# MFP SET

## Lecture 5

## Interdependence within markets

# Perfect competition

- The models of demand & supply have been discussed without being specific about how many firms are in the market
- If we assume many firms and many buyers, we are some elements of *perfect competition*
  - Firms in perfectly competitive markets do not influence each other directly because each is too small to affect the market

# Interdependence within markets

- In many markets, we have just a few firms – which means they have influence over the market and over each other's actions
- The study of interdependence within markets is called *Industrial organisation* or the organisation of markets

# What is industrial organisation?

- The study of *individual markets*
  - the *organisation* of markets or the *structure*
  - the *explanation* of that structure
  - what creates *market power*
    - external forces
    - strategic behaviour on the part of firms
  - and what, if any, are the appropriate government policies to deal with market power

# How does it differ from microeconomics?

- IO is an *application* of microeconomics
  - ➢Uses price & game theory to analyse the interactions between players within a market
- *Not* a prescriptive subject
  - ➢Not a list of strategic moves
  - ➢Uses an analytical approach; foundation is microeconomics

# Focus of analysis

- Focus is on the *industry*
  - Need to define the industry or market under consideration
  - Need a way to characterise the industry
    - By level of concentration, form of competition, number of buyers, degree & type of government interference
  - Need to be specific about the questions we're asking

# What questions does industrial organisation address?

- The economist:
  - "Does the structure of this industry lead to efficient outcomes?" (Is price equal to marginal cost?)
- The manager:
  - "How does market structure affect our strategy options?" (Can we cut costs, differentiate our product, enter a new market?)
- The regulator:
  - "Does the structure of this industry mean that firms can engage in anti-competitive behaviour at the expense of consumers?"

# Market structure

- Structure/Conduct/Performance
  - Approach developed by J. Bain (Harvard)

➢Industrial structure basically an empirical problem of describing the market, discovering how firms interact with each other, and how these factors affect firm profitability

# Structure / Conduct / Performance

- Structure
  - ➢number of sellers, degree of product differentiation, cost structures, degree of vertical integration
- Conduct
  - ➢pricing policies, level & type of R&D, investment strategies, advertising
- Performance
  - ➢efficiency, ratio of price to marginal cost, innovation rates, profits

# Porter's five forces

- Internal rivalry: competition within a market for market share
- Entry: competition by outsiders
- Substitutes & complements: influences on demand
- Supplier power: market structure/power upstream
- Buyer power: market structure/power downstream

# Game theory

- Game theoretic approach
  - ➢Because (most) markets are *not* perfectly competitive, firms are interdependent
  - ➢Game theory used to analyse interactions between these interdependent firms
  - ➢Strategies can be developed to improve firm performance

# Dynamic pricing rivalry

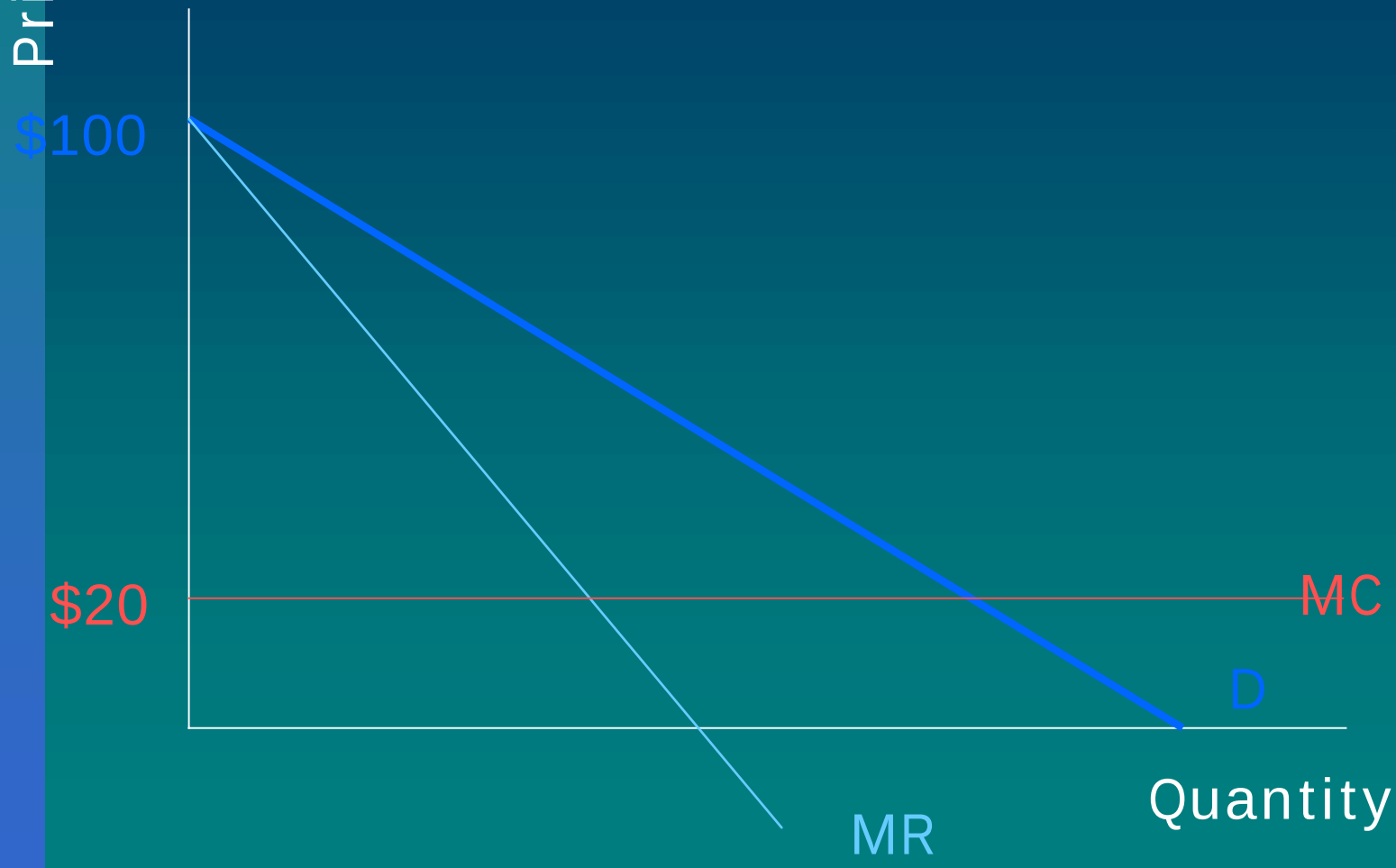
- Why dynamic?
  - ➢Because most interactions in most markets are repeated
- What does pricing rivalry mean in practice?
  - ➢Should you compete by cutting price, trying to capture market share or should you keep prices high, and take a share of (monopoly) profits?

# An Example

- Rupert Murdoch takes on the *Daily News*

| | Price | |
|---|---|---|
| | *Post* (Murdoch) | *Daily News* |
| Jan '94 | $0.40 | $0.40 |
| Feb '94 | $0.50 | $0.40 |
| Mar '94 | $0.25 (Staten Island) | $0.40 |
| Jul '94 | $0.50 | $0.50 |

# A generalisation



# To defect or not to defect?

- Suppose Alpha & Beta are charging the monopoly price of $60
- Does Beta keep its price at $60 or lower to $40 to gain market share?

# Beta's decision

- Beta needs to consider what its profit will be in each case, over the likely period of interaction
  - It does two calculations
    - Profit from keeping at $60
    - Profit from dropping to $40

# The calculations

- Beta stays with price of $40:
  It should anticipate that Alpha will keep its price at $60 for the first week, then drop back to $40 in the second week:

$$\$23.08 + \frac{11.54}{1.002} + \frac{11.54}{(1.002)^2} + \frac{11.54}{(1.002)^3} \text{ L}$$

- Beta increases price to $60:
  It should anticipate that Alpha will keep its price at $60 for the foreseeable future:

$$\$15.38 + \frac{15.38}{1.002} + \frac{15.38}{(1.002)^2} + \frac{15.38}{(1.002)^3} \text{ L}$$

# Profit Calculations

- First period weekly profit if defecting:

  $\pi_{annual}$ = \$40 $\times$ 60 – \$20 $\times$ 60 = \$2400 – \$1200 = \$1200

  \$1200/52 = \$23.08

- 2nd period profit once Alpha reduces price to \$40

  $\pi_{annual}$ = (\$40 $\times$ 60 – \$20 $\times$ 60)/2 = \$1200/2 = 600

  \$600/52 = \$11.54

- Profit if Beta increases price to \$60

  $\pi_{annual}$ = (\$60 $\times$ 40 – \$20 $\times$ 40)/2 = \$1600/2 = 800

  \$800/52 = \$15.38

# To D or not to D

- Need to consider more than just one period's profit
- Depends on
  - ➢each firm's pricing strategy
  - ➢each firm's expectations of its rivals' strategies
  - ➢the market environment in which firm operates

# What else influences decision?

- Some general concerns
  - ➢How quickly can my rivals respond?
  - ➢What is the difference between defection profits versus monopoly profits?
  - ➢Will my actions in this market affect other markets?

# Is the cooperative pricing equilibrium efficient?

- From the economist's point of view, no
  - ➢Price is above marginal cost, so there is an allocative inefficiency
  - ➢Note that this doesn't (necessarily) imply a productive inefficiency

# Price collusion??

- Have the firms communicated with a view to increasing price in their industry?
- No explicit communication, but signalling intentions through pricing policies
- Was there a violation of the Trade Practices Act?