

Vertical Relations

Kyu Bong Cho

Handong Global University

June 29, 2020

Background

- We normally think of firms as selling products and services to consumers.
- Most firms sell to other firms, not to final consumers.
 - Cement producers sell cement to concrete producers, and then the concrete producers sell concrete to construction firms.
 - Electronic firms such as Samsung and LG sell TV sets to retailers, then the retailers sell them to consumers.
- There are relations between two firms in sequence along the value chain as the case of a manufacturer selling to one or several retailers.
- Such relations are called “vertical relations”.
- The analysis in this course applies more generally to cases when an **upstream firm** sells to a **downstream firm**.

Vertical Integration: Double Marginalization

- Consider a structure consisting of an upstream firm (M) and a downstream firm (R).
- Suppose there is a demand for the final product (supplied by R), given by $D(p)$.
- Assume that in order to produce one unit output, R needs one unit of input. Suppose that R has no cost in addition to the wholesale price, w , that it pays its supplier.
- Finally, firm M has a constant marginal cost c .
- The retailer (R)'s problem is identical to a monopolist with marginal cost w .
- Suppose final demand is given by $D = a - p$. Then, the optimal price is given by:

$$p = \frac{a + w}{2}, \text{ which results in: } q = \frac{a - w}{2}$$

Vertical Integration: Double Marginalization

- For the manufacturer (M), this implies a profit of:

$$\pi_M = (w - c)q = (w - c)\frac{a - w}{2}$$

- The firm M's problem is identical to a monopolist with marginal cost c and demand $q = \frac{1}{2}(a - w)$. So, the optimal price is given by:

$$w = \frac{a + c}{2}$$

- As a result, vertical integration increases total profits. (Check this.)

Vertical Restraints

- Nonlinear pricing: if nonlinear contracts are possible like two-part tariff, then the optimal solution under vertical separation is identical to that under vertical integration.
- Vertical restraints such as resale price maintenance, exclusive territories, and exclusive dealing allow upstream and downstream firms to internalize the effects of demand-increasing investments.
 - ① Resale price maintenance: the practice whereby the manufacturer imposes a minimum price on retailers
 - ② Exclusive territories: a vertical restraint whereby each retailer is assigned a given territory that other retailers have no access to
 - ③ Exclusive dealing: a vertical restraint whereby the retailer cannot work but with one manufacturer
- Vertical restraints may facilitate collusion or lead to competitor foreclosure.

Nonlinear Pricing

- Suppose that, in addition to determining a wholesale price (w), the upstream firm, M, can set a fixed fee f to be paid by the downstream firm, R, in case it wants to do any business with M.
- We call the pair (f, w) a **two-part tariff** and the fixed fee f **franchise fee**.
- Suppose that the manufacturer sets $w = c$ and $f = \pi^M$, where $\pi^M \equiv (p^M - c)D(p^M)$ is monopoly profit for a vertically integrated firm.
- There are three points to notice about this nonlinear contract:
 - 1 This contract is efficient because the marginal cost taken into consideration by the retailer (w) is equal to the true marginal cost (c); accordingly, the retailer sets price at the optimal level.
 - 2 By pricing this way, the retailer receives total gross profits $\pi = \pi^M$ (gross of the franchise fee); therefore, it is willing to pay up to $f = \pi^M$.
 - 3 The manufacturer receives zero in terms of variable profit but is able to recover all monopoly profits through the fixed fee.