

Homework 1: Recursive Competitive Equilibrium. Due: 2/12

1. Suppose the utility function is isoelastic in a composite of consumption and leisure and that this composite is homothetic. Define a recursive competitive equilibrium for the case of any standard, neoclassical technology. Show that the aggregation theorem applies in this environment by (i) guessing, on the individual decision rules and the aggregate law of motion and pricing functions; and then (ii) verifying, by finding a set of functional equations to which you can argue there is a well-defined, probably unique solution. Describe how to use these functional equations to characterize local dynamics (that is, you do not have to do it, but you do have to outline how to).
2. Consider the same economy as above with two exceptions: (i) leisure is not valued; and (ii) there is an aggregate shock to productivity. The productivity shock follows a two-state Markov chain. There is a representative consumer in the economy. Define a recursive competitive equilibrium in two different ways:
 - (a) with incomplete markets, using physical capital as the only asset; and
 - (b) with complete markets (using contingent claims).

For each case, try to guess and verify (as in question 1) on individual and aggregate equilibrium functions. Do the two kinds of equilibria give rise to the same aggregate and individual savings functions?