Exclusive Dealing Under Asymmetric Information about Entry Barriers

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1. Introduction

- **Exclusive Dealing (ED)**: a contractual commitment for a buyer (i.e. retail or wholesale outlet) to **source their requirements exclusively from a single supplier**
- ED can have **exclusionary effects:**
  - ED allows dominant incumbent to play **divide-and-conquer strategies** among multiple buyers, thus **preempting potential entrants** who cannot reach a critical mass of buyers to make entry viable...
  - Rasmusen et al (AER, 1991), Segal and Whinston (AER, 2000)

1. Introduction cont'd

- **High informational burden**: Literature generally assumes that **entry barriers are perfectly observable to all buyers**
- Is this **assumption realistic**?
- **This paper**: Allow for entry barriers to be observable **only to the incumbent supplier, but not to buyers**.
  - **New rationale for ED**: Supplier may (or may not) **use ED contracts to signal entrant type.**
- **Result:** Absent signaling (i.e. at the pooling equilibria), ED is an **even more powerful tool** to exclude more efficient entrants!

1. Introduction - Literature

Recent surge of **interest in role of informational frictions in exclusion** through ED (or market-share clauses in general):

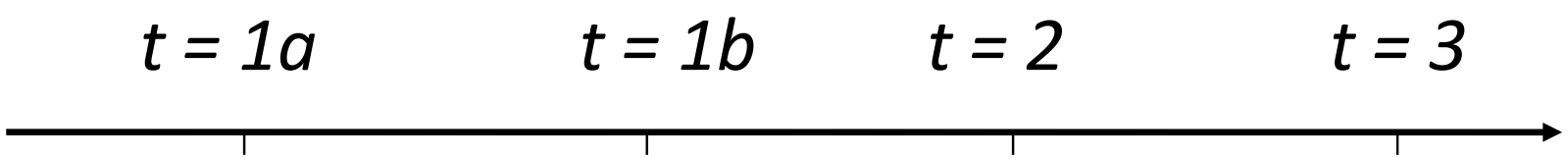
- Chen and Shaffer (RAND, 2014)
- Miklos-Thal and Shaffer (2014)
- Johnson (2012)
- Majumdar and Shaffer (JEMS, 2009)
- Calzolari and Denicolò (2014)
- Nocke and Peitz (2015)
- Ide et al (2015)
- Yehezkel (RAND, 2008)

2.1. Basic Ingredients

...analogous to Segal and Whinston (AER, 2000):

- **Upstream:** incumbent (I) and potential entrant (E), produce homogeneous good
- E is **more efficient** at producing good: $c_E < c_I$, and $\triangle = c_I - c_E$
- **Downstream:** 2 identical buyers, $B1$ and $B2$
- Buyers have **independent, downward-sloping demand functions** $q(p)$ (i.e. no competitive spillovers among buyers as in Fumagalli and Motta, AER 2006)
  - Unique **monopoly price** $p^m = \arg\max_p (p - c_I)\, q(p)$
  - ...yields **monopoly profits** $\pi = (p^m - c_I)\, q(p^m)$

Figure 1: Timeline



$t = 1a$	$t = 1b$	$t = 2$	$t = 3$
I offers observable ED contract(s) against compen-sation $\{x\}$	Buyer(s) decide(s) whether to accept or reject: $S = 0, 1, 2$	*E* observes *S* and decides on entry	Active firms set prices

2.1. Basic Ingredients cont'd

- ED contracts **cannot specify price** at which transactions will occur in $t = 3$ (not innocuous: Chen and Shaffer, 2014)
- In $t = 3$, I can **price-discriminate** between **committed buyers** (those who signed ED in $t = 1$) and **free buyers**: $\{p_s, p_f\}$
- **If no entry occurred**:
  - I charges all buyers p^m and makes profits π on each buyer
- **If entry occurred**:
  - I charges committed buyers $p_s = p^m$
  - E can only make offers to free buyers:
  - **Bertrand competition for free buyers**: $p_E = c_I$

2.2. Chicago Critique vs. Naked Exclusion

- Committed buyer **loses surplus** $x^* = CS(c_I) - CS(p^m)$
- Because of **deadweight loss**, we have that $x^* > \pi$
  - ...A single buyer will require at least compensation $x = x^*$ to sign ED contract (...**Chicago critique of ED**)
- We assume $x^* < 2\pi$
  - If E must serve both buyers for entry to be feasible, then **divide-and-conquer strategy** can exclude E (...**Naked Exclusion**)

2.3. Asymmetric Info on Entry Barriers

...Novelty of this paper: **Information structure**

- Entrants come in **two types**: "weak" and "strong"
  - "weak" E needs **both buyers** to cover its entry costs: $F \in (\triangle q(c_I), 2\triangle q(c_I)]$
  - "strong" E needs **only one buyer** to cover its entry costs: $F \in (0, \triangle q(c_I)]$
- Assumption: While ED contracts are fully observable, E type is **observable only to I**, but **not to buyers**.
  - Buyers only know **ex-ante probabilities**: E is weak wp μ, and strong wp $1-\mu$

3. Equilibrium Contracts

- Solution concept under incomplete information: **Perfect Bayesian Equilibrium (PBE)**
- **Two classes of PBEs:**
  - **Separating Equilibria:** E's type is revealed, I uses ED contracts to signal E's type to buyers
  - **Pooling Equilibria:** E's type is NOT revealed, I uses ED contracts to exclude, but they don't carry information
- **Protocols for the offer game:**
  - Simultaneous, non-discriminatory offers ($x_i = x_j$)
  - Simultaneous, discriminatory offers (i.e. $x_i \neq x_j$)
  - Sequential offers (perfect info)

Figure 2: Separating Equilibria vs. Full Info Benchmark

	Sim. & unif.	***Sim. & disc.***	***Sequential***
Incomplete Information	Entry equ'a: $x^s \neq x^w$ $\epsilon [0,x^*]$ Excl.: $S=2$, $x_1 = x_2 = \pi$	$E = S$ entry, $E = W$ excl.; if excl: $S=1$, $x_1 = x^*$, $x_2 = 0$	$E = S$ entry, $E = W$ excl.; if excl: $S=1$, $x_1=x^*$, $x_2=0$ or v.v.
Full Info (SW 2000)	Entry equ'a: $x \epsilon [0, x^*]$ Excl. Equ'a (MC): $x \epsilon [0, \pi]$	$E = S$ entry or excl (MC); $E = W$ excl.: $S=1$, $x_1 = x^*$, $x_2 = 0$ or MC	$E = S$ entry (no MC!) $E = W$ excl.; $S=1$, $x_1=0$, $x_2=0$

Figure 3: Pooling Equilibria

	Sim. & unif.	***Sim. & disc.***	***Sequential***
Incomplete Information	Both entry and excl.; if excl: $S=2$, $x_1 = x_2 \in [(1-\mu)x^*, \pi]$	NO entry, only excl.; $S=2$, $x_1 = x_2 \in [(1-\mu)x^*, x^*]$	NO entry, only excl.; $S=2$, $x_1 = x_2 \in [(1-\mu)x^*, x^*]$
Full Info (SW 2000)	Closest analogue: MC	Closest analogue: MC	Closest analogue: MC

4. Conclusions

- **New role** for ED contracts: **signaling entry barriers** to buyers
- **Separating PBEs:**
  - Exclusion arises whenever it would under complete info, but is **more costly** (even if offers can be made sequentially)
- **Pooling PBEs:**
  - Exclusion can arise **even if entry barriers are zero**!
  - Exclusion can be **next to costless** if probability of strong entrant is low enough
  - No possibility of entry under Pooling PBEs

5. Future Work

- ...impose less (or more?) structure on **out-of-equilibrium beliefs**
- ...sustain exclusion through **repeated interaction** (without exclusivity clause) in the spirit of Asker and Bar-Isaac (AER, 2014)
- ...consider **risk-averse** buyers
- ...consider **coalition-proof equilibria**
- ...generalize to N **buyers**
- ...