

Exam

Macroeconomics III

Dr. Tiago Cavalcanti

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1. Consider the following infinite horizon model economy with two types $i \in \{A, B\}$ of households of equal measure 1. Preferences are given by:

$$U = \sum_{t=0}^{\infty} \beta^t \ln(c_t^i), \quad \beta \in (0, 1).$$

This is a pure exchange economy and the endowments of each type of households are:

$$\omega^A \in \{1, 0, 1, \dots\}, \quad \omega^B \in \{0, 1, 0, \dots\}.$$

Therefore, in the aggregate the total amount of the consumption good is always equal to one.

- (a) (20 percent) Define a Competitive Equilibrium. You are free to define a Time-0 approach or a Sequence approach. Just be consistent with your approach and how you define the problem of households.
- (b) (20 percent) Solve for allocations and prices. Comment on your solution.

Consider a pure exchange economy with idiosyncratic risk (i.e. household endowment shocks - some households get one while others get zero) and no aggregate uncertainty such that the total amount of goods in each period is still one. You should use now an expected utility:

$$U = E_0 \left(\sum_{t=0}^{\infty} \beta^t \ln(c_t^i) \right), \quad \beta \in (0, 1).$$

Suppose that agents can only buy a one period bond at discount.

- (c) (30 percent) Define a Stationary Recursive Competitive Equilibrium for this economy. Be precise.
- (d) (30 percent) Describe an algorithm to solve this equilibrium. Be precise.