

Exclusive Dealing in Asymmetric Platform Competition

Yao Huang (HKU)

with Jiajia Cong (Fudan) and Wen Zhou (HKU)

14th Paris Conference on Digital Economics

March 30, 2023

Outline for section 1

1 Introduction

2 Setup

3 Benchmark Analysis

4 Analysis

5 Conclusions

Background

Alibaba in China

- In terms of the total transaction amount, Alibaba's share was around 2/3.
- In the written contracts or verbally, Alibaba did not allow core sellers to sell on other platforms.
- Alibaba was fined around 2.6 billion USD in 2021.

Foodpanda (strong) and Deliveroo (weak), food delivery platforms, in Singapore and Hong Kong

Turo, car-sharing platform, in US, UK, and Canada

Features and the question

Features:

- Exclusivity is on the seller side.
- Platforms are asymmetric.
- Exclusivity can be enforced by a strong or a weak platform.

Question:

- When will a platform enforce exclusivity in competition?

Main Results

A platform enforces exclusivity if and only if it is **not** strong enough per se and compared to the rival.

- Strength v_i : the stand-alone value platform i provided to sellers.

Intuition: Two platforms. Two cases: Benchmark with multihoming sellers vs. exclusivity case. Exclusivity implies that the platform will lose some multihoming sellers that are loyal to the rival.

- Platform 1's strength v_1 grows \implies more multihoming sellers in the benchmark. Exclusivity causes a greater seller loss.
- Losing sellers forces platforms to lower prices. When platform 1's strength grows compared to the rival, there will be more sellers on platform 1, while fewer for the rival. Therefore, platform 1 becomes softer in lowering price while 2 becomes more aggressive.

Outline for section 2

1 Introduction

2 Setup

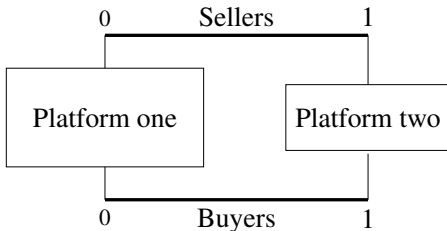
3 Benchmark Analysis

4 Analysis

5 Conclusions

Players:

- Platform 1 and 2 are located on two ends of two Hotelling lines
- Mass one sellers and buyers are uniformly distributed over two lines, resp.



Actions and payoffs:

Platforms

- Platforms choose whether to enforce exclusivity on sellers;
- Then platforms decide price p_i for sellers. No buyer price.
- The profit of platform i is $\Pi_i = p_i s_i$. s_i : the number of sellers on i .

Given the platform's exclusivity policy and prices, sellers and buyers choose which platform to join simultaneously.

- The seller's profit and buyer's utility of joining platform i are resp.

$$\pi_i = v_i + b_i - (t - 1)x_i - p_i \text{ and } u_i = s_i - y_i.$$

- ▶ v_i : the platform i 's strength. b_i : buyer number on platform i . x_i : the seller's distance to platform i . y_i : the buyer's distance to platform i . $t > 0$: transportation cost.
- WLOG, platform 1 is strong and platform 2 is weak: $v_1 \geq v_2$.
- **If no exclusivity, a seller joins platform i iff $\pi_i \geq 0$.**
 - ▶ A multihoming seller receives $\pi_1 + \pi_2$.
- **If exclusivity is enforced by either platform, a seller joins platform i iff $\pi_i > \pi_j$.**
- Buyers are singlehoming and not charged any fee.

Timing:

- (1) Platforms choose exclusivity or not $d_i \in \{0, 1\}$ simultaneously.
- (2) Platforms choose seller prices p_1 and p_2 simultaneously.
- (3) Sellers and buyers choose which platform to join.

Program: Backward induction

- (3) Given (d_1, d_2) and (p_1, p_2) , the distribution of sellers and buyers:

$$s_i(p_1, p_2, d_1, d_2) \text{ and } b_i(p_1, p_2, d_1, d_2)$$

- (2) Given (d_1, d_2) and anticipating the distribution

$$p_i(d_1, d_2) = \arg \max_{p_i} p_i s_i(p_1, p_2, d_1, d_2), i \in \{1, 2\}$$

- (1) Anticipating later prices and distribution

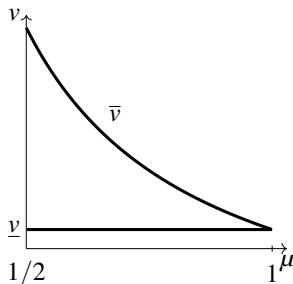
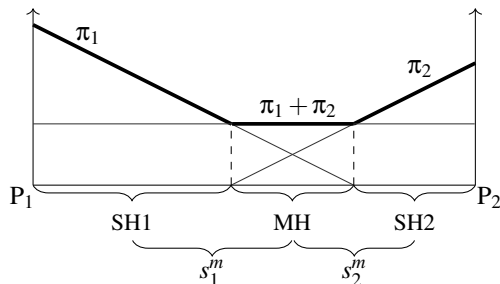
$$d_i = \arg \max_{d_i} p_i(d_1, d_2) s_i(p_1(d_1, d_2), p_2(d_1, d_2), d_1, d_2)$$

Outline for section 3

- 1 Introduction
- 2 Setup
- 3 Benchmark Analysis**
- 4 Analysis
- 5 Conclusions

Multihoming Benchmark: Subgame $d_1 = d_2 = 0$

Distribution of sellers in equilibrium: s_i^m (left fig).



Def. **Joint strength** $v \equiv v_1 + v_2$ and **asymmetry** $\mu \equiv \frac{v_1}{v_1 + v_2} \in [1/2, 1)$.

Properties:

- The number of MH sellers is determined by and increasing in v .
 - ▶ $v \uparrow$ suggests more MH.
- The position of MH is determined by and increasing in μ .
 - ▶ $\mu \uparrow$ suggests SH1 \uparrow and SH2 \downarrow .

Feasible (v, μ) for the coexistence of SH1, MH, and SH2 (right fig).

Outline for section 4

- 1 Introduction
- 2 Setup
- 3 Benchmark Analysis
- 4 Analysis**
- 5 Conclusions

Exclusivity Equilibrium: Subgame $d_1 = 1$ or $d_2 = 1$

Superscript e represents exclusivity equilibrium results.

Big picture

- From non-exclusivity to exclusivity, the exclusivity policy affects demand curves of both platforms through the seller's **outside option**.
- The change in demand curves induces the exclusivity prices p_1^e and p_2^e , and distributions of sellers s_1^e and s_2^e .
- Platform i enforces exclusivity iff $p_i^e s_i^e \geq p_i^m s_i^m$.
- Either platform enforces exclusivity \implies exclusivity equilibrium.

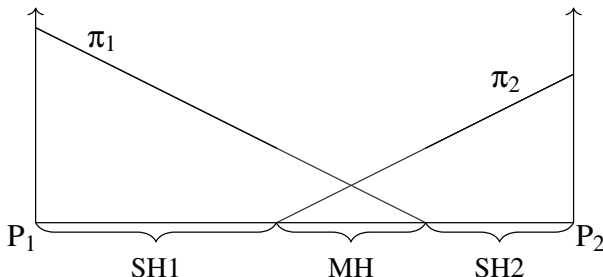
Exclusivity's impact on the demand curve

- In the benchmark where exclusivity is not enforced, a seller joins platform i iff she enjoys a profit from i that is greater than **zero**:

$$\pi_i \geq 0$$

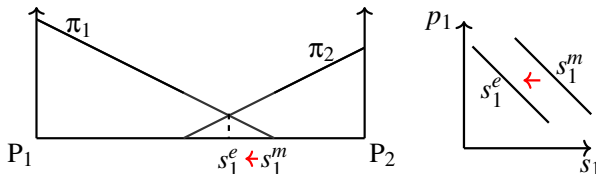
- Now, if either platform enforces the exclusivity, a seller joins platform i iff she enjoys a greater profit from i than **from** j :

$$\pi_i \geq \pi_j$$

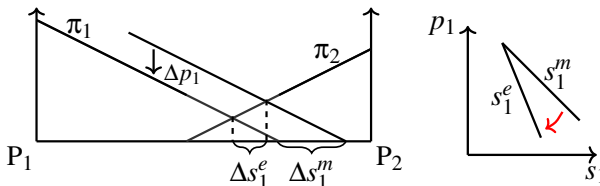


Immediately, exclusivity brings two effects on demand

- **Demand shrink:** Two platforms split MH \implies both lose some MH sellers + incentive to lower price
 - ▶ Related to the number of MH and hence the joint strength v .



- **Lower price sensitivity:** The slope of demand curve is steeper under exclusivity \implies Incentive to raise price



PROPOSITION 1: When the joint strength v is not too large, exclusivity benefits two platforms via higher seller prices.

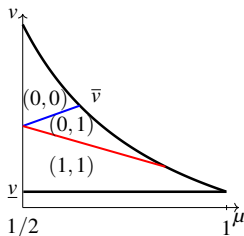
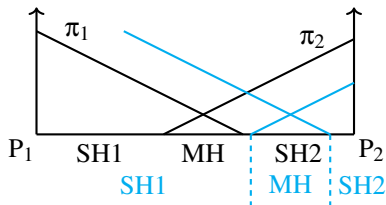
Platform Asymmetry μ 's Role

Demand shrink \implies platforms decrease prices to compete for MH

However, this effect is asymmetric for two platforms:

- $v_1 \geq v_2$, platform 1 has more sellers, therefore more burden to decrease price. While platform 2 has less burden.
- Platform 1 is soft and platform 2 is aggressive in cutting price.

Similarly, if μ grows, the strong will be softer than before while the weak will be more aggressive.



PROPOSITION 2: Greater asymmetry μ decreases platform 1's incentive for exclusivity and increases platform 2's incentive.

Outline for section 5

- 1 Introduction
- 2 Setup
- 3 Benchmark Analysis
- 4 Analysis
- 5 Conclusions**

Conclusions

Platforms enforce exclusivity to charge higher seller prices.

Exclusivity will be enforced when

- the platform is not strong enough per se, and
- the platform is not strong enough compared to the rival.

Antitrust authorities should be more careful when concluding that market dominance leads to exclusive dealing.