Platform Price Parity Clauses and Direct Sales

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Outline

Recent Antitrust Cases

- **Hotel Booking Platforms (Booking – Expedia – HRS)**
  - UK (OFT, Jan. 2014 ; CAT, Sept. 2014 ; closed by CMA, Sept. 2015)
  - Germany (HRS, 2013 + ongoing case).
  - France – Italy – Sweden (Booking, Apr. 2015), France (Loi Macron, Aug. 2015), Italy (?).

- **Private Motor Insurance Investigation (UK, Mar. 2015)**
  - The CMA identified a number of competition concerns with the use of wide price parity clauses (by price comparison websites).
  - But the CMA found no breach of competition law.
  - The CMA nevertheless decided to prohibit wide price parity clauses but allowed narrow price parity clauses.

- **Amazon (UK and Germany, 2013)**

- **Flight Center (Australia, 2013 and 2015)**

Main Theory of Harm

- **Price parity clauses limit competition between platforms (intra-brand competition) over commissions.**

  - Under price parity, a platform can increase its commission without becoming less attractive since suppliers cannot adjust prices (or have to do it on all platforms).

  - Because its market share is unaffected, it is indeed profitable for the platform to increase its commission.

  - Equilibrium commissions are therefore higher under price parity.

- **Higher commissions lead to higher final prices.**

  - Higher commission $\iff$ higher (marginal) cost.

- **Consumers (and suppliers) are thus harmed by price parity clauses.**

- **Because a new entrant cannot benefit from a low-cost strategy, price parity clauses may prevent entry (by low-cost platforms).**

Some relevant literature
"Traditional" vertical relationships models

- ## Boik and Corts (mimeo, 2015)
    - **1 supplier** – 2 competing platforms. **No direct sales.**
    - Each platform sets a (non-discriminatory) revenue sharing rule.
    - Price parity clauses lead to higher commissions and thus higher prices.

- ## Johnson (mimeo, 2015)
    - Multiple suppliers – Multiple platforms. **No direct sales.**
        - **Seem to implicitly assume that suppliers always sell through all platforms** (i.e., equivalent to "intrinsic common agency").
    - Each platform sets a (non-discriminatory) revenue sharing-rule.
    - Price parity clauses lead to higher commission rates and thus higher prices (prices that maximize total industry profit).

- ## Rey and Vergé (mimeo, 2016)
    - Multiple suppliers – Multiple platforms. **No direct sales.**
    - Secret bilateral contracting over **two-part commissions.**
    - Price parity clauses have no effect on prices and profits.

Some relevant literature
Platforms models

- ### Edelman and Wright (QJE, 2015)
  - Intermediaries (platforms) invest in the creation of consumer benefits but there is a cost (for consumers) to join a platform.
  - **Price coherence leads to excessive intermediation and excessive investment, and harms consumers (on average).**
  - Perfect competition increases this negative effect.

- ### Wang and Wright (mimeo, 2015)
  - **Search model** (matching values and prices unknown). A platform lowers search costs and may also generate additional consumer benefits.
  - Platform(s) may become unviable because of **showrooming**.
  - **Monopoly platform :** price parity cannot increase consumer surplus.
  - **Competing platforms** (one high and one low benefit platform) : consumers never benefit from wide price parity clauses but **may gain under narrow price parity.**

Outline

1. Introduction

2. Model

3. No Price Parity

4. Price Parity Clauses

5. Discussion

A model with inter-brand competition and direct sales

- **2 suppliers (1 and 2) − 2 platforms (A and B) + direct sales (D)**

- Production and distribution costs normalized to 0.

- **Linear inverse demand functions** (adapted from Ziss (*JIE*, 1995)). Price for supplier j's product (with $j \neq k \in \{1, 2\}$) on "platform" i (with $i \neq k \neq l \in \{A, B, D\}$) given by :

$$p_{ij} = 1 - (q_{ij} + \alpha q_{ik} + \beta (q_{hj} + \alpha q_{hk}) + \beta (q_{lj} + \alpha q_{lk}))$$

  where :

  - $\alpha \in {]}0, 1{[}$ measures the degree of **inter**-brand competition (i.e., between suppliers).
  - $\beta \in {]}0, 1{[}$ measures the degree of **intra**-brand competition (i.e., between platforms).

- **Platforms set (discriminatory) linear commissions, i.e., constant per-unit price w_{ij} charged by platform i to supplier j.**

A model with inter-brand competition and direct sales
Timing of interactions and equilibrium concept

Timing of interactions :

1. Platforms simultaneously set (discriminatory) commissions. Suppliers then decide which offer/s to accept (i.e., on which platform to list). **Offers are secret and listing decisions are not observed by the rival supplier.**

2. Suppliers simultaneously set retail prices on all platforms on which they are active.

Equilibrium Concept : Contract equilibrium (see Crémer and Riordan (*Rand*, 1987) and O'Brien and Shaffer (*Rand*, 1992)).

- Focus on **symmetric** equilibria for which **both suppliers are active on all "platforms"**.

A model with inter-brand competition and direct sales
Contract equilibrium - Definition

A contract equilibrium is a vector of commissions $(w_{A1}^*, w_{A2}^*, w_{B1}^*, w_{B2}^*)$ **and an associated vector of retail prices** $(p_{A1}^*, p_{A2}^*, p_{B1}^*, p_{B2}^*, p_{D1}^*, p_{D2}^*)$ (with the implicit notation that $p_{ij}^* = +\infty$ if supplier j decides not to list on platform j) such that :

- In the second stage, for any pair of commission (w_{Aj}, w_{Bj}) that it has been offered, supplier j's pricing strategy $P_j^R(w_{ij}, w_{hj})$ maximizes :

$$p_{Dj}\, q\left(p_{Dj}, p_{Dk}^*, p_{ij}, p_{ik}^*, p_{hj}, p_{hk}^*\right) + (p_{ij} - w_{ij})\, q\left(p_{ij}, p_{ik}^*, p_{hj}, p_{hk}^*, p_{Dj}, p_{Dk}^*\right)$$
$$+ (p_{hj} - w_{hj})\, q\left(p_{hj}, p_{hk}^*, p_{ij}, p_{ik}^*, p_{Dj}, p_{Dk}^*\right)$$

- In the first stage, the commission w_{ij}^* maximizes the platform's profit given the other three equilibrium commissions, the supplier's pricing $P_j^R(w_{ij}, w_{hj}^*)$, and the rival supplier's equilibrium prices P_k^*, that is :

$$w_{ij}\, q\left(p_{ij}^R(w_{ij}, w_{hj}^*), p_{ik}^*, p_{hj}^R(w_{ij}, w_{hj}^*), p_{hk}^*, p_{Dj}^R(w_{ij}, w_{hj}^*), p_{Dk}^*\right)$$
$$+ w_{ik}^*\, q\left(p_{ik}^*, p_{ij}^R(w_{ij}, w_{hj}^*), p_{hk}^*, p_{hj}^R(w_{ij}, w_{hj}^*), p_{Dk}^*, p_{Dj}^R(w_{ij}, w_{hj}^*)\right)$$

Outline

Equilibrium with unrestricted pricing strategies

Unrestricted Pricing Equilibrium

When suppliers can freely set prices on all platforms, there exists a **unique contract equilibrium for which both suppliers are active on all three channels.** In this equilibrium, platforms charge the same commission w^*,

$$w^* = \frac{2\left(1 - \beta\right)}{2\left(2 + \beta\right) - \alpha\left(1 + \beta\right)}$$

and the suppliers set prices p_P^* on the platforms and prices p_D^* when selling directly :

$$p_D^* = \frac{1 - \alpha}{2 - \alpha} \quad \text{and} \quad p_P^* = p_D^* + \frac{w^*}{2 - \alpha}$$

Outline

Price Parity Clauses

- Price parity clauses (PPC) exogenously imposed by both platforms.

- **Wide Price Parity**
    - Platform i forces each supplier to charge the lowest price on its platform, i.e., $p_{ij} \leq \min\{p_{hj}, p_{Dj}\}$.
    - Because both platforms impose wide PPC, we must have $p_{ij} = p_{hj} \leq p_{Dj}$.
    - Given that it is cheaper to sell directly, the last condition is binding, i.e., **supplier j sets a common price p_j on all three platforms.**

- **Narrow Price Parity**
    - Platform i only forces each supplier to charge a lower price on its platform than on the supplier's website, i.e., $p_{ij} \leq p_{Dj}$.
    - Because both platforms impose narrow PPC and it is cheaper to sell directly, we must have $p_{Dj} = \max\{p_{Aj}, p_{Bj}\}$.

Wide Price Parity Clauses

- When both suppliers are active in all three channels, the demand for supplier j's product in each channel is simply :

$$\hat{q}(p_j, p_k) = q(p_j, p_k, p_j, p_k, p_j, p_k) = \frac{1 - \alpha - p_j + \alpha p_k}{(1 - \alpha^2)(1 + 2\beta)}.$$

- When facing commissions $w_{ij} = w$ and $w_{hj} = w^W$, and anticipating that its rival sets the equilibrium price p^W, supplier j chooses its price $p^R(w, w^W)$ so as to maximize :

$$3\left(p - \frac{w + w^W}{3}\right)\hat{q}(p, p^W) \implies p^R(w, w^W) = \frac{1 - \alpha + \alpha p^W + \frac{w + w^W}{3}}{2}$$

- The equilibrium retail price must satisfy :

$$p^W = p^R(w^W, w^W) \iff p^W = \frac{1 - \alpha}{2 - \alpha} + \frac{2w^W}{3(2 - \alpha)}.$$

Wide Price Parity Clauses
Platform profit maximization program

- This yields a profit for supplier j equal to :

$$\pi_j\left(w, w^W\right) = 3\left(p^R\left(w, w^W\right) - \frac{w + w^W}{3}\right)\hat{q}\left(p^R\left(w, w^W\right), p^W\right).$$

- Alternatively, supplier j could reject platform i's offer in which case its profit is :

$$\widetilde{\pi}_j\left(w^W\right) = \max_p 2\left(p - \frac{w^W}{2}\right)q\left(p, p^W, \infty, p^W, p, p^W\right).$$

- **Platform i's then chooses the (equilibrium) commission w^W maximizing its profit subject to supplier j's participation constraint, that is :**

$$w^W = \arg\max_w\left[w\hat{q}\left(p^R\left(w, w^W\right), p^W\right) + w^W\hat{q}\left(p^W, p^R\left(w, w^W\right)\right)\right]$$

$$\text{s.t. : } \pi_j\left(w, w^W\right) \geq \widetilde{\pi}_j\left(w^W\right)$$

Wide Price Parity Clauses
Participation constraint binding in equilibrium

Equilibrium commission given by the participation constraint

The supplier's participation constraint is always binding in equilibrium.
The equilibrium commission w^W is thus given by :

$$\pi_j \left(w^W, w^W \right) = \widetilde{\pi}_j \left(w^W \right).$$

- Suppose that suppliers are very close substitutes (α close to 1) and platforms offer the same commission w.
    - If both suppliers sell on all channels, final prices are equal and close to $\frac{2w}{3}$.
    - If one supplier stops selling on one platform, its (average) marginal cost is $\frac{w}{2}$ and it can profitably undercut its rival.
    - Drawback is that it looses sales on the platform it has left, but that is not too costly is w is large enough.
    - In equilibrium, platforms thus need to charge very low commissions.

Wide Price Parity
Equilibrium commissions and final prices

Equilibrium with wide price parity clauses

Given that both platforms use wide price parity clauses, there exists a unique contract equilibrium for which both suppliers are active on all three channels. In this equilibrium, platforms charge the same commission w^W,

$$w^W = \frac{12(1-\alpha)(1-\sigma(\beta))}{2(1-\alpha)(4-3\sigma(\beta))+\alpha\sigma(\beta)}, \quad \text{where } \sigma(\beta) = \sqrt{\frac{2(1+2\beta)}{3(1+\beta)}},$$

and the suppliers set the unique price p^W on all "platforms" :

$$p^W = \frac{1-\alpha}{2-\alpha} + \frac{2w^W}{3(2-\alpha)}$$

Wide Price Parity Clauses
Effects on commissions and prices

Effect on commissions : WPPC lead to higher commissions if and only if $\alpha < \alpha_w(\beta) < 1$.

- Without price parity, commission is always strictly positive and increases with α.
- With price parity, commission decreases with α and tends to 0 as α tends to 1.

Effect on (average paid) prices : WPCC lead to higher prices (on average) if and only if $\alpha < \alpha_p(\beta)$, where $\alpha_w(\beta) < \alpha_p(\beta)$.

- Without price parity, $p_D = \frac{1-\alpha}{2-\alpha}$ and $p_P(w^*) = p_D + \frac{w^*}{2-\alpha}$ and therefore $p_D < p_{Av} < \overline{p}(w^*) = \frac{2}{3}p_P(w^*) + \frac{1}{3}p_D$.
- With price parity, the equilibrium is $\overline{p}(w^W)$.
- Therefore, the average price increases if commissions increase. But, it decreases at least for α close enough to 1 since w^W then tends to 0.

Wide Price Parity Clauses
Effects on profits

Effect on platforms' profits : WPPC lead to higher profits for platforms if and only if $\alpha > \alpha_P(\beta)$, with $\alpha_P(\beta) > \alpha_w(\beta)$.

- Platforms benefit from price parity when the commissions increase : they then achieve higher margins and higher market shares.

- They may also benefit if the commissions do not decrease too much because of the positive effect on market shares.

Effect on suppliers' prices : WPCC lead to higher profits for suppliers if and only if $\alpha < \alpha_S(\beta)$, where $\alpha_w(\beta) < \alpha_S(\beta)$.

- Suppliers lose when commissions increase : they pay more for each sale on a platform and sell more through the platforms.

- But they may benefit from lower commissions (despite the shift in market shares).

Wide Price Parity Clauses
Effects on commission, prices, profits and consumer surplus

Platforms, suppliers and consumers all benefit from wide price parity clauses.
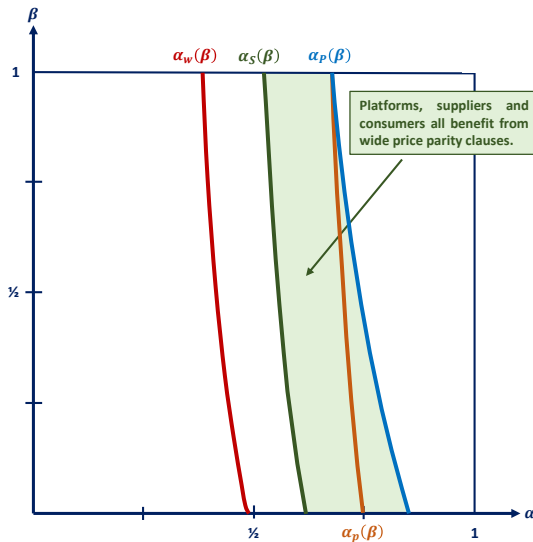
Wide Price Parity
Conclusions

Even the absence of any efficiency argument (reduced search costs, protection from free-riding on services, . . .).

1. **Commissions and (final) prices do not necessarily increase when (wide) price parity clauses are introduced.**

2. **(Wide) Price Parity clauses may (simultaneously) benefit to platforms, suppliers and consumers.**

3. **Suppliers participation constraints (i.e., opportunity not to list on a given platform) matter, so does the degree of substitutability between suppliers (i.e., inter-brand competition).**

Narrow Price Parity
Narrow $\Longleftrightarrow$ Wide

Equilibrium with Narrow Price Parity

When both platforms impose narrow price parity clauses, the unique contract equilibrium for which both suppliers are active on all three channels is the same than when they impose wide price parity clauses, i.e., $w^N = w^W$ and $p^N = p^W$.

Intuition :

- Suppose that platform A offers a lower commission than platform B.

- Average marginal cost for direct sales and sales on platform B is $\frac{w_B}{2}$.

- Therefore, the supplier will find it attractive to set a (strictly) lower price on platform A only if w_A is sufficiently low (actually, lower than $\frac{w_B}{2}$).

- Similar analysis with higher commissions. Thus the platforms do not have incentives to deviate from w^W.

Outline

Discussion / Extensions

Linear commissions

- Results are not robust to the introduction of non-linear commissions (see Rey and Vergé (2016)). **With two-part commissions, price parity clauses have no effect on prices.**

Unobservable commissions and listing decisions

- **Observable decisions to accept/reject should strengthen our main mechanism**, as it makes it even more tempting – under price parity – for a supplier to reject a platform's high commission offer.

- A decision to reject a platform i's offer will cause the rival supplier to respond by setting a higher common price (facing reduced competition on platform i), which causes the deviating supplier's profit to increase.

Discussion / Extensions

Two suppliers – Two platforms

- Adding more suppliers and/or more platforms does not qualitatively affect our results.

Cost of selling directly

- Suppose that there is now a slightly higher cost to sell directly (i.e., $c_D = c > 0 = c_A = c_B$).

- If platforms are sufficiently differentiated (i.e., β low enough), the (un-restricted) price is lower for direct sales than on the platforms. Our results should thus continue to apply.

- If platforms are close substitutes (i.e., β closer to 1), we may have $w^*(c) < c$. In this case, narrow price parity should have no effect but wide price parity should be anti-competitive (similar to a model without direct sales).

Discussion / Extensions

Asymmetric substitution

- What if the degree of substitution between platforms (diversion ratio from A to B) differs from the degree of substitution between a platform and direct sales (diversion ratio from A to D)?

- Should not qualitatively affect the results regarding wide price parity clauses.

- But may matter when considering narrow price parity when the direct sales channel is a closer substitute to a platform than the rival platform.

More general demand functions?

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