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 $\iff$ 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 $E$ enters: market price is $\max \{c_e, 1/2\}$
  - If $c_e < 1/2$, $E$ sells, at $\tilde{P} = 1/2$.
  - If $c_e > 1/2$, $I$ sells, at $P = c_e$.

• $E$ 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: $E$ enters only when technology is superior to $I$.

• If $E$ doesn’t enter, $I$ charges 1.
In the absence of contract 2

Sumup:

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

Consider a contract b/t $B$ and $I$ which specifies

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

What is optimal $(P, P_0)$?

- What is $B$’s expected surplus from contract? $(1 - P)$ if buy from $I$; in order to generate sale, $E$ must set $\tilde{P}$ s.t. $B$ gets surplus of at least $(1 - P)$. So: $B$’s expected surplus is $(1 - P)$.

- $B$ get surplus of $\frac{1}{4}$ without contract, so will only accept contract if surplus $\geq \frac{1}{4} \iff (1 - P) \geq \frac{1}{4}$.

- When will $E$ enter? If $E$ enters, it will set $\tilde{P} = P - P_0$. In order to make positive profit $c_e \leq \tilde{P} = P - P_0$.

- $E$ 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:

\[
\max_{P,P_0} \phi' * P_0 + (1 - \phi') * (P - 1/2)
\]

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 renegotation-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 $\pi^d=\?, K=\?, \pi^m=\?$

• 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).