one unit in the good and the bad state, respectively. (I suggest that you follow Obstfeld-Rogoff and parameterize such that the period 0 price of 1 unit delivered in the good state is  $p^g/(1+r)$  and in the bad state it is  $p^b/(1+r)$  which implies that  $p^g + p^b = 1$  when  $r$  is the safe rate of interest. The price of a unit of period 0 consumption is normalized to 1.)
- b) Find the safe rate of interest  $r$ .
- c) Find the consumption of both agents in period 0, and in period 1 in the good state and in the bad state. (Hint. Use the Arrow securities to find the value of the endowment stream of each agent.)