Consumer Economics and Pricing Strategies
Vertical relation (Part I) - Contracts

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Introduction

- Retailers are intermediate between producers and consumers
  - Consumers are mainly price takers
  - But producers and retailers sign contracts (or bargain)
- Most common contracts
  - The simplest contract is a unit price
  - Any additional clause is called "vertical restraint"
    - Two-part tariff: (franchise fee)
    - Slotting allowances (introduction fees, pay-to-stay fees,...)
    - Any non linear tariff: progressive rebates.
    - Resale price maintenance (RPM), price-floor, price-ceiling.
    - Quantity forcing / quantity rationing.
    - Exclusivity clauses (exclusive territories, single branding, selective distribution,...)
    - Tying / bundling clause
    - Royalties
  - These clauses can add up.

Type of contracts used in food retailing

- Two-part tariff contracts
  - Structural econometrics on yogurt market: Villas-Boas Sofia B. (2007).
  - Structural econometrics on bottled water market: Bonnet, C. and P.Dubois, (2010).
  - Both papers find non linear tariffs.
- Slotting fees (FTC report, 2003)
- Galland law: Resale price maintenance (or price-floor)

Type of contracts used in European car dealership

- Exclusive dealing contracts : Exclusive territories were granted to dealers and dealers were required to sell a single brand. (+ selective with quality criteria imposed on dealers.

Type of contracts used in books retailing (France, Germany)

- Resale price maintenance

Why using such contracts?

- To better coordinate (pricing, provision of service,...) and thus improve the joint profit of the vertical structure
- Some restraints are indeed efficient to control for basic externalities (double-marginalization, under-provision of service)

However their impact on welfare is mitigated:

- Trade-off between the potential efficiency enhancing of vertical restraints...
  - Linear tariffs are not efficient (double marginalization);
  - Helps coordination between upstream and downstream firm, creates incentives to make a better effort;
  - Protects specific investments...
- ... and their anti-competitive effects:
  - Exclusionary effects on the upstream and/or the downstream market (Barriers to entry, foreclosure...);
  - Softening of competition upstream and/or downstream;

Roadmap

Pros and Cons of 3 vertical restraints

- Slotting allowances
  - Foros, Kind and Sand (2009)
  - Shaffer (1991)
- Resale price Maintenance
  - MacAfee and Schwartz (1994)
- Exclusive territories
  - Rey and Stiglitz (1995)

Slotting allowances

Slotting fees for the introduction of new products

- Up-front payment from producer to retailer to allow for the listing of a new product.
- Slotting fees in the US (FTC Report, 2003):
  - Frequency: 50% to 90% of all new grocery products.
  - Amount: Important compared to the total cost of launching a new product BUT varies a lot from one producer to another.
  - Highest amounts for fresh and frozen products (refrigerated shelves are more limited!!)

Why using slotting fees?

- To allocate scarce shelf space: A supermarket offers less than 25,000 products/ 100,000 are available! (=Another expression of buyer power)
- Risk sharing associated to a new product launching
- Compensation for extra cost associated with new product launching

Slotting allowances

- Efficiency in allocating scarce shelf space
  - Screening device (Chu(1991), Sullivan (1997)).
  - Sharing of risk and compensation for extra cost associated to a new product launching, Larivière et al (2001).
  - Better coordination in the chain on the producer's promotion of the new product, **Foros et al (2009)**.
- Anticompetitive effects of slotting fees
  - **Shaffer** (**1991**, 2005), Marx & Shaffer (2007,2010), Miklós-Thal, Rey, Vergé (2011).

Slotting Fees and incentives to advertise

Foros, Kind & Sand (2009)

Assumptions

- P chooses an advertising service in quantity s that improves final demand $D(p,s)$.
- The cost of advertising $\varphi(s)$ is increasing in s.

The game:

1. P (or R) offers a two-part tariff contract (w,F). R (or P) accepts or rejects the contract.
2. Simultaneously, P chooses s and R chooses p.

Program of a vertically integrated firm : FOC :

$$
\begin{aligned}
(p-c)\frac{\partial D(p,s)}{\partial p} + D(p,s) &= 0 \\
(p-c)\frac{\partial D(p,s)}{\partial s} - \frac{\partial \varphi(s)}{\partial s} &= 0
\end{aligned}
$$

The solution is (p^M, s^M).

In stage 2, retailer's and producer's FOCs are :

$$(p - w)\frac{\partial D(p,s)}{\partial p} + D(p,s) = 0$$
$$(w - c)\frac{\partial D(p,s)}{\partial s} - \frac{\partial \varphi(s)}{\partial s} = 0$$

In stage 1, (w^*, F^*) is such that :

$$\max_w (p(w) - c)D(p(w), s(w)) - \varphi(s(w)) \Rightarrow w^* > c$$

Franchise fee vs Slotting Fee

If P makes the offer, R pays a franchise fee $F^* = (p^* - w^*)D(p^*, s^*) > 0$; If R makes the offer, P pays a slotting fee $F^* = -(w^* - c)D(p^*, s^*) + \varphi(s^*) < 0$.

Double distortion:

1. $w^* > c$ implies $s^* > 0$ but because of double-marginalization $p^* > p^M$.
2. Underprovision of advertising $s^* < s^M$.
3. Slotting fees are not always better for welfare than a linear tariff if R makes the offer.

To restore efficiency R or P offers a three-part tariff (w, F, θ) with θ a revenue sharing rule (royalty).

$$\begin{aligned}(\theta p - w)\frac{\partial D(p,s)}{\partial p} + \theta D(p,s) &= 0 \\ ((1-\theta)p + w - c)\frac{\partial D(p,s)}{\partial s} - \frac{\partial \varphi(s)}{\partial s} &= 0\end{aligned}$$

In stage 1, (w^*, F^*, θ^*) is such that $w^* = \theta^* c$: Then it is immediate that for any $\theta > 0$ $p = p^M$ and that when $\theta^* \to \epsilon$ $s \to s^M$

Franchise fee vs Slotting Fee

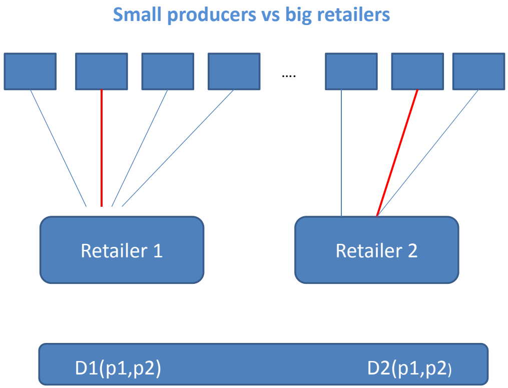
If P makes the offer, R pays a franchise fee $F^* \to (\theta^* p^M - w^*)D(p^M, s^M) > 0$; If R makes the offer, P pays a slotting fee $F^* \to -((1-\theta^*)p^M + w^* - c)D(p^M, s^M) + \varphi(s^M) < 0$.

Efficiency is restored!

Slotting allowances: Anti-competitive effect

Shaffer (1991)

- Upstream perfect competition (unit production cost: c)
- Imperfect downstream competition



Assumptions

- $\partial_{p_i} D_i < 0$ and $\partial_{p_i} D_j > 0$: Products at each store are imperfect substitutes.
- Let $p = (p_1, p_2)$ define the vector of retail prices.
- Let w_i be the unit wholesale price and F_i the fixed fee specified in the contract with retailer i' s supplier.
- Let $\pi_i(p, F_i) = (p_i - w_i)D_i(p) - F_i$ denote retailer i's profit.
    - If $\Delta = \partial^2_{p_i}\pi_i\partial^2_{p_j}\pi_j - \partial_{p_i}\partial_{p_j}\pi_i\partial_{p_j}\partial_{p_i}\pi_j$, we need $\Delta > \partial_{p_j} D_i\partial_{p_j}\partial_{p_i}\pi_j$ to insure that there exists a unique Nash equilibrium and that each retailer's equilibrium profit, absent fixed fee, decreases in its wholesale price.
    - $\partial^2_{p_i}\pi_i < 0$ and $\partial_{p_i}\partial_{p_j}\pi_i > 0$: a firm's marginal profit increases with its rival price=> Bertrand reaction functions slope upward.

The Game

3-stage game

1. Producers simultaneously announce the terms of their sales contracts (w_i, F_i)
2. Retailers then choose which producer to buy from.
3. Retailers compete in price.

All information is common knowledge!

The retailer is legally prohibited from accepting slotting allowances but then not stocking producer's good!

No slotting allowances: $F_i = 0$

- The first order conditions in stage 3 for $i = 1, 2$ are:

$$\partial_{p_i}\pi_i = (p_i - w_i)\partial_{p_i} D_i + D_i = 0$$

- It defines a unique equilibrium in prices $(p_1^*(w_1, w_2), p_2^*(w_1, w_2))$
- In the first two stages, to obtain shelf space at store i, a producer
  - Chooses the contract maximizing the retailer's profit:

$$\max(p_i^* - w_i)D_i(p_i^*, p_j^*)$$

  - Under its participation constraint:

$$(w_i - c)D_i(p_i^*, p_j^*) \geq 0$$

$$\Big(\frac{\partial p_i^*}{\partial w_i}\underbrace{\Big(D_i + (p_i^* - w_i)\frac{\partial D_i}{\partial p_i}\Big)}_{=0} - D_i + (p_i - w_i)\underbrace{\frac{\partial D_i}{\partial p_j}}_{<|\frac{\partial D_i}{\partial p_i}|}\underbrace{\frac{\partial p_j^*}{\partial w_i}}_{<1} < 0$$

Equilibrium

In equilibrium, all suppliers offer $w_i = c$ and retail prices are $p_1^*(c, c) = p_2^*(c, c) = p^b$.

Slotting allowances: Anti-competitive effect

- There is no restriction on the sign of fixed fees.
- Exactly as in the previous case, the FOCs in stage 3 for $i = 1, 2$ are:

$$\partial_{p_i} \pi_i = (p_i - w_i)\partial_{p_i} D_i + D_i = 0$$

- It defines a unique equilibrium in prices $(p_1^*(w_1, w_2), p_2^*(w_1, w_2))$
- In the first two stages, to obtain shelf space at store i, a producer.
    - Chooses the contract maximizing retailer's profit:

$$\max_{w_i, F_i} (p_i^* - w_i) D_i(p_i^*, p_j^*) - F_i$$

    - Under its participation constraint:

$$(w_i - c) D_i(p_i^*, p_j^*) + F_i \geq 0$$

Slotting allowance: $F_i < 0$

- Binding the participation constraint $F_i = -(w_i - c)D_i(p_i^*, p_j^*)$ and replacing in the maximization program: $\max_{w_i}(p_i^* - c)D_i(p_i^*, p_j^*)$
- The FOC rewrites as:

$$[(p_i^* - c)\partial_{p_i} D_i(p_i^*, p_j^*) + D_i(p_i^*, p_j^*)]\frac{\partial p_i^*}{\partial w_i} + (p_i^* - c)\partial_{p_j} D_i(p_i^*, p_j^*)\frac{\partial p_j^*}{\partial w_i} = 0$$

- and thus (using retailer's FOC) simplifies as:

$$[(w_i - c)\partial_{p_i} D_i(p_i^*, p_j^*)]\frac{\partial p_i^*}{\partial w_i} + (p_i^* - c)\partial_{p_j} D_i(p_i^*, p_j^*)\frac{\partial p_j^*}{\partial w_i} = 0$$

- By assumption $\partial_{p_i} D_i < 0$ and $\partial_{p_j} D_i > 0$: products are imperfect substitutes.
- By totally differentiating stage-3 retailer FOC, we have: $\frac{\partial p_i^*}{\partial w_i} = \frac{\partial_{p_i} D_i \partial^2_{p_j} \pi_j}{\Delta} > 0$ and $\frac{\partial p_j^*}{\partial w_i} = -\frac{\partial_{p_i} D_i \partial_{p_j} \partial_{p_i} \pi_j}{\Delta} > 0$

Result

The equilibrium supplier contract is $w_i = w^S > c$ and $F_i = F^S < 0$ and the resulting retail prices are $p_i^*(w^S, w^S) = p^S > p^b$.

Proof: Slotting allowances

Shaffer (1991)

$$(p_i - w_i)\partial_{p_i} D_i(p_i, p_j) + D_i(p_i, p_j) = 0 \quad (1)$$

$$(p_j - w_j)\partial_{p_j} D_j(p_i, p_j) + D_j(p_i, p_j) = 0 \quad (2)$$

By applying implicit function theorem to stage-3 retailer FOC, we have:

$$\frac{\partial p_i}{\partial w_i} = -\frac{-\partial_{p_i} D_i(p_i, p_j) + \partial_{p_i}\partial_{p_j}\pi_i(p_i, p_j)\frac{\partial p_j}{\partial w_i}}{\partial^2_{p_i}\pi_i(p_i, p_j)} \quad (3)$$

$$\frac{\partial p_j}{\partial w_i} = -\frac{-\partial_{p_j}\partial_{p_i}\pi_j(p_i, p_j)\frac{\partial p_i}{\partial w_i}}{\partial^2_{p_j}\pi_j(p_i, p_j)} \quad (4)$$

replacing (4) in (3), we obtain:

$$\frac{\partial p_i}{\partial w_i} = \frac{\partial_{p_i} D_i(p_i, p_j)\partial^2_{p_j}\pi_j(p_i, p_j)}{\Delta} > 0 \quad (5)$$

$$\frac{\partial p_j}{\partial w_i} = -\frac{\partial_{p_i} D_i(p_i, p_j)\partial_{p_j}\partial_{p_i}\pi_j(p_i, p_j)}{\Delta} > 0 \quad (6)$$

Insights

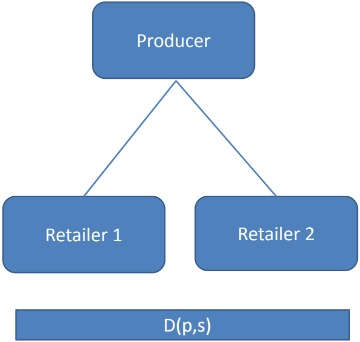
Shaffer (1991)

- By committing to $w_i > c$, retailer i gives retailer j an incentive to raise its price $=>$ profitable for i
- The lost revenue from each sale is returned ex ante through the slotting allowance: $F_i < 0$
- Retailer j has similar incentives and thus both commit to $w^S > c$.
- Producers have no profit. Retail prices and profit are higher when producers can use slotting allowances to obtain shelf space.
- This result depends critically on contracts observability.
- Slotting allowances are legal and widespread. Here, Shaffer shows that even perfectly competitive producers can use them to relax retail competition to the detriment of consumers.

Resale Price Maintenance

- Legislation: prohibited in EU, and also in the US until the Leegin case (2007)
  - Leather products of high quality : sales service important
- RPM Pros
  - Spengler (1950) solves double marginalization;
  - Mathewson and Winter, (1984), solves hold-up inefficiencies (more innovation),
  - Enhances the level of service provided to consumers (correct the free-riding Motta).
- RPM Cons
  - RPM destroy retail competition (by solving opportunism)
  - Reduces upstream competition (Jullien and Rey facilitates upstream collusion (dynamic), destroy upstream competition (static) Rey and Vergé (2010).

Resale Price Maintenance



- Bertrand competition restores the efficient outcome $w = p$: Zero margin downstream, no double marginalization ($p = p^M$)
- Imperfect / Cournot competition however reduces but keeps some double marginalization as $p > w$
- With services: horizontal externality (free-riding)
- If contract are secrets: opportunism

RPM to solve the Free-riding of services

Assumptions

- Demand is linear $D(p, s)$ increases in s.
- Total effort service is the sum of the retailer's effort $s_1 + s_2 = s$
- Cost of effort is $C(s_i)$ with $C'(.) > 0$.

Benchmark: Vertically integrated industry:

$$\max_{w, s_1, s_2} (p - c)D(p, s_1 + s_2) - C(s_1) - C(s_2)$$

$$\begin{aligned} (p - c)\frac{\partial D(p, s)}{\partial p} + D(p, s) &= 0 \\ (p - c)\frac{\partial D(p, s_1 + s_2)}{\partial s_i} - C'(s_i) &= 0 \end{aligned}$$

Linear tariff and retailer's service : Bertrand $w = p$, $s_1 = s_2 = 0$

Free-riding of services

- A shop refrains from providing services that are not appropriable.
- This leads to a zero effort and a suboptimal global demand.

RPM to solve the Free-riding of services

RPM + two-part tariff can reach the first best

- $w^* < c$, $p^* = p^M$ and F to get back the industry profit
- The optimal contract is offered to the two retailers and $s_1^M = s_2^M$

$$\max_{s_1}(p^M - w)D(p^M, s_1 + s_2) - C(s_1) - F$$

$$(p^M - w)\frac{1}{2}\frac{\partial D(p^M, s_1 + s_2)}{\partial s_i} - C'(s_i) = 0$$

- This is why $w^* < c$: to eliminate free-riding!

Mandatory RPM for book sellers

- In France (Loi Lang 1982) or Germany (since 2002), RPM is mandatory by law to protect cultural diversity: Exception.
- RPM eliminates downstream competition which favors traditional booksellers and thus the variety of books offered to consumers.

RPM Anticompetitive effect

Mc Afee and Schwartz (1994)

Assumptions

- P sells a product to two Cournot-competing retailers $i = 1, 2$ each selling a quantity q_i. The equilibrium price is $P(q_1 + q_2)$.
- Similar with imperfect price competition.

3-stage game

1. P offers **public** contracts (F_i, w_i) to each retailer i.
2. If i accepts the contract, F_i is paid. Acceptance and reject decisions are observed by all.
3. Each i chooses q_i.

Public contracts

- P sets $w^* > c$, $q^* = q_i(w^*, w^*) = \frac{q^M}{2}$, $\Pi^P = \Pi^M$ and $F_i = \frac{\Pi^M}{2}$

Public contract

With public contracts, the monopolist producer can always obtain the monopoly profit (despite downstream competition).

Public contracts

Solution of each stage.

- Stage 3: If $i = 1, 2$ accepted their contracts, each i sets q_i to maximise $(P(q_i, q_j) - w_i)q_i$ which gives $q_i(w_i, w_j)$ (Cournot quantity which decreases with w_i.)
- Stage 2: Let $P(w_i, w_j) = P(q_i(w_i, w_j), q_j(w_i, w_j))$; Each i accepts the contract iff $(P(w_i, w_j)) - w_i)q_i(w_i, w_j) - F_i \geq 0$
- Stage 1: P chooses $w_1 = w_2 = w^* > c$ to maximize: $(P(w_i, w_j) - c)(q_i(w_i, w_j) + q_j(w_j, w_i))$, i.e. the industry profit.

With public contract

Despite downstream competition, (P) fully exerts its monopoly power. In equilibrium $w_i = w_j = w$ is such that $q_i(w, w) = \frac{q^M}{2}$ and $F_i = \frac{\Pi^M}{2}$.

Secret contracts

Consider now that in stage 1, P offers **secret** contracts (w_i, F_i) to each retailer i.

Secret contracts

With secret two-part tariffs offers, the monopoly outcome may no longer be supported in equilibrium.

We focus on **pure strategy perfect bayesian Nash equilibria**.

The equilibrium depends on the retailer's beliefs about its rival's contract.

- Under *symmetric beliefs*, each retailer believes that the other receives the same offer as it receives; The monopoly outcome is sustained.
- Under *passive beliefs*, a retailer that receives an unexpected offer does not revise its belief about the offer made to its rival. Under passive beliefs, a contract must be pairwise-proof!

Secret Contracts and Passive Beliefs

Assumptions

- P sells a product to two Cournot-competing retailers $i = 1, 2$ each selling a quantity q_i. The equilibrium price is $P(q_1 + q_2)$.
- Similar with imperfect price competition.

3-stage game

1. P offers **secret** contracts (F_i, w_i) to each retailer i.
2. If i accepts the contract, F_i is paid. *Acceptance and reject decisions are not observed.*
3. Accepting firms i chooses q_i.

There is another variant with *interim observability*.

Secret Contracts and Passive Beliefs

Solution of each stage

- Stage 3: If i accepted its contract, each i only sees its w_i and not the w_j of its rival. i has an anticipation $\hat{q}_j$ and sets q_i to maximise $(P(q_i, \hat{q}_j) - w_i)q_i$ which gives :

$$(P(q_i, \hat{q}_j) - w_i) + \frac{\partial P(q_i, \hat{q}_j)}{\partial q_i} q_i = 0 \Rightarrow q_i(w_i, \hat{q}_j)$$

- Stage 2: Let $P(w_i, \hat{q}_j) = P(q_i(w_i, \hat{q}_j), \hat{q}_j)$; Each i accepts the contract (w_i, F_i) offered by P in stage 1 iff $(P(w_i, \hat{q}_j) - w_i)q_i(w_i, \hat{q}_j) - F_i \geq 0$
- Stage 1: For $i = 1, 2$, P sets

$$F_i = (P(w_i, \hat{q}_j) - w_i)q_i(w_i, \hat{q}_j)$$

and chooses w_i to maximize:

$$(P(w_i, \hat{q}_j) - c)q_i(w_i, \hat{q}_j) + (P(w_j, \hat{q}_i) - c)q_j(w_j, \hat{q}_i)$$

i.e. the joint profit of the pair $P - i$. $w_i^* = c$ and q_i^* is the Cournot quantity!

- With secret contracts, opportunism prevents P from realizing the monopoly profit.
- Industry-wide Resale Price Maintenance may prevent opportunism and restore Monopoly profit!
- If P announces publicly that the industry retail price is p^M, retailers no longer fear in their bargaining that the other is going to sell more than $\frac{q^M}{2}$ (for instance the Cournot quantity) at this price.

RPM

Industry-wide Resale Price Maintenance $\Rightarrow$ destroys downstream competition and restores the monopoly profit to the detriment of consumers (higher prices).

Exclusive territories: Pros and Cons

Exclusive territories : A producer gives a downstream firm the exclusivity on the sale of its brand in a geographic region (often accompany exclusive dealing).

- Common in franchising;
- Common in beer distribution in the U.S and car retailing.

Legislation on Exclusive territories

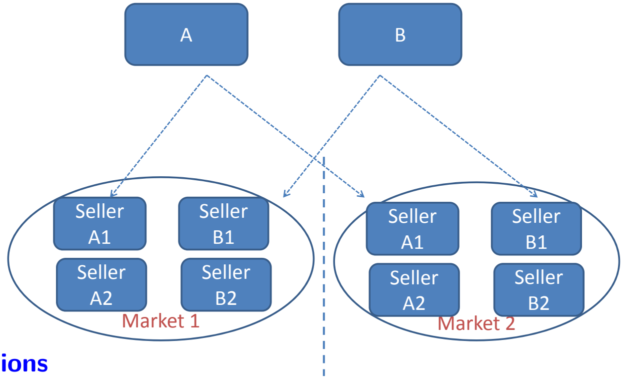
- The 1890 Sherman Act: per se illegal in the U.S.
- Supreme Court's 1977 decision: Rule of reason
- EU: Rule of reason (article 101(3))

Effects of Exclusive territories

- Limits the free riding of service.
- Reduces "downstream" and "upstream" competition!

Exclusive territories

Rey and Stiglitz (1995)



Assumptions

- Identical linear demand in each region i : $q_{Ki} = \alpha_i(1 - p_{Ki} + \sigma p_{Li})$ (with $\sigma \in [0, 1[$).
- α_i is the size of market i with $\alpha_1 + \alpha_2 = 1$.
- Absent exclusive territories, there is pure Bertrand competition

2-stage game

1. Producers simultaneously offer contracts with or without exclusive territories to retailers. These offers are public.
2. Contracts are accepted or refused and retailers set their final price for each good on each market.

We focus only on symmetric equilibria:

- C (wholesale unit prices)
- E (exclusive territories + wholesale unit prices)
- EF (exclusive territories + two-part tariffs)

C: Linear tariffs

- Perfect retail competition: $p_{K1} = p_{K2} = w_K$ for $K = A, B$.
- Each producer maximizes $w_K(1 - w_K + \sigma w_L)$ on each market and thus $w_A^C = w_B^C = w^C = p^C = \frac{1}{2-\sigma} > 0$.
- Each producer gets $\pi_A^C = \pi_B^C = \frac{1}{(2-\sigma)^2}$.

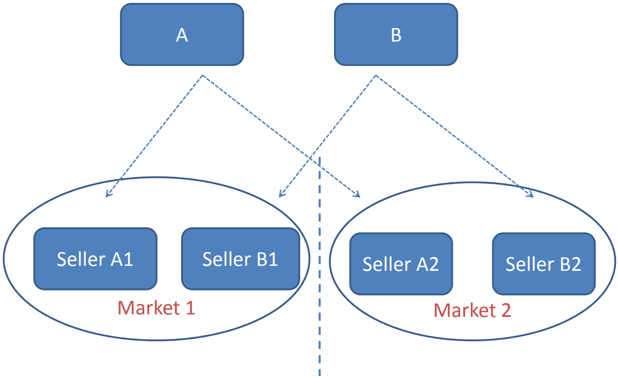
Without exclusive territories

Imperfect upstream competition: Positive profits for producers. No retail profits. Because of perfect competition downstream, a two-part tariff here would lead to the same outcome.

E: Exclusive territories +linear tariffs

Assumptions

- Each retailer is now a monopoly on a given brand in its market.



Exclusive territories with linear tariff (E)

- Each retailer now maximizes $\alpha_i \pi_K = \alpha_i (p_K - w_K) \alpha_i (1 - p_K + \sigma p_L)$.
- The FOC is: $1 - 2p_K + \sigma p_L + w_K = 0$
- Each retailer therefore sets: $p_K = \frac{2+\sigma+2w_K+\sigma w_L}{4-\sigma^2} > w_K$ on each market.
- Each producer now maximizes on each market: $w_K(1 - p_K(w_K, w_L) + \sigma p_L(w_L, w_K))$
- The FOC is: $2 + \sigma - 4w_K + 2\sigma^2 w_K + \sigma w_L = 0$.
- In equilibrium $w_A^E = w_B^E = w^E = \frac{2+\sigma}{4-\sigma-2\sigma^2} > w^C$, $p^E = \frac{2\left(3+\sigma^2\right)}{(2-\sigma)(4-\sigma-2\sigma^2)} > p^C$
- Equilibrium profits $\pi^E = \frac{(2+\sigma)\left(2-\sigma^2\right)}{(2-\sigma)(4-\sigma-2d^2)^2}$.

With exclusive territories + linear wholesale price

Downstream monopoly on each brand => Retail profits > 0. Despite the double-margin, $w^E > w^C$: Upstream competition is relaxed.

Exclusive territories with Two-part tariff (EF)

- Each producer sets $F_K^{EF} = \pi_K$ and now maximizes on each market i $\alpha_i \pi_K = \alpha_i (p_K(1 - p_K(w_K, w_L) + \sigma p_L(w_L, w_K))$, and we obtain $w_A^{EF} = w_B^{EF} = \frac{\sigma^2}{4-2\sigma-\sigma^2} > 0$.
- In equilibrium, each producer sets $w_A^{EF} > 0$ in order to relax downstream competition and pushes up the retail prices.
- In each market $p_A = p_B = p^{EF} = \frac{2}{(4-2\sigma-\sigma^2)} > p^C$ and $\pi_A^{EF} = \pi_B^{EF} = \pi^{EF} = \frac{2(2-\sigma^2)}{(4-2\sigma-\sigma^2)^2} > \pi^C$

With exclusive territories + Two-Part tariffs

Retail profits are 0 thanks to the franchise. Upstream competition is relaxed $p^{EF} > p^C$ to the benefit of producers, $\pi_K^{EF} > \pi_K^C$

ET enables to relax downstream and upstream competition

Producers can use strategically exclusive territories to relax upstream competition.

- Thanks to exclusive territories, the perceived demand elasticity decreases.
- Final price increases and consumers are always worse off.
- Producers' profit always increase with exclusive territories and franchise.
- The relative profit gain increases with σ.
- When competition is intense (σ high), $\pi_K^E > \pi_K^{EF}$. Although retailers capture profits (not much because σ is high), producer's commitment power to set high linear tariff is stronger!

Main References

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