Recap: Predation is aimed at discouraging entry and encouraging exit

- In the models we have considered before,

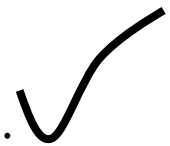
  LR profits → entry & LR losses → exit

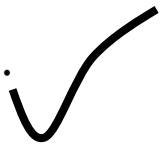
- Entry and exit were functions of exogenous factors:
  - Sunk cost of entry (e.g. environmental permits)
  - Minimum Efficient Scale (e.g. technology)
  - Government regulations (e.g. patents)
- Now firms behave strategically to discourage entry and encourage exit

Strategic barriers to entry

Last lecture we studied two steps can firms take to discourage or prevent entry?

- Threaten to lower prices if entrant comes in (predatory pricing).
- Price low before entry to discourage entrant (limit pricing).





- LeBlanc (1992) the stronger the Incumbent relative to the Entrant, the more likely the incumbent to choose predatory pricing, the weaker the more likely to choose limit pricing

Entry deterring strategies: general rules.

To be credible, an entry-deterring strategy must:

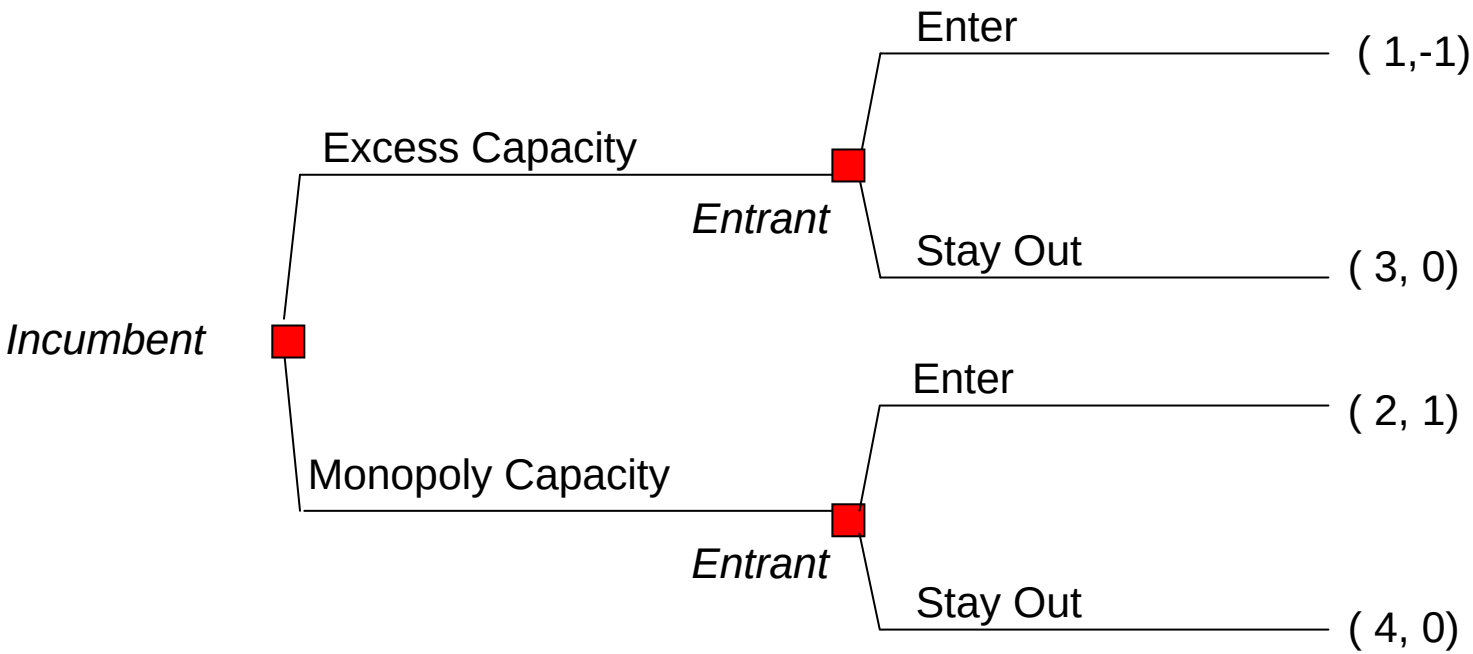
1. Leave the incumbent with higher profits as a monopolist (net of the cost of the entry deterring strategy) than he would earn competing with the entrant.
2. Change the entrants' expectations about post-entry profits.

Preemption.

What kinds of *credible* commitments can an incumbent make?

- Restrict/expand capacity (last lecture example)
- Lock in consumers (*long term contracts a la Aghion and Bolton*).
- Do a lot of advertising or R&D that potential entrant would need to match. This is called creating endogenous sunk costs.

Capacity expansion example.



Advantage of Entrants

- There are advantages to coming in as a small entrant.
- A large incumbent looses a lot of money preying, while a small entrant won't steal much market share.
- Example:
  - Big airlines concede vacation travelers to Southwest
  - Bulow, Geanakoplos, Klemperer (1985), Fudenberg and Tirole (1984), Whinston (1990), Bernheim and Whinston (1990)

Strategic substitutes and complements

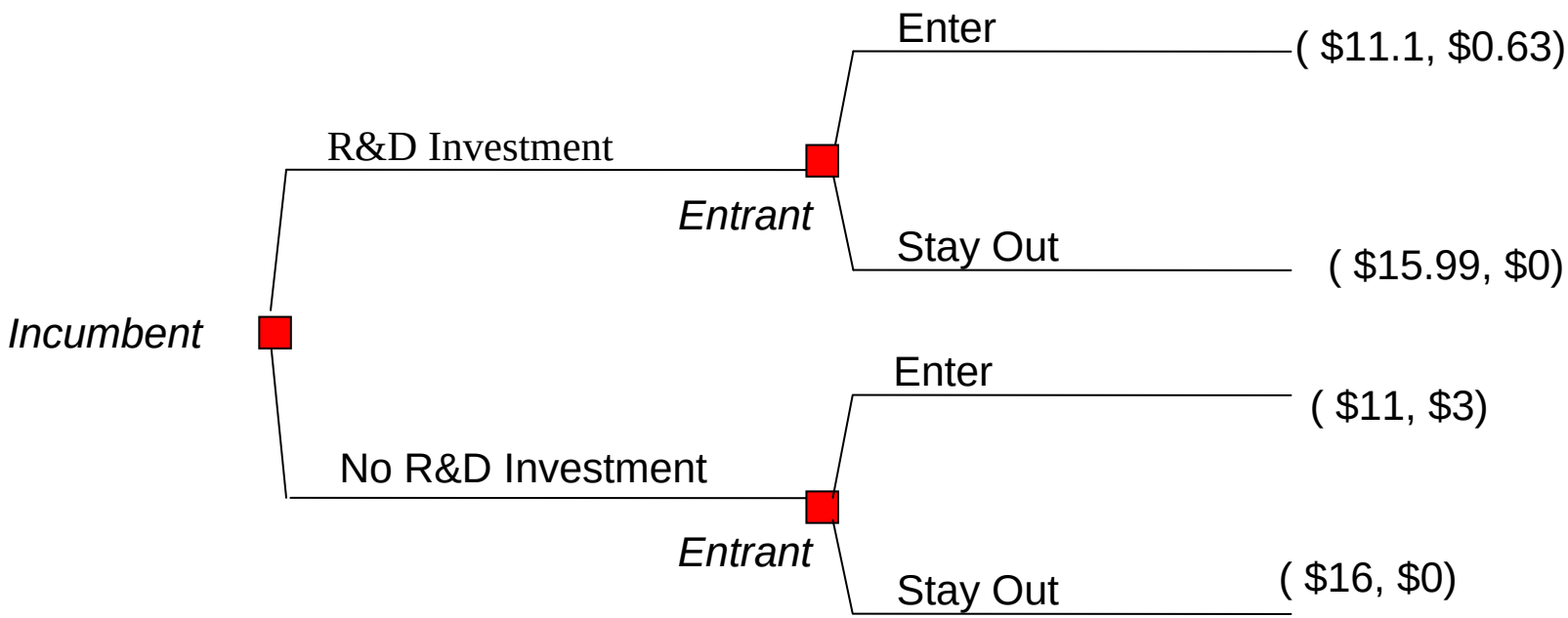
- Bulow, Geanakoplos, Klemperer (1985)
- Strategic complements: products are called strategic complements if an aggressive action in one product induces an aggressive reaction (such as a firm meeting its rival's price decrease)
- Strategic substitutes: when the reaction is dissimilar, as when a firm reduces its own output as a response to a rival's expansion

Additional Strategies

- **Investments to lower own costs**
  - Investments in R&D that lower costs in later periods
  - Lower costs through learning by doing (Spence 1981)
- **Raising Rival's Costs (Salop 1981)**
  - Raising rivals' costs relative to its own costs
  - Raising all firms' costs

Investments to lower own costs

- **Investments in Research and Development (R&D)**
  - Asymmetry assumption: Only the incumbent firm can invest in R&D in the first period to reduce costs for the next period



Investments to lower own costs

- In the previous example the firm wants to invest in R&D. Regardless of what the incumbent does, the entrant will always enter in the example. Without the threat of entry the firm would not invest in R&D.
- **Learning by doing**
  - Sell more than it otherwise would in period 1 to gain experience and lower its costs relative to the entrant (sell more means lower price than otherwise). If the learning-by-doing cost advantage is large enough, the enrant may choose not to enter.

Raising Rival's Relative Costs

- **Direct Methods**
  - sabotage (for example, Virgin Atlantic Airlines and British Airways)
  - Make market (consumer response) information gathering by rival firms difficult (example, offer huge promotional discounts when rival firms conduct marketing campaign, Fudenberg & Tirole, 1986)
- **Supporting government regulation that "grandfathers" incumbents**
  - Example, stricter environmental requirements on new equipments
- **Tying in of incumbents' complementary products**
  - Products bought by incumbent must be used together (camera and film) and entrant's product is incompatible with incumbents other product (Farrell and Saloner (1986), Matutes and Ragibeau (1988) and Whinston (1990)

Raising Rival's Relative Costs

- **Raise Switching Costs**
  - A potential entrants faces a lower demand because it is difficult for incumbents customers to switch to entrant in the future (e.g., Segal and Whinston 1996)
- **Raising Input prices**
  - If incumbent uses a different production technology than rivals it may be able to raise the rivals' costs disproportionately by raising the costs of an input in the market (raising wages by supporting union activities if uses relatively less labor than rivals in production, Williamson 1968)
  - Make distribution of the product more costly to rivals (Ordover et al, 1990) by controlling most of the distributors (wholesalers and retailers)

Raising all firms' costs

- It may be advantageous for the incumbent to raise the costs of all firms. By having already made expenditures (sunk costs) before anyone else
  - the incumbent signals that he is less likely to exit the market
  - makes entry into the market more costly.
  - The incumbent is willing to pay more money to keep entrants out of the market (monopoly profits) than entrants are willing to pay to enter (duopoly profits) as in Gilbert 1989 and Salop 1979.
- Examples:
  - Do a lot of advertising or R&D that potential entrant would need to match. This is called creating endogenous sunk costs
  - Buy distribution outlets it does not use to foreclose entry
  - Patents put to sleep (Gilbert, 1981), bid high for a scarce resource
  - Support legislation that raises pollution controls of incumbent and rivals

Network Effects and Strategic Behavior: The Microsoft Case

- Network Effects (exist when consumers' value of a product is higher when a larger number of other people also purchase the product)
  - Direct network effects: (telephones, email) buyers of the product form a network of users who communicate directly with each other.
  - Indirect network effects: the more people who use a product, the more complementary products will be created, increasing the value of owning the initial product (for example, Operating system)
- What is better for consumers in the presence of network effects? Few or many firms?
- Did Microsoft behave in a predatory way to preserve the Windows operating system dominance?

The Microsoft Case

- Microsoft has market power in operating system (OS) market
  - dominant system in use (most software applications ran on Windows OS)
- Did Microsoft use complementary products (tie-in and product compatibility) to maintain and increase market power in OS ?
  - Government charged that Microsoft bundled its OS with Internet Explorer (IE) to harm Netscape, a rival software browser used to interact with the World Wide Web. IE was “sold” for free.
  - Why was Netscape a threat to Windows OS? With the rapid growth of the internet, software firms would develop applications that could run on the browser and did not use Windows OS.
  - So Netscape’s software had a potential to become an alternative platform to Windows, since Microsoft would no longer have the advantage of having substantially more applications written specifically for its OS.