ECO 511: Midterm 2

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Consider a model with a single asset b that earns interest rate r. Agents can make their assets negative and borrow, but at most $-\underline{b}$: $\underline{b} > 0$, i.e. they face an ad hoc borrowing constraint. Income fluctuates $z \in \{z_i\}$ which evolves acorrding to a Markov chain with transition probabilities $\pi(z, z')$.

Let preferences be quadratic, $u(c) = ac - b\frac{c^2}{2}$ and households live for $T = \infty$ periods.

1. Set up the household problem and define a recurvise competitive equilibium.
2. Suppose $\underline{b} = \infty$ so that the borrowing constraint will never bind and $\beta(1 + r) = 1$, without worrying whether r is an eqiulibrium interest rate or not. Solve for consumption as a function of initial period assets b_0 and the expected stream of income. Is consumption finite as $t \to \infty$?
3. Suppose $\underline{b} = \infty$ and $r = \frac{1}{\beta} - 1$. What do r and $\frac{1}{\beta} - 1$ represent? Can this be the equilibrium r?
4. Suppose $\underline{b} < \infty$ so that it binds with positive probability, now is $r = \frac{1}{\beta} - 1$ an equilibrium?