Dynamic Entry Games

Competitive Strategy, Lecture 6

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Overview of Today

- Dynamic Games
- Stackelberg
- Entry Deterrence
  - Predation
  - Reputation
  - Signaling
- Entry Strategy

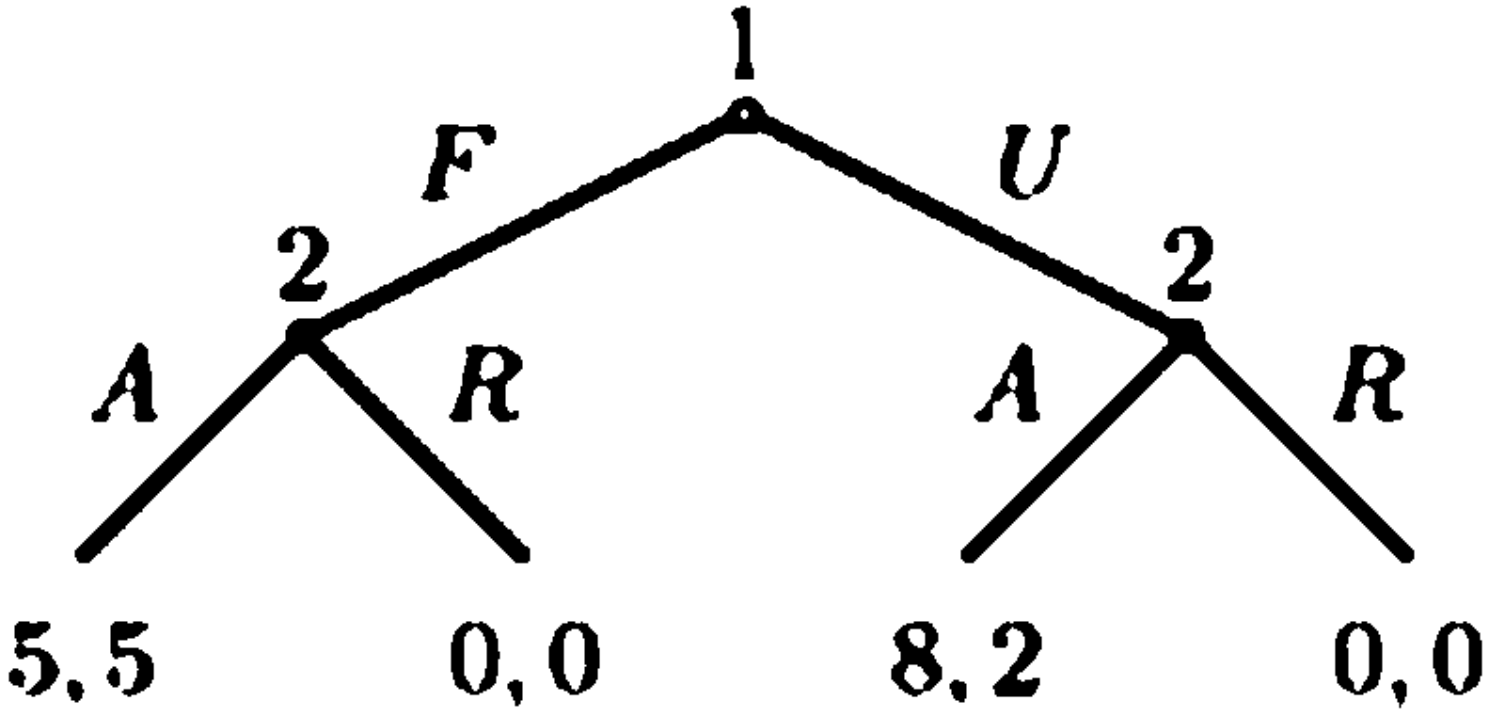
Dynamic Games Setup

- Dynamic games are when moves are 'sequential'
  - Other player see your moves before making their own
  - Illustrated with a game *tree*
  - Strategies are *still* fully-specified plans
  - Solutions are *still* mutual best response strategies

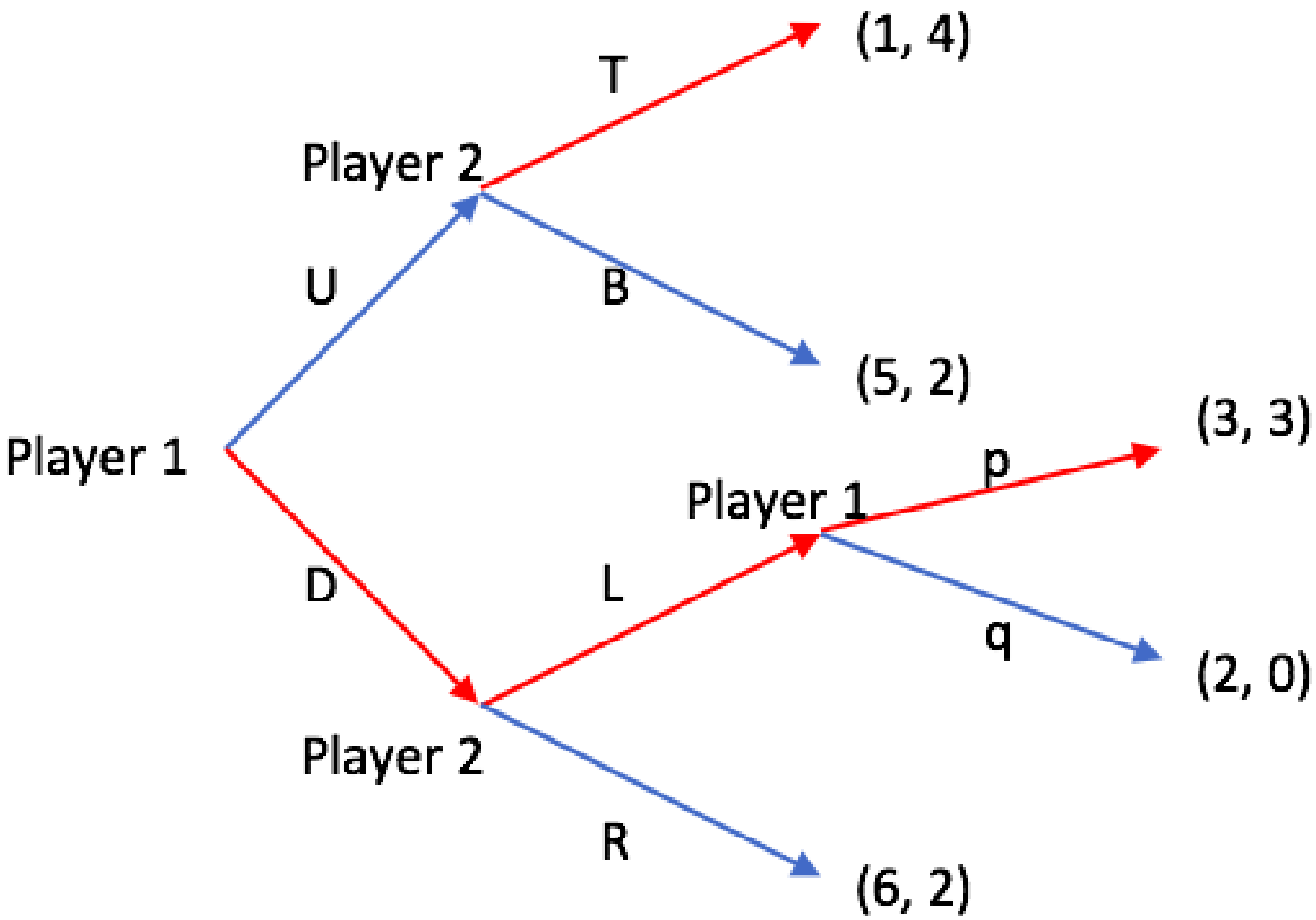
Backwards Induction

- Solving is even easier than static games
  - Start with the decision points at the end of the tree
  - Once you know how these play out, you can solve the next level up
  - (Given how bottom level plays, how should top level play?)
  - Sort of like Sudoku

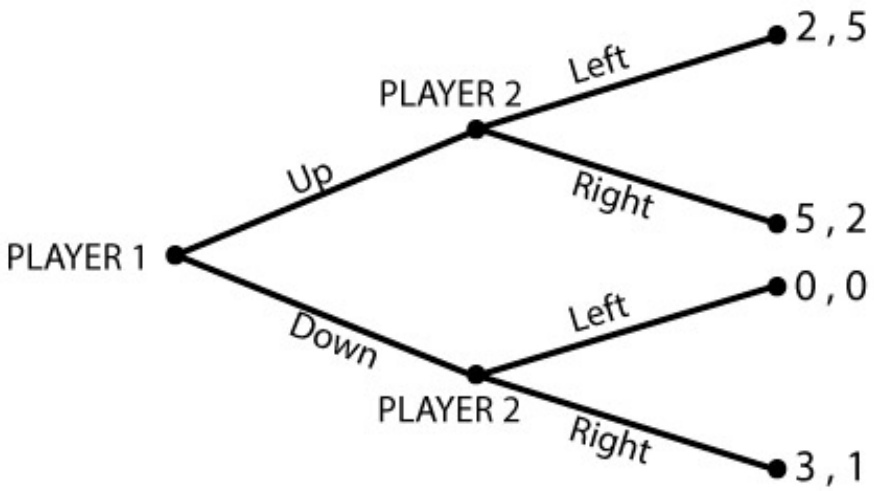
Warm-Up Example



Bigger Trees



Relationship to Static Games

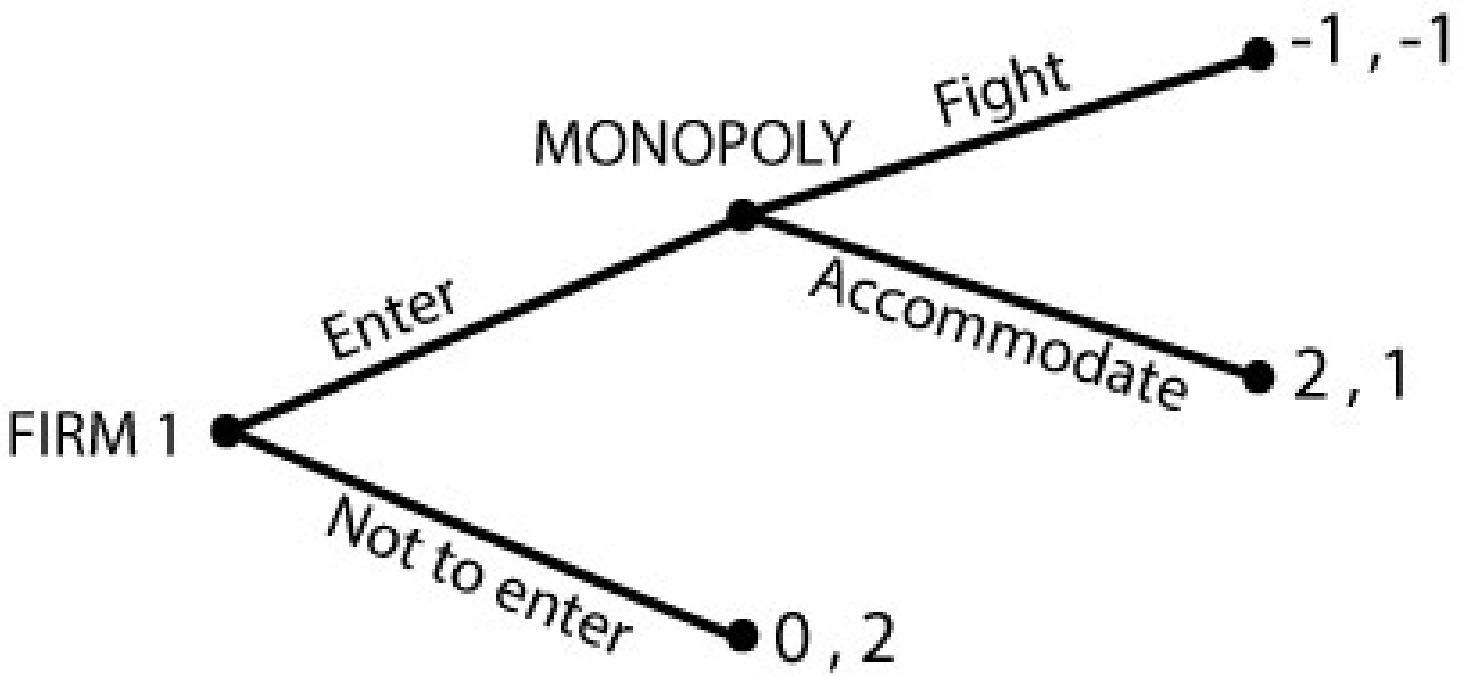


		PLAYER 2			
		R , L	L , R	R , R	L , L
PLAYER 1	U	5 , 2	2 , 5	5 , 2	2 , 5
	D	0 , 0	3 , 1	3 , 1	0 , 0

Stackelberg Competition: CVS vs Walgreens

- CVS has a store on a street corner
- Walgreens is considering entering across the street
- If Walgreens enters, then CVS chooses pricing toughness

Stackelberg Competition: Game Tree



The Power of Commitment

- CVS would like Walgreens to not enter
- What can CVS do to get this outcome?
  - CVS would like to commit to Fight
  - If it can, then Walgreens chooses to Not Enter

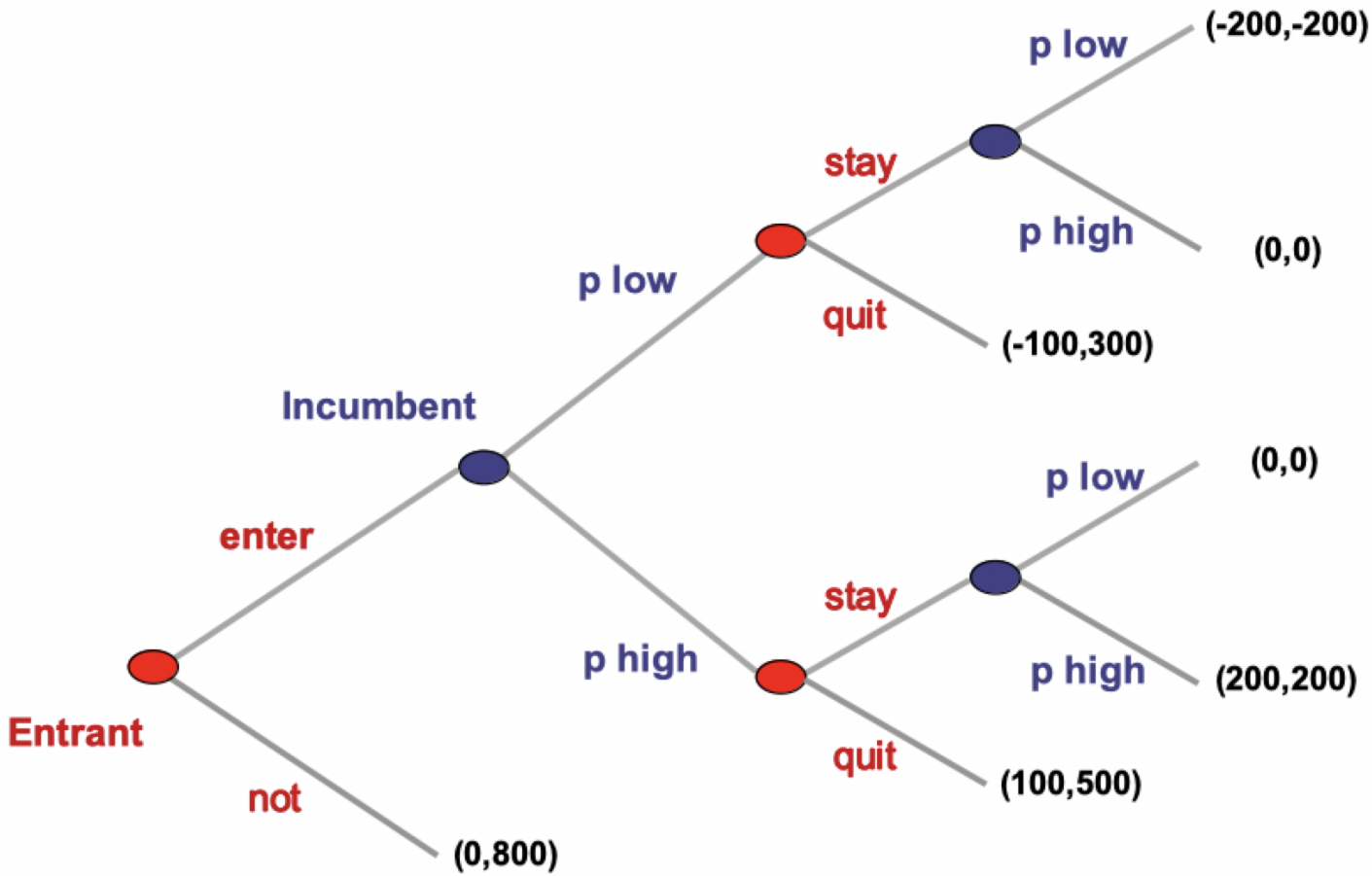
Is Your Commitment Credible?

- How do you commit?
  - "Let's run them out of business if they try to enter"
  - "Let's price low now to 'deter' entry later"
  - "Let's 'signal' we're going to fight"
  - Others?
- Are these credible?
  - i.e. optimal once you get there?
- **Need *irreversible investments* (impossible or costly)**
  - e.g. marriage and divorce

Predation Doesn't Really Work

- Predation is pricing lower than o/w optimal to push out rivals
  - Technically illegal, but almost all cases lost in court
- But entrant's losses from the fight are sunk...
  - ...so won't affect subsequent decisions!
  - Predation hurts the predator as much as the prey!
- Caveat: predation can bankrupt illiquid entrants
  - Not often relevant in practice
  - (by the time you care, they're big enough to get financing)

Predation Game Tree



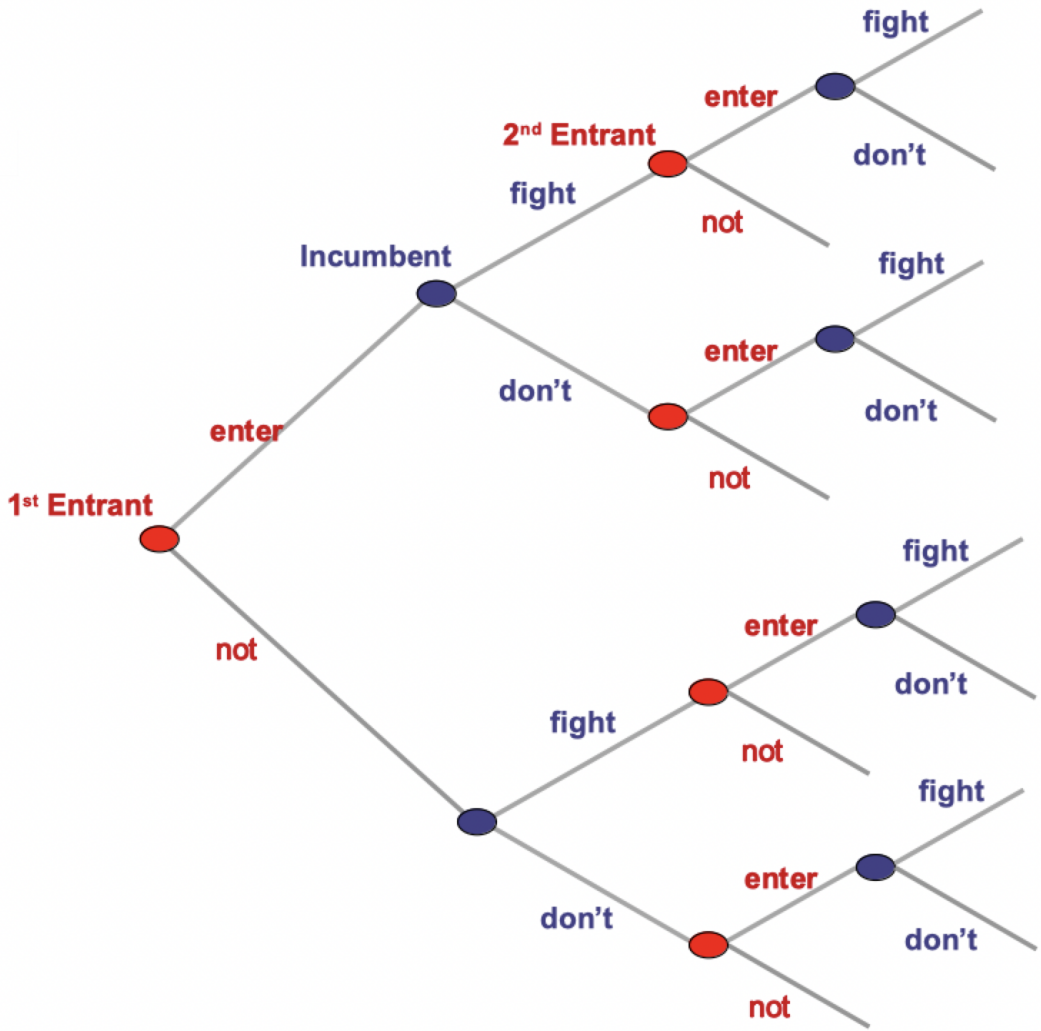
Contestable Markets

- Different payoffs can lead to “hit and run" competition
  - If incumbent raises prices, rival enters market to capture profit
  - Incumbent then has to lower prices to compete
- Because of this threat, monopolist might have to price competitively
- What prevents this?
  - BTE (Industry Analysis), product differentiation...
- Game theory exercise: change payoffs in previous slide to model

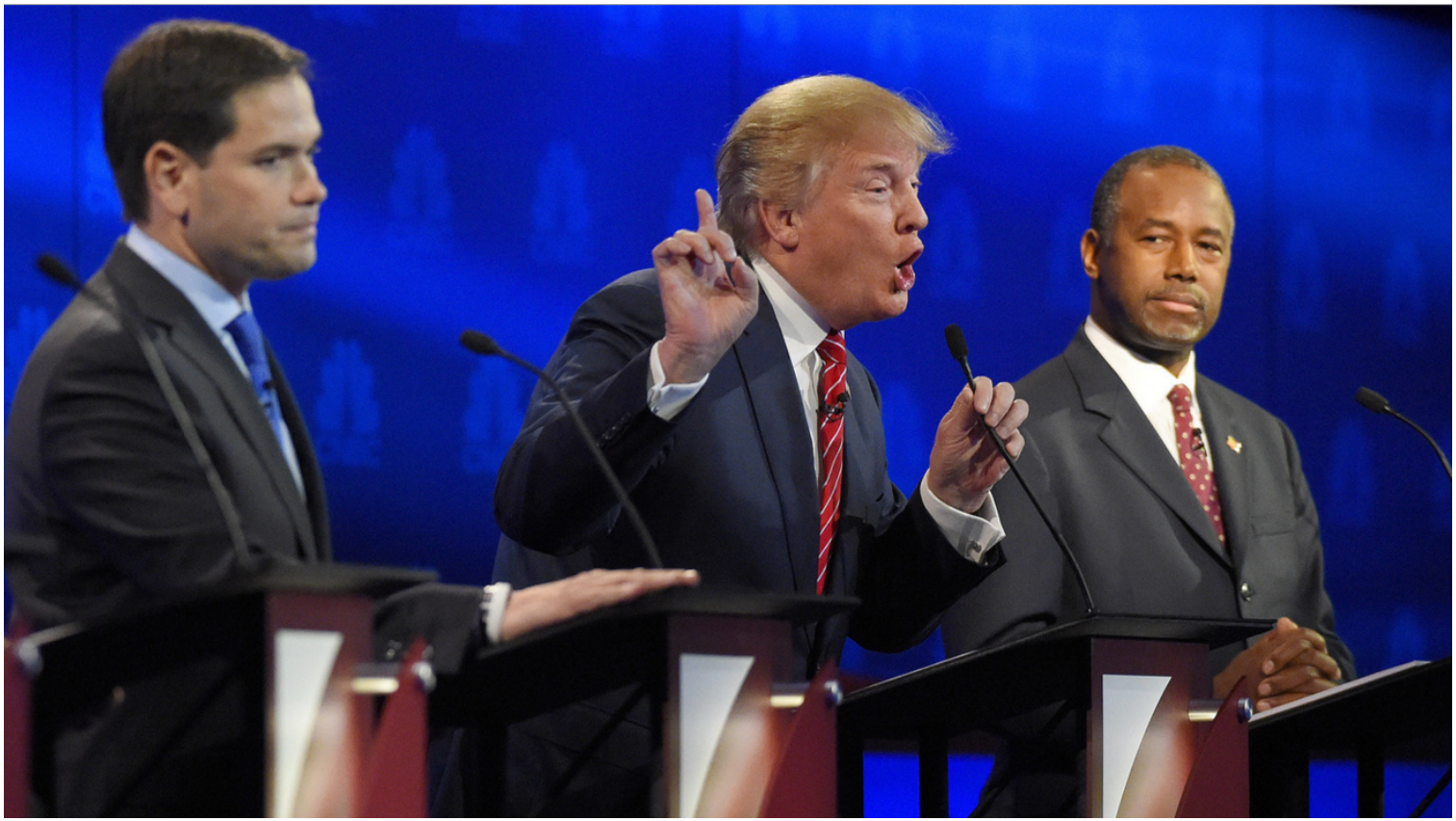
Reputation Can Work, Though Very Costly

- Suppose incumbent faces many potential future competitors
  - e.g. large company with many patents
- Incumbent faces potential entry many, many times
- Fighting today might keep entrants out tomorrow
- Warning: needs irreversible decisions that are unprofitable in isolation
  - e.g. setting prices that lose money for a particular store forever

Reputation Game Tree



A Political Example



Signaling Setup

- Incumbents can be high or low type (e.g. efficient or not)
- Entrants do not know what type of incumbent they face
- Entrant would *enter* if it knew incumbent was high cost type
- Entrant would *not enter* if it knew incumbent was low cost type

Signaling Can Be Useful (Even, Only) If Costly

Signaling Discussion

- Do something only high types would want to do
  - Big public donations ("you can afford it")
  - Price promotions, advertising
  - Others?
- Outside of business economics
  - Unfit but pretty peacocks die
  - Students without dedication and skills suffer at UChicago
  - Others?

Defence Against the Dark Arts

- Now consider the problem from the entrant's prospective
  - Entry decision weighs expected profits against sunk entry costs
  - Profits depend on deterrence-related factors
- These are simply incumbent considerations in reverse!
  - Solution requires backwards induction
  - Must think carefully about timing and uncertainty
- Features of the game that were opportunities for incumbents are threats to incumbents

Entry Strategies

- Do not ignore predation
  - Be ready to borrow, build a war chest
- Do not ignore reputational issues for incumbent
  - If you enter in Chicago, others may try in NYC, Philly...
- Do not ignore uncertainty about the type of incumbent you face
  - Pay close attention to costly signals
  - Ignore cheap talk

Master the Poke Flute

Disarm Yourself

- Don't wake the sleeping giant!
  - Commit to be small and targeted
  - Commit to avoiding incumbent
- How to commit? Same tools as incumbent
  - ***Irreversible investments* (impossible or costly)**