

Lecture 10: Vertically related markets¹

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¹The lecture is based on [Belleflamme and Peitz, 2015] Chapter 17(Vertically related markets).

Motivation I

- ▶ Firms require intermediate goods as input: requires vertical supply chains.
- ▶ Various forms of competition with vertical supply chain:
 - double marginalization problem, upstream firms have market power.
 - exclusive dealings, upstream firms deny competitors access to their distribution channels.
 - resale price maintainance.

Model

► The basic model

- Demand $Q(p) = a - bp$.
- Marginal cost $c < a/b$. **Why?**
- The upstream firm(*manufacturer*) sell through a single downstream firm(*retailer*).
- The manufacturer set the wholesale price w , and the retailer set the retail price p .

Motivation

Double-
marginalization
problem

Resale-price
maintainance

Case: German Bookstore

Exclusive
Territories

Exclusive Dealing

Vertical Mergers

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► The retailer's problem:

- $\max_p (p - w)(a - bp)$.
- Solution $p(w) = \frac{a+bw}{2b}$.

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► The manufacturer's problem:

- $\max_w (w - c) \left(\frac{a}{2} - \frac{bw}{2} \right)$.
- $w = \frac{c}{2} + \frac{a}{2b}$.

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- ▶ The manufacturer's problem:
 - $\max_w (w - c) \left(\frac{a}{2} - \frac{bw}{2} \right)$.
 - $w = \frac{c}{2} + \frac{a}{2b}$.
- ▶ The corresponding retail price: $p^* = \frac{3}{4} \frac{a}{b} + \frac{c}{4}$.
How does this compare to a monopolist's pricing?

Conclusion

The double-marginalization problem

In a vertically related industry with an upstream and a downstream monopolist in which each firm maintains the price-setting power of its product, the retail price is above the monopoly price set by a vertically integrated firm.

Remarks on the results

1. The double marginalization remains relevant under imperfect competition.
2. The double marginalization can be avoided through the use of more sophisticated contracts that differ from linear contracts.
 - Profit-sharing agreement.
 - Two-part tariffs.
 - Resale-price maintenance.

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Nonlinear Pricing

Nonlinear pricing and other contracts can solve the double marginalization problem.

Double marginalization and retail services

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Vertical Mergers

In a retailing industry, down stream firms provide complementary services.(examples?)

► Model

- The demand function $Q(p, s)$, p is the retail price, s is the service.

Double marginalization and retail services

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- If not integrated, the manufacturer maximize $(w - c)Q(p, s)$, the retailer maximize $(p - w - \psi(s))Q(p, s)$.

Double marginalization and retail services

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► Conclusion:

- We have a double marginalization problem.
- The retailer distorts its service provision.

Case: Cable TV I

Review: Waterman, D., & Weiss, A. A. (1996). The effects of vertical integration between cable television systems and pay cable networks. *Journal of Econometrics*, 72(1-2), 357-395.
<https://www.sciencedirect.com/science/article/abs/pii/0304407694017263>

- ▶ Standard business practice in this industry is to charge for programming per subscriber(a linear price).
- ▶ Vertically integrated cable systems operators produce their own programming.
- ▶ Both vertically integrated and non-vertically integrated firms coexist in the market.

Case: Cable TV II

- ▶ Empirical evidence in the U.S. cable market shows that vertically integrated operators have a larger subscriber base.
- ▶ Vertically integrated cable systems operators are more likely to carry their own premium programming than to rely on programming by other upstream firms.

The paper analyses the two major MSOs (multiple system operator) that closely tied to the four major pay networks.

Case: Cable TV III

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Table 1
Pay cable networks, 1988–89

Network	% systems carrying network	% basic subscribers covered	% market share	MSO affiliation	Launch date	Date of MSO affiliation
HBO	83	99	42.0	ATC (82%) Paragon (50%)	1972	1975 1987
Showtime	50	86	16.5	Viacom (100%)	1976	1976
Cinemax	49	85	14.9	ATC (82%) Paragon (50%)	1980	1980 1987
The Disney Channel	64	95	10.7	None	1983	—
The Movie Channel	31	56	6.8	Viacom (100%)	1979	1983
The Playboy Channel	5	23	1.2	None	1982	—
American Movie Classics	—	—	1.0	n.a.	1984	—
Bravo	—	—	1.0	n.a.	1980	—
Other	—	—	5.9	n.a.	—	—

Case: Cable TV IV

$$Profit = P_B S_B + \sum_{j=1}^4 NET_j P_j S_j - C(w_B, \{w_j: j = 1, \dots, 4\}, M, T), \quad (1)$$

- ▶ P_B, S_B are the prices and subscribership for basic service
- ▶ P_j, S_j are the prices and subscribership for the pay networks.
- ▶ $C(\cdot)$ is the cost function.
- ▶ M marketing costs
- ▶ T service and line maintenance costs.

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Case: Cable TV V

Table 9
Predictions

	Predicted	Normal	Change	t	Systems
<i>(A) Individual carriage models (% of systems)</i>					
ATC					
HBO	98.2	98.2	—	—	109
CMX	91.0	77.6	- 13.4	(5.5)	109
SHO	48.2	85.1	36.9	(7.6)	109
TMC	12.2	51.9	39.7	(13.2)	109
Viacom					
HBO	98.4	98.4	—	—	20
CMX	14.6	74.7	60.1	(7.8)	20
SHO	80.2	80.2	—	—	20
TMC	85.1	49.9	- 35.2	(5.0)	20

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Model

- ▶ Allow a positive margin for the retailer; ensure that the downstream firm remains active.
- ▶ Gives the manufacturer power over price and thus potentially eliminates competition between retailers.

Conclusion

RPM gives the manufacturers power over price and can potentially eliminate competition between retailers focus on the role of RPM and how it affects retailers' service provision of retailers.

Effect of RPM

The use of resale-price maintenance by a manufacturer

- ▶ leads to higher retail prices and more retail services if consumers are more sensitive to price competition than to service competition.
- ▶ this leads to lower prices and fewer retail services if consumers are less sensitive to price competition than to service competition.

German Bookstore I

Investing in the incentive of the retailer will be eroded in the absence of RPM.

- ▶ Until 2002 booksellers and publishers in Germany what part of a voluntary contractual agreement according to which booksellers were not allowed to operate dates and prices that were fixed by the publisher.
- ▶ Publishers or not allowed to supply to booksellers who had not signed the agreement, the agreement goes back to 1888.
- ▶ At the end of the 20th century, about 90% of books in Germany or treat sold under this agreement.
- ▶ In 2002 the resale price maintenance became mandatory by law in the German book trade.

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German Bookstore II

- ▶ However, it is forbidden per se for essential or other sectors. The argument is to protect its cultural diversity.

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German Bookstore III

A proponent of RPM in the German book trade claimed that booksellers played an important role to cater to the diverse taste of readers.

In the absence of RPM, the traditional booksellers would be driven out of the market which would lead to less informed purchases. In addition, the variety of the books authored will be reduced.

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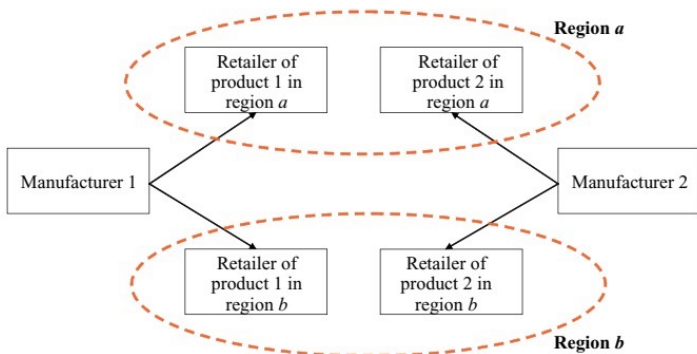


Figure 17.1 A two-region model with exclusive territories

Case: European Union Car Market I

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Double-
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Vertical Mergers

Brenkers, R., & Verboven, F. (2006). Liberalizing a distribution system: the European car market. *Journal of the European Economic Association*, 4(1), 216-251.

In the European Union, cars were seen as a product unlike others and therefore received special treatment by the European Commission.

- ▶ Car manufacturers were allowed to operate distribution systems that were both exclusive and selective.(block exemption until 2002.)
- ▶ Exclusive in two ways: protected dealers through exclusive territories, and they required dealers to essentially exclusively sell a single brand.

Case: European Union Car Market II

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Vertical Mergers

In 2002, new regulation aim to increase competition.

- ▶ Either exclusive distribution system or selective distribution system.(not both)
- ▶ A *selective distribution* system permits the car manufacturers to choose their authorized partners, can sell to other territories.

Case: European Union Car Market III

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Table 5. Percentage price changes after liberalization
(full national intrabrand competition before liberalization)

	domestic	foreign	all	domestic	foreign	all
	Non-cooperative pricing					
	Max. markup differential $\tau = 12\%$			Max. markup differential $\tau = 0\%$		
Belgium	–	–	1.4	–	–	5.0
France	-2.1	2.8	0.1	-4.8	6.8	0.4
Germany	-0.7	1.5	-0.2	-2.4	2.6	-1.2
Italy	-3.8	4.0	1.6	-4.8	7.6	3.8
U.K.	-2.6	1.7	0.1	-3.6	2.4	0.2
All	-1.9	2.4	0.3	-3.3	4.4	0.6
	Partially collusive pricing (ϕ)					
	Max. markup differential $\tau = 12\%$			Max. markup differential $\tau = 0\%$		
Belgium	–	–	13.1	–	–	14.6
France	5.8	10.6	7.9	6.5	12.1	9.0
Germany	4.7	2.5	4.2	5.3	1.8	4.5
Italy	2.9	4.6	4.1	6.2	4.5	5.0
U.K.	-15.1	-16.4	-15.9	-17.6	-18.9	-18.4
All	-0.2	-0.8	-0.2	0.1	-1.5	-0.3

Note: Results are percentage changes of price indices. Price indices are weighted average price levels using the sales before liberalization as weights.

Case: European Union Car Market IV

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Table 6. Welfare changes after liberalization
(full national intrabrand competition before liberalization)

		Non-cooperative pricing				Partially collusive pricing (ϕ)			
		$\tau = 12\%$		$\tau = 0\%$		$\tau = 12\%$		$\tau = 0\%$	
ΔCS	Belgium	-63	(-1.10)	-244	(-4.22)	-662	(-11.49)	-731	(-12.68)
	France	76	(0.32)	167	(0.69)	-1632	(-6.71)	-1820	(-7.48)
	Germany	154	(0.34)	806	(1.80)	-1801	(-4.01)	-1844	(-4.11)
	Italy	-315	(-1.47)	-736	(-3.45)	-509	(-2.38)	-595	(-2.78)
	U.K.	101	(0.39)	122	(0.47)	6133	(23.46)	7258	27.76)
	All	-47	(-0.04)	117	(0.09)	1530	(1.25)	2270	(1.85)
ΔPS	All	84	(0.15)	-162	(-0.29)	101	(0.16)	-238	(-0.38)
ΔW	All	38	(0.02)	-45	(-0.03)	1631	(0.88)	2030	(1.10)

Note: Results are changes expressed in millions of Euro. Percentage changes are in parentheses.

Case: European Union Car Market V

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Conclusion

- ▶ If the existing system already entails sufficient national intrabrand competition, then liberalization mainly improves international intrabrand competition, and so leads to a reduction in international **price discrimination**. Total total welfare may increase by an amount between zero and 1.6 - 2 billion Euro per year.
- ▶ If the existing system effectively limits national intrabrand competition, then liberalization may lead to both reduced international price discrimination and to the elimination of **tacit collusion**. The computed welfare gains become much larger.

Firms' Incentives

Why do Firms have an incentive to offer rent to downstream firms?

- ▶ Exclusive territories create market power downstream and thus lead to reduced output in the industry
- ▶ make demand less elastic and reduce competition upstream

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Exclusive territories

- ▶ Manufacturers make higher profit if sell through exclusive territories
- ▶ Retailers are also better off
- ▶ Consumers are worse off and total surplus is reduced

Exclusive dealing

- ▶ Exclusive dealing between upstream and downstream firms are commonly seen as *anticompetitive* according to the antitrust doctrine that prevailed in the first half of the twentieth century in the US.
- ▶ In 1950s, the Chicago Law School argued that a downstream firm which foresees that more attractive terms are available under competition will demand a compensation from the proposing upstream firm for signing a long-term contract with an exclusivity clause.

Case: Beer distribution in Chicago I

Asker, J. (2016). Diagnosing foreclosure due to exclusive dealing. *The Journal of Industrial Economics*, 64(3), 375-410.

The American beer industry is highly concentrated.

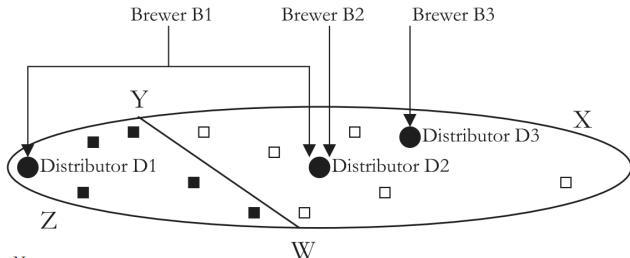
- ▶ Take market shares in 1994: Anheuser Busch produced 45% of the beer that was shipped in the USA, Miller, 22%, Coors, 10%. Imported beers, treated together, accounted for about 5% of the market.

Case: Beer distribution in Chicago II

The vertical industry structure - the three-tier distribution system:

- ▶ brewer sells to distributors who sell on to retailers.
- ▶ distributors are granted exclusive territories.
- ▶ "retail" price maintenance(referring to the price paid by retailers to distributors) is prohibited,
- ▶ brewers recommend and monitor the price paid from retailers to distributors, so that they essentially set both the input and the output price of their distributors.

Case: Beer distribution in Chicago III



Notes:

- | | |
|----------|--|
| D1: YZW | D1 can distribute B1's products to retailers marked with a ■ |
| D2: YXW | D2 can distribute B1's products to retailers marked with a □ |
| WXYZ | D2 can distribute B2's products to all retailers □ & ■ |
| D3: WXYZ | D3 can distribute B3's products to all retailers □ & ■ |

Figure 1
Exclusive Territories and the Three Tier System

Conclusion

Exclusive dealing can be:

▶ Anticompetitive

- strong incumbent upstream firms can use exclusive dealing clauses to vertically foreclose the market to potential entrants.
- Vertical integration between an upstream seller and a downstream seller may lead to an inefficient allocation because the integrated firm uses its market power to offer too low a price for the product of the outside seller.
- Under imperfect competition, exclusive dealing contracts that are signed before entry takes place can constitute a barrier of entry. In effect, there is too little entry from a welfare perspective.

▶ Efficiency enhancing

- it protects investments by the incumbent seller.

Antitrust concerns

Vertical mergers raise anti-trust concerns through two effects:

▶ **Exclusionary effects**

Vertical integration may raise the costs of nonintegrated downstream rivals. A higher wholesale price may or may not lead to higher retail prices

▶ **Collusive effects**

- outlets effect: vertical integration by an upstream firm reduces the number of outlets through which its rivals can sell when deviating. This generally reduces their profit from cheating and thus facilitates collusion.
- punishment effect. If an upstream firm integrates with a downstream firm, these profits now become part of the profit of the merged entity. The merged entity can expect to make more profits in the non-cooperative punishment phase than the upstream firm would make alone.

References I



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