

# Lecture#7 Multiple regression: Does vertical integration increase prices – part I

Model, institutional set-up

# The paper

Ricard Gil, 2015, Does vertical integration raise prices? Evidence from the Paramount antitrust case of 1948, *American Economic Journal: Policy*, Vol. 7, No. 2 (May 2015), pp. 162-91.

# Research question

- Does vertical integration raise prices?

# Why should we be interested?

1. US Supreme court decision lead to "quasi-exogenous change in organizational form".
2. Design of antitrust policy

# Key parts of the analysis

1. The institutional setup
2. The theory
3. The data
4. The econometrics

# Institutional setup

- A vertically related industry.
- Upstream: movie studios, producing movies (the intermediate good).
- Middlestream: distributors, selling rights to show movies to downstream firms.
- Downstream: movie theaters, showing movies at a particular time in a particular location (the final good).
- Consumers buy the final good.

# Conflict of interest

- Studios & distributors want movies to play long.
- Theatres want to change movies faster.

# Starting point

- 8 largest studios: Paramount, Warner, MGM, RKO, Fox, Columbia, Universal, United Artists.
- First 5 controlled 3 137 of the 18 075 theatres in the US.
- The other 3 did not own theatres.
- 70% of "first-run" theatres in the 92 largest cities.



# Starting point

- Studios used "block-booking", i.e., an independent theatre had to contract on a bundle of movies.
- Studios used "blind bidding" = theatre owner had to bid for a movie without seeing it.
- Theatres could show movies of other studios, and even refuse some parts of the bundle.

# Accusation / worry

- DoJ worried about two issues:
  1. Through block booking and blind bidding, entry of independent studios (i.e., upstream competitors) prevented (applied to all 8 studios).
  2. Used own studios to gain market power in downstream market, and drive other studios out of business (applied only to the first 5).

# Simple model of vertical integration (VI)

- let's make things as simple as possible:
- One upstream firm
- One downstream industry.
- = double / successive monopoly.
- Alternatively an integrated firm.

# Simple model of vertical integration (VI)

- Two cases:

Case #1: single integrated monopolist.

Case #2: 2 vertically separated monopolists.

See e.g. Tirole, J., 1988, The Theory of Industrial Organization.

# Single (integrated) monopoly

- Case #1: vertically integrated monopoly.
- Demand curve  $Q = a - bP_{VI}$ . [aside: a, b?]
- Downstream marginal cost  $c_D = 0$ .
- Upstream marginal cost  $c_U \geq 0$ .

# Single (integrated) monopoly

- Maximize profits wrt. to price  $P_{VI}$ .



$$P_{VI} = \frac{a + bc_U}{2b}$$



$$Q_{VI} = \frac{a - bc_U}{2}$$

Single (integrated) monopoly



$$\pi_{VI} = \frac{(a - bc_U)^2}{4b}$$

# Successive monopolies

- Case #2: vertically separated (successive) monopolies.
- Downstream marginal cost  $c_D = P_U =$  upstream price.



# Successive monopolies

- First, solve the downstream monopoly problem taking upstream price as given. →

$$P_D = \frac{a + bc_D}{2b} = \frac{a + bP_U}{2b}$$

→

$$Q = \frac{a - bc_D}{2} = \frac{a - bP_U}{2}$$

# Successive monopolies

- Upstream monopolist's problem: solve for optimal  $P_U$  taking downstream action into account (SPNE).



$$P_D = \frac{a + bc_D}{2b} = \frac{a + bP_U}{2b}$$



$$Q = \frac{a - bc_D}{2} = \frac{a - bP_U}{2}$$

# Successive monopolies

- First, solve the downstream monopoly problem taking upstream price as given.



$$\pi_D = \frac{(a - bc_U)^2}{16b}$$

$$\pi_U = \frac{(a - bc_U)^2}{8b}$$

# Comparison of industry profits

Integration

$$\pi_{VI} = \frac{(a-bc_U)^2}{4b}$$

Vertical separation

$$\pi_D + \pi_U = \frac{(a-bc_U)^2}{16b} + \frac{(a-bc_U)^2}{8b} = \frac{3(a-bc_U)^2}{16b}$$

# Comparison of downstream prices

Integration

$$P_{VI} = \frac{a + bc_U}{2b}$$

Vertical separation

$$P = \frac{3a + bc_U}{4b}$$

Note: we know  $a > bc_U$ .

# Comparison of downstream P&Q

Integration

$$Q_{VI} = \frac{a - bc_U}{2}$$

Vertical separation

$$Q_{VI} = \frac{a - bc_U}{4}$$

# Sympathetic view

- Various possible mechanisms that we do not model explicitly.
- Mechanism #1. inability by the upstream firm to commit.
- Mechanism #2: raising rivals' costs.
- Mechanism 3#: induce collusion.

# Decision

- Force vertical separation.
- Ban bundling.



# Execution

- 3 non-theatre owning studios abandoned block booking & blind bidding.
- The 5 theatre owning studios
  1. sold some theatres,
  2. appealed and
  3. lost

# Execution

- Divestitures started in Dec 1950.
- Divestitures took up to 5 years.
- Distribution of movies one by one (no bundling).
- # market transactions increased.

# Important element

- Who made the decision to disintegrate?
- The US Supreme Court.
- no business incentive driving the decision.
- This is what Gil means by "quasi-exogenous".