

Industry Economics - Market models (using examples from the Australian economy)

Perfect Competition - occurs when market forces dictate the price and output levels of each firm

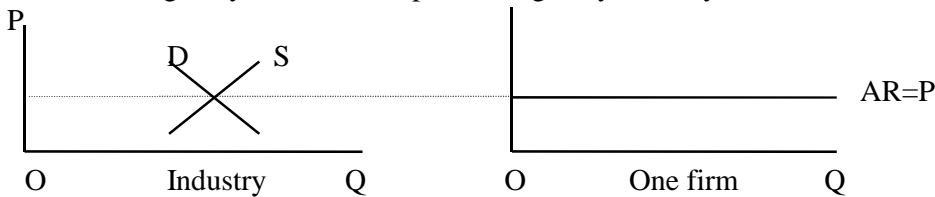
Structure

- è **number of firms:** large (infinite) number of buyers and sellers
- è **relative size of firms:** no one buyer or seller can influence the market.
- è **barriers to entry:** no financial or technical barriers in the long run
 - Perfect knowledge exists among all firms and consumers
- è **product differentiation:** G & S supplied to the market by firms are identical or homogeneous
- è **market power:** All firms are price-takers & consumer is sovereign

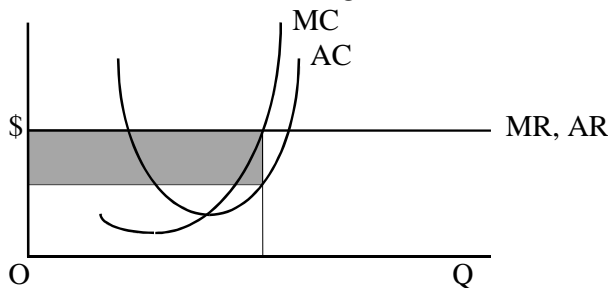
Conduct

è **pricing and output policies** - firm operating in perfect competition is a price-taker

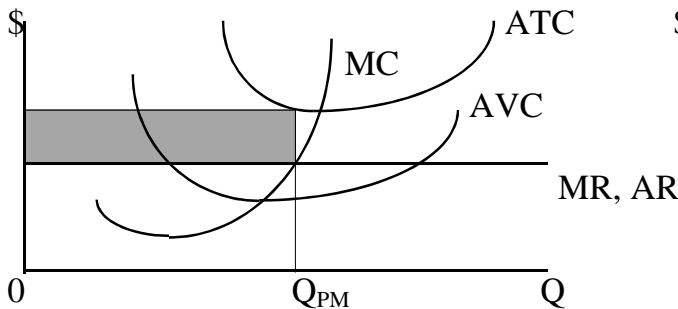
- Price charged by firm same as price charged by industry - horizontal demand curve.



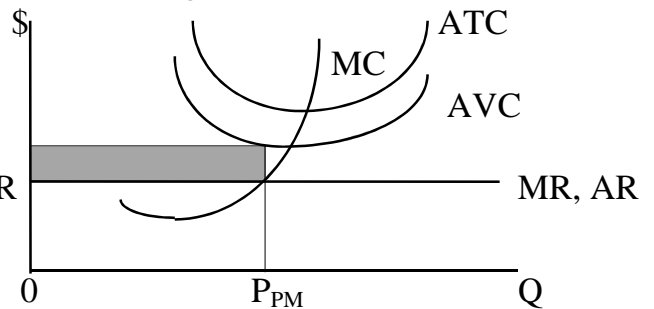
Intra Marginal Firm - Supernormal Profit



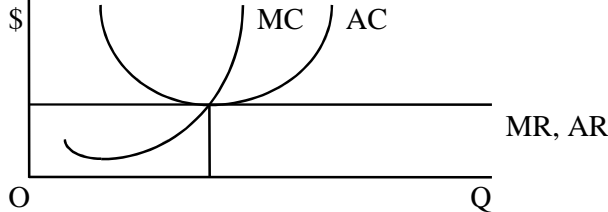
Extra Marginal Firm - loss minimisation



Extra Marginal Firm - shut down position



Marginal firm - normal profit only



è Long-run maximisation

- All firms will be marginal and technically efficient producers, through operation of competition. The most stable production level for perfectly competitive firms in the long-run is where:

$$AC = MC = MR = AR = \text{Price}$$

AC= MC: technical efficiency

MC=MR: profit maximisation

MC=AR: allocative efficiency

Performance

- è **Technical efficiency:** production method yielding given level of output with fewest inputs.
 - competition forces firms to produce at point of minimum ATC & to charge price $ATC = P$.
 - Firms must use the best available (least-cost) technology or they will not survive.
- è **Allocative efficiency:** producing best combination of G&S with best resource combination.
 - Profit-motivated producers will produce each commodity up to precise point at which $P = MC$.
- è **Dynamic efficiency:** maximising pace at which society's material welfare is expanding
 - Purely competitive firms are neither willing nor able to undertake innovation.
 1. The only profit being normal profit - no funds for R&D.
 2. homogeneous products: product differentiation is against perfect competition definition.
 3. Incentive for innovation weak due to perfect knowledge.

Weaknesses of the competitive price system - challenges to efficiency

1. The income distribution problem.
 - Distribution of income is quite unequal and may lead to inequality.
2. Market failure: Spill-overs and external goods - does not accurately measure costs
 - each producer will assume only those costs which he must pay - leading to brutal exploitation.
 - Profit-seeking will bring about an allocation of resources which is efficient from society's point of view only if marginal cost embodies all the costs & benefits which production entails.
3. The market system does not provide for public goods: national defence, flood-control programmes.
4. Range of consumer choice: not sufficient range of consumer choice

Examples from the Australian economy:

- è Wheat growing
 - **number of firms:** 40,000 wheat growing properties
 - **Number of consumers:** its processed products are eaten by hundreds of millions of people
 - **Demand side:** AWB sells wheat to large food processors who have millions of consumers.
- è The wine market
 - market oversupply; many producers; very competitive retail system:
 - **Size of the market:** with foreign competition, market is large & growing rapidly - Wine Australia agenda: five-fold increase in wine exports from \$471 million in 1995-96 to \$2.5 billion in 2025.
 - Formation of domestic oligopoly feared : within 10 years, rationalisation expected to lead to the domination of the market by Penfolds, Mildara and Hardy, covering 90% of market.
 - **Homogenous products:** The various producers have made significant efforts to segment the market into different price, quality, and wine types - competition amongst brands
 - **price competition:** particularly among the lower priced cask and flagon brands.

Monopolistic Competition - shares some perfect competition characteristics, but through advertising & product differentiation, it is really striving to achieve some of the market powers monopolies enjoy

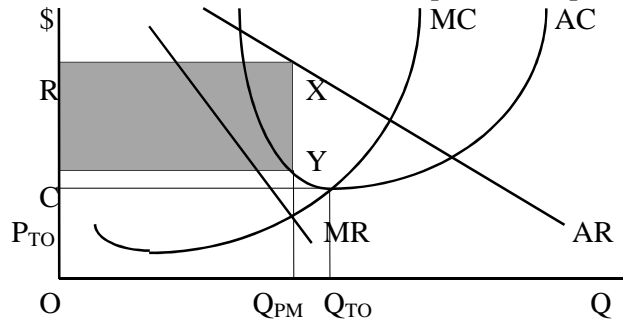
Structure:

- è **number of firms** Relatively large number of small producers that price fixing is impossible
- è **relative size of firms** pricing and output behaviour or one firm has minimal impact on others.
- è **barriers to entry:** product differentiation; financial; patents (process), copyright (presentation), licence.
 - Some impact of output on price - firm has downward sloping demand curve.
- è **product differentiation:** Products are similar but not identical - close substitutes.
 - **real:** quality, features; **imaginary:** brand names, packaging; **advertising** informative vs. persuasive
- è **market power:** Limited control over price (by extent of product differentiation) Little ability for collusion

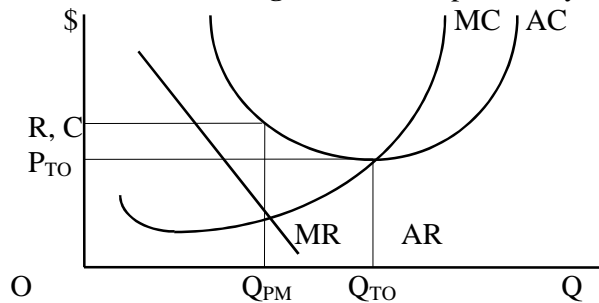
Conduct

⇒ pricing and output policies

- **Downward sloping demand curve** because output has an impact on the price
- **Profit maximisation in the short run** - super normal profit for the intra-marginal firm.



- Demand curve shifts left & becomes more elastic in long-run: market share reduced & more comp.
- **Profit maximisation in the long-run:** normal profit only - insufficient barriers to entry



- Profit maximisation in the long run will TEND to occur despite three complicating factors
 1. product differentiation without duplication
 2. greater financial barriers due to Product differentiation
 3. persistence in a loss making situation by some firms.

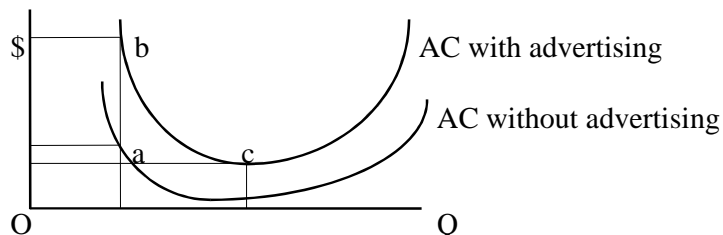
⇒ Advertising - temporary edge for firm by manipulating product or consumer demand

• case for advertising

1. Firm can expand its production, realise economies of scale & conduct product development.
2. Provides market information to assist consumers to make rational choices
3. Promotes competition
4. Promotes full-employment by inducing high levels of consumer spending
5. Supports national communications

• the case against advertising

1. Objective is to persuade, not to inform
2. advertising expenditures account for 1% of Australian GDP and are relatively unproductive
3. much advertising tends to be self-cancelling
 - Moves industry towards oligopoly
4. advertising promotes growth of monopoly - creates financial barriers to entry
5. Affects composition rather than volume of spending



- proponents: a→c: economies of scale. Critics: a→b: increase costs, output relatively unchanged

⇒ research and development - encouraged to increase market share & monopoly pricing power.

- Although some of cost of research included in sale price, provides better product for consumers.

Performance

è **technical efficiency** in long run, quantity produced does not tend towards technical optimum

- overcrowded with firms → Output lower than in perfect competition, & average costs higher.
- Highly elastic nature of each firm's demand curve guarantees results are nearly competitive.

è **Allocative efficiency** not achieved - Under-allocation of resources to production of product: $P > MC$

è **dynamic efficiency**: considerable incentive to undertake R&D as well as real, rather than imaginary, product differentiation - to gain an increase in market share and some monopoly pricing power

Examples from the Australian economy:

è **Neighbourhood pharmacies** 5,000 pharmacies in Australia, one for every 3000 of the population

- State legislation limiting ownership prevents large pharmacy chains developing.
- **Many homogeneous goods**: 90% of sales of a pharmacist come from mass-marketed goods.
- **Entry barriers**: Entry to the industry is easily provided business has a qualified pharmacist.
 - through co-operative purchasing (AMCAL - 500, Chem Mart - 135) costs are similar
- **Some product differentiation**: separated from market by location, prescription makeup.

è **Video Hire**: **Many sellers**: 1985 - 3500 video outlets

- **Product differentiation**: independence from rivals: location advantage, types of videos, service.
- **Competition**: if one lowers its rental prices this will lead to the nearest rivals responding.

Oligopoly

Structure

è **number of firms**: a small number of large firms dominate the market

è **relative size of firms**: each firm has a significant fraction of the market

è **barriers to entry**: large barriers to entry: technical, legal - patents, copyright - & financial barriers

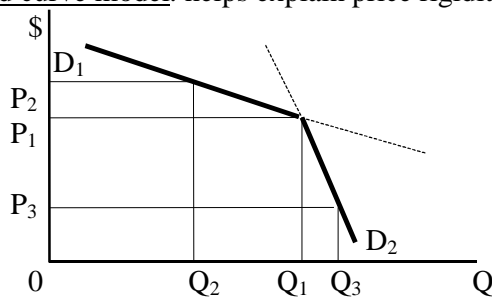
è **product differentiation**: Products may be homogenous or differentiated

è **market power**: economies of scale encourages market concentration & mutual interdependence

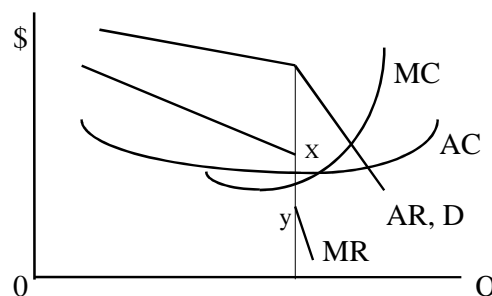
Conduct Key features: 1. price stability 2. interdependence between firms

è **pricing & output policies** barriers to entry ensure firms can earn super normal profits in long term

- prices tend to be inflexible & price changes are "orderly" - imply collusion - price wars rare
 - informal collusion - firms seek & maintain most profitable price, & compete non-price
- **Kinked Demand curve model**: helps explain price rigidity (MR); they do not explain the level

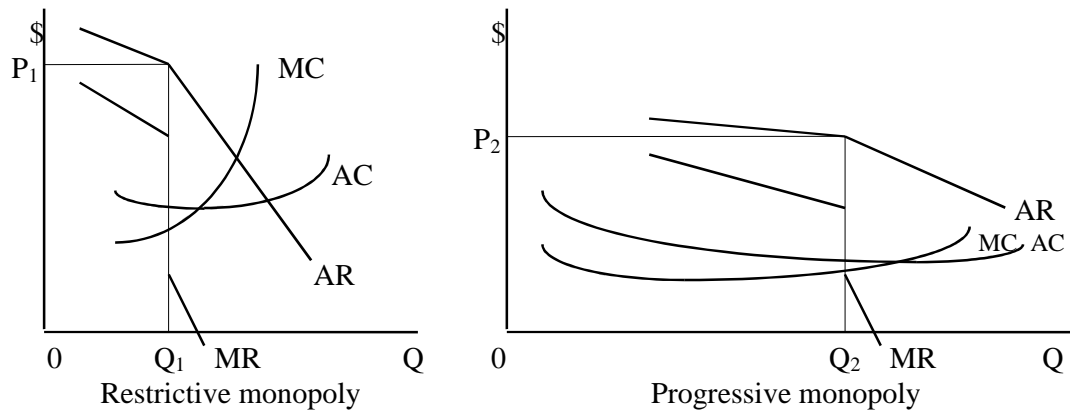


- If firm raises its price, its competitors will not follow and demand will be elastic. & Vice versa.



- price stability: firms willing to absorb costs between X and Y.

- Price leader model: one firm seen as “market leader” - market dominator or low cost producer
 - price leadership: leader operates at $MC = MR$, others adjusting
 - predatory competition: dominant firm takes over, ACCC keeps a watchful eye.
- Restrictive oligopoly and progressive oligopoly



- Restrictive oligopoly: Oligopolist maximises profits by restricting output to Q_1 & charging price P_1 .
 - output beyond Q_1 : must accept large price reductions, rising average costs & risk price war.
 - Restrictive oligopoly worse than regulated monopoly due to market power abuses: collusion.
 - Informal collusion among oligopolists may yield price and output results similar to monopoly.
 - Where oligopoly is restrictive, abuses of its market power may be curbed by countervailing power.
 - Progressive oligopoly: lower average costs & marginal costs through technological advance.
 - MR & AR pushed far to the right as a result of product development & want-creating activities.
 - Compared to restrictive, net result of progressive oligopoly is larger output, Q_2 & lower price P_2 .
 - More relevant model for many manufacturing industries which have been characterised by falling product prices, improvements in product quality & expanding levels of output & employment.
 - Countervailing power: on opposite side of markets in which “original power” has developed
 - Countervailing power, or “across the market” competition, can have an important competitive force in those markets in which “same-side-of-the-market” rivalry is weak:
 - chain supermarkets buy in quantity from oligopolistic food processors and manufacturers.
 - a) The socially desirable operation of a market system characterised by oligopoly will be furthered
 - b) Buyer and seller may cancel the power and negate the potential market abuses of one another.
 - limitations:
 - a) countervailing power is not universally present: dealers in the motor vehicle industry unable
 - b) vertical integration by manufacturers: petroleum industry.
 - c) Inflation: countervailing power undermined: with excess demand, buyers unable to restrain sellers.
 - d) both may benefit at expense of economy by combining forces rather than offsetting one another.
 - Collusion: Tendency to maximise joint profits - to behave like pure monopolists
 - impediments to collusion: Legislation: Trade Practices Act
 - Legislation, presence of a “large” number of firms and differences in cost and demand curves.
 - Collusive price arrangements are difficult to maintain during recessions.
 - Though potentially profitable, secret price concessions can lead to breakdown of price-collusion
 - In Australia, price collusion is usually accompanied by non-price competition
- è **protecting market share** - Market share determined by non-price competition - advertising & R&D
1. advertising & product variations are less easy for rivals to match compared to price reductions.
 2. oligopolists frequently have ample financial resources to support advertising and R&D.
- è **Advertising** - (refer to monopolistic competition) heavy due to large size of firms

è **research and development** - increases revenue and profit potential

- The reason for possible progressiveness in an oligopolistic market lies in technological competition.
 - The betterment of productive techniques will expand the range of constant or declining unit costs
 - Advances in product quality (and advertising) will shift the firm's demand curve to the right.
- Arguments for assumption that oligopolies have greatest means & strongest inclination for R&D.
 - Means (supernormal profits) & Motive (existence of competitors):
 - a) Alternative means for enlarging total profits that is relatively hard for competitors to match.
 - b) Technological superiority increases oligopolist's chance of survival in a price war.
 - c) Entry barriers ensure oligopolist will realise the profit rewards of his research expenditures.
- Arguments against:
 1. Research laboratories responsible for only 20 of 61 basic inventions this century.
 2. Oligopolistic industries in which there is little interest in R&D: cigarette & aluminium industries
 3. substantial portion of research carried out by oligopolistic industries is government funded: Australian Industry Research and Development Grants Acts.
 4. In Australia, private sector has imported much of its technology through parent companies.
 - Private sector R&D spending particularly low in Australia:
 - spent \$3.4 billion (0.74% of GDP) on R&D in 1994-95, lag behind OECD average 1.14%.

Performance

è **technical efficiency:** not technically efficient, misallocation of resources and exploitation of consumer

è **allocative efficiency:** not allocatively efficient

è **dynamic efficiency:** due to high profits, firms can afford research and development.

Examples from the Australian economy

è The petroleum industry

- **Number and size of firms:** handful of large firms dominate Shell, Ampol, BP & Caltex
- **Product differentiation:** compete on basis of service rather than price.
- **Pricing and output policies:**
 - collusion?: Federal Court found no cartel in 1993 when TPC took Service Station Association to court, alleging petrol producers had colluded to fix prices in 1990, illegal under TPA 1974
 - Price increases will not be matched until all firms face increases in costs.- Gulf War
 - Price reductions will always be matched as firms want to maintain their market share.

è The motor vehicle industry

- **number & size of firms:** Ford 23%; GMH 19%; Toyota 16%; Mitsubishi 11% supply 70% market
- **Degree of competition:** Differentiated products, fair degree of price & non-price competition
 - Price competition: Domestic producers have to compete price-wise with imports (30% market).
 - Non-price competition - innovation and product development, after sales service, advertising
- **Barriers to entry:** High establishment costs; economies of scale
- **International competitiveness:** Present tariff level of 25% to be 15% by 2000. Australian industry groups claim that a zero tariff regime would threaten the survival of the car industry.

Monopoly

Structure

è **number of firms:** only one firm in the market

è **barriers to entry:** very substantial barriers to entry at least in the short run: technical, financial and legal

- a) natural monopolies - economies of scale
- b) the ownership or control of essential raw materials
- c) patent ownership and research
- d) unfair competition

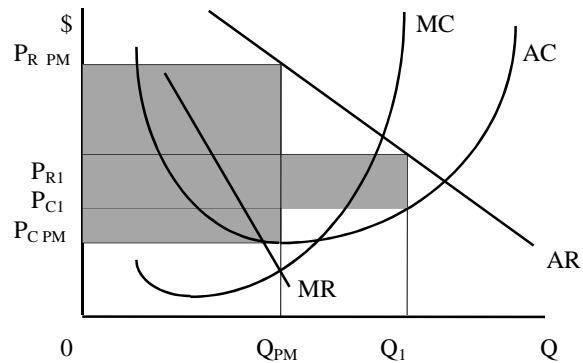
è **product differentiation:** none in a pure monopoly, there are no close substitutes.

è **market power:** monopolies emerge:

1. because the market can only support one supplier - a natural monopoly - roads, railways
2. because the firm is the single owner of a raw material
3. because the firm has bought patent rights, thus forming a monopoly - Hills Australia
4. due to government legislation or regulation - CSR monopoly due to embargo on sugar exports

Conduct

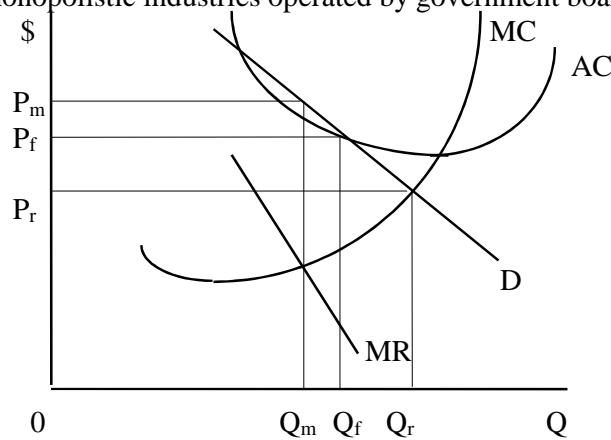
è **pricing and output policies** firm is the industry - short-run same as long-run due to large barriers to entry



- When maximising profits, firm tends to restrict output & elevate price.
- Supernormal profit in both short & long-run may encourage:
 - new producers; consumers to seek alternatives; governments to scrutinise operations
 - Monopolist may produce greater quantity (Q_1) & accept lower profits to maintain position.
- Monopolist is a price maker, therefore he or she may have goals other than profit maximisation:
 - to maximise growth and expand output; preserve public goodwill; product differentiation

è **Regulated monopoly**

- Price regulation to eliminate tendency of monopolists to underallocate resources & earn profits.
- Australia: monopolistic industries operated by government boards or commissions, or regulated.



- Price regulation can improve the social consequences of a natural monopoly.
 - Social optimum price P_r results in efficient allocation of resources but requires permanent subsidies.
 - “fair-return” price P_f monopolist breaks even but not a full correction of resource underallocation.
 - Dilemma of regulation
 - Regulation can improve upon the results of monopoly from the social point of view.
 - Price regulation can reduce price, increase output, & reduce economic profits of monopolies.

è research and development - how conducive is pure monopoly to technological advance?

- **YES:** Some feel that pure monopoly is more progressive than pure competition because its ability to realise economic profits provides for the financing of technological research.
 - IN Australia, can take advantage of a 150% R&D tax concession.
- **NO:** Absence of competitors means there is no automatic stimulus for technological advance.
 - monopolist may withhold technological improvements to exploit existing capital equipment.
 - Advances come from outside industry of from smaller firms at 'competitive fringe' of industry.
- There are at least two counter arguments:
 1. Technological advance is a means of lowering unit costs and thereby expanding profits.
 2. R&D may be one of the monopolist's barriers to entry;
- pure competition superior to pure monopoly in static economy: economies of scale equally accessible
 - Pure competition forces use of best-known technology & demonstrates allocative efficiency.
- However, when economies of scale available to monopolist only, or in a dynamic context, with changes in the rate of technological advance, inefficiencies of pure monopoly are not so evident.

Performance

è **technical efficiency:** profit maximisation occurs at quantity less than technical optimum.

è **allocative efficiency:** output at level less than allocative efficiency - society would like more.

- one basic exception - public utilities

è **dynamic efficiency:** means, but perhaps not the motive.

Examples from the Australian economy

è Australia Post

- **structure** government owned monopoly
 - **Natural monopoly:** Because of its market size - 47,000 employees in 1992 and an extensive distribution system - duplicating capital network would be an impossible barrier to entry.
- **Conduct**
 - **Pricing & output policies:** AP sets its own price for letter postage, ranging from 45 cents.
- **Performance**
 - Under Industry Commission recommendations, general and rural consumers would be paying higher prices, & AP would incur costs of between \$350 & \$590 million to implement recommendations & have to shed 9000-13000 jobs as well as close hundreds of post offices and agencies.

è BHP iron and steel division

- **Structure**
 - **Size of firm:** Closest to a monopoly in private sector in Australia, import competition 30% of market
 - BHP built up its local monopoly status through take-overs and economies of scale.
 - Maintained through vertical integration long-term arrangements with processors.
 - **Product differentiation** threat of overseas competition & substitutes - plastics and aluminium.
- **Conduct - Pricing and output policies:** BHP not able to charge prices it would like for its products.
 - Price is determined by what the market will bear and by the fact that BHP has tariff protection.
- **Performance**
 - **Employment policies:** Following large losses in early 1980s, company embarked on rationalisation: workforce in division cut from 42,000 to 23,000 and a number of plants closed.