Exclusive dealing contracts

- Return to phenomenon of *exclusive dealing*: upstream seller dictates that it is sole source for downstream retailer
- Previously: explain by upstream moral hazard (eg. upstream manufacturer wants to recoup its R&D costs)
- Next abstract away from these issues. Ask instead: can exclusive dealing be anti-competitive (i.e., deter entry)?

Chicago school answer: No

- Reduced competition means higher wholesale price $\Longleftrightarrow$ lower profits for retailer
- Since signing ED contract is voluntary, retailer would never voluntarily enter into a relationship with lower profits.

Consider model where retailer *would* voluntarily sign such contracts: Aghion/Bolton model (handout)

Setup

Graph: Incumbent ($\mathcal{I}$) and entrant ($\mathcal{E}$) upstream seller; one downstream retailer/buyer ($\mathcal{B}$)

$\mathcal{B}$ demands one unit of product, derives utility 1 from it.
$\mathcal{I}$ produces at cost $1/2$, sells at price P.
$\mathcal{E}$ has cost c_e, unknown to $\mathcal{B}$ or $\mathcal{I}$; it is uniformly distributed between $[0, 1]$. If enter, sells at price $\tilde{P}$.

Two stage game:

1. $\mathcal{I}$ and $\mathcal{B}$ negotiate a contract. $\mathcal{E}$ decides whether or not to enter.
2. Production and trade:
   - Contract must be obeyed.
   - Bertrand competition between $\mathcal{I}$ and $\mathcal{E}$.

In the absence of contract 1

Graph:

- Bertrand competition if $\mathcal{E}$ enters: market price is $\max\{c_e, 1/2\}$
  - If $c_e < 1/2$, $\mathcal{E}$ sells, at $\tilde{P} = 1/2$.
  - If $c_e > 1/2$, $\mathcal{I}$ sells, at $P = c_e$.
- $\mathcal{E}$ enters only when profit > 0: only when $c_e < 1/2$. Cost threshold c^* is $1/2$. This is with probability $\phi = 1/2$. This is efficient: $\mathcal{E}$ enters only when technology is superior to $\mathcal{I}$.
- If $\mathcal{E}$ doesn't enter, $\mathcal{I}$ charges 1.

In the absence of contract 2

Sumup:

- Expected surplus of $\mathcal{B}$: $\phi * \frac{1}{2} + (1-\phi) * (1-1) = \frac{1}{4}$.
- Expected surplus of $\mathcal{I}$: $\phi * 0 + (1-\phi) * (1-1/2) = \frac{1}{4}$.
- $\mathcal{B}$ and $\mathcal{I}$ will write contract only when it leads to higher expected surplus for *both* $\mathcal{B}$ and $\mathcal{I}$. This is Chicago school argument.
- Question: Is there such a contract which would deter $\mathcal{E}$'s entry (i.e., lower cost threshold $c^* < 1/2$)?

With a contract 1

Consider a contract b/t $\mathcal{B}$ and $\mathcal{I}$ which specifies

1. P: price at which $\mathcal{B}$ buys from $\mathcal{I}$
2. P_0: penalty if $\mathcal{B}$ switches to $\mathcal{E}$ (*liquidated damages*)

What is optimal (P, P_0)?

- What is $\mathcal{B}$'s expected surplus from contract? $(1 - P)$ if buy from $\mathcal{I}$; in order to generate sale, $\mathcal{E}$ must set $\tilde{P}$ s.t. $\mathcal{B}$ gets surplus of at least $(1 - P)$. So: $\mathcal{B}$'s expected surplus is $(1 - P)$.
- $\mathcal{B}$ get surplus of $\frac{1}{4}$ without contract, so will only accept contract if surplus $\geq \frac{1}{4} \Leftrightarrow (1 - P) \geq \frac{1}{4}$.
- When will $\mathcal{E}$ enter? If $\mathcal{E}$ enters, it will set $\tilde{P} = P - P_0$. In order to make positive profit $c_e \leq \tilde{P} = P - P_0$.
- $\mathcal{E}$ enters with probability $\phi' = \max\{0, P - P_0\}$.

With a contract 2

- $\mathcal{I}$ proposes P, P_0 to maximize his expected surplus, subject to $\mathcal{B}$'s participation:

$$\max_{P,P_0} \phi' * P_0 + (1-\phi') * (P - 1/2)$$
$$\text{subject to } 1 - P \geq 1/4.$$

- Set P as high as possible: $P = 3/4$.

- Graph: optimal $P_0 = 1/2$, so that $\mathcal{I}$'s expected surplus $= 5/16 > 1/2$.

- $\mathcal{B}$'s expected surplus: $1/4$. as before.

- $\mathcal{E}$: only enter when $c_e \leq P - P_0 = 1/4$. Inefficient: when $c_e \in [1/4, 1/2]$, more efficient than $\mathcal{I}$, but (socially desirable) entry is deterred.

Would parties want to renegotiate the contract?

- Assume contract is renegotiated if both $\mathcal{I}$ and $\mathcal{B}$ agree to do so.
- If $\mathcal{E}$ enters and offers $\tilde{P} = 2/5$:
  - $\mathcal{B}$ offers to buy from $\mathcal{E}$, and pay $1/4$ to $\mathcal{I}$.
  - $\mathcal{I}$ accepts, since $1/4$ is same surplus he could get if $\mathcal{B}$ "punished" him by purchasing from him at $P = 3/4$.
  - $\mathcal{B}$ strictly better off, since $1 - 2/5 - 1/4 = 0.35$ is greater than $1/4$, his surplus under original contract.
- The exclusive dealing contract is not *renegotiation-proof.*
- Same argument for $\tilde{P}$ up to $1/2$:
  - No exclusive contracts are renegotiation-proof.
  - Once we take this into account, socially efficient outcome obtains, where $\mathcal{E}$ enters if her costs $c_e \leq 1/2 = c_i$.

Remarks

- Contract deters entry by imposing switching costs upon buyer: much-observed practice: Loyalty-reward programs (Frequent-flyer miles, Buy 10/Get 1 free, etc.)
- Falls under category of raising rivals costs: recall that this is profitable if $\pi^m - K \geq \pi^d$. Here π^d=?, K=?, π^m=?
- What if two competing incumbent sellers?
- What if $\mathcal{E}$'s cost known? Then Chicago result holds: contract will never be desired by *both* $\mathcal{I}$ and $\mathcal{B}$.
- What if $\mathcal{B}$ is risk averse (i.e., dislikes variation in payoffs)?
  - Under contract: guaranteed surplus of 1/4, no matter if $\mathcal{E}$ enters or not
  - Without contract, gets 1/2 if $\mathcal{E}$ enters, but 0 if $\mathcal{E}$ stays out.
  - Prefers contract since it is less risky: if extremely risk-averse, exclusive contract could even survive renegotiation (i.e., if incumbent can set P very close to 1).