Vertical Control

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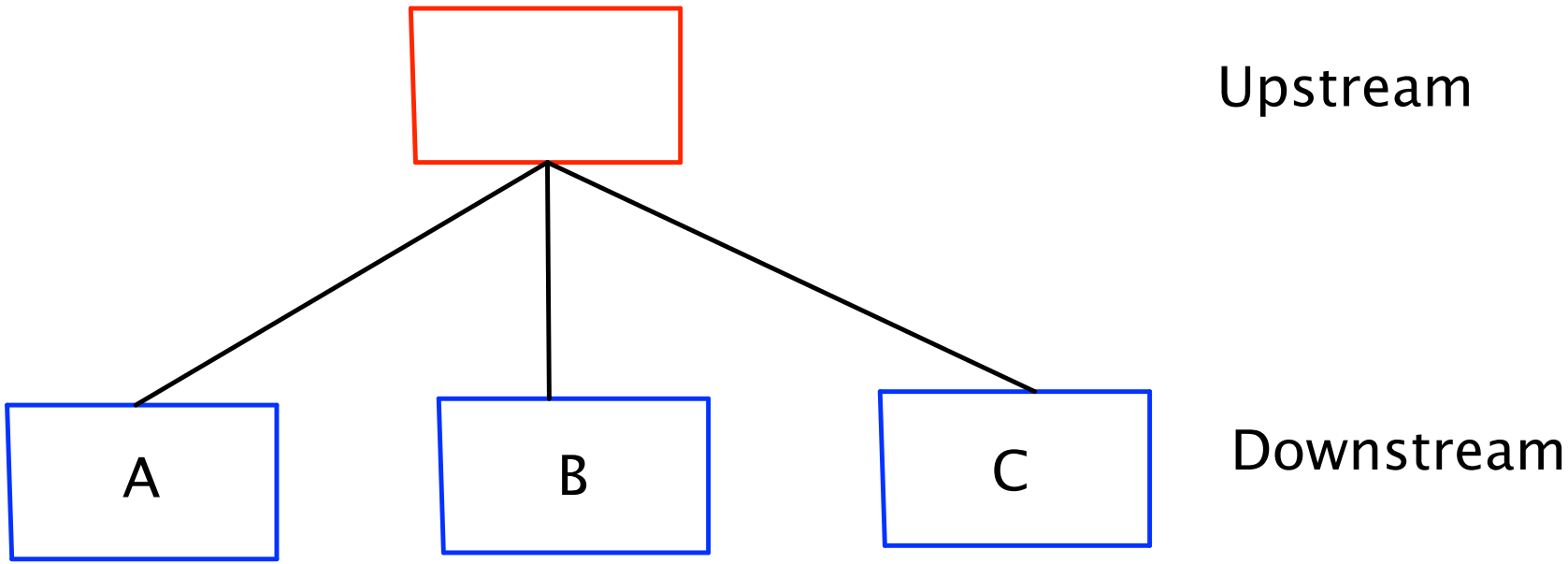
Vertical Control

Manufacturers rarely supply final consumers directly (as we've typically modeled them in the first part of the course). Instead, most industries are vertically separated. Recall the definition of "vertically-separated markets." We often refer to firms in these markets as upstream and downstream firms.

In these settings, downstream firms are the customers of the upstream firms, and many of the issues that we covered in the first part of the course still apply. For example, the upstream firm may want to price discriminate across the downstream firms.


Upstream
A
B
C
Downstream

Examples of Upstream-Downstream Issues

- Brewery-Owned Bars. What happens to prices, what about exclusion of other brands?
- Tesla trying to enter the market without dealers. GM can't get rid of dealerships.
- Intel had contracts that made it difficult to purchase microprocessors from AMD.
- Fox tried to buy Time Warner this summer.

Tension between benefits from vertical integration – being able to control everything, versus having firms distribute multiple products. Wholesale is a large part of the economy as well.

Activities of Upstream-Downstream pairs

However, things can also get more complicated in vertical relationships between firms. In particular, downstream firms often do not simply consume the good, but typically make further decisions regarding the product.

Examples of activities of downstream firms:

1) determination of final price
2) promotional effort
3) placement of product on store shelves
4) promotion and placement of competing products
5) technological inputs

By the way, why don't manufacturers simply engage in direct marketing to consumers?
(Tesla versus GM dealers)

Some reasons:

- increasing returns to distribution due to shopping needs or travel costs for consumers
- choice of variety
- demand for service
- integration of complementary products
- different geographical markets

Unlike the consumption activities of final consumers, the activities of the downstream firms may affect the profits of the upstream firm. This is why upstream firms care about the activities of the downstream firms, and why we study vertical control/restraints between firms in these settings. We focus on the incentives for vertical control when the market for the intermediate good is imperfectly competitive.

A common benchmark for what firms can achieve through vertical control is the “vertically integrated profit.” This is the maximum industry or aggregate (manufacturer plus retailer) profit. If firms use vertical restraints efficiently, they should achieve the vertically integrated profit.

Types of Vertical Restraints

4 types of vertical restraints used by firms in vertically-separated markets:

1) Exclusive Territories: a dealer/ distributor/ retailer is assigned a (usually geographic) territory by the manufacturer/ upstream firm and given monopoly rights to sell in that area.

2) Exclusive Dealing: a dealer/ distributor/ retailer is not allowed to carry the brands of a competing upstream firm.

3) “Full-line forcing": a dealer is committed to sell all varieties of a manufacturer’s products rather than a limited selection. (the upstream firm ties all products when selling to the downstream firm).

4) Resale Price Maintenance: a dealer commits to a retail price or a range of retail prices for the product. This can take the form of either minimum resale price maintenance or maximum resale price maintenance.

Actually there are 5:

5) Contractual arrangements: upstream and downstream firms write contracts to provide greater flexibility in the transfer of the product. Profit sharing and revenue sharing are the most common, which we'll see soon. Also, quantity forcing and quantity rationing and franchise fees.

The typical outline of vertical control is as follows:

1) Basic Framework

2) The need for control because of externalities between downstream and upstream firms, or among downstream firms themselves.

3) Interbrand competition

4) Intrabrand competition

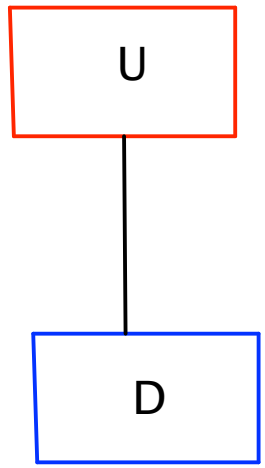
Think of exclusive dealing as a way of restraining interbrand competition, and exclusive territories as a form of vertical control to restrain intrabrand competition. (We cover these in the next lecture.)

Basic Framework:

Simple model: homogeneous good with (inverse) demand given by

$$p = a - Q$$

Suppose we have a monopolistic manufacturer and we have given exclusive rights to a dealer to sell the product of the manufacturer, so both the upstream and downstream firms are monopolistic. The downstream firm has marginal cost of selling the product of d which is equal to the wholesale cost of purchasing the product from the manufacturer, and the manufacturer has marginal cost of producing the good equal to c.



Upstream

Downstream

Dealer maximizes his profit given by

$$\pi_d = p(Q)Q - dQ = (a - Q)Q - dQ$$

F.O.C.:

$$\frac{\partial \pi_d}{\partial Q} = 0 = a - 2Q - d$$

$$Q^* = \frac{a-d}{2} \qquad p^* = \frac{a+d}{2} \qquad \pi_d = \frac{(a-d)^2}{4}$$

Now, how should the upstream firm set d?

Check: what are the strategies of the two players in this game? What does each firm choose?

Manufacturer maximizes profit given by

$$\pi_m = (d - c)Q = (d - c)\frac{a - d}{2}$$

F.O.C.:

$$\frac{\partial \pi_m}{\partial d} = 0 = a - 2d + c$$

$$d^* = \frac{a + c}{2} \qquad \pi_m = \frac{(a - c)^2}{8}$$

Note that we can now substitute into the dealer's solutions (for d) and get:

$$Q^* = \frac{a - c}{4} \qquad p^* = \frac{3a + c}{4} \qquad \pi_d = \frac{(a - c)^2}{16}$$

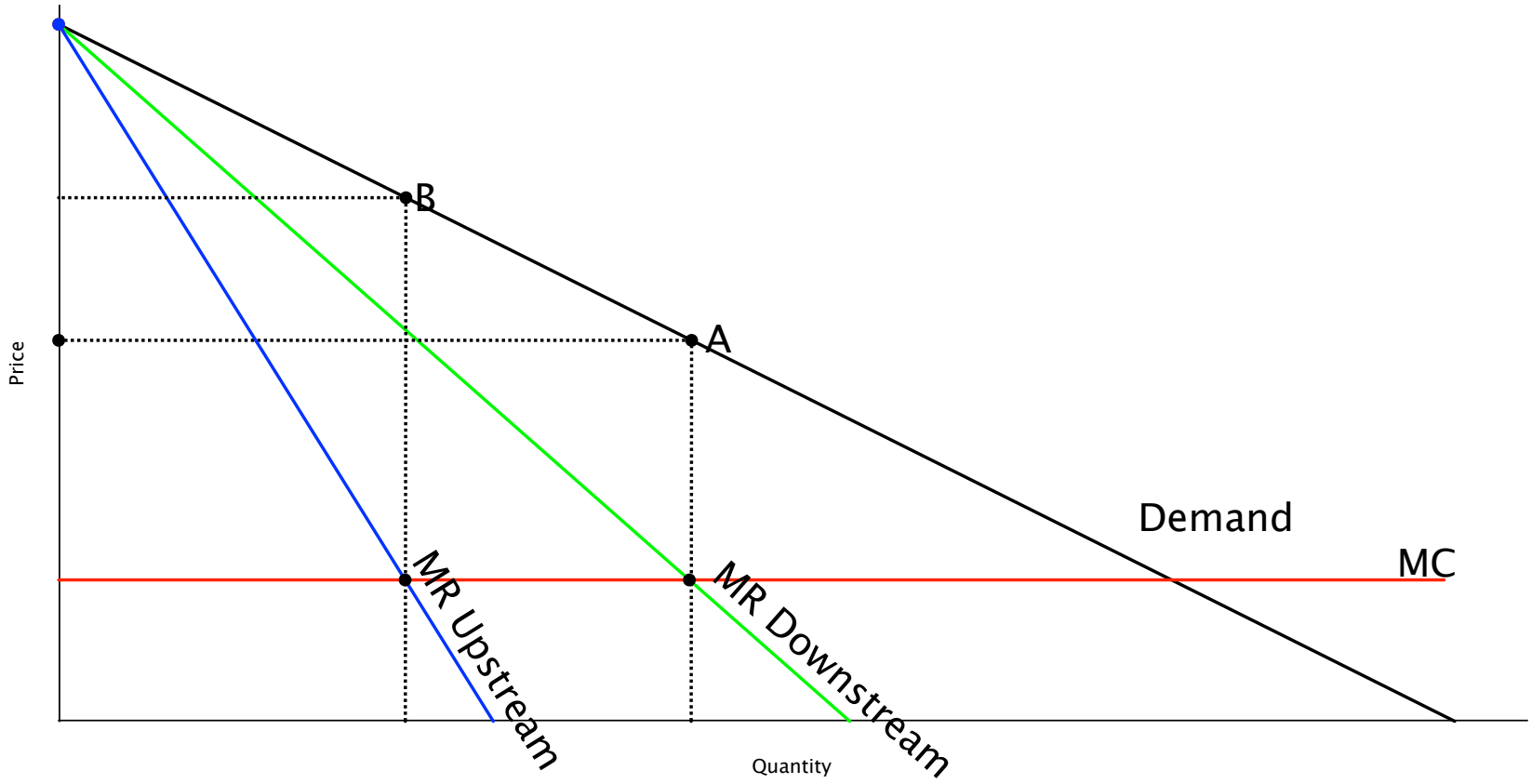
Results:

1. The manufacturer earns a higher profit than the dealer

2. The manufacturer could earn a higher profit if he does the selling himself. Total industry profit in this case is lower than the vertically integrated profit. Shown here:

$$\pi_{VI} = \frac{(a-c)^2}{4} > (\pi_d + \pi_m) = \frac{3(a-c)^2}{16}$$

The presence of two markups screws things up for the firms. This basic fact is called:
double-monopoly markup problem, successive monopolies problem, or double marginalization.


B
A
Demand
MC
MR Upstream
MR Downstream
Price
Quantity

As mentioned earlier, there are many ways around these problems, including RPM, contracts, etc. There are also other problems that arise, and sometimes we might even create a successive monopoly problem in order to solve other incentive problems in the vertical channel.

Quantity Requirements:

Quantity Forcing/Quantity Rationing: Instead of setting prices, require that downstream firms purchase a minimum or a maximum quantity of the product.

1) This may be used in place of price controls in the case when the upstream firm is a monopolist.

2) It is potentially used in vertical settings where the upstream firm is competing with other manufacturers. (interbrand versus intrabrand competition).

A question for Monday: what does my paper assume about these mechanisms? What would you like to assume?

Contractual Arrangements:

Instead of using RPM or ET, write other types of contracts. Perhaps lease the good to the downstream firm, perhaps use profit-sharing contracts.

Profit-sharing or revenue-sharing contracts: Similar to a two-part tariff. Instead of charging linear prices, the manufacturer requires a lump-sum transfer as well as a per-unit charge.

Tactic 1: Two-Part Tariffs

Two-part tariffs can be used both in vertical settings, and in direct-to-consumer or retail settings. Here is how it might work in the vertical setting.

The upstream firm charges the downstream firm a lump-sum amount equal to the expected profits that the downstream firm will make by purchasing the product at its true marginal cost of production and selling it to consumers at the monopoly price.

Once the downstream firm has paid the lump-sum payment, they purchase any amount of the product they want (note that this will be the monopoly quantity) at marginal cost. This mimics vertical integration, because it's how a jointly-owned firm would supply the good on the market.

Resale Price Maintenance:

Requires retailers to maintain a minimum price, a maximum price, or a fixed price. Two goals:

1) Partially solve the double marginalization problem

2) Induce dealers or retailers to allocate resources for promoting the product, or exerting other forms of effort in distributing the product. (Examples: perfume, Coors beer)

1) Addressing the double-marginalization problem:

Maximum Resale Price Maintenance (Maximum RPM), or Quantity Forcing

Set a maximum resale price below the optimal retail price, in order to mitigate the double marginalization problem. Equivalently, use a Quantity Forcing arrangement.

Examples include:
gasoline
newspapers
“suggested retail prices”

Important Court Cases are:
Albrecht v. The Herald Co. (1968) (per se)
State Oil Co. v. Khan (1997) (rule of reason)

2. Consider the example of promotions or advertising (*Minimum* Resale Price Maintenance)

Assume (inverse) demand is given by

$$p = \sqrt{A} - Q$$

The manufacturer sells to two dealers who compete in price. Denote the wholesale price as d and advertising expenditures as A_1 and A_2, where $A = A_1 + A_2$.

First result:

For any given d, no dealer will engage in advertising and demand would shrink to zero, with no sales.

Why?

Firms compete in price, and they sell a homogeneous product. What does p equal in this case??

What can Resale Price Maintenance do?

Minimum Resale Price Maintenance: $p = p^f \geq d$

Now demand is

$$Q = \sqrt{(A_1 + A_2)} - p^f$$

Assume that quantity demanded is split evenly between the two retailers. The only strategic variable for the retailers is A. Thus, writing profits as a function of A and finding the F.O.C. yields:

$$\pi_i = \frac{\sqrt{(A_i + A_j)} - p^f}{2}(p^f - d) - A_i$$

F.O.C.:

$$0 = \frac{\partial \pi_i}{\partial A_i} = \frac{p^f - d}{4\sqrt{(A_i + A_j)}} - 1$$

Note that we can only identify the sum of $A_1 + A_2$ and not A_1 and A_2 individually. But the idea is that retailers will compete on promotion now. As long as $p^f > d$ then at least one retailer has an incentive to advertise, and the total dollars spent on ads increases with the markup.

Examples of Minimum RPM:
perfume
cameras
Coors beer
Windows 98, Windows XP, Vista
books
many, many retail products (toys, electronics, etc.)

Also sometimes called “Telser special services”

Important court cases include:
Miles Medical v. John Park and Sons (1911) (per se)
Leegin Creative Leather Products v. PSKS (2007) (rule of reason)

Note that one problem in the last example was that competition between the retailers initially resulted in too much competition downstream, so that firms could not afford to advertise as a vertically-integrated firm would choose to do.

One way around that: Exclusive Territories or “Territorial Dealerships.” We’ll cover these in the next lecture.

Legal Issues

- There are many ambiguities in the legal treatment of vertical contracts.
- Until 1970s, RPM and E. Territories were per se illegal under Sherman Act.
- But many states passed fair trade laws that were interpreted to cover some of these cases.
- Furthermore, the Khan case in 1997 switched Maximum RPM to a “rule of reason” status, as did the Leegin Leather Products case in 2007 for Minimum RPM.

Thus, although price fixing remains per se illegal, it's not always applied in vertical settings because it conflicts with free-trade notions between mfgs and their distributors.

Non-price issues have been generally accepted to be ok by the courts. Decisions turn on arguments about efficiency vs. anti-competitive effects.

- Exclusive territories
- Refusal to deal
- Foreclosure, etc.