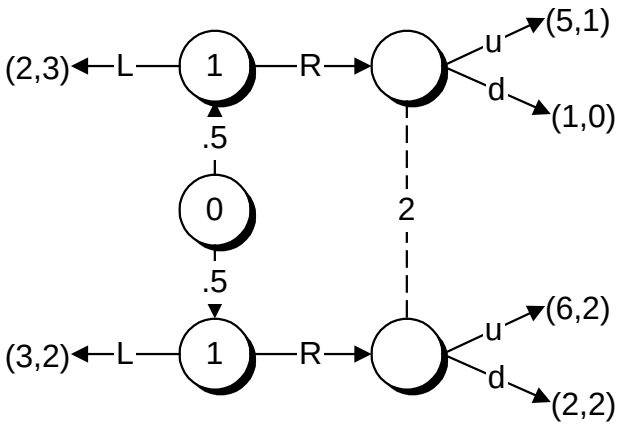
Midterm Exam: Economics 201, David K. Levine

2/7/05

Instructions: Do all questions, and be sure to explain your answers. You have two hours. Good luck.

1. Sequential and other Equilibria

Consider the extensive form game given below



a. Show that LL,d is a Nash equilibrium.
b. Why is LL,d subgame perfect?
c. Is LL,d trembling hand perfect?
d. Consider an "assessment" by player 2 of the probability that Nature played UP versus DOWN. For what assessments would d be optimal by player 2?
e. Are the assessments from part d "consistent" in the sense that you can find a sequence of positive probability trembles by player 1 and derive from those trembles using Bayes law a sequences assessments by player 2 that converge to the assessments from part d?

2. Backwards Induction

Consider the game of grab-a-dollar played in three rounds between two players. Initially player 1 may grab the dollar. If she does not (she "passes"), player 2 may grab 2 dollars. If player 2 does not grab, then player 1 chooses between taking 4 dollars and giving 8 dollars to player 2. The player that does not get the money gets nothing. Players' utility is given by the expected amount of money the receive.
a. Draw the extensive form.
b. What is the subgame perfect equilibrium of this game.
c. Show that in any Nash equilibrium player 1 must grab immediately.
d. Are there any other Nash equilibria of the normal form?
e. Find all Nash equilibria of the reduced normal form.
f. Suppose that this is a Bayes game in which there is a "deviant" type of player 1 who is altruistic, here utility is the sum of payments to player 2 and herself. Suppose the probability of a deviant type is 30%. Describe a Bayesian equilibrium in which player 1 passes with probability 1.
g. Continuing with the altruistic case, is there an equilibrium in which player 1 grabs with positive probability?