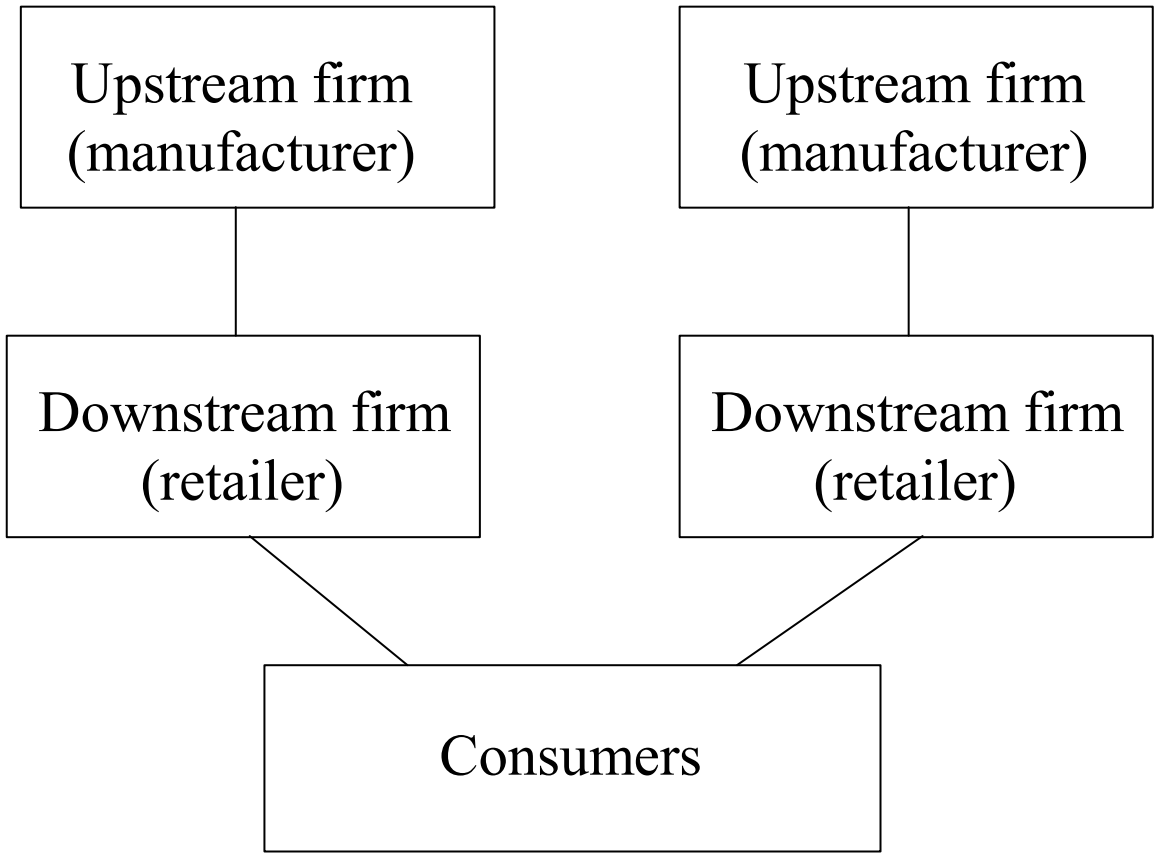
Vertical restraints (cont'd)

1. Types of vertical restraints
2. Intra-brand competition
   - Double marginalisation
   - Horizontal externalities (free-riding among retailers)
   - Other efficiency reasons for VR
   - The commitment problem

3. Inter-brand competition



Strategic use of vertical restraints

- Two upstream firms U1,U2 sell differentiated goods. Demand is given by:

$$q_i = (1/2)\left[v - p_i(1+\gamma/2) + (\gamma/2)p_j\right]$$

- Each upstream firm needs retailer (resp. R1,R2) to sell the good
- Zero production and retail cost, for simplicity
- It can be showed that vertical restraints (delegation) can be used to increase profits

Integration v. delegation

Vertical integration. If R1, R2 are owned by U1, U2, one can find equilibrium by solving:

$$\max_{p_i} \pi_i = p_i q_i(p_i, p_j)$$

From FOCs one obtains:

$$p_{VI} = \frac{2v}{4+\gamma}; \quad \pi_{VI} = \frac{(2+\gamma)v^2}{(4+\gamma)^2}.$$

VR: Two-part tariffs

1st stage: U_i sets $F_i+w_iq_i$ for R_i. Contracts are observable. 2nd stage: R_i chooses p_i.

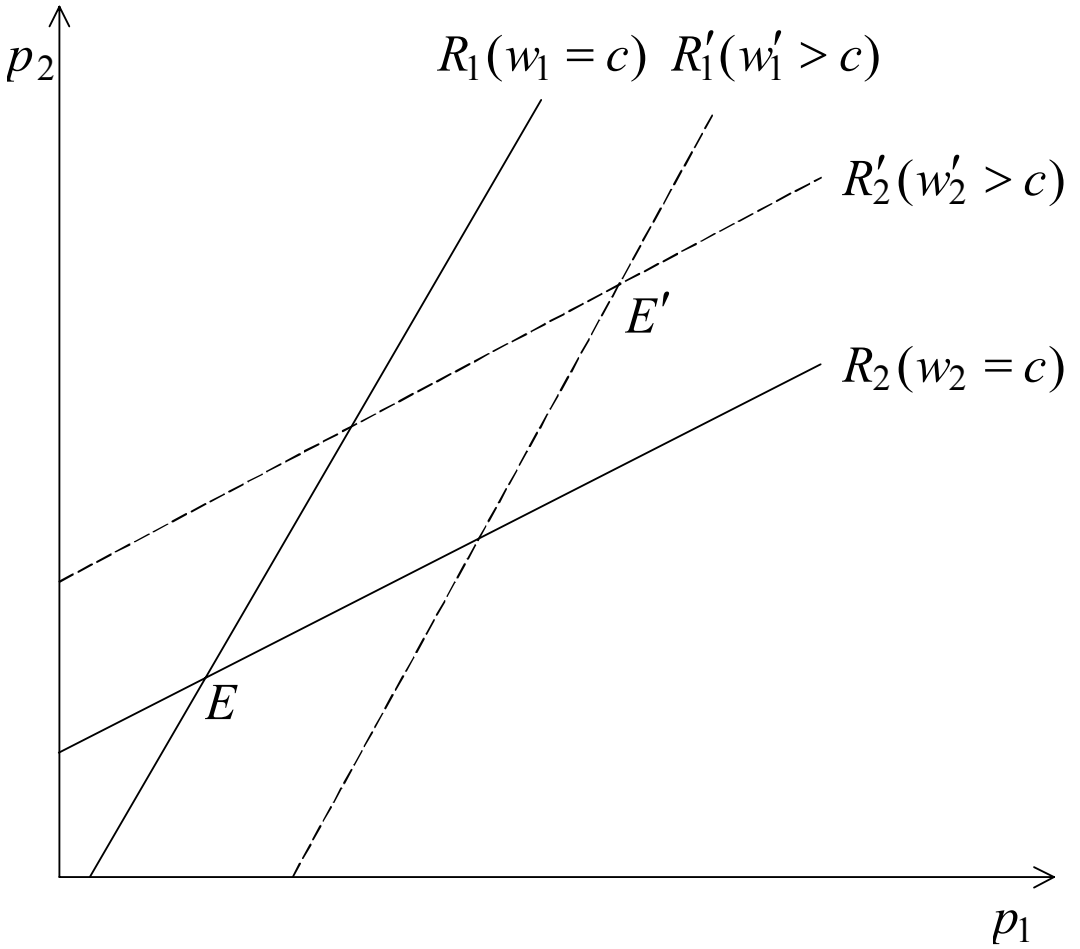
Last stage: each R_i $\max_{pi}\pi_i^R=(p_i-w_i)q_i$ (p_i,p_i). Whence, $p_i^*(w_i,w_j)$, $q_i^*(w_i,w_j)$.

First stage: each U_i earns $F_i+w_iq_i$. Therefore, U_i wants to $\max_{wi}\pi_i^U=(p_i^*-w_i)q_i^*+w_iq_i^*$.

At equilibrium: $w_i^*>0$ and:

$$p^{FF}=\frac{4(2+\gamma)v}{16+12\gamma+\gamma^2}>p^{VI};\quad \pi^{FF}=\frac{2(2+\gamma)(8+8\gamma+\gamma^2)v^2}{(16+12\gamma+\gamma^2)^2}>\pi^{VI}$$

Strategic effects of VR: intuitions



Exclusive territories

Rey and Stiglitz (1988): exclusive territories allow manufacturers to relax competition.

Suppose each (differentiated) Ui has two or more retailers perceived as homogenous by consumers. Intra-brand competition: $p_i=w_i$, and solution as if Ui are vertically integrated.

Suppose now each retailer is given an ET. Then in each territory, the game is as the one above, and prices will be higher.

Inter-brand competition, cont'd

Vertical restraints might also facilitate collusion

Resale price maintenance

Common agency

4. Exclusionary effects

- Exclusive contracts and tying can be used as a way to deter entry

- These will be analysed in the next lectures.
- Main concern is that such practices may be used by a dominant firm for exclusionary purposes.

5. Policy implications

Strong presumption VR enhance efficiency

Possible anti-competitive effects only when enough market power exists

Market power, not the type of agreement adopted, matters

(=> change in the EC approach to VR)

Large enough market power: rule of reason, balancing efficiency with (possible) adverse effects

Exclusive dealing: contracts that require to purchase products or services for a period of time exclusively from one supplier.

Efficiency gains

- stimulate investments into retailers' services (*free riding problem*).

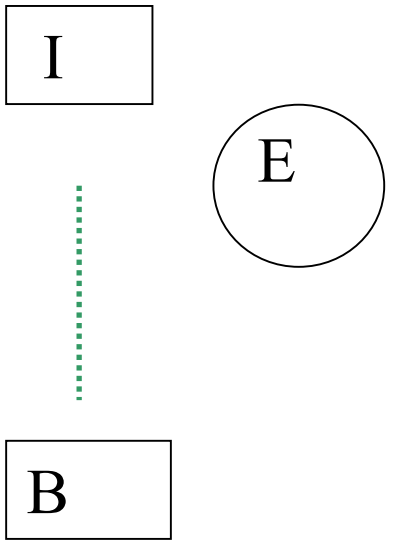
- stimulate specific investments (*opportunistic behaviour*)

Anti-competitive effects

- allow a dominant firm to deter efficient entry.

CASES:
Langnese-Iglo GMBH v. Commission (1992).
United States v. Microsoft (1995).

Traditional argument



- Foreclosure of a crucial input

  (ex. distribution network)

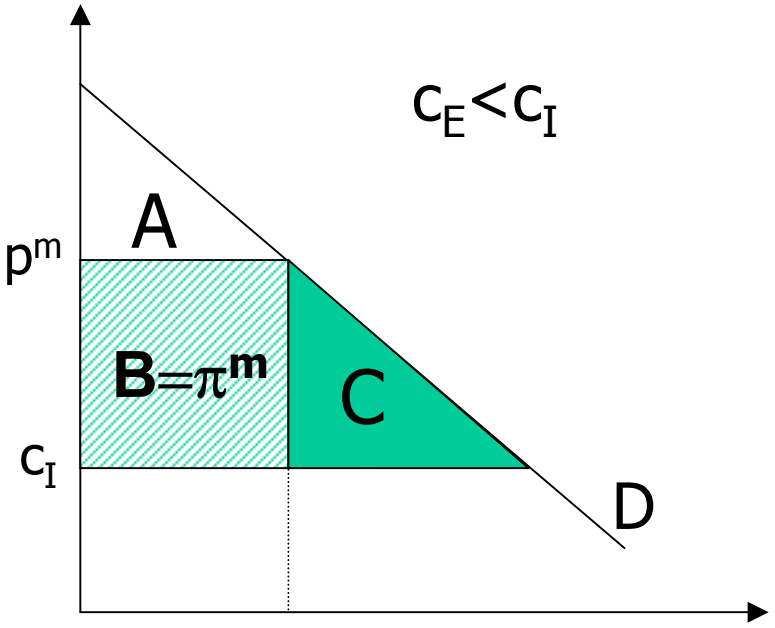
  I: incumbent

  B: unique buyer

  E: potential entrant

"Chicago school" critique

(Posner 1976, Bork 1978)



Why does the buyer sign the exclusive deal?

$$\underbrace{\pi^m}_{\text{Incumbent's gain}} < \underbrace{CS(c_I)-CS(p^m)}_{\text{buyer's loss}} = x^*$$

⇨ The incumbent cannot profitably use exclusive contracts to deter entry.

⇨ Efficiency considerations explain the use of exclusive contracts.

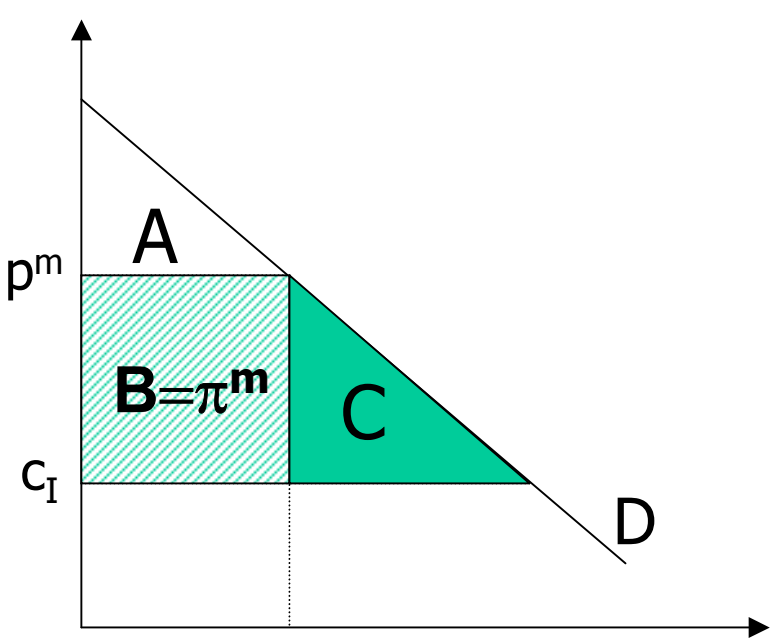
Challenge to the previous view

(Aghion-Bolton, 1987, AER; Rasmusen et al., 1991, AER; Segal-Whinston, 2000, AER; Bernheim-Whinston 1998, JPE)

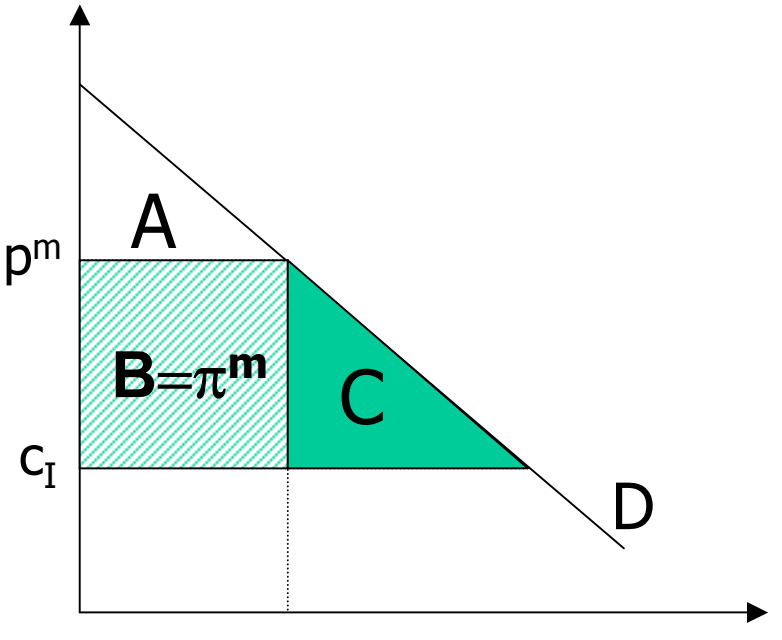
⇨ when an exclusive deal is signed, externalities are exerted on third parties (ex. other buyers).

⇨ their exploitation allows the incumbent to *profitably* use exclusive dealings to deter entry.

Externalities



Market 1

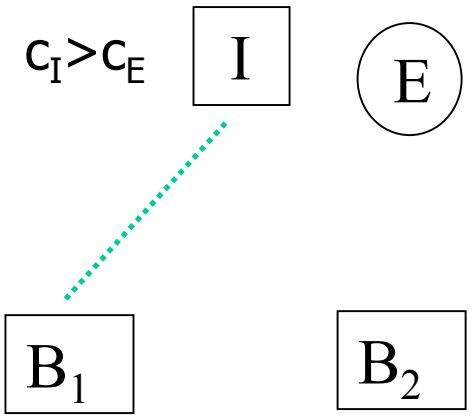


Market 2

If entrant needs both markets, foreclosure may be profitable

(Bernheim and Whinston; Segal and Whinston; also: Carlton and Waldmann; Choi and Stefanadis)

Naked exclusion (Rasmusen et al.,Segal-Whinston)

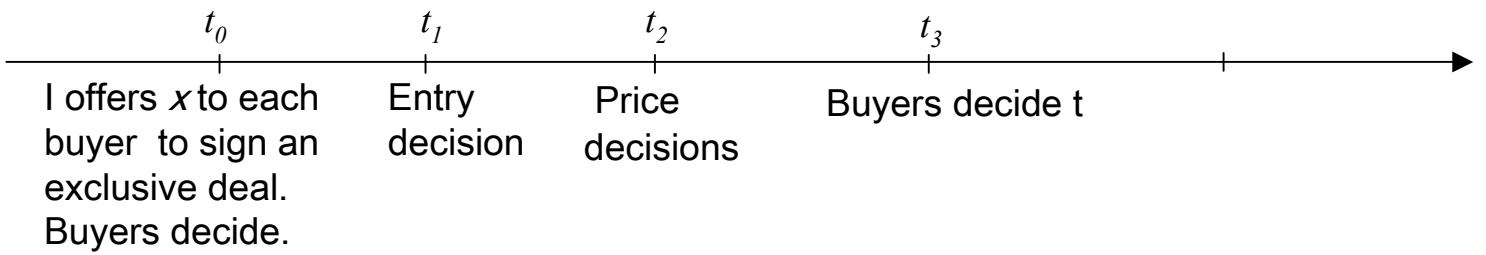


- uncoordinated buyers.

- demand of a single buyer not enough to trigger entry.

- if a buyer accepts ⟹ negative externality on the other.

- N.B.: Buyers do not compete



Simultaneous/non-discriminatory offers

Proposition 1: if downstream firms are independent monopolists, there exist both:

EXCLUSION EQUILIBRIA: both buyers sign

Why? Individual deviation is not profitable

ENTRY EQUILIBRIA: no buyer signs

Why? I cannot prevent these equilibria from arising (offering x^* to both buyers is not profitable)

Incumbent exploits coordination failures to exclude

Simultaneous and discriminatory offers

Proposition 2: if downstream firms are independent monopolists:

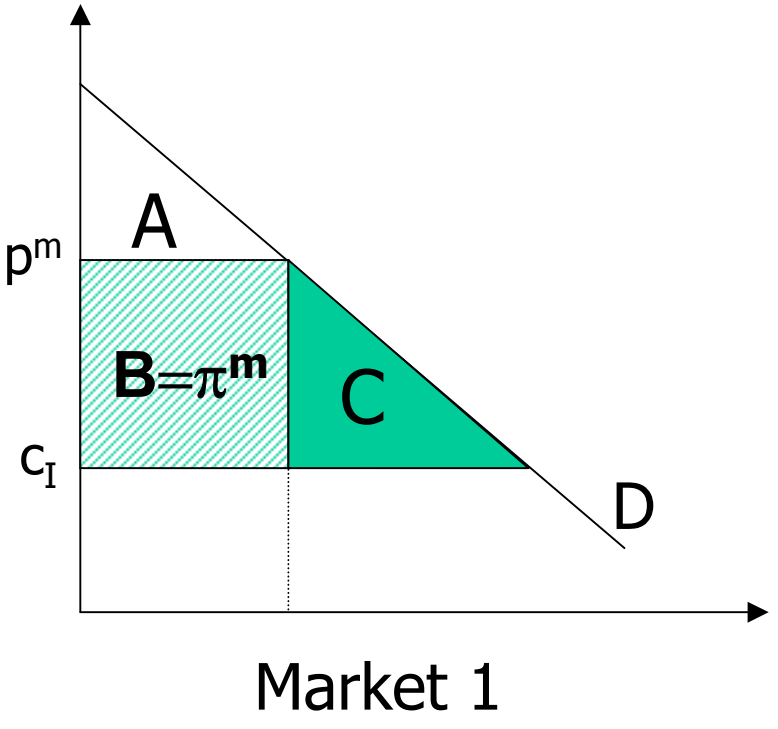
Only EXCLUSION EQUILIBRIA exist

Why? If both buyers reject, I deviates and offers x^* to one buyer only.

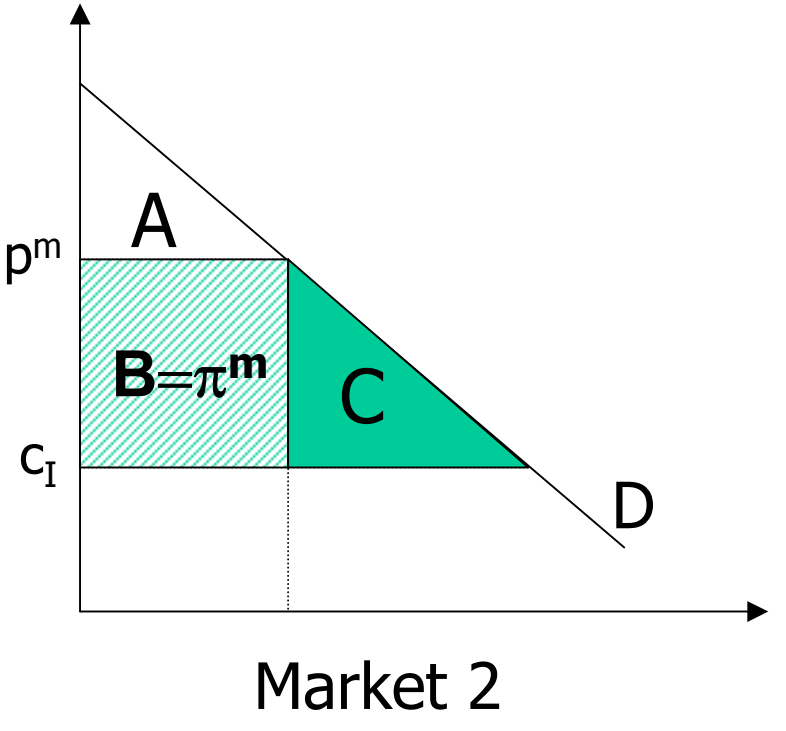
(Note: there exists multiplicity of exclusion equilibria)

Discriminatory offers facilitate exclusion

Discriminatory offers facilitate exclusion



Market 1



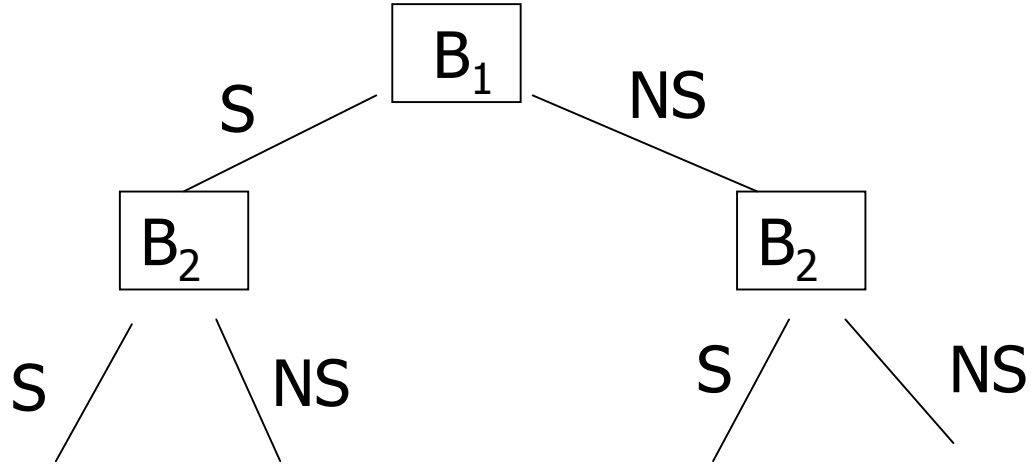
Market 2

If 2 π^m > ΔCS (i.e., B+C), then the incumbent can persuade *one* buyer, and therefore exclude the entrant from *both* markets.

Sequential offers

Proposition 3: if downstream firms are independent monopolists:

there exists a unique EXCLUSION EQUILIBRIUM where I excludes at no cost $x=0$ and both buyers sign.

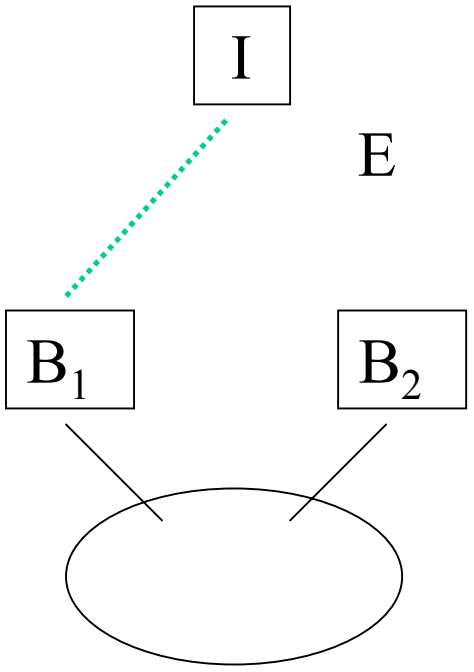


If B_1 signed, B_2 cannot do better than signing (even for free).

If B_1 rejected, I offers x^* to B_2 ⟹ B_2 signs.

B_1 anticipates that B_2 will always sign ⟹ signs for free.

When buyers compete downstream



- close substitutes: cheaper input ⇒ strong competitive advantage ⇒ demand of a single buyer triggers entry ⇒ the incumbent cannot profitably compensate the buyer

- differentiated products: cheaper input ⇒ negligible competitive advantage ⇒ same as S&W

Fierce downstream competition eliminates the anticompetitive effect of exclusive dealing

Conclusions

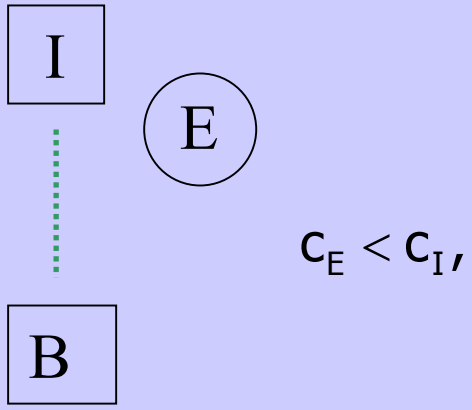
- Exclusive deals might be used to deter entry
- Externalities story convincing
- The intensity of downstream competition is crucial to assess potential anti-competitive effects of exclusive dealing
- Discriminatory offers help exclude (selective discounts by dominant firms dangerous)
- Fidelity rebates may have same effect as exclusive contracts

"Rents extraction" *(Aghion and Bolton – non-stochastic version)*

- An incumbent can use exclusive deals to extract rents from entrants.

- A simple example:
  Inelastic demand, $q = 1$.

- Example without uncertainty to show rents extraction.



Game:

1. I offers an exclusive deal with (x, d, w_I), where:

   x = compensation;
   d = penalty (liquidated damages") if deal terminated
   w_I = price commitment.

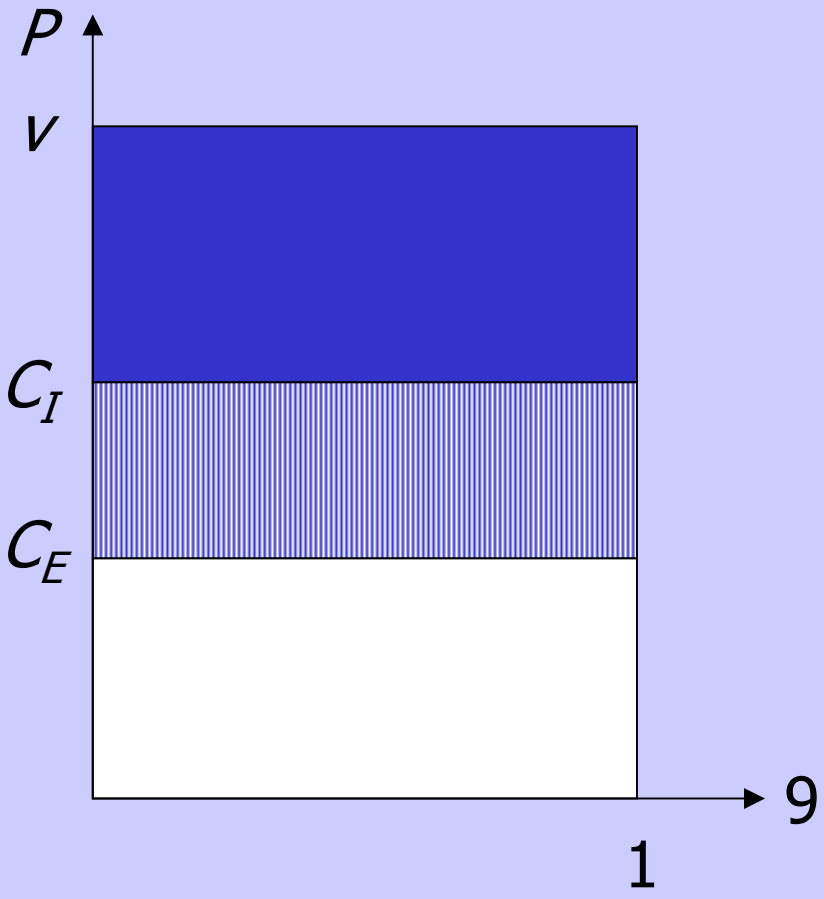
2. Buyer B accepts or rejects.

3. E decides on entry.

4. If entry, E decides p_E (and if no deal, I chooses p_I.

5. B decides on termination (if had signed),
   or on supplier (if "free").

Note. Here the buyer is final consumer with willingness to pay v and unit demand.



• If buyer rejects, E enters and buyer buys at $p_E = c_I - \varepsilon$. Any contract should leave buyer with at least:

$$cs_B = v - c_I$$

•If buyer accepts (x, d, w_I), it switches to E only if:

$$p_E + d \leq w_I$$

(or: $p_E \leq w_I - d$).

•Entry occurs only if $p_E \geq c_E$.

Incumbent maximises its profits, by offering:

$\underline{x^*=0}$, $\underline{d^*=c_I-c_E}$, $\underline{w_I^*=c_I}$.

Buyer makes $cs_B = v = c_I$;

$\Rightarrow$ entrant makes zero profit;

incumbent makes $\Pi_I = c_I - c_E (= d^*)$.

The incumbent finds it **optimal to allow entry and use the exclusive contract and the penalty to extract the efficiency rent associated with entry**.

In this model, entry is pre-empted only if E's cost is stochastic and I makes mistakes in predicting E's costs.

Contracts as a barrier to entry (Aghion and Bolton, AER 1986)

- Incumbent I has cost $c_I=1/2$
- B′s valuation: v=1 (unit demand)
- Potential entrant E: c_E unif. distr. in [0,1].
- Exclusive deal (p,p_o): B will buy from I at price p, but: it can buy from E if pays "liquidated damages" p_o.

The game

- t_1 : firm I offers (p,p_o) to B, who accepts or rejects
- t_2 : firm E decides on entry and sets price p_E. (If no contract, I chooses its price p)
- t_3 : payoff realisation.

No exclusive contract

- If $c_E < 1/2$, E enters, sets $p_E = 1/2$ and gets all
  - Prob. of entry: $\phi = Pr(c_E \leq 1/2) = 1/2$
  - Buyer's surplus: $v - p_E = 1 - 1/2 = 1/2$.
- If $c_E \geq 1/2$, no entry, I sets $p = 1$
  - With probability $(1-\phi)$, B has surplus $v - p_I = 0$.

B's expected surplus: $(1/2)\phi + (1-\phi)0 = 1/4$.

I's expected payoff: $(0)\phi + (1-\phi)(1-1/2) = 1/4$.

Exclusive contract

- B buys from E if: $p_E+p_o \leq p$: if it enters, E sets $p_E=p-p_o$. $\Rightarrow$Prob. of entry with contract: $\phi'=Pr(c_E \leq p-p_o)=p-p_o$.
- Incumbent's problem:

  $\max_{p,po}\pi=\phi' p_o+(1-\phi')(p-1/2)$ s.to:$1-p \geq 1/4$.

  [B accepts only if $\geq$ than no contract (=1/4)]

$\Leftrightarrow \max_{po} \pi$ s.to $p \leq 3/4$, $\Rightarrow(p^*,p_o^*)=(3/4,1/2)$.

Hence, firm E enters with prob. $\phi'= p^*-p_o^*= 1/4$.

Effects of exclusivity

- Entry efficient if $c_E \leq 1/2$, but occurs under the contract only if $c_E \leq 1/4$

  $\Rightarrow$welfare loss for $1/4 < c_E \leq 1/2$
- Does I offer this contract at equilibrium?

  Yes: $\pi=(1/4)(1/2)+(3/4)(1/4)=5/16>1/4$.

When E very efficient, I prefers not to deter entry (it extracts some of E's rent via t).