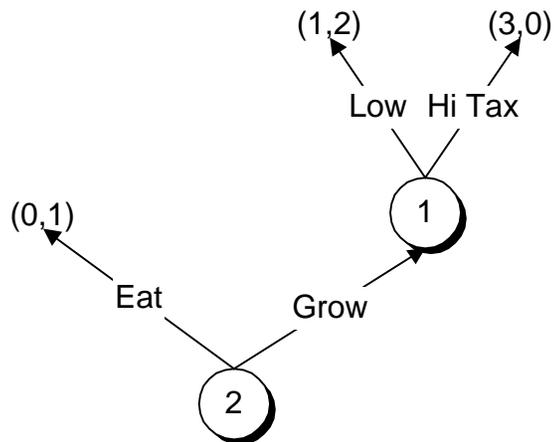


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More about Extensive Form Games

- *Peasant Dictator*

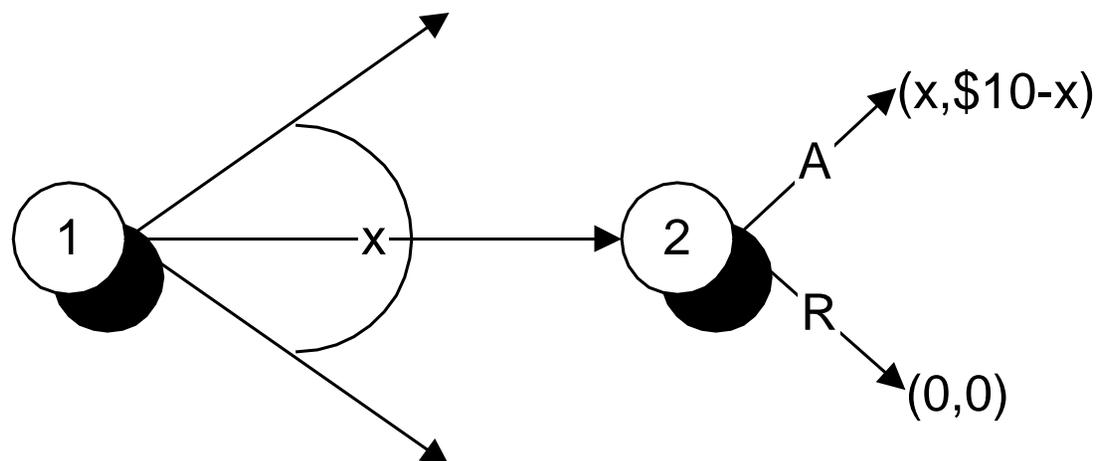


Political Economy Applications

- time consistency
- capital taxation
- inflation

Ultimatum Bargaining

extensive form



x is the demand by player 1 (in nickles)

subgame perfection player 2 accepts any demand less than \$10

subgame perfection requires player 1 demand at least \$9.95

Roth et al [1991]: ultimatum bargaining in four countries

pooled results of the final (of 10) periods of play in the 5 experiments with payoffs normalized to \$10

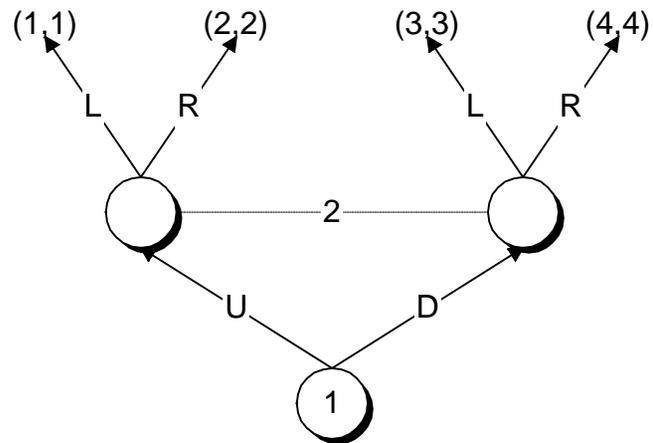
Demand	Observations	Frequency of Observations	Accepted Demands	Probability of Acceptance
\$5.00	37	28%	37	1.00
\$6.00	67	52%	55	0.82
\$7.00	26	20%	17	0.65

Does subgame perfection fail, or are the preferences wrong?

Information Sets and the Normal Form

How can we represent a simultaneous move game as an extensive form?

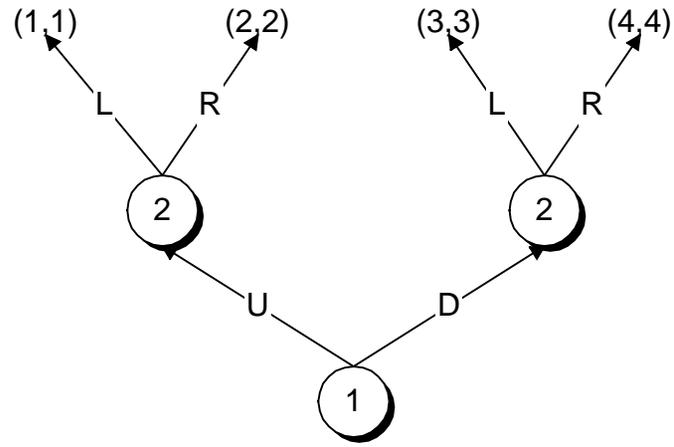
Example: a simple simultaneous move game



- The dashed line represents an *information set*.
- A player knows what information set he is at, but not which node in the information set

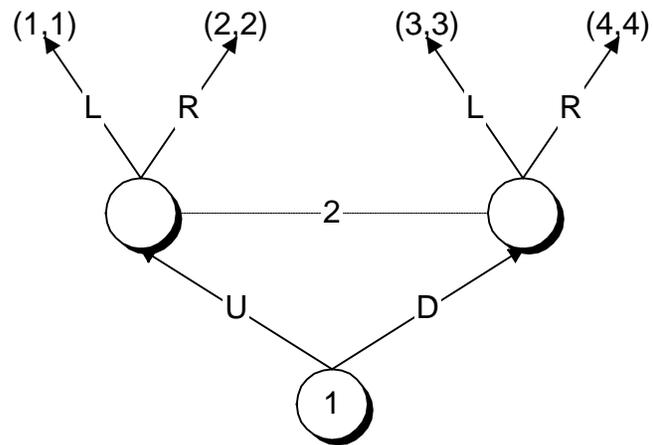
Normal Form Examples

Without an information set



	LL	LR	RL	RR
U	1,1	1,1	2,2	2,2
D	3,3	4,4	3,3	4,4

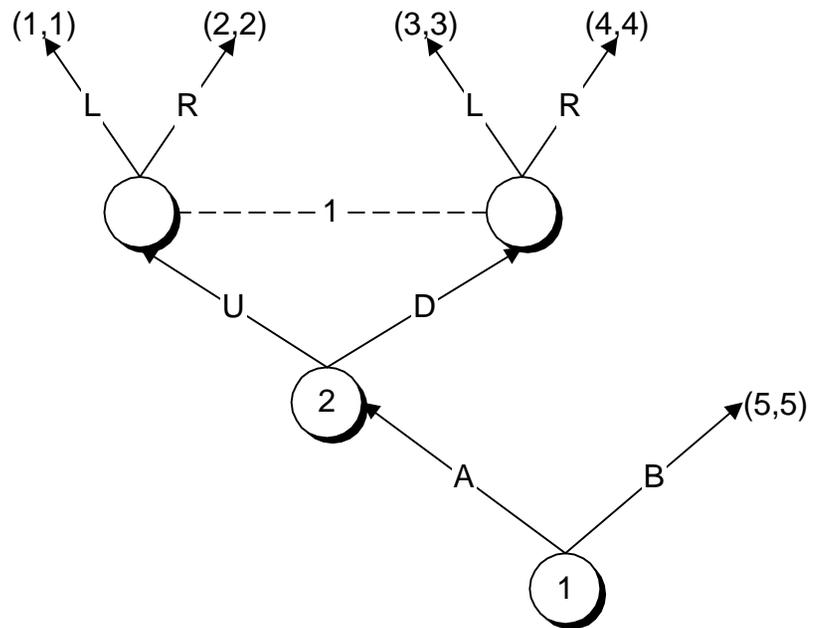
With an information set



	L	R
U	1,1	2,2
D	3,3	4,4

- actions constant within an information set
- labeling of actions must be consistent
- what are subgames like with information sets?
- what about uniqueness with information sets?

A more elaborate example

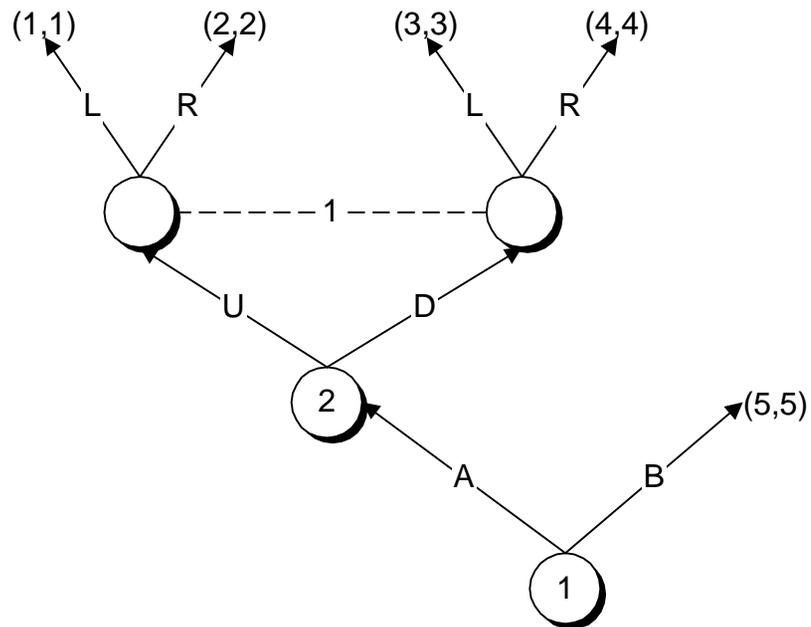


	U	D
AL	1,1	3,3
AR	2,2	4,4
BL	5,5	5,5
BR	5,5	5,5

- we find Nash equilibrium in the usual way from the normal form
- the strategies BL and BR are *equivalent* in the sense that neither player cares which is used

- the *reduced normal form* collapses equivalent strategies

	U	D
AL	1,1	3,3
AR	2,2	4,4
B	5,5	5,5



- no easy procedure to find subgame perfect
- can easily check a particular Nash equilibrium for subgame perfection

1. find subgames; look for nodes which begin a game (not connected to anything else by information sets); this game has a subgame starting with 2's node
2. find the normal form of the subgame

	U	D
L	1,1	3,3
R	2,2	4,4

check for Nash equilibrium in the subgame