Exclusionary Minimum Resale Price Maintenance

John Asker and Heski Bar-Isaac
NYU, Stern School of Business

This version of the slide deck is for audiences who want the ideas without the technical details. A more detailed version aimed at economists and similarly inclined folks can be found following slide 36.

1. Introduction
2. Framework
3. Analysis
4. Relevance
5. Policy
6. Conclusion

April 4, 2011
NY City Bar
Exclusionary Minimum Resale Price Maintenance

Establishing common ground

What is Minimum Resale Price Maintenance? (RPM)

1. Introduction
2. Framework
3. Analysis
4. Relevance
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6. Conclusion
Research Question:

1. “Can RPM be an exclusionary mechanism?”
2. “How might this work?”
3. “When might we look for it?”

Approach:

Objective is to build a theoretical structure to inform observation

Why is this interesting?

1. US Supreme Court:
   - *Dr Miles* 1911 – per se violation of §1
   - *Leegin* 2007 – overturns *Dr Miles*, now rule of reason
2. European Vertical Restraint Guidelines released 2010
3. A lot of work on pro-competitive theories in 80s/90s, some work on facilitation of collusion.
4. Need for better developed theories of harm.
Minimum resale price maintenance can be a way to force retailers to internalize the effects of upstream entry on industry profits. If retailers let an entrant in, the profits in which they share (via RPM) get dissipated away.

Gives foundations for:

Kennedy, J. in Leegin 2007: “A manufacturer with market power, by comparison, might use resale price maintenance to give retailers an incentive not to sell the products of smaller rivals or new entrants.”
Baseline Model

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Baseline Model

Homogeneous goods, $c_i \geq c_e > 0$

- Incumbent
- Entrant

Homogeneous, zero cost of distribution

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2. **Framework**
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4. Relevance
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Baseline Model

Exclusionary Minimum
Resale Price
Maintenance

Homogeneous goods, $c_i \geq c_e > 0$

Incumbent

Entrant

R1

R2

Homogeneous, zero cost of distribution

To enter:

1. Get a retailer to agree to stock
2. Pay a fixed cost $F_e \geq 0$
3. Enter, get profits

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Exclusionary Minimum
Resale Price
Maintenance

Baseline Model:
Analysis

• Work through what happens:
  • If no entry possible
  • If RPM is used
  • If entry occurs
Exclusionary Minimum
Resale Price
Maintenance

Baseline Model: Analysis

• Accounting:
  • What is the most that an Incumbent can transfer to a retailer via RPM?

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Baseline Model:

Analysis

• Accounting:

\[ p^m_i \]

= Max Incumbent can transfer to a retailer

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Baseline Model:  

Analysis

• Accounting:

= Max Incumbent can transfer to a retailer

What happens if Entrant enters?
Baseline Model:

Analysis

- Accounting:
  - Max incumbent can transfer to a retailer
  - Profit from entry, when undercut the incumbent

Baseline Model:

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Baseline Model: Analysis

• Accounting:
  - Max incumbent can transfer to a retailer
  - Profit from entry, when undercut the incumbent

What happens once the incumbent responds to entry?

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Baseline Model:

Analysis

• Accounting:

= Max incumbent can transfer to a retailer

= Profit from entry, when undercut the incumbent

+ profit one incumbent adjusts price following entry

Baseline Model:

Analysis

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Baseline Model:

Analysis

• Accounting:

Baseline Model:

Analysis

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• Accounting: Adding up what a retailer can get if retailer’s action is…

Do not accommodate, given no other retailer accommodates

Accommodate, given no other retailer accommodates

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Baseline Model

The effect of a sufficiently high fixed cost in this example is exclusion.

- Accounting: Adding up what a retailer can get if retailer’s action is...

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An exclusionary equilibrium exists if and only if

\[
\frac{1}{1-\delta} \frac{1}{N} (p^m_i - c_i) q(p^m_i) \geq (p^m_e - c_e) q(p^m_e) + \frac{\delta}{1-\delta} (c_i - c_e) q(c_i) - F_e
\]

NPV of profits shared with retailer via RPM
Entrant’s profit from undercutting
NPV of post-entry competition

(This is proposition 1 in our paper).
Genealogy

- This is not a new idea but is somewhat forgotten

  - Yamey 1966: “Resale Price Maintenance can serve the purposes of a group of manufacturers acting together in restraint of competition by being part of a bargain with associations of established dealers to induce the latter not to handle the competing products of excluded manufacturers.”

  - Kennedy, J. in Leegin 2007: “A manufacturer with market power, by comparison, might use resale price maintenance to give retailers an incentive not to sell the products of smaller rivals or new entrants.”

  - Pro-competitive theories: Telser 60, Posner 75, Matthewson and Winter 84, Klein and Murphy 88, Deneckere, Marvel and Peck 96,97, Winter 09

  - Collusive theories: Shaffer 91, O’Brien and Shaffer 92, Julien and Rey 07, Rey and Verge 09
An exclusionary equilibrium exists if and only if

\[
\text{NPV of profits shared} \geq \text{Entrant's profit} + \text{NPV of post-entry from undercutting competition} - F_e
\]

Robustness:

- Still get exclusion if there if product differentiation
  - Product differentiation may make exclusion easier in some cases

- Different forms of post-entry conduction can still lead to exclusion

- Demand conditions influence the extent, but not possibility, of exclusion

- Can get exclusion is fixed cost is zero, more on this later.
An exclusionary equilibrium exists if and only if

\[ \text{NPV of profits shared with retailer via RPM} \geq \text{Entrant's profit} + \text{NPV of post-entry from undercutting competition} - F_e \]

Other observations:

- Exclusion benefits both retailers and incumbents
Empirical Relevance

• Empirical Relevance

• Does this ever happen?

• How big could the impact be?
Exclusionary Minimum
Resale Price
Maintenance

Empirical
Relevance

From
Overstreet
(1983), Resale
Price
Maintenance,
FTC Staff
Report

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<table>
<thead>
<tr>
<th>Industries Represented by Members of American Fair Trade Council*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kitchen utensils</td>
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<tr>
<td>Photographic equipment</td>
</tr>
<tr>
<td>Automotive vision products</td>
</tr>
<tr>
<td>Fishing tackle</td>
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<td>Outboard motors</td>
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<td>Cutlery, personal</td>
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<td>Abrasives</td>
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<td>Tapes and dispensers</td>
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<tr>
<td>and glue</td>
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<td>Sweepers, mops, and brooms</td>
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<td>Scales</td>
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<td>Hair toiletries</td>
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<td>Insecticides and household chemicals</td>
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<tr>
<td>Cleansers, polishes, and soaps</td>
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<td>Clocks, watches and bands</td>
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<td>Cosmetics and perfumes</td>
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<td>Dentist supplies</td>
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<td>Automotive ignition products</td>
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<td>Camping equipment</td>
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<td>Knit goods and underwear</td>
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<td>Glassware and pottery</td>
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<td>Lighting equipment</td>
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<td>Proprietary medicines</td>
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<td>Compacts and cases</td>
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<td>Mattresses</td>
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<td>Pens and pencils</td>
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<td>Household electric appliances</td>
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</table>
<pre><code>                                                             | Leather goods |
                                                             | Farm equipment and supplies |
                                                             | Clothing (suits and coats) |
</code></pre>

### Table 3
Price Comparisons Prepared by the Maryland Pharmaceutical Association and the Baltimore Retail Druggists Association*

<table>
<thead>
<tr>
<th>Product</th>
<th>Fair Trade Prices</th>
<th>Free-Trade Prices</th>
<th>Product</th>
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<th>Free-Trade Prices</th>
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*Source: Standard Drug Co., Washington, D.C.*

*Study of Monopoly Power, Hearings Before the Antitrust Subcommittee of the Committee on the Judiciary, House of Representatives, 82nd Congress, 2nd Session, on Resale Price Maintenance, Serial No. 12, February 1952, p. 124.*
### Empirical Relevance

From Overstreet (1983), Resale Price Maintenance, FTC Staff Report

<table>
<thead>
<tr>
<th>Product Type</th>
<th>Brand 1</th>
<th>Brand 2</th>
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<td>Hair tonics:</td>
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Empirical Relevance

• Examples of exclusionary resale price maintenance (from Yamey 1969 and Bowman 1955):
  • Sugar
  • Whisky
  • Wallpaper
  • Enameled Iron Ware
  • Watch Cases
  • Spark Plugs
  • Fashion Patterns
Empirical

Relevance

Exclusion in Whisky

• The Distilling and Cattle Feeding Company [US v. Greenhut, 1892 U.S. Dist. Ct]

  • Company: “purchased or leased or otherwise obtained control of 70 distilleries, which had theretofore been competing, separate distilleries, and so operated them as to produce 77,000,000 gallons of distillery product, which output comprised about 75-100 of the total production of the distilleries of the United States”

  • 1890 entered into distribution contract: “the defendants, six months after date, promised to repay to Kelly & Durkee five cents per proof gallon of defendants' products then purchased, upon condition that said purchasers …, from date of voucher or purchase to time of payment, shall buy exclusively such kind of goods as are produced by defendants from some one of their agents designated, and shall not sell the same at prices lower than said dealers' list prices”

  • Note: use of explicit rebates, explicit conditioning on exclusivity, and explicit timeframe

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Empirical Relevance

Exclusion in Sugar

- The American Sugar Company
  - Trust formed in 1887 combining sugar refining operations controlling 80 per cent of industry capacity
  - Rising to 95 per cent of capacity by 1982
  - In 1895 wholesale grocers association proposes RPM
  - Zerbe reports proposal came in the form of “a threat and a bribe”
  - Arbuckle enters in 1898, although has to create own distribution in some areas, and excluded in others
  - Mix of raising rivals costs and exclusion

(American and Arbuckle form a cartel soon after that lasts till WWI)

Set fixed cost to zero

An exclusionary equilibrium exists if and only if

\[
\frac{1}{1-(1-\delta)} \left( \frac{1}{N} \right) (p^m_i-c_i)q(p^m_i) \geq \frac{\delta}{1-(1-\delta)} (c_i-c_e)q(c_i) + (p^m_e-c_e)q(p^m_e)
\]

- Setting \( p^m_e = p^m_i \) provides a bound on lowest MC

\[
(c_i-c_e) < \frac{(p^m_i-c_i)q(p^m_i)}{N q(c_i)}
\]
Empirical Relevance

Range of Exclusion

Demand: $q = 10 - p$
Incumbent's MC = 4, Vertical axis is (4 - MC of excluded)
"The source of the restraint may also be an important consideration.

If there is evidence retailers were the impetus [*898] for a vertical price restraint, there is a greater likelihood that the restraint facilitates a retailer cartel or supports a dominant, inefficient retailer. See Brief for William S. Comanor et al. as Amici Curiae 7-8.

If, by contrast, a manufacturer adopted the policy independent of retailer pressure, the restraint is less likely to promote anticompetitive conduct...(Leegin at 897-898)

It makes all the difference whether minimum retail prices are imposed by the manufactures in order to evoke point-of-sale services or by the dealers in order to obtain monopoly profits. (Leegin at 898 citing Posner, 2001, at 177)"

In our framework, exclusion works to advantage of both retailers and incumbent. Further, anecdotal evidence suggests may be initiated by either.
[226] The possible competition risk of maximum and recommended prices is firstly that the maximum or recommended price will work as a focal point for the resellers and might be followed by most or all of them. A second competition risk is that maximum or recommended prices may facilitate collusion between suppliers.

No mention of exclusion, RPM on matters on the “intensive” margin (pricing) and no consideration of “extensive” margin (entry).
Conclusion

- Framework by which RPM can be argued to be exclusionary

- Empirically relevant issue

- Framework indicates economically significant harm is possible

- Current law and policy more focused in collusion on the intensive margin (prices) rather than effect on the extensive margin (exclusion)
  - probably economists are at fault for this

Take Away:

Minimum resale price maintenance can be a way to force retailers to internalize the effects of upstream entry on industry profits. If retailers let an entrant in, the profits in which they share (via RPM) get dissipated away. This provides an incentive to not accommodate entrants.
Exclusionary Minimum Resale Price Maintenance

John Asker and Heski Bar-Isaac

NYU, Stern School of Business

This version of the slide deck is for economists and folks that want to see more technical details.

1. Introduction
2. Context
3. Model
4. Analysis
5. Extensions
6. Policy

April 4, 2011

City Bar New York
Exclusionary Minimum Resale Price Maintenance

Research question

1. Introduction
2. Context
3. Model
4. Analysis
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6. Policy

• What is Minimum Resale Price Maintenance? (RPM)

Manufacturer

R1

R2

Sell to Consumers
• Research Question:

  1. “Can RPM be an exclusionary mechanism?”
  2. “How might this work?”
  3. “When might we look for it?”

• Approach:

  Objective is to build a theoretical structure to inform observation

• Why is this interesting?

  1. US Supreme Court:

     - *Dr Miles* 1911 – per se violation of §1
     - *Leegin* 2007 – overturns *Dr Miles*, now rule of reason

  2. European Vertical Restraint Guidelines released 2010

  3. A lot of work on pro-competitive theories in 80s/90s, some work on facilitation of collusion.

  4. Need for better developed theories of harm.
Basic story to come out of the analysis here:

Minimum resale price maintenance can be a way to force retailers to internalize the effects of upstream entry on industry profits. If retailers let an entrant in, the profits in which they share (via RPM) get dissipated away.
Exclusionary Minimum Resale Price Maintenance

Research question

1. Introduction
2. Context
3. Model
4. Analysis
5. Extensions
6. Policy

• This is not a new idea but is somewhat forgotten

• Cassady 1939: “…manufacturers are now in a real sense their allies, the distributors are willing (nay, anxious!) to place their sales promotional effort behind these products, many times to the absolute exclusion of non-nationally advertised products”

• Yamey 1966: “Resale Price Maintenance can serve the purposes of a group of manufacturers acting together in restraint of competition by being part of a bargain with associations of established dealers to induce the latter not to handle the competing products of excluded manufacturers.”

• Kennedy, J. in Leegin 2007: “A manufacturer with market power, by comparison, might use resale price maintenance to give retailers an incentive not to sell the products of smaller rivals or new entrants.”

• Pro-competitive theories: Telser 60, Posner 75, Matthewson and Winter 84, Klein and Murphy 88, Deneckere, Marvel and Peck 96,97, Winter 09

• Collusive theories: Shaffer 91, O'Brien and Shaffer 92, Julien and Rey 07, Rey and Verge 09
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Research question

• Road Map
  • Instances of exclusionary RPM
  • Baseline model
  • Analysis
  • Extensions
  • Policy implications
Research question

• Examples of exclusionary resale price maintenance (from Yamey 1969 and Bowman 1955):
  • Sugar
  • Whisky
  • Wallpaper
  • Enameled Iron Ware
  • Watch Cases
  • Spark Plugs
  • Fashion Patterns
Exclusionary Minimum
Resale Price
Maintenance

Research question

Exclusion in Whisky


- Company: “purchased or leased or otherwise obtained control of 70 distilleries, which had theretofore been competing, separate distilleries, and so operated them as to produce 77,000,000 gallons of distillery product, which output comprised about 75-100 of the total production of the distilleries of the United States”

- 1890 entered into distribution contract: “the defendants, six months after date, promised to repay to Kelly & Durkee five cents per proof gallon of defendants' products then purchased, upon condition that said purchasers …, from date of voucher or purchase to time of payment, shall buy exclusively such kind of goods as are produced by defendants from some one of their agents designated, and shall not sell the same at prices lower than said dealers' list prices”

- Note: use of explicit rebates, explicit conditioning on exclusivity, and explicit timeframe
• The American Sugar Company

• Trust formed in 1887 combing sugar refining operations controlling 80 per cent of industry capacity

• Rising to 95 per cent of capacity by 1982

• In 1895 wholesale grocers association proposes RPM

• Zerbe reports proposal came in the form of “a threat and a bribe”

• Arbuckle enters in 1898, although has to create own distribution in some areas, and excluded in others

• Mix of raising rivals costs and exclusion

(American and Arbuckle form a cartel soon after that lasts till WWI)

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Exclusionary Minimum Resale Price Maintenance

Baseline Model

Homogeneous goods, $c_i \geq c_e > 0$

Incumbent

Entrant

Homogeneous, zero cost of distribution

R1

R2

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Baseline Model

Homogeneous goods, $c_i \geq c_e > 0$

Incumbent

Entrant

Homogeneous, zero cost of distribution

To enter:
1. Get a retailer to agree to stock
2. Pay a fixed cost $F_e \geq 0$
3. Enter, get profits

Exclusionary Minimum
Resale Price
Maintenance

1. Introduction
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Baseline Model

- Further assumptions:
  - Fixed costs are set so that entry in competitive industry is profitable
  - Entrant’s monopoly price is above the incumbents costs

Exclusionary Minimum
Resale Price
Maintenance

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Baseline Model

- Structure of play:

- Infinite horizon, $\delta$ is the common, per-period discount rate, ($\delta > 1/2$)

- Each period, incumbent offers $(p_i, w_i)$ retail and wholesale price
  - Define RPM as occurring when this leads to a price different from what unrestricted competition between retailers would generate.
  - Cannot differ across retailers or units
  - No commitment outside of period

- Entrant competes similarly if established in the market

- Entrant, before retail presence established can offer a lump sum payment $R$ to retailer
  - This assumption makes exclusion hardest
1. Introduction
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Baseline Model

- Structure of play:
Analysis

- Equilibrium: Markov Perfect Nash Equilibrium

- Incumbent:
  - wholesale and retail prices in states M and C

- Entrant:
  - wholesale and retail prices in states M and C
  - lump sum transfer R and whether to incur fixed cost of entry in M

- Retailer j:
  - Yes or No to entrant’s offer to stock
Exclusionary Minimum
Resale Price
Maintenance

Baseline Model

- No Entrant benchmark

No Entrant

- Incumbent sets Wholesale price equal to monopoly
- Retailers compete away the retail margin
- No role for RPM

\[ w_i = p^m_i \]
Analysis:

- Objective of analysis:
  - Find exclusionary equilibria
  - Work out necessary and sufficient conditions for existence
  - Use this as a basis for working out how big a problem it could be
Exclusionary Minimum
Resale Price
Maintenance

Analysis:

Post-Entry Play
(State “C”)

- Post-entry: wholesale prices and retail prices equal to incumbent marginal cost
Analysis:

A no-exclusion equilibrium always exists

Proof:
• Post-entry: no retailer margin
• \( \pi(N,Y) = 0 \)
  • no payoff and no margin post entry

Exclusionary Minimum
Resale Price
Maintenance
Analysis:

• When is N,N also an equilibrium?

Exclusionary Equilibrium

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2. Context
3. Model
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6. Policy
Analysis:

- When is N,N also an equilibrium?

- Need: $\pi(N,N) > \pi(Y,N)$

- Look at maximal $\pi(Y,N)$ entrant can generate; then
- Look at maximal $\pi(N,N)$ incumbent can generate.

Exclusionary Equilibrium

<table>
<thead>
<tr>
<th></th>
<th>N</th>
<th>Y</th>
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<tbody>
<tr>
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<td>$\pi(N,N)$</td>
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<tr>
<td>Y</td>
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Exclusionary Minimum
Resale Price
Maintenance

Analysis:

- When is N,N also an equilibrium?
- Need: $\pi(N,N) > \pi(Y,N)$
- Look at maximal $\pi(Y,N)$ entrant can generate; then
  - Look at maximal $\pi(N,N)$ incumbent can generate.

Maximal $\pi(Y,N)$:

$$
(p - c_e)q(p) + \left[ \frac{\delta}{1-\delta} \right] (c_i-c_e)q(c_i) - F_e
$$

undercut in current period  
post entry bertrand thereafter

Price when undercut = min( $p_i$, $p^m_e$ )
Analysis:

- When is N,N also an equilibrium?
- Need: $\pi(N,N) > \pi(Y,N)$
- Look at maximal $\pi(Y,N)$ entrant can generate; then
- Look at maximal $\pi(N,N)$ incumbent can generate.

Maximal $\pi(N,N)$:

\[
\left[ \frac{1}{1-\delta} \right] \left[ \frac{1}{N} \right] (p_i - c_i)q(p) 
\]

- Set $w_i = c_i$
- What to set $p_i$?

\[
\left[ \frac{1}{1-\delta} \right] \left[ \frac{1}{N} \right] (p_i - c_i)q(p) - \left[ (p - c_e)q(p) + \left[ \frac{\delta}{1-\delta} \right] (c_i - c_e)q(c_i) - F_e \right] 
\]

- Solution: $p_i = p^m_i$
Analysis:

• When is N,N also an equilibrium?

• Need: \( \pi(N,N) > \pi(Y,N) \)

Exclusionary Equilibrium

Central Result

An exclusionary equilibrium exists if and only if

\[
\frac{1}{1-\delta} \cdot \frac{1}{N} \left( \frac{c_i - c_e}{p_m^* - c_i} q(p_i^*) \right) \geq \left( \frac{p_m^* - c_e}{p_m^* - c_e} q(p_m^*) \right) + \frac{\delta}{1-\delta} \left( c_i - c_e \right) q(c_i) - F_e
\]

Use RPM to share profits

Undercut

Bertrand post-entry
Analysis:

- Consumer surplus
- Producer surplus (less amortized fixed costs)

Exclusionary Equilibrium

Welfare Loss
1. Introduction
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Exclusionary Minimum
Resale Price
Maintenance

Analysis:

Set fixed cost to zero

An exclusionary equilibrium exists if and only if

\[
\frac{1}{1-\delta} \frac{1}{N} (p_{m_i} - c_i) q(p_{m_i}) \geq (p_{m_e} - c_e) q(p_{m_e}) + \frac{\delta}{1-\delta} (c_i - c_e) q(c_i)
\]

Use RPM to share profits
Undercut
Bertrand post-entry

• Highest MC able to be excluded is \(c_i\)

• Lowest MC implicitly defined by setting inequality to equality

• Setting \(p_{m_e} = p_{m_i}\) provides a bound on lowest MC

\[
(c_i - c_e) < (p_{m_i} - c_i) q(p_{m_i}) / [ N q(c_i) ]
\]
Analysis:

Exclusionary Equilibrium

Range of Exclusion

Demand: $q = 10 - p$

Incumbent’s MC = 4, Vertical axis is $4 - \text{MC of excluded}$
Exclusionary Minimum
Resale Price
Maintenance

Analysis:

Exclusionary Equilibrium

Range of Exclusion

Demand: constant elasticity, same incumbent price as linear
Incumbent’s MC = 4,
Vertical axis is (4 - MC of excluded)
Extensions:

Three Extensions:

• Relax the MPNE assumption:

  • Why can’t the entrant exclude the incumbent after entry? Wouldn’t retailers agree to this?

  • Allow for collusion among: i) manufacturers; and ii) retailers

• Extend the baseline model to accommodate differentiation
Extensions:

Why can’t the entrant exclude the incumbent after entry? Wouldn’t retailers agree to this?

The post-entry price of entrant is found by solving

$$\tilde{p}_e^* = \arg \max_{(\tilde{p}_e, \tilde{w}_e)} (\tilde{w}_e - c_e) q(\tilde{p}_e)$$

subject to

IC:

$$\frac{1}{1 - \delta} \frac{1}{n} (\tilde{p}_e - \tilde{w}_e) q(\tilde{p}_e) \geq (\tilde{p}_e - c_i) q(\tilde{p}_e)$$

IR:

$$\frac{1}{1 - \delta} \frac{1}{n} (\tilde{p}_e - \tilde{w}_e) q(\tilde{p}_e) - (\tilde{p}_e - c_i) q(\tilde{p}_e) > \frac{1}{1 - \delta} (c_i - c_e) q(c_i)$$

Which simplifies to

$$\tilde{p}_e^* = \arg \max_{\tilde{p}_e \geq c_i} (\tilde{p}_e - c_e) q(\tilde{p}_e) - (1 - \delta) n (\tilde{p}_e - c_i) q(\tilde{p}_e)$$
**Proposition 1A** Suppose that \( \frac{1}{1-\delta} \frac{1}{n} > 1 \). Then, an exclusionary equilibrium (one in which the entrant does not enter) exists if and only if

\[
F_e + \frac{1}{1-\delta} \frac{1}{n} (p_i^m - c_i) q (p_i^m) \geq (p_e^m - c_e) q (p_e^m) + \frac{\delta}{1-\delta} \left[(\tilde{p}_e^* - c_e) q (\tilde{p}_e^*) - (1-\delta) n (\tilde{p}_e^* - c_i) q (\tilde{p}_e^*)\right].
\]

(5)

**Table 1A:** Exclusion by the Incumbent and Entrant

<table>
<thead>
<tr>
<th>( q = 10 - 0.5p, c_i = 5 )</th>
<th>( \delta )</th>
<th>( n )</th>
<th>( c_e )</th>
<th>( \text{Max } F_e )</th>
<th>( \text{Does Entrant Exclude Incumbent?} )</th>
<th>( \text{Does Incumbent Exclude Entrant?} )</th>
<th>( \text{Range of } F_e ) excluded (if any)</th>
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<td>225</td>
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<td>No</td>
<td>–</td>
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</tr>
</tbody>
</table>

**Note:** \( \max \{F_e\} = \frac{1}{1-\delta} (c_i - c_e) q (c_i) \), i.e. the largest fixed cost consistent with entry without exclusion.
Extensions:

Collusion:

• Useful to think about when exclusion is likely relative to other conduct we might care about.

• First consider accommodation, entry and collusion among manufacturers

• At technical level relaxing MPNE

• Want to consider collusion without transfers – otherwise entrant just buys the incumbent…

• Consider a market division scheme (same set-up as Harrington 91)
Extensions:

Collusion via market division following entry:

Look for the incumbent optimal scheme sustainable via a grim-trigger strategy.

Derive a bound

Manufacturer Cartel
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**Extensions:**

**Comparison with collusion**

**Manufacturer Cartel**

**Collusion:**

The bigger the difference in costs the smaller the gain for the incumbent

**Deviations:**
Extensions:

Comparison with collusion

Manufacturer Cartel

Collusion:

- Useful to think about when exclusion is likely relative to other conduct we might care about.

- Answer:

  - Relative to a market division scheme, exclusion is most preferred when fixed costs of entry are high, and differences in marginal costs are big.

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Extensions:

Comparison with collusion

Manufacturer Cartel

Collusion:

- Useful to think about when exclusion is likely relative to other conduct we might care about.

- Answer:

Relative to a market division scheme, exclusion is most preferred when fixed costs of entry are high, and differences in marginal costs are big.

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Extensions:

Comparison with collusion

Retailer Cartel

Collusion:

• Useful to think about when exclusion is likely relative to other conduct we might care about.

• Answer:

• Relative to a market division scheme, exclusion is most preferred fixed costs of entry are high, and differences in marginal costs are big.

• Note that as the number of entrants increase the attractiveness of exclusion would increase.
Extensions:

Comparison with collusion

Retailer Cartel

Collusion:

- Now want to think about the effects of a cartel among retailers
Extensions:

Comparison with collusion

Retailer Cartel

Collusion:

- Now want to think about the effects of a cartel among retailers

- Cartel has a commitment problem
- Entry can be deterred
- Incumbent can use Max RPM to fix if a monopolist
- Retailers will think about ways to bust their own cartel...
Extensions: We show that product differentiation (at either retail or manufacturer level) can make exclusion easier (over some range)

Idea:

Hotelling line – manufacturers differentiated

An exclusionary equilibrium exists if and only if

Use RPM to share profits $\geq$ Undercut $+$ Bertrand post-entry $- F_e$

(Independent of Diff) Decreasing in Diff Goes either way

Balance of:
- Softening competition
- Business stealing.
We show that product differentiation (at either retail or manufacturer level) can make exclusion easier (over some range).

Idea:

Hotelling line – manufacturers differentiated

An exclusionary equilibrium exists if and only if

\[
\text{Use RPM to share profits} \geq \text{Undercut} + \text{Bertrand post-entry} - F_e
\]

(Independent of Diff) Decreasing in Diff Goes either way

Balance of:
- Softening competition
- Business stealing.
Extensions: Caution in suggested screens?

• Manufacture vs retailer initiated
  
  • *It makes all the difference whether minimum retail prices are imposed by the manufactures in order to evoke point-of-sale services or by the dealers in order to obtain monopoly profits.* (Leegin citing Posner, 2001)

• Competition
  
  • If measure competition using x-elasticities then we stress caution in saying competition is good.
  • HHI's, or C4 etc might actually be more useful.

• Ease of vertical integration
  
  • Implicitly assume away vertical integration, but might be a useful screen in assessing strength of entry barrier.

• Bound gives a quick litmus test of empirical relevance.
Conclusion

Minimum resale price maintenance can be a way to force retailers to internalize the effects of upstream entry on industry profits. If retailers let an entrant in, the profits in which they share (via RPM) get dissipated away.