

ECN 594: Vertical Relationships

Nicholas Vreugdenhil

January 4, 2026

Plan for today

1. Vertical relationships: upstream and downstream
2. Double marginalization problem
3. Solutions: integration and two-part tariffs

4. Vertical restraints
5. The free-rider problem
6. Antitrust implications

Part 1: Vertical Relationships

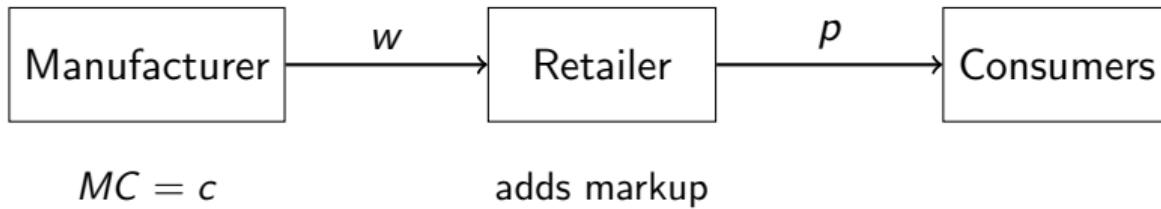
Vertical relationships

- **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 → 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