

ECN 594: Vertical Relationships

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Plan for today

1. Vertical relationships: upstream and downstream
 2. Double marginalization problem
 3. Solutions: integration and two-part tariffs
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4. Vertical restraints
5. The free-rider problem
6. Antitrust implications

Part 1: Vertical Relationships

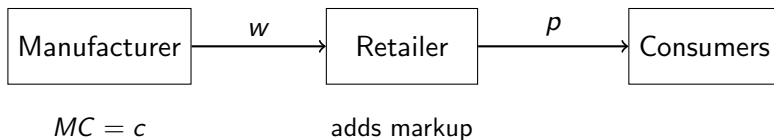
Vertical relationships

- **Vertical structure:** Production chain from raw materials to consumers
- **Upstream:** Manufacturers, wholesalers
- **Downstream:** Retailers, distributors
- **Examples:**
 - Car manufacturer → dealer
 - Beverage company → restaurant
 - Book publisher → bookstore
- Key question: How should these relationships be structured?

Double marginalization: setup

- **Upstream monopolist** (manufacturer): produces at $MC = c$
- Sells to **downstream monopolist** (retailer) at price w
- Retailer sells to consumers at price p
- Consumer demand: $q = D(p)$
- **Problem:** Each firm adds its own markup

Double marginalization: the chain



- Manufacturer: sets $w > c$ (first markup)
- Retailer: sets $p > w$ (second markup)
- Result: p is “too high” relative to integrated monopolist

Double marginalization: intuition

- Each firm ignores the effect of its markup on the other
- Manufacturer doesn't fully account for:
 - Higher $w \rightarrow$ higher $p \rightarrow$ lower $q \rightarrow$ lower profits for both
- This is a **vertical externality**
- Integrated monopolist would set lower price!
- **Paradox:** More competition (vertical separation) \rightarrow higher price

Worked example: Double marginalization

- Consumer demand: $q = 100 - p$
- Manufacturer: $MC = 20$
- Retailer: no additional costs (just buys from manufacturer at w)
- **Questions:**
 - (a) Find the price and profit of an integrated monopolist
 - (b) Find the prices and profits with separate firms
 - (c) Compare total industry profits

Take 7 minutes.

Worked example: Integration (solution a)

- **Integrated monopolist:**
- Inverse demand: $p = 100 - q$
- $MR = 100 - 2q$
- Set $MR = MC$: $100 - 2q = 20 \Rightarrow q = 40$
- $p = 100 - 40 = 60$
- $\pi^{Int} = (60 - 20) \times 40 = 1600$

Worked example: Separation (solution b)

- **Step 1: Retailer's problem** (given w)
- Retailer's cost is w , faces demand $q = 100 - p$
- $MR_R = 100 - 2q$, $MC_R = w$
- Set $MR_R = MC_R$: $100 - 2q = w \Rightarrow q = (100 - w)/2$
- $p = 100 - q = (100 + w)/2$
- Retailer profit: $\pi_R = (p - w)q = \left(\frac{100-w}{2}\right)^2$

Worked example: Separation (solution b, cont.)

- **Step 2: Manufacturer's problem**
- Anticipates retailer's response: $q = (100 - w)/2$
- Manufacturer profit: $\pi_M = (w - 20) \times \frac{100-w}{2}$
- FOC: $\frac{\partial \pi_M}{\partial w} = \frac{100-w}{2} - \frac{w-20}{2} = 0$
- $100 - w = w - 20 \Rightarrow w = 60$
- Then: $q = (100 - 60)/2 = 20$, $p = (100 + 60)/2 = 80$
- $\pi_M = (60 - 20) \times 20 = 800$
- $\pi_R = (80 - 60) \times 20 = 400$

Worked example: Comparison (solution c)

| | Integrated | Separated |
|--------------|------------|-----------|
| Final price | 60 | 80 |
| Quantity | 40 | 20 |
| Total profit | 1600 | 1200 |

- Separation: price 33% higher, quantity 50% lower
- Industry profits 25% lower with separation
- Consumers also worse off (higher p , lower q)
- **Everyone loses** from double marginalization!

Solutions to double marginalization

1. Vertical integration

- Manufacturer buys retailer (or vice versa)
- Eliminates double markup

2. Two-part tariff

- Set $w = MC$ (no wholesale markup)
- Charge franchise fee F to extract retailer profits

3. Resale price maintenance (RPM)

- Manufacturer sets final price directly
- Controversial under antitrust law

Two-part tariff solution

- Manufacturer charges:
 - Wholesale price: $w = c = MC$ (at cost)
 - Franchise fee: F
- With $w = MC$, retailer sets integrated monopoly price
- Retailer earns π^{Int} minus F
- Manufacturer sets $F = \pi^{Int}$ to extract all profit
- **Result:**
 - Price = integrated monopoly price
 - Total profit = integrated monopoly profit
 - Captured by manufacturer through F

Part 2: Vertical Restraints

Vertical restraints: overview

- **Vertical restraints:** Contractual restrictions between upstream/downstream firms
- **Types:**
 1. **Exclusive dealing:** Retailer can only sell manufacturer's products
 2. **Exclusive territories:** Retailer has geographic monopoly
 3. **Resale price maintenance (RPM):** Manufacturer sets retail price
 4. **Tying:** Must buy product B to get product A

The free-rider problem

- **Setup:** Retailer provides services (advice, showroom, etc.)
- **Problem:**
 - Consumer gets service at Retailer A
 - Buys from Retailer B (lower price, no service)
 - Retailer A's service investment wasted
- **Result:** Retailers under-invest in services
- **Examples:**
 - Electronics stores vs online retailers
 - Car dealerships and test drives

Solutions to free-riding

- **Resale price maintenance (RPM):**
 - Set minimum retail price
 - Prevents price competition, preserves margin for services
- **Exclusive territories:**
 - Each retailer is local monopolist
 - No other retailer to free-ride on
- Both reduce **intra-brand** competition (same brand, different retailers)

Intra-brand vs inter-brand competition

- **Intra-brand:** Competition among retailers selling same brand
 - Different Toyota dealers competing on price
- **Inter-brand:** Competition between different brands
 - Toyota vs Honda
- **Vertical restraints often reduce intra-brand competition**
- **Key question for antitrust:**
 - If inter-brand competition is strong, less concern
 - If inter-brand is weak, restraints may harm consumers

Antitrust analysis of vertical restraints

- **Rule of reason:** Case-by-case analysis
 - Weigh pro-competitive vs anti-competitive effects
- **Pro-competitive justifications:**
 - Solve free-rider problem
 - Encourage retailer investments
 - Improve product quality/service
- **Anti-competitive concerns:**
 - Facilitate collusion
 - Exclude competitors
 - Raise prices without efficiency benefit

Legal status of vertical restraints

| Restraint | US Legal Status |
|-----------------------|-----------------------------|
| Maximum RPM | Rule of reason |
| Minimum RPM | Rule of reason (since 2007) |
| Exclusive dealing | Rule of reason |
| Exclusive territories | Rule of reason |
| Tying | Quasi-per se illegal |

- Most restraints evaluated under rule of reason
- Need to show harm to competition (not just competitors)

Key Points

1. **Double marginalization:** Two markups \rightarrow price too high
2. Vertical separation hurts both firms AND consumers
3. **Solutions:** Integration, two-part tariff, RPM
4. Two-part tariff: $w = MC$, extract profit through F
5. **Free-rider problem:** Under-investment in services
6. Restraints (RPM, exclusive territories) can solve free-riding
7. Reduce **intra-brand** competition
8. **Antitrust:** Rule of reason; weigh pro/anti competitive effects

Next time

- **Lecture 12:** Collusion
 - Sustaining collusion: trigger strategies
 - Critical discount factor
 - Detection and leniency programs