Buyer Power

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Buyer Power: Background

Surveys / Practitioner oriented material:

* BP in Distribution (with N. Mazzarotto), ABA Antitrust HB
* The Role of BP in Merger Control (with G. Shaffer), ABA Antitrust HB
* Some Economics on the Treatment of BP in Antitrust, ECLR 06
* Differential BP and the Waterbed Effect (with P. Dobson), ECLR 08
* Where BP and Seller Power Come Together .... (with -"-), Wisconsin Law Review 08

-> See also presentations on homepage

Buyer Power: Own Research

* Bargaining, Mergers, and Technology Choice (with C. Wey), Rand 03
* Retail Mergers, BP, and Product Variety (with G. Shaffer), EJ 07
* BP and Supplier Incentives (with C. Wey), EER 07
* Leveraging Buyer Power, IJIO 07
* Single Sourcing vs. Multiple Sourcing, Rand 08
* BP and the Waterbed Effect (with T. Valletti), under review
* Countervailing Power and Dynamic Efficiency (with C. Wey)
* Price Discrimination in Input Markets (with T. Valletti), under review
* Large Buyer Discount or Large Buyer Premium?

BP in Antitrust

- Framework of Analysis
  - Monopsonistic / "Market Interface" perspective
    –> BP exercised through withholding demand
  - Bargaining perspective
    –> BP results in individually negotiated discount
- Sources and measures of BP
  - Criticism of "raw size" approach
  - Standard bargaining framework:
    –> What affects outside options of buyer and seller?
  - In addition: BP in collusive framework & BP through particular purchasing practices

Consequences of BP / Potential Harm

- Short-run impact:
  - Own retail prices -> Pass through?
  - Rivals' wholesale and retail prices -> Waterbed effect / "Me too" ?
- Long-run impact:
  - Downstream / Upstream consolidation?
  - Incentives to invest and innovate?

Organization of my "45 Minutes"

1. Sources of BP?
   –> More modelling needed!
2. Consequences of BP?
   –> More careful analysis needed!
3. Price discrimination in input markets
   –> "Consolidated view" needed!

Sources of BP

- One theory based on suppliers' convex costs of production:
  Anton/Yao Rand 89, Chipty/Snyder REStat 99, Inderst/Wey Rand 03

- Illustration:
  - One large supplier with $C(x)$, one large buyer purchasing X
    –> Negotiate over sharing of incremental costs $C(X)$
    –> Per unit $C(X)/X$
  - Two smaller buyers purchasing $X/2$ each
    –> Negotiate each over incremental costs $C(X) - C(X/2)$
    –> Per unit $[C(X) - C(X/2)] \,/\, [X/2]$

Sources of BP (cont.)

- Application by Anton/Yao Rand 89: Single sourcing optimal
  - Two suppliers with $C(x)$, bidding in truthful menus
  - Single buyer pays 2 $[C(X) - C(X/2)]$
  - Single sourcing (commitment): Pays $C(X)$
- Qualification of results: E.g., two symmetric buyers
  - Single sourcing: Each pays $C(X/2 + X/2) - C(X/2)$
  - Equal split: Each pays 2$[C(X/2 + X/4) - C(X/2)]$

Sources of BP (cont.)

- Result in "Single Sourcing and Multiple Sourcing", Rand 08:
  - With "buyer organized auctions":
    –> Creating large purchase orders (incl. "single sourcing") beneficial if buyer is sufficiently large (in terms of total purchase volume)
    –> Otherwise, "multiple sourcing" enhances outside option
  - With "seller organized auctions":
    –> Then single sourcing only beneficial for small buyers

Sources of BP (cont.)

- Generalization in "Large Buyer Discount or Premium?:
  - Open-ended bargaining model with S sellers and B buyers
    –> Size: "Ownership" of m_s upstream plants or n_b downstream (retail) markets
  - Low buyer bargaining power: Smaller buyers / orders obtain better deal
  - High buyer bargaining power: Larger buyers / orders obtain better deal

Consequences of BP

- Theory of long-run harm: BP reduces upstream incentives to invest and innovate?
- Simple "formalization":
  - Take any upstream (non-contractible) investment decision
  - BP = Buyer's share of net surplus increases (in axiomatic Nash solution)
- Criticism: Adjusting sharing rule as "primitive" is *not* innocuous

Criticism 1: Incentives = Incremental Profits

- Theory of BP "from primitives"
  –> Here: Size in a "supplier convex cost" framework
- Example 1 (Inderst/Wey Rand 03): "Process innovation"
  - Switch from quadratic to linear technology
    –> "More flexible": Lower marginal costs "at the margin"
    –> Production increase –> Consumer surplus higher
  - Switch becomes more profitable after buyer consolidation
    –> Less "roll over" of incremental costs "at the margin"

Criticism 1 (cont.)

- Example 2: "Product innovation" (Inderst/Wey EER 07)
- Investment in "versatility" of input
  –> At each downstream firm/market $N \geq 1$ products can be sold
  –> Linear demand: $p_n = 1 - x_n - \gamma \sum_{m \leq N, m \neq n} x_m$
  –> Revenue at each buyer: $R(x, N)$
- Fewer (but larger) buyers increase incentives to invest in N
- Intuition: Supports value of his outside option
  –> Fewer/larger buyers –> Would have to replace larger volume

Criticism 2: Details of Setting/Model Matter

(from Inderst/Wey 07)

1. Buyers compete downstream
   - Supplier's incentives to reduce own marginal costs also derive from impact on buyers' outside option.
   - Effect larger after buyer consolidation (across independent "retail" markets) –> Intuition works through subsequent buyer investment/search to make alternative supply option more attractive
2. Bargaining model: Outside option principle?
   - Fewer/larger buyers -> More likely that outside option binds –> Then full incremental surplus is extracted by supplier
   - Plus: Additional incentives from effect on buyers' outside option.

Price Discrimination in Input Markets

- Role of contracts: Are discounts granted
  - "at the margin" or "infra-marginally"?
  - observably or non-observably?
- Different settings:
  - Non-linear, non-observable: "Opportunism problem"
  - Non-linear, observable: "Full channel control"
    –> Cf Inderst / Shaffer 08
  - Linear: "Double marginalization"

Plea for Flexible Choice

- Linear contracts = Counterfactual and suboptimal ? But:
  - Contracts are sometimes linear!
  - Discounts are often passed through.
  - Evidence that discounts often more "at the margin" than "infra-marginally".
- View: Choice of linear contracts "admissible" if
  - study competitive impact ("first-line injury");
  - and stylized facts/data suggest discounts at the margin (or high pass-through)

PD with Linear Contracts

- Different own efficiency of buyers: DeGraba AER 90, Yoshida AER 00
- Finding with monopolistic supplier:
  - More efficient firm represents less elastic (derived) demand
  - and pays higher wholesale price, benefits from ban on PD.
  - Ban on PD mitigates hold-up problem
- Inderst/Valletti 07:
  - Threat of demand-side substitution
    –> Katz 87: At cost $F > 0$ can switch source of supply
  - Consequence: All results overturned (plus new insights)

Basic Model

- One (incumbent) supplier. Two downstream firms $i = 1, 2$.
- Own marginal costs (efficiency) k_i. Wholesale prices w_i. In total $c_i = w_i + k_i$.
- Negotiations:
  - TIOLI-Offer by supplier (observable or non-observable).
  - Outside option: Take-up costs $F > 0$. Marginal procurement cost $\widehat{w}$.
- Initial stage of the model: Supplier can invest to reduce k_i.
- Analysis: i) Independent markets and ii) Cournot competition in same market.
  –> Qualitatively same results. Sometimes sharper with independent markets.

Static Analysis under Competition

- Benchmark: Monopolistic supplier maximizes $w_1 q(c_1, c_2) + w_2 q(c_1, c_2)$, where $c_i := w_i + k_i$.
  –> More efficient firm charged higher wholesale price w_i.

- Demand-side substitution:
  - Participation constraints of downstream firms: Switch to alternative supply option.
  - Alternative: Incur fixed costs F –> purchase at $\widehat{w}$.
  - With reduced profit function $\pi(c_i, c_j)$ it must hold that

$$\pi(c_i, c_j) = \pi(\widehat{c}_i, c_j) - F,$$

    where $\widehat{c}_i := \widehat{w} + k_i$.

Static Analysis under Competition

- Assumption 1: Unique Cournot equilibrium (giving rise to $\pi(.)$).
- Assumption 2: $\pi_{11} > 0$ and $\pi_{12} < 0$.
  - Standard (cf. Athey and Schmutzler 2001).
  - Intuition for $\pi_{11} > 0$:
    If firm already sells more, then benefits more from lower marginal cost.
  - Intuition for $\pi_{12} < 0$:
    If firm already sells more, then hurt more as rival expands output (due to lower cost).

Static Analysis under Competition

- **Proposition.** *Unique wholesale prices such that*
  - *more efficient firm -> larger market share -> lower wholesale price;*
  - *k_i down -> lower w_i but higher w_j ("waterbed effect").*

- k_i down -> w_i down.
  - On-equilibrium profits $\pi(c_i, c_j)$ and off-equilibrium profits $\pi(\widehat{c}_i, c_j)$ up.
  - But more so off-equilibrium profits: From $\widehat{w} < w_i$ (margin!) and $\pi_{11} > 0$.

Waterbed Effect

Inderst IJIO 2007

- Waterbed effect both for organic growth (efficiencies, k_i) *and* growth through further acquisitions in separate markets.

- In particular for growth through acquisitions, waterbed effect can be sufficiently strong so as to raise *average* retail price.

Waterbed Effect: Hotelling Setting

- Waterbed effect:

$$\frac{dw_1}{dw_2} = -\frac{1}{6t}\frac{w_1}{y_1}, \text{ where } y_1 \text{ is the market share.}$$

- Retail price of firm $i = 1$ up (following reduction ion w_2) if

$$y_1 < \frac{w_1}{3t}$$

- Stronger condition ensures that also total consumer surplus down!

Ban on Price Discrimination

Inderst/Valletti 07

1. Uniform price lies between the PD prices.
   –> Linear demand: Consumer surplus *up.*

2. Long run: Incentives to reduce c_i
   –> Higher under PD
   –> Linear demand & quadratic investment costs: Consumer surplus *down.*

Concluding Remarks / Open Issues ?

- Theory
  - BP and vertical restraints
  - Specific settings and sources of buyer power. Eg
    –> Own labels ("triple role")
    –> "vertical competition" (over functions)

- Empirical work
  –> Data from antitrust authorities (eg CC)