Econ 410: Midterm1
October 5, 2005

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Instructions. Please write neatly and label all diagrams clearly.

1. [25 marks]. Consider the following model economy, consisting of an infinite number of infinitely-lived agents indexed by $j = 0, 1, 2, ..., \infty$. There is an equal number of all types of agents. Time is discrete and indexed by $t = 1, 2, ..., \infty$. There is an infinite number of time-dated goods, $c(t)$, $t \geq 1$. A type $j = 0$ person values only good $c(1)$. A type $j = 1$ person values goods $c(1)$ and $c(2)$; and, in general, a type $j \geq 1$ values goods $c(j), c(j+1)$ according to a utlity function $u(c(j), c(j+1))$. Each type of agent has an endowment of goods, $y(t)$, $t \geq 1$. A type $j = 0$ person has no endowment; i.e., $y(t) = 0$ for all t. A type $j = 1$ person has an endowment $y(1) = y > 0$ and $y(t) = 0$ for all $t > 1$. A type $j = 2$ person has an endowment $y(1) = 0, y(2) = y > 0, y(t) = 0$ for all $t > 2$; and so on. The endowment is non-storable.

   (a) Explain why this economy displays a complete lack of double-coincidence of wants.

   (b) Consider any stationary allocation $(c(j), c(j+1)) = (c^y, c^o)$ for all $j \geq 1$, with $c(0) = c^o$. Characterize the Golden Rule allocation (using either math or a diagram).

   (c) Assume that agents lack a commitment technology. There is, however, a publicly-accessible and costless record-keeping technology. Explain how it is possible to implement any feasible (stationary) allocation (that dominates autarky) as an equilibrium without money.

   (d) Assume now that agents are completely anonymous (so that no record-keeping technology is available). Demonstrate (mathematically) that there are now only two stationary equilibria; i.e., one in which fiat money is valued, and one in which it is not. Be sure to define a monetary equilibrium.

   (e) Prove that the (stationary) monetary equilibrium implements the Golden Rule allocation.