Market Structure and Behaviour

See chapters 10-12 in Mansfield et al

Market Structure

- Market: firms and individuals –buy and sell
- Important social and legal preconditions
- Different structures depending on nature of good, agents and market conditions
- Extremes perfect competition and monopoly
- Important for managers to understand nature of market

Perfect competition

- Nature of demand and supply
- Many suppliers and consumers
- No market power
- Equilibrium price
- Shifting demand and supply

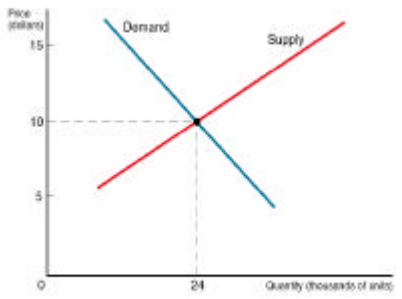

FIGURE 10.1 Determination of Price in a Perfectly Competitive Market

PC firm output

- Can produce as much as it chooses
- So how to choose
- Maximise profit
- MC=MR=P
- Normal profits

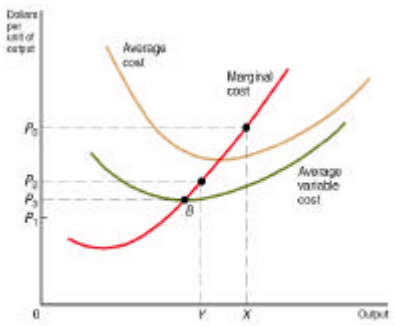

FIGURE 10.4 Short-Run Average and Marginal Cost Curves

Consumer and Producer Surplus

- Consumer surplus: difference between price pay and price willing to pay
- Producer surplus: difference between pice received and that willing to receive

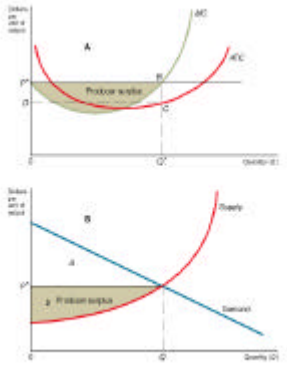

FIGURE 10.5 Producer Surplus and Variable Cost Profit

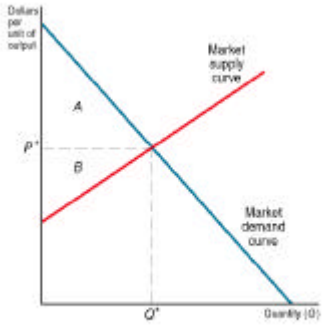

FIGURE 10.6 Market Social Welfare (A + B) of Perfectly Competitive Price Policy, P*

Long run equilibrium

- Economic profits not accounting profits
- Produce if make normal profits
- Can change capital in LR
- Competition to lowest point LRAC

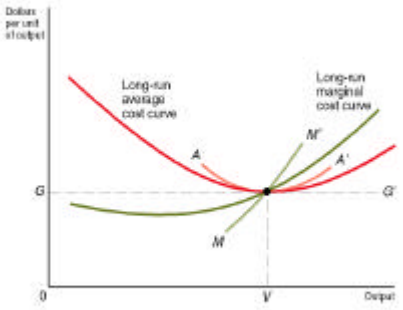

FIGURE 10.7 Long-Run Equilibrium, Perfectly Competitive Firm

Long run industry adjustment

- Constant cost industry
- Increasing cost industry

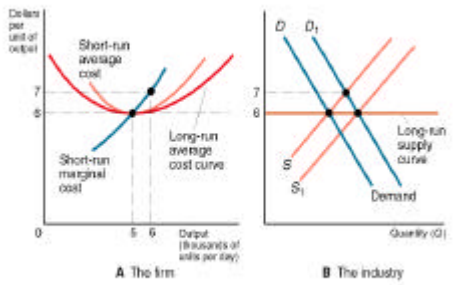

FIGURE 10.8 Long-Run Equilibrium: Constant-Cost Industry

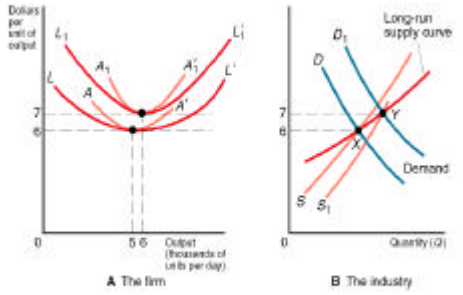

FIGURE 10.9 Long-Run Equilibrium: Increasing-Cost Industry

Resource allocation

- Important pointers to real world phenomena
- Short run equilibrium after change in demand
- Long run market adjustment: when capital variable
- Transfers of resources between commodities
- Walras and Marshall

Monopoly

- Downward sloping demand curve
- Maximise profits
- MC=MR

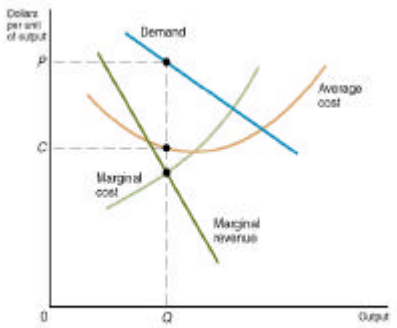

FIGURE 10.13 Output and Price Decisions of a Monopolist

Monopoly

- Max Π=TR-TC
- d Π/dQ = dTR/dq – dTC/dQ=0
- dTR/dQ – dTC/dQ
- MR=MC
- Now for monopolist MR=MC=P (1+1/η) where η is the price elasticity of demand
- P=MC/ (1+1/η)
- As η<0 (1+1/η)<1 then price is higher than MC
- Monopoly leads to higher price and lower output than PC

In Between

- Two-part tariffs:
  - Make consumer pay initial payment before use
  - Trade off number customers and initial fee: max profit
- Bundling
  - Put goods and services together at package price
- Patents:
  - create monopolies:
  - 20 years or less
- All means of creating monopoly power –tying in consumers

Monopolistic Competition

- Perfect competition but product differentiation
- Need:
  - Large number of firms
  - Enough firms that individual actions doesn't lead to retaliation
  - Free or easy entry and no collusion

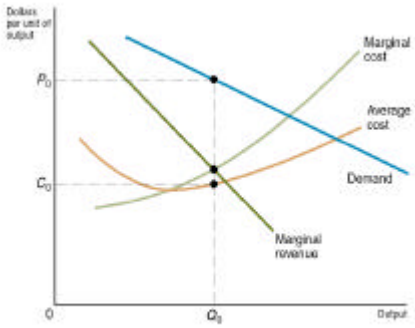

FIGURE 10.14 Short-Run Equilibrium, Monopolistic Competition

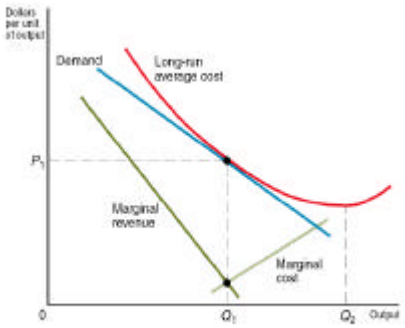

FIGURE 10.15 Long-Run Equilibrium, Monopolistic Competition

Oligopoly

- Market structure with small number of firms
- Common market structure
- Emerges in mature markets where industry sales growing more slowly

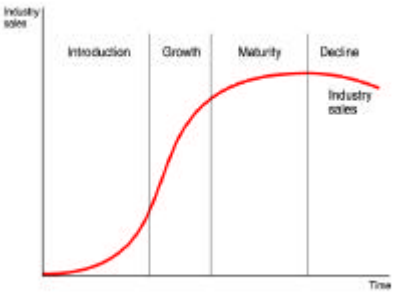

FIGURE 11.1 Typical Stages of the Evolution of an Industry

Oligopoly

- Mature industry cant simply protect market share to maintain growth
- Interdependence: actions will lead to responses
- Need to
  - Attack rivals
  - Collude

Cartel

- Clear advantages to collusion: reduce uncertainty, increase profits, prevent entry
- If collusion open and formal it's a cartel
- Cartels illegal in US but not elsewhere
- Anti trust and size of market
- How does a cartel set price?
- Consider cost curves and revenues for cartel as a whole:

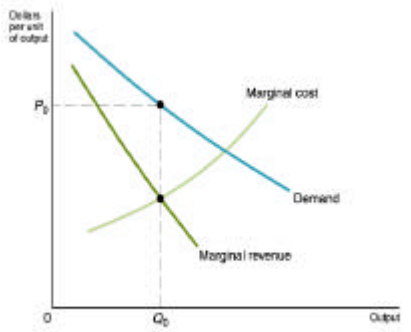

FIGURE 11.2 Price and Output Determination by a Cartel

Cartels

- So will set monopoly price
- But then needs to allocate output to each member
  - Max profit if allocate so all MC of all firms equal
  - Unlikely to happen as likely to be negotiated and more influence more output
  - High cost firms unlikely to take small quotas offered
- Often sales allocated based on past sales, capacity…

Cartels

- Cartels are likely to be unstable
- It is in interest of companies to leave or cheat
- If they can reduce price they can increase sales and profits
- Many examples of such problems -OPEC

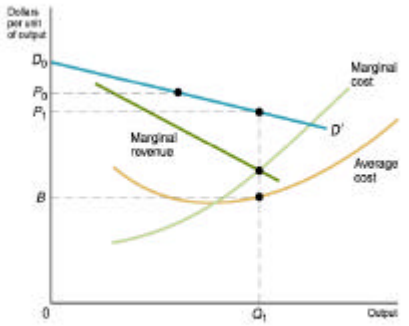

FIGURE 11.3 Instability of Cartels

Price leadership

- In many oligopolistic industries there is a dominant firm
- Can become a price leader
- Consider one large firm and number of smaller ones
  - Dominant firm sets industry price
  - Dominant firm maximises profits MC=MR

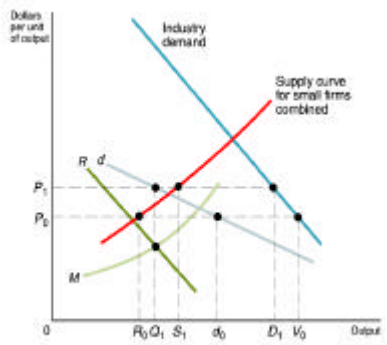

FIGURE 11.4 Price Leadership by a Dominant Firm

Strategic behaviour

- When consider oligopoly have strategic behaviour
- Other companies actions and reactions matter
- Useful method of analysis is game theory
- Makes sense of common strategic behaviour in business world

Games

- Two person game: simplest
- Rules of game: how resources can be employed
- Strategy: what player will do under contingency
- Payoff matrix: reward by outcome
- Dominant strategy:
  - Allied B; Barkley 1
  - Whatever the other does individuals will choose this
  - Gives solution

FIGURE 12.1 Payoff Matrix: R and D Programme

Nash Equilibrium

- Make Barkley's profit $4 million if it chooses strategy 2 and Allied chooses strategy 2
- No longer a dominant strategy for Barkely
- It depends on what Allied does

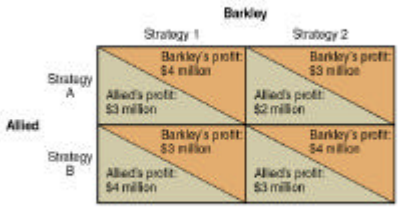

FIGURE 12.2 Payoff Matrix: No Dominant Strategy for Barkley

Nash Equilibrium

- If Allied adopts strategy A Barkley will make more profit if it chooses 1
- If Allied adopts strategy B Barkley will make more profit if it chooses 2
- Allied dominant strategy is B so Barkely will choose 2
- This is Nash equilibrium
  - Doing best it can given the others action
  - Neither has any reason to change

Nash equilibria

- If dominant strategy for each then best regardless of what other does
- If Nash equilibrium each adopts strategy that is best given what the other has done
- Can be no Nash equilibrium
- Can be more that one. Can see in next slide
  - Allied adopts A Barkley will adopt 2
  - Allied adopts B Barkley will adopt 1

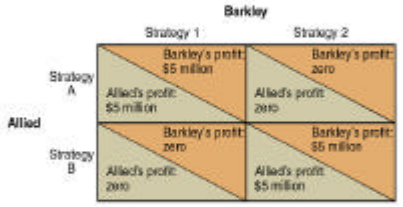

FIGURE 12.3 Payoff Matrix: Two Nash Equilibria

Cournot Equilibrium

- Consider duopoly
  - Homogenous product
  - Same cost functions
  - Aware of demand function (linear)
- Each firm assumes the other will hold output constant regardless of their behaviour
- Each firm maximises profit on this assumption
- Each firms output level will depend on what it thinks the other will do
- Consider example: 3 alternatives

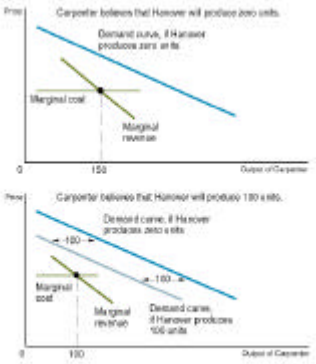

FIGURE 12.4 A, B Optimal Output of Carpenter Company If Hanover Corporation Produces 0 or 100 Units of Output per Month

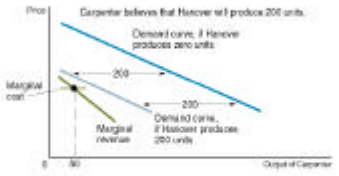

FIGURE 12.4 C Optimal Output of Carpenter Company If Hanover Corporation Produces 200 Units of Output per Month

Cournot equilibrium

- In each case Carpenter takes the expected output of Hanover and then determines its output MC=MR
- From this exercise can plot a reaction curve and do a similar exercise for Hanover

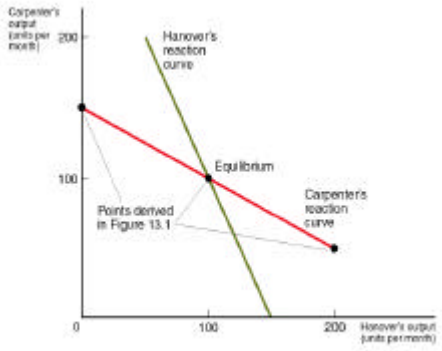

FIGURE 12.5 Reaction Curves of Carpenter Company and Hanover Corporation

Cournot equilibrium

- Equilibrium is where reaction curves intersect
- Each firm is maximising profits and its expectations about the others output is correct
- No incentive to change
- Nash equilibrium
- Cournot has poor dynamics so not used much: doesn't explain how firms move to equilibrium

Prisoners dilemma

- Best known game and useful for oligopoly
- Two prisoners being questioned separately and will get away if don't confess, but if they both confess then both go down, but if only one confesses they will be treated leniently
- What will happen?
- Consider example:
  - two producers of specialised scientific instrument
  - Form cartel to maintain price
  - Have option of cheating

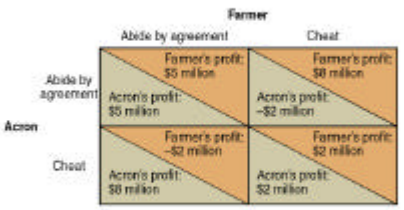

FIGURE 12.7 Payoff Matrix: Acron and Farmer

Prisoners dilemma

- Dominant strategy is to cheat
- Outcome will be both cheat
- Would not have happened if trusted each other
- Different in the case of repeated games
  - Don't need to collude just assume other sensible
  - Could have 'tit for tat' strategy
- Most favoured customer clause
  - Means if reduce price after purchase early customer gets compensated
  - Not necessarily introduced to benefit consumers
  - Leads to payoff from price cutting reduced
  - Reduces chances of cheating

FIGURE 12.8 Payoff Matrix before Most-Favored-Customer Clause

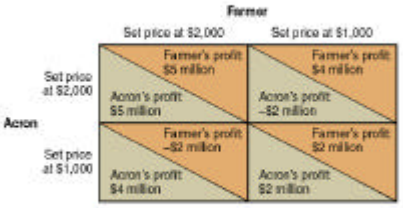

FIGURE 12.9 Payoff Matrix after Most-Favored-Customer Clause

Oligopolistic behaiour

- World of strategy: tensions; action reaction
- Non threatening behaviour possible
- Ability and speed of retaliation important
- Commitment important
  - Convince rivals committed to strategic move
  - Convince rivals committed to retaliation
  - Convince rivals not threatening: build trust
- Commitments and threats must be credible
  - Company Gelhart threatens to respond to price cut
  - But not very credible
  - Regardless of LIV being high or low Gelhart benefits more from high price

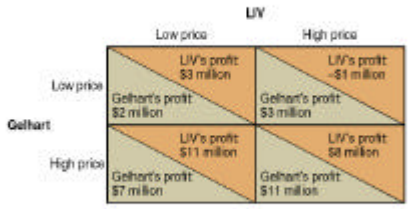

FIGURE 12.10 Payoff Matrix: Gelhart and LIV

Oligopolistic behaviour

- In long run can have entry and exit
- Above average profits will attract firms
- Easy entry will erode cartels/collusion
- Oligopolists can try to deter entry by threats
- Consider example:
  - Salem must decide to enter
  - In this case it will; threat to resist not credible

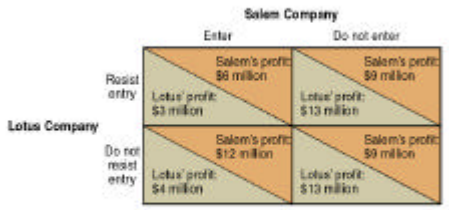

FIGURE 12.11 Payoff Matrix before Lotus Makes Credible Its Threat to Resist

Barriers to entry

- Lotus could increase capacity, lowering its profits but making its threat credible
- Now Lotus better off resisting
- Salem has more to lose

FIGURE 12.12 Payoff Matrix after Lotus Makes Credible Its Threat to Resist

Barriers to entry

- Sunk costs: general barriers: costs establishing;
- Using advertising
- Pre-emptive strikes: moving first to prevent the other eg two shop chains considering moving into a town

Developing analysis

- Games can have sequential structures
- Consider Compaq and H-P (before merged)
  - Decide whether to expand productive capacity
  - Compaq to move first
- Can develop a decision tree
  - Have to solve by backward induction

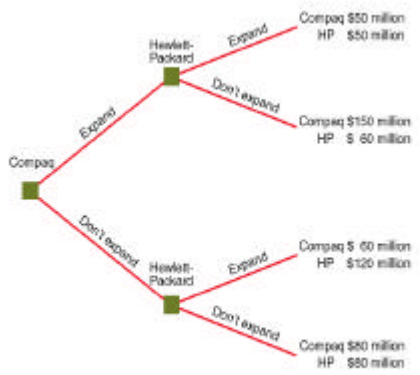

FIGURE 12.14 Game Tree: Compaq and Hewlett-Packard

Developing analysis

- Evaluate payoff to H-P allows Compaq to determine what they will do. Makes Compaq's options clear
  - If Compaq expanded then H-P would not: Compaq gets 150
  - If Compaq did not expand H-P would: Compaq gets 60
  - Compaq expands and H-P doesn't