Resale price maintenance and up-front payments: Achieving horizontal control under seller and buyer power.

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Resale price maintenance (RPM)

➤ The practice that a producer restricts the resale price of a distributor

➤ Several forms:
  ➤ maximum resale price
  ➤ minimum resale price
  ➤ fixed resale price

➤ Legal development
  ➤ Min and fixed RPM: "hard core" infringement of competition law
  ➤ US: recently more lenient (Leegin)
  ➤ EU: still hard-core, but a real efficiency defence

➤ RPM has spurred a lot of attention in the IO literature recently
General topic

- Long tradition in IO-literature: Use of vertical restraints to monopolize markets
- Here: Specific restraints considered:
  - Two-part tariffs
  - RPM
  - Quantity ceilings
  - Up-front payments (slotting fees)
- Also a lot of attention is devoted to the effect of buyer-induced restraints (buyer power).
Setting

- One upstream dominant manufacturer, denoted by $A$, with marginal cost $c$
- A competitive fringe of suppliers that supply a differentiated product $B$ at marginal cost $c$
- Two downstream retailers that are horizontally differentiated
Two contracting games

- **Offer game (seller power):**
  - Manufacturer $A$ makes simultaneous observable offers (take-it-or-leave-it) to the two retailers.
  - Retailers observe contract terms, accept or reject offers from $A$, after which they compete in prices downstream.

- **Bidding game (buyer power):**
  - The two retailers make simultaneous offers to manufacturer $A$.
  - $A$ accepts or rejects each offer, after which retailers compete in prices downstream.

- Contracts are own-sale contracts in both games (i.e. excludes market share contracts as in Inderst and Shaffer (2010)).
- Contingent contracts (contingent on exclusivity).
Main results

- **Offer game (seller power):**
  - A may induce both retailers to set monopoly prices on both $A$ and $B$ by offering each retailer a contract with a two-part tariff coupled with a minimum RPM provision, possibly coupled with a maximum quantity that each retailer may buy.

- **Bidding game (buyer power):**
  - Retailers may achieve monopoly prices on both $A$ and $B$ by offering the manufacturer contracts with a two-part tariff coupled with a minimum RPM provision and an up-front payment from $A$ to each retailer.
Related literature

The article is related to several strands of the literature:

- **Buyer power and exclusion**: Marx and Shaffer (RAND 2007), Miklós-Thal, Rey and Verge (JEEA 2011), Gabrielsen and Johansen (WP 2012)

- **RPM**: Jullien and Rey (RAND 2007), Dobson and Waterson (IJIO 2007), Rey and Verge (JIE 2010), Innes and Hamilton (RAND 2009)

- **These papers all study the performance of different vertical restraints in different structures:**
  - All have a competitive retail sector with differentiated retailers
  - Monopoly upstream (Marx and Shaffer (2007), Miklós-Thal et al (2011))
  - Dominant supplier with a competitive fringe upstream (Gabrielsen and Johansen (2012); Innes and Hamilton (2009), Inderst and Shaffer (2010))
  - Several strategic suppliers upstream (Jullien and Rey (2007); Dobson and Waterson (2007); Rey and Verge (2010))
Related literature: Buyer power

Papers: Marx and Shaffer (2007), Miklós-Thal et al (2011); Gabrielsen and Johansen (2012)

- Monopoly upstream:
  - MS: a strong retailer may use slotting allowances (up-front payments) and this will lead to exclusion of the rival downstream retailer.
  - Miklos-Thal et al: If contracts can be contingent of exclusion or not: No exclusion, but monopoly prices.
  - Conclusion: Buyer power with contingent contracts may lead to monopoly prices or exclusion.

- Dominant brand + competitive fringe upstream
  - GJ: Exclusion will occur when competition at either level is hard. More exclusion and higher prices under seller power than buyer power.
  - Conclusion: Buyer power is good because of less exclusion and lower prices.
Related literature: RPM


- JR: RPM makes collusion easier because it makes retail prices more uniform and less responsive to local shocks.
- DW: Industry-wide RPM with linear contracts and bargaining. RPM is procompetitive when retailers are weak and differentiated. Reason: RPM eliminates double marginalisation.
- RV: With 2pT and RPM interlocking relationship may generate monopoly prices. With competitive retailers \( w = c \) and \( p = p^M \).
- IH: Assume one-stop shopping: 2pT and RPM will monopolize market. Equilibrium structure of contracts very different from us. Do not consider buyer power.
The model

- A supplier-retailer framework with dominant manufacturer A, producing at \( c > 0 \) and selling its brand through two differentiated retailers, 1 and 2.
- The retailers also sell a second brand, denoted B, which is assumed to be an imperfect substitute for the manufacturer’s brand.
- Brand B is assumed to be competitively supplied to the retailers at \( w = c \).
- There are no fixed costs.
- A set \( \Omega \) of four different "products",
  \( \Omega = (A - 1, B - 1, A - 2, B - 2) \), where \( \{A - 1, B - 1\} \) are distributed by retailer 1 and \( \{A - 2, B - 2\} \) are distributed by retailer 2.
- \( q^i_h(p) = q^i_h(p^i_h, p^i_k, p^j_h, p^j_k) \) is demand for brand \( h \) at retailer \( i \). \( q^i_h(p) \) is continuously differentiable, with \( \partial q^i_h / \partial p^i_h < 0 \), \( \partial q^i_h / \partial p^i_k > 0 \), \( \partial q^i_h / \partial p^j_h > 0 \), \( \partial q^i_h / \partial p^j_k > 0 \).
A benchmark: The fully integrated (collusive) outcome

- Overall industry profit can be written as

\[ \Pi(p) = \sum_{ij \in \Omega} (p_{ij} - c) Q_{ij} \]

where \( \Omega = (A1, B1, A2, B2) \).

- Reaches its maximum, \( \Pi^M \), for symmetric prices \( p^M = (p^M,..) \).

- FOCs for products A1 and B1 (evaluated at the optimum)

\[
(p^M - c) \left[ \sum_{ij \in \Omega} \frac{\partial Q_{ij}}{\partial p_{A1}} \right] + Q_{A1} \left( p^M \right) = 0 \tag{1}
\]

\[
(p^M - c) \left[ \sum_{ij \in \Omega} \frac{\partial Q_{ij}}{\partial p_{B1}} \right] + Q_{B1} \left( p^M \right) = 0 \tag{2}
\]

Symmetric for A2 and B2
Offer game - contracts

- Unrestricted two-part tariff:
  \[ T^i (q_A^i) = w^i q_A^i + F^i \]

- Restricted two-part tariff:
  \[
  T^i (q_A^i, p_A^i) = \begin{cases} 
  w^i q_A^i + F^i & \text{if } p_A^i \geq p^i \\
  \infty & \text{otherwise}
  \end{cases}
  \]

- Contracts are contingent on whether the rival retailer sells \( A \) or not, and we assume that exclusive contract offers are renegotiation proof.
What happens if negotiations between a retailer and the manufacturer breaks down?

We let $\pi^d_U$ and $\pi^d_R$ denote the profit of a retailer when not reaching an agreement with $A$ (but when the other retailer does) under unrestricted (U) and restricted (R) contracts.

We let $\pi$ denote the profit of a retailer when no retailer sells $A$.

These values will determine whether all products will be sold in our equilibria, i.e. that no one deviates to exclusivity.
Any retailer that rejects an offer from A will earn $\pi_U^d$ and $\pi_R^d$ depending on whether RPM is in use or not.

Given that A wants both to accept, he should ensure that fixed fees are such that each retailer earns no more and no less than this.

This means that, in every equilibrium with all products sold, the manufacturer’s maximization problem can be written

$$\max_{w^i, w^j} \Pi_{U2} (w^i, w^j) - 2\pi_U^d$$

without price restraints, or

$$\max_{w^i, w^j, p^i, p^j} \Pi_{R2} (p^i, w^i, p^j, w^j) - 2\pi_R^d$$

with RPM.

Hence, the manufacturer will seek to maximize industry profit given the available contracts.
Offer game: 2pT

Stage III: The pricing game

- Suppose R1 and R2 accept the contract terms
- R1’s profit at stage III (similar for R2)

\[
\max_{p_{A1}, p_{B1}} \left( (p_{A1} - w_{A1}) Q_{A1} + (p_{B1} - c) Q_{B1} - F_{A1} \right)
\]

FOCs

\[
(p_{A1} - w_{A1}) \frac{\partial Q_{A1}}{\partial p_{A1}} + (p_{B1} - c) \frac{\partial Q_{B1}}{\partial p_{A1}} + Q_{A1} = 0 \quad (3)
\]

\[
(p_{A1} - w_{A1}) \frac{\partial Q_{A1}}{\partial p_{B1}} + (p_{B1} - c) \frac{\partial Q_{B1}}{\partial p_{B1}} + Q_{B1} = 0 \quad (4)
\]

- R1 internalises the effect of its pricing on its own margins \((p_{A1} - w_{A1})\) and \((p_{B1} - c)\)
- Fails to internalise the upstream margins, \((w_{A1} - c)\), \((w_{A2} - c)\), and R2’s margins, \((p_{A2} - w_{A2})\), \((p_{B2} - c)\)
Offer game: 2pT

- \( p_{A1}^* = p^M \) requires (1) aligned with (3), evaluated at \( p^M \)

\[
\left( p^M - c \right) \left[ \sum_{ij \in \Omega} \frac{\partial Q_{ij}}{\partial p_{A1}} \right] + Q_{A1} \left( p^M \right) \\
= \left( p^M - w_{A1} \right) \frac{\partial Q_{A1}}{\partial p_{A1}} + \left( p^M - c \right) \frac{\partial Q_{B1}}{\partial p_{A1}} + Q_{A1} \left( p^M \right)
\]

\[\updownarrow\]

\[w_{A1} - c = \left( p^M - c \right) \frac{\partial Q_{A2}}{\partial p_{A1}} + \frac{\partial Q_{B2}}{\partial p_{A1}} > 0\]

- Set \( w_{A1} > c \) to dampen downstream competition and induce a higher price for brand A
Offer game: 2pT

- \( p_{B1} = p^M \) requires (2) aligned with (4), evaluated at \( p^M \)

\[
\left( p^M - c \right) \left[ \sum_{ij \in \Omega} \frac{\partial Q_{ij}}{\partial p_{A1}} \right] + Q_{B1} \left( p^M \right)
\]

\[
= \left( p^M - w_{A1} \right) \frac{\partial Q_{A1}}{\partial p_{B1}} + \left( p^M - c \right) \frac{\partial Q_{B1}}{\partial p_{B1}} + Q_{B1} \left( p^M \right)
\]

\[
\uparrow
\]

\[
w_{A1} - c = \left( p^M - c \right) \frac{\partial Q_{A2}}{\partial p_{B1}} + \frac{\partial Q_{B2}}{\partial p_{B1}} < 0
\]

- Set \( w_{A1} < c \) to induce retailers to sell less of (set a higher price for) \( B \)
The manufacturer unable to achieve the first-best with pure 2pT

- $w > c$ and $w < c$ cannot simultaneously hold

Prices always "somewhat competitive" in equilibrium (without exclusivity)

Problem for manufacturer:

- Retailers fail to internalise upstream margins and rival’s margins
- Retailers set $p_{B1}$ and $p_{B2}$ "too low" (from A’s perspective)
- Manufacturer sets $w < w^M$ to avoid losing too much demand to B. $w^M \implies p_{Ai}(w^M, w^M) = p^M$
Suppose manufacturer A use 2pT + RPM instead
This contract is sufficiently flexible to fully restore the collusive outcome
Fix the prices for A (or set a price floor): \( p^i_A = p^M \)
Adjust the wholesale price such that

\[
\begin{align*}
  w^i - c &= \left(p^M - c\right) \left( \frac{\partial Q_{A2}}{\partial p_{B1}} + \frac{\partial Q_{B2}}{\partial p_{B1}} \right) - \frac{\partial Q_{A1}}{\partial p_{B1}} < 0
\end{align*}
\]

Retailers receive a higher margin on A than on B and each of them will wish to sell more of A (less of B)
Only way is to increase the price of B (cannot reduce \( p_A \) below \( p^M \))
Proposition 3. In the offer game with restricted two-part tariffs, the manufacturer is able to induce the fully integrated outcome $\Pi^M$. The manufacturer may induce this outcome by choosing a wholesale price $w^I < c$ and fixing the retail price of brand A to $p^M$ and such an equilibrium always exists. If the degree of interbrand competition is weak, and the unit production cost $c$ is sufficiently low, the manufacturer may have to use a quantity ceiling as well as resale price maintenance to induce the integrated outcome.
Bidding game - contracts

- Unrestricted two-part tariff
- Restricted two-part tariff
- Unrestricted three-part tariff

\[
G^i (q^i_A) = \begin{cases} 
S^i & \text{if } q^i_A = 0 \\
S^i + T^i (q^i_A) & \text{if } q^i_A > 0 
\end{cases}
\]

- Restricted three-part tariff:

\[
G^i (q^i_A, p^i_A) = \begin{cases} 
S^i & \text{if } q^i_A = 0 \\
S^i + T^i (q^i_A) & \text{if } q^i_A > 0 \land p^i_A \geq p^i \\
\infty & \text{if } q^i_A > 0 \land p^i_A < p^i
\end{cases}
\]
Bidding game: 2pT

- After the retailers have made their offers, $A$ can accept both, the best exclusive offer or reject both.
- Let $\bar{\theta}_U$ denote $A$'s profit from the best exclusive offer without RPM and let $\bar{\theta}_R$ his profit from the best exclusive offer with RPM. Then each retailer solves

$$
\max_{w_i} \left\{ \Pi_U (w^i, w^j) - \tilde{\pi}_r (w^j, w^i) \right\} + F_j - \bar{\theta}_U,
$$

with no RPM, and

$$
\max_{w_i, p^i} \left\{ \Pi_R (p^j, w^i, p^j, w^j) - \tilde{\pi}_r (p^j, w^j, p^j, w^i) \right\} + F_j - \bar{\theta}_R
$$

with RPM

- Each retailer maximizes the overall industry profit minus the downstream (variable) profit earned by her rival. I.e., each retailer maximizes her joint profit with the manufacturer.
Bidding game: 2pT

- Result: The retailers are unable to monopolize the market
- Similar to Miklós-Thal et al but here extended to a competitive upstream sector
- Intuition:
  - Each retailer sets his wholesale price to maximize her joint profit with A, and ignores the downstream margins earned by its rival
  - Each retailer will have an incentive to free-ride on the rival’s downstream margins, hence monopoly prices cannot be achieved
Result: The retailers are still unable to monopolize the market.
In contrast to what is claimed by Innes and Hamilton (2009)

Intuition:

- Suppose contracts are designed as in the Offer game, i.e.
  \[ p^i_A = p^j_A = p^M \text{ and } w^i = w^j = w^l < c \text{ resulting in } \]
  \[ p^i_B = p^j_B = p^M \]
- Because \( w^l < c \) each retailer earns substantial variable profits.
- Hence, there is an incentive for each retailer to free-ride on the rival’s margins.
- Increase \( w^i \implies p^i_B < p^M \) or choose \( p^i_A < p^M \).
Bidding game: 3pT

- **Result:** With 3pT only, the retailers are still unable to monopolize the market.

- Hence, with a competitive upstream sector the result of Miklós-Thal et. al does not hold anymore, i.e., contingent contracts are not enough to induce \( p^M \).

- **Intuition:**
  - With 2pT retailers earned variable profits that created an incentive to free-ride by cutting prices.
  - With a 3pT each retailer can protect himself from such deviations as the contract allows her to waive the fixed fee if the rival retailer should deviate in such a way.
  - In this way prices will be increased, but not to such an extent that monopoly prices can be sustained.
  - We know that monopoly pricing on brand \( B \) requires \( w^I = w^I < c \) and then the price on brand \( A \) would be too low.
  - It then follows directly that 3pT with RPM are sufficient to induce monopoly prices on both brands.
Summary

- With seller power monopoly prices can be sustained with simple $2pT + \text{RPM (min)}$ even where a producer always supplies at cost.
- With buyer power $3pT + \text{RPM}$ is needed to sustain the same outcome.
- Shows that RPM can be very detrimental for welfare even in seemingly competitive situations.
- Suggest that under buyer power: slotting fees and RPM may be detrimental.
- As noted by Miklós-Thal et al. up-front payments (slotting fees) is just an example of a VR that will do the job. What is needed is a drastic response to deviations from a rival retailer.