University of Minnesota
MICRO ECON 8103 prof. Aldo Rustichini

TA: Jakub Pawelczak

Recitations 20

[Definitions used today]

- SPE, Backward Induction, Behavioral Strategies, Linear Game, Perfect Recall, Dalkey and Kuhn Theorems

Question 1[84 III.1 Spring 2009 majors]

An extensive form game (EFG) is said to be linear if every information set is crossed at most once by every history.

- Give an example of an EFG which is not linear.
- Give an example of EFG that is linear but not of perfect recall.
- Compare linear games and games with perfect recall. Is one of the two a subset of the other? Prove your answer.

Question 2 [32 and 45 IV.2 Spring 2006 III.1 Spring 2007 majors]

Consider extensive form games that are finite (that is, that have a finite set of nodes).

a) Give an example to show that in an extensive form game a behavioral strategy may not havean equivalent mixed strategy

b) Define an extensive form **linear game**.

c) Prove that for any linear game, any player in the game, and any behavioral strategy of the player there is a mixed strategy of the same player that induces the same probability distribution on final nodes for any pure strategy of the other players.

d) Give an example to show that in a linear game for a mixed strategy of the player there may be no behavioral strategy that induces the same distribution on final nodes for some pure strategy of the other players.

Question 3

Find all SPE and NE of following games

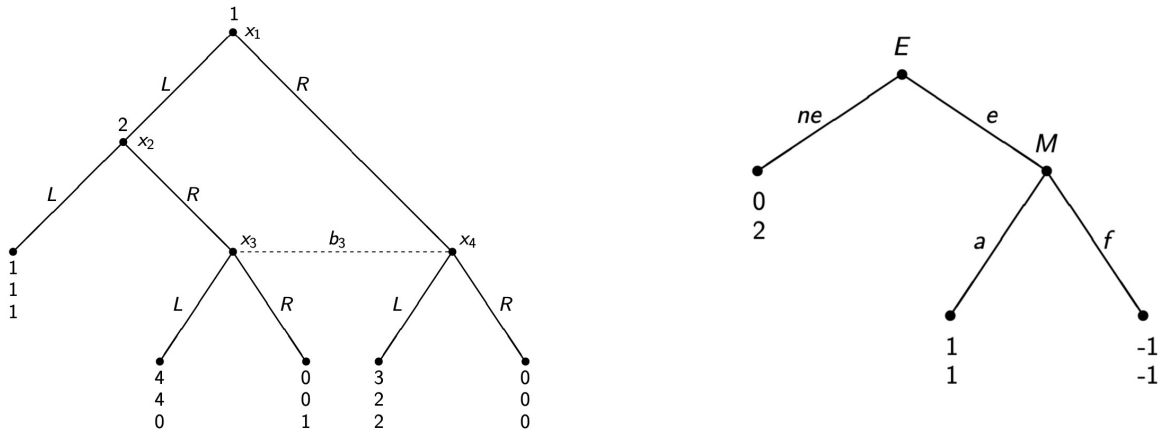

Figure 1

Question 4 [Final 2019]

- Prove that for any finite EFG of perfect information, there is a last move node, that is a move node x such that $IS(x) \subseteq Z$.
- Prove, or disprove by showing a counter-example to the statement: In any finite EFG of perfect recall, there is a last information set I^i for some player i, that is, an information set such that for any node $x \in I^i, IS(x) \subseteq Z$.