SCARCITY, CHOICE & OPPORTUNITY COST

Economics *– The allocation of scarce resources to decide what goods to produce*
Scarcity *– The problem due to limited resources and unlimited wants*
Opportunity cost *– The next best alternative forgone*

Scarce resources (CELL)
- **Capital** – man-made resources (eg. machines, tools, factories, money)
- **Entrepreneurship** – organization & management of factors of production (FoPs)
- **Land** – natural resources (eg. land space, trees, minerals)
- **Labour** – human effort directed at production, both physical and mental

Scarcity → prioritise wants, making choices → opportunity cost incurred

Opportunity cost
- Subjective to individuals and societies
- Difficult to quantify exactly the cost of the next best alternative
- Varies with current situation

Marginalist principle *– deciding whether to take one more step (whether MB > MC)*

The Production Possibility Curve (PPC)
- Graph that shows maximum attainable combinations of output of **two goods** of an economy within a specific timeframe, when using all resources **fully & efficiently** at a **fixed** state of technology
- Concave to origin due to increasing opportunity cost of sacrificing good A to producing more of good B (∵ resources are not perfectly suitable for both goods)

Economic growth *– Increase in real output (actual economic growth) with increase in production capacity (potential economic growth)*

Actual economic growth
- % increase in national output → moving closer/onto the PPC

Potential economic growth
- Speed that economy could grow at → % increase in capacity to produce → outward shift of PPC
- Due to increase in resource quantity, resource quality or tech advancement
- May be skewed towards one good → ∵ difference in suitability of resources

Tradeoff between current and future consumptions
- More capital goods → less consumer goods (for current consumption) → **temporarily decreased standard of living** (SOL)
- More resources to capital good production → increase in production capacity in LR → potential increase in SOL in future

- Therefore, economy operating at point A will experience **greater future increase in economic capacity** (outward PPC shift) than at point C

Efficiency → minimum cost, maximum benefit

- **Static efficiency** – efficiency at given point of time
- **Productive efficiency** – all resources are fully and efficiently used → **any** point on PPC
- **Allocative efficiency** – goods produced in correct quantities as desired → maximized welfare (marginal social cost = marginal social benefit) → **only one** point on PPC
- **Dynamic efficiency** – degree of change in amount & quality of G&S available (innovation level)

*Note: Efficient allocation of resources is attained when **both** productively & allocatively efficient.*

Economic systems

- Seek to best decide: What & how much to produce? How to produce? For whom to produce?
- Spectrum from **planned economy** (eg. North Korea) to **free market economy** (eg. USA)

***Free Market Economy** – reliant solely on market forces to allocate resources, no govt intervention*

Characteristics of the free market economy

- Private ownership of property – can own, control, and earn from one's own resources
- Freedom of choice & enterprise – free to decide what to do and how to do anything
- Pursuit of self-interest – driven by personal benefits, profit-driven
- Competition – many buyers & sellers → insignificant market share and market control
- Functional price mechanism – sole interaction of demand & supply determines price

Roles of price in free market economy

- Signalling device – guides consumers on what & how much to consume
- Incentive device – guides producers on what & how much to produce
- Rationing device – ration scarce resources, goods & services among buyers

*Competition → incentive to produce **max output with min cost** (productively efficient), allocates more goods to **those with the capacity to pay** (allocatively efficient) → economically efficient*

RESOURCE ALLOCATION IN COMPETITIVE MARKETS

***Demand** – Quantity that consumers are **willing & able** to buy at a given price and timeframe*

Demand Theory

- Quantity demanded of a good/service is inversely proportional to its price, ceteris paribus
- Refers to the flow of goods, not stock amount of goods
- Assumes consumers are rational and allocate their income to **maximize satisfaction**

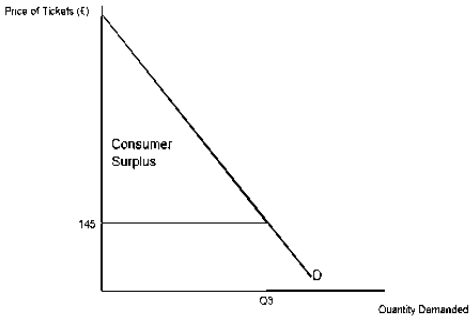
Non-price determinants of demand (TIGER PIE)

- **T**astes & preferences – effects of advertisements, education, culture, fads & age group
- **I**ncome – changes in income → adjustments to expenditure patterns
- **G**ovt policy – taxes/subsidies on consumers' income → changes in purchasing power
- **E**xpected price changes – consumers "stock up" on goods while they're cheaper → DD rises
- **R**elated goods – changes in prices of substitutes or complements of a particular good
- **P**opulation – change in number/composition → different consumer profile → different DD

- **I**nterest rates – inversely related to demand of very expensive goods (eg. cars, houses)
- **E**xchange rates – affects foreign demand for a country's G&S → ∵ G&S now seem relatively cheaper/expensive when converted to foreign currency

Consumer surplus (CS)

- Difference between maximum amount that consumers willingly pay for a given quantity of goods and what they actually pay → area between price line & DD curve
- Indication of consumer benefit derived from buying the good & consumer welfare



Supply *– Quantity that producers are* ***willing & able*** *to offer for sale at a given price and timeframe*

Supply Theory

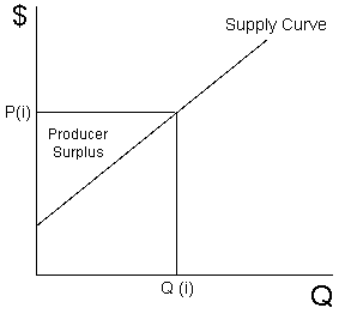
- Quantity supplied of a good/service is directly proportional to its price, ceteris paribus
- Assumes producers are rational and aim to **maximize profits**

Non-price determinants of supply (CENTGER)

- **C**osts of production (COP) – changes in prices of FoPs affect COP → affects profits → affects SS
- **E**nvironmental factors – climate favourable (or not) → affects yield of agricultural products
- **N**umber of firms – more producers in market → increase in total market supply → rise in SS
- **T**echnology advancement – discoveries/innovation → lower cost per unit output → rise in SS
- **G**ovt policy – taxes/subsidies on producers → affect COP and profits → affects SS
- **E**xpected price changes – producers vary amount they sell to gain max profit with price changes
- **R**elated goods – changes in prices of substitutes or complements to goods produced

Producers' surplus (PS)

- Difference between revenue earned by producers and minimum amount that they are willing and able to accept to produce the good → area between price line and SS curve
- Used with CS to determine welfare effects of firms', households/ and govts' actions → indicated by changes in CS and PS respectively



Market equilibrium *– a state where buyers and sellers are satisfied with the current price-quantity combination of a good bought or sold → no incentive to change their current actions*

Price adjustment process

- Situation – prevailing price is above/below equilibrium price
- This results in a **surplus/shortage** in the market
- So a **downward/upward** pressure on the price is expected because…
  - **Downward:** Producers will find they cannot sell out all their output & consumers will recognise the excess supply of the good → offer lower prices
  - **Upward:** Consumers who cannot buy the desired quantity of good will offer higher prices & producers will increase supply in response to increase profit → drives prices up
- Thus, the market price will **fall/rise** until equilibrium price is attained, where $Q_D = Q_S$

Elasticity *– Responsiveness of a variable to changes in price or other determinants, ceteris paribus*

Price elasticity of demand (PED)

- PED = (% change in Q_D)/(% change in price) = $\Delta Q_D/Q_D \div \Delta P/P$
- |PED| > 1: Q_D of a good is sensitive to changes in price (price elastic)→ gentle DD curve
- |PED| < 1: Q_D of a good is not sensitive to changes in price (price inelastic) → steep DD curve

Determinants of PED (SHIT)

- **S**ubstitutability – more close substitutes → more options for consumers → more price elastic
- **H**abitual consumption – good is bought habitually → more essential → price inelastic
- **I**ncome proportion – large income proportion spent on good → more sensitive to price changes
- **T**ime period – given time, close substitutes will pop up → more options → more price elastic

Applications of PED

- **Producers:** Deciding pricing strategies to increase total revenue (∵ TR = P x Q) in SR & LR
- **Govts:** Deciding which goods to indirectly tax → usually tax price inelastic goods (eg. cigarettes)
- Explanation of price fluctuations of price inelastic goods (eg. agricultural products)
- Effectiveness of trade union to bargain for higher wages → works more for price inelastic goods

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Income elasticity of demand (YED)

- YED = (% change in Q_D)/(% change in income) = $\Delta Q/Q \div \Delta Y/Y$
- YED > 1: Luxury good → highly sensitive to income changes → ∵ usually more expensive
- 0 < YED < 1: Necessity → increase in income → **less than proportionate** increase in demand
- YED < 0: Inferior good → increase in income → decrease in demand
- Determines extent of shift of DD curve when income rises/falls

Determinants of YED

- Degree of necessity of good – necessities → Q_D stays about the same despite income changes
- Income of consumer – changes consumer's perception of necessity of certain goods

Applications of YED

- **Producers:** Plan future output, target consumer & nature of product with changes in income
- **Govts:** Help to predict demand patterns with income changes → project changes in policies

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Cross elasticity of demand (CED)

- CED = (% change in Q_D of good A)/(% change in price of good B) = $\Delta Q_A/Q_A \div \Delta P_B/P_B$
- CED > 0: Substitutes → increase in P_B → consumers switch to the cheaper good A
- CED < 0: Complements → increase in P_B → DD_B falls, which causes DD_A to fall also
- CED = 0: Unrelated goods → demands of either good is unlikely to affect the other's
- Determines relative shift of DD_A curve in response to a change in P_B

Applications of CED

- **Firms:** Plan pricing policies and marketing strategies in response to rival firms' actions
  - **Substitutes:** Advertising, product differentiation, membership scheme → increase brand loyalty and decrease substitutability → CED falls

- **Complements:** Link marketing plans to pricing policy of other firm, package goods together as one, display them in close proximity → strengthen link between goods → CED rises

Price elasticity of supply (PES)

- PES = (% change in Q_S)/(% change in price) = $\Delta Q_S/Q_S \div \Delta P/P$
- |PES| > 1: Q_S of a good is sensitive to changes in price (price elastic)→ gentle SS curve
- |PES| < 1: Q_S of a good is not sensitive to changes in price (price inelastic) → steep SS curve
- Indication of ease of expansion of firm's production when price of good changes

Determinants of PES

- Time period – ease of increasing output → longer timeframe, more price elastic
- Factor mobility – ease & speed of shifting resources between industries for use
- Number of firms – more suppliers → output is more easily increased → more price elastic
- Stocks & spare capacity – greater spare capacity/shelf life of good → more price elastic

Applications of PES

- Explaining large price fluctuations of goods that are price inelastic to supply with DD changes

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Government intervention and impact on market outcomes

Indirect taxes/subsidies

- Classified in 3 types: general expenditure taxes (eg. GST), excise duties (on certain goods) & customs duties (on crossing borders)
- Compulsory taxes by govt on expenditure paid **by producers** → some/all tax burden passed on to consumers (depending on relative PED and PES of the good)
- Lead to leftward/upward shift of SS curve **by the dollar amount** of the per unit tax
  - **Specific/per unit taxes:** constant sum levied on each unit → parallel upward shift of SS curve
  - **Ad valorem tax/percentage taxes:** pegged at certain % of price of good → pivotal shift of SS
- Subsidies are simply the opposite of taxes

Tax/subsidy incidence *– distribution of burden of taxation/benefit of subsidy between consumer and producer after new equilibrium price is established after tax/subsidy imposition*

Note: Graphically, tax burden ***on consumer = $P_1 - P_0$*** *& tax burden* ***on producer = rest of the tax***

Welfare impacts of indirect taxes/subsidies

- **Deadweight welfare loss** – welfare benefits lost to society due to inefficient allocation of resources → it is always incurred in taxation or subsidization
- Graphically, compare changes in areas of CS and PS with the tax revenue/cost from subsidy → deadweight welfare loss to society incurred = triangle formed from Q_1 & original DD-SS curves

Price controls

- Setting of minimum/maximum prices by govt → market forces unable to adjust prices
- Results in market disequilibrium → shortages and surpluses created
  - **Shortages** → non-price rationing, black markets
  - **Surpluses** → govt spends extra to buy up/stores/destroys surplus
- Disjoint in Q_D and Q_S → too little/much resources allocated to the good → allocative ineff.
- Deadweight welfare loss is also lost

THE LABOUR MARKET – similar to any other market really

DD & SS for labour

- Labour is a **derived demand** from the demand of produced G&S → linked to monetary value of additional G&S produced by an additional unit of labour
- Supply is made up of people **willing and able** to work for a given wage
- Wage rate is the price of labour

Non-wage determinants of demand of labour

- Price of final good – directly proportional to wage rate
- Physical output of each worker – changed by tech advancement, better education or machinery
- Prices of other FoPs – machines could substitute labour if cost of using them is lower than wage rates

Non-wage determinants of supply of labour

- Population size – directly affects size of workforce
- % of economically-active people – dependent on retirement age → affect size of workforce
- Income tax & benefits – high taxes/benefits (eg. social safety net) lowers incentive to work
- Educational requirements of job – harder to find qualified experts in very specialised field
- Scope of job/job reputation – refers to non-wage benefits of job that contribute to its image
- Wage rates of other industries – relative attraction of workers to one industry over another

Reasons for LR wage differentials

- Non-competing groups – labour is heterogeneous and mostly immobile between industries
- Compensating differentials – some jobs more stressful/dangerous → higher salaries
- Labour market imperfections/govt intervention – limits on supply of foreign labour/wages
- Discrimination – stereotypes of certain genders, races, age, religions or disability

FIRMS & HOW THEY OPERATE: PRODUCTION & COSTS

***Firm** – Organization by profit-seeking entrepreneurs who bring FoPs together to produce & sell G/S*
***Plant** – A physical location where FoPs are gathered to produce G/S*
***Industry** – A group of firms that produce a single G/S or a group of related G/S*
***Production** – Process by which FoPs are used to create G&S*

***Explicit cost** – Direct payment made to external supplies of input (eg. wages, raw materials)*
***Implicit cost** – Cost that aren't directly paid to a third party, but are still an opportunity cost*
***Accounting cost** – Monetary value of explicit costs*
***Economic cost** – Total monetary value of explicit & implicit costs*

Traditional objective of firms – To maximize profit (where Profit = Revenue – Cost)

Reasons for deviation from traditional profit-maximizing objective
- **Principle-agent problem** – Managers in large firms seek to increase power/revenue, not profit
- **Satisficing behaviour** – Parties within the firm behave to fulfill several, conflicting objectives
- **Nationalized industries** – Owned by govt → maximize social welfare/political influence
- **Imperfect information** – Firms do not have full information to make appropriate price decisions
- **Social enterprise** – Business viewed as vehicle for social change → profit is a means, not a goal

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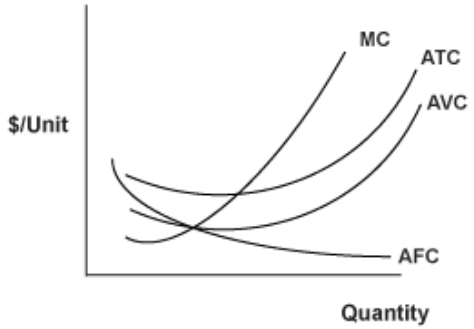
***Fixed factor** – An input that cannot be increased in supply within SR (eg. land, machinery)*
***Variable factor** – An input that can be increased in supply within SR (eg. labour, raw materials)*

Short run (SR)
- Time period with at least 1 fixed FoP
- Time taken differs between industries → ∵ depends on time taken for firms to vary all FoPs

Production in SR
- Marginal O/P rises at first → ∵ division & specialization of labour → greater efficiency
- As more units of variable FoP are applied to a fixed quantity of fixed FoP, the marginal O/P from additional variable FoP will eventually diminish **(Law of Diminishing Marginal Returns)**
  - Due to overcrowding of fixed FoPs → loss in productivity
- Marginal O/P decreases and becomes negative

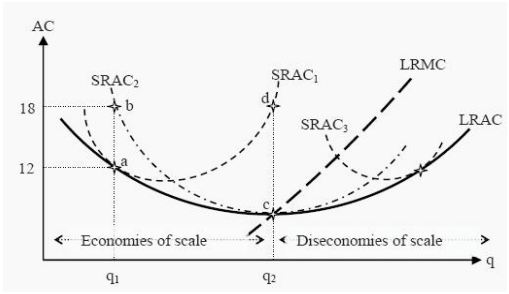
***Fixed cost** – Cost that doesn't vary with O/P → paid even without production (eg. rent)*
***Variable cost** – Cost that varies with O/P → not incurred without production (eg. utilities/labour)*
***Marginal cost** – Cost incurred in producing an additional unit of O/P*

Things to note when drawing cost curve graph
- AFC falls towards zero, ATC/AVC/MC parabolas
- ATC & AVC convergent to each other
  - ∵ ATC is vertical summation of AVC & AFC
- Min pt of ATC is on the **right** of min pt of AVC
- MC intersects both min pts of ATC & AVC



Long Run (LR)
- Time period where all FoPs can be varied at a fixed technology level

Long run average cost curve (LRAC)



- U-shaped curve that shows variation of AC with O/P
- As O/P rises, AC falls initially due to indivisibilities in production, specialization, etc → shows iEOS
- **Minimum efficient scale (MES)** is attained at min AC
  - ***MES** – O/P level where no more iEOS can be reaped*
- AC starts rising again → shows iDEOS
- At any O/P, LRAC is tangent to 1 point on SRAC curve
- LR optimum size varies between industries (eg. tailors vs transport providers)
- MES relative to market demand → max no. of firms possible in market & degree of competition

Internal economies of scale (iEOS) – cost savings due to expansion & firm's own policies/actions
- Technical economies – technical/engineering factors directly related to production **(main iEOS)**
  - Factor indivisibility – fully using inputs (eg. machines) of large minimum size
  - Law of increased dimensions – larger equipment more efficient due to geometry
  - Specialization & division of labour – simpler, repetitive jobs → less training, time lost
  - Linked process economies – integrating vertically-linked processes → save time/energy
  - By-product economies – wastes can be economically used to make by-products → extra $$
- Managerial economies – can hire specialists to supervise different sections of production line
- Commercial economies – bargaining advantage → buying raw materials/components in bulk
- Financial economies – easier to get loans/raise capital → ∵ larger firms have better credit
- R&D economies – can afford to build labs, employ researchers → ∵ more capital to utilise
- Welfare economies – can provide medical benefits, recreational facilities to employees
- Risk-bearing economies – spread uncertainty of COP over large O/P → reduced unit costs
- Scope economies – wide range of products → diverse clientele, bulk purchase of common parts

Internal diseconomies of scale (iDEOS) – increase in costs due to firm's own policies/actions
- Complexity of management – bureaucracy, divorce between ownership & management
- Strained relations – impersonal work relations → loss of loyalty to company → apathy/sloppy

External economies of scale (eEOS) – savings to all firms by expansion/concentration of industry
- Causes LRAC curve to shift **downwards** → ∵ reduction in AC for every O/P level
- Economies of concentration – mutual benefit of close proximity to firms within the industry
  - Availability of skilled labour – special educational facilities to train workers in the area
  - Well-developed infrastructure – better transport lines, utilities, commercial facilities
  - Reputation – large & well-established industry → better reputation, brand loyalty
- Economies of disintegration – supporting firms specialise to cater to needs of main industry
- Economies of information – publication of trade journals → improve productivity of each firm

External diseconomies of scale (eDEOS) – increased costs to all firms by expansion/concentration
- Causes LRAC curve to shift **upwards** → ∵ increase in AC for every O/P level
- Increased strain on infrastructure – eg. traffic congestion → loss of time & increased fuel usage
- Rising factor costs – larger industry → growing shortage of common raw materials & labour

Size of firm

- Measured by O/P level, total annual revenue, market share, amount of real assets, no. of employees

Reasons for growth of firms

- Exploit available iEOS → done by expansion of O/P, mergers, diversification of product range
- Increase market share → increase market power → reduce risk of takeover by other firms
- Increase market valuation

Methods of growth

- Internal expansion – increasing O/P or extending product range → funded by profits/borrowing
- Merger/acquisition – merging to form a new enterprise/buying over another firm to absorb it
  - **Vertical integration** – merging with firms in different stages of production
    - Backward integration – earlier stage → better control over quality & quantity of materials
    - Forward integration – later stage → ensure standards of retail outlets to live up to image
  - **Horizontal integration** – merging with firms in same stage of production → mkt domination
  - **Conglomeration** – merging with unrelated firms → diversify output → ensure LR survival
- Franchising – selling of rights to use a firm's business model & brand for a period of time
  - Avoids investments & liabilities of actually owning the chain
  - Franchisee also has more incentive than normal employee → ∵ direct stake in business

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Why do small firms still exist despite the enormous advantages of large firms?

Demand factors

- Nature of product – perishables, preference for variety over standardization, specific products
- Prestige markets – incredibly expensive products (eg. jewellery) → very limited market
- Personalised services – services that require personal attention (eg. hairdressing, doctors)
- Geographical limitations – product with great bulk relative to value → unfeasible to transport

Supply factors

- MES at low O/P levels – advantages of large firms overridden by need for personal attention
- Low entry barriers – easy to setup small firm if cost is relatively low
- Vertical disintegration – production process broken into small, distinct processes by small firms
- Difficulty in raising capital – small firms do not have the profits, and thus, funds to expand
- Unwillingness to take risks – ∵ larger firm → higher expenditure → greater risk of loss
- Banding – small firms can buy in bulk together while still retaining independence
- Profit-cycles – firm is temporarily small as product is still in infancy, so demand tends to be low

Why do small and large firms coexist in the same industry?

- Nature of industry's LRAC – has MES over wide range of O/P → all firms equally competitive
- Segmentable market (eg. cars) – different classes of product demanded (eg. Toyota & Ferrari)
- Production process can be disintegrated – small firms can specialise & complement large firms
- Joint ventures/banding – small firms set up jointly owned enterprises to enjoy iEOS together
- Technological progress – new tech smaller/simplified/cheaper → affordable for small firms

FIRMS & HOW THEY OPERATE: SPECTRUM OF COMPETITION

Determinants of market structure

- **Number of firms** relative to market size (no. of dominant firms in the market)
- **Nature of product** (no. of types of product & extent of product differentiation)
- ***Barriers to entry (BTE)*** *– Conditions that prevent entry of new firms into an industry*
- **Level of product knowledge** of consumers and producers

Equilibrium/Profit-maximising condition *– MR = MC* ***and*** *MC rising*
Shutdown condition *– TR < TVC or AR < AVC*

Perfect Competition (PC)

- Large number of firms → insignificant market share → PC firm is a **price-taker**, follows DD-SS
  - DD curve of PC firm is a **horizontal line** (perfectly price elastic demand) → DD = AR = MR
- Homogeneous product → no preference towards any one firm
- No BTE → all FoPs are perfectly mobile & available to all firms at uniform price, minimal FC
- Perfect knowledge → everybody knows everything → **price uniformity & no advertising**

Profits of PC firms

- **In SR** – supernormal/normal/subnormal profits all possible
- **In LR** – normal profits only → no incentive/ability to innovate (∵ R&D is capital-intensive)
  - Situation: supernormal/subnormal profits
  - Firms will be attracted into industry/forced to leave if TR < TVC → market SS rises/falls
  - This causes market price, and thus, the PC firm's DD line to shift upwards/downwards
  - Reduction in existing firms' profits/losses → at new LR P_E, existing firms make normal profits

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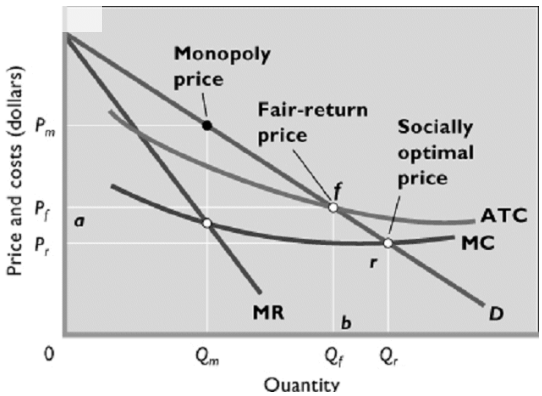
Monopoly

- Single producer → producer = whole industry → **price-setter, $DD_{firm} = DD_{industry} = AR = P$**
  - MR line is always **twice as steep** as DD = AR = P line
- No close substitutes/unique product → great price-setting ability (∵ very low PED & CED)
  - Can restrict O/P to sell at high price or practice price discrimination
- High BTE → monopoly retains LR supernormal profit → **incentive to maintain BTE & do R&D**
- Low outsider knowledge of product → ∵ tech is usually closely-guarded → price-setter

Barriers to entry – how the monopolist maintains its position

- Natural monopoly – already at large scale (∵ large MES) → reap substantial iEOS → lower AC
  - New smaller firms cannot survive at small scales → high AC
  - Monopolist may also reduce price → ward off new firms
  - Usually involves high startup cost/high TFC (eg. power stations, utilities) → DD only supports 1 large firm operating efficiently → natural monopoly

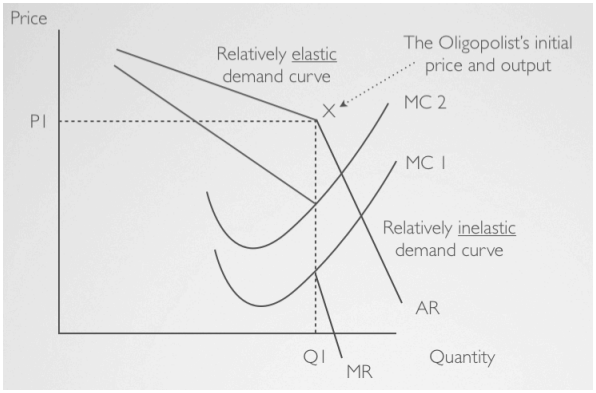


- Strategic entry deterrence – product differentiation (eg. advertising, R&D) → customer loyalty
- Legal barriers – protection through exclusive rights (eg. patents, copyrights, licenses)
- Control over key inputs – governs supply of vital inputs for production (eg. sole supplier)
- Mergers, collusions & takeovers – takeover any new firm → reduce competition

Profits of monopolies
- **In SR** – supernormal/normal/subnormal profits all possible
- **In LR** – supernormal/normal profits → ∵ high BTE

Oligopoly
- Few dominant firms relative to mkt size → strong market power → **mutual interdependence**
  - Measured by **market concentration ratio** – the sum of **n largest firms**' market share
  - ***Mutual interdependence (MI)*** *– action taken by any firm will affect other firms significantly*
- Homogeneous (eg. metal, petrochemicals) or differentiated products (eg. cars, beverages)
  - Demand is **not** perfectly price elastic → firms are all their own **price-setter**
- Huge BTE → ∵ few dominant firms reap large iEOS → hard for new firms to enter
- Imperfect knowledge about production methods & prices → also a BTE, technically

Price rigidity



- Few dominant firms → firms will predict rivals' actions to its pricing strategies:
- If $P_2 > P_1$, unlikely that rivals will follow → Q_D falls more than proportionately → price-elastic DD above P_1 (gentler slope) → lower TR
- If $P_2 < P_1$, rivals will match price reduction → Q_D only increases less than proportionately → price-inelastic DD below P_1 (steeper slope) → lower TR
- Therefore, firms **perceive no benefit** from changing price → **price rigidity**
- Kinked AR curve → MR curve has discontinuous section → MC rise is **entirely absorbed** by firm
- Note: This theory does not explain how the initial price P_1 is determined in the first place.

Competition in oligopoly
- Price wars – occurs in excess capacity despite price rigidity & MI → started by firm with largest MES → drives out rivals → surviving firms gain greater market share & power → more profits
  - However, losses in SR are inevitable → price wars are unsustainable
- Product differentiation – R&D, intensive advertising → ∵ funds from supernormal profits
  - Advertising & promotion → raise consumers' product awareness, build customer loyalty
  - Innovation, R&D → increase product range & quality, improve production methods

Collusive oligopoly – agreement among firms to decide prices & how to divide the market
- Main motive is to **reduce unpredictability of rivals' reactions** to firm's pricing strategies
- Increases profits of all firms as a whole → incentive to collude
- Firms basically act and behave like 1 big monopoly

Profits in SR – supernormal/normal/subnormal**; Profits in LR –** supernormal/normal

Monopolistic competition (MPC)

- Large number of firms → ∵ no/low BTE → insignificant market share
  - Collusion is not possible → ∵ large number of firms → pricing/non-pricing competition
  - **Pricing competition** – impacts of price changes is negligible on rivals → freer to price-set
  - **Non-pricing competition** – production differentiation → maintain customer loyalty
- Differentiated products – by quality, design, packaging, branding, etc → some degree of price control → **price-setter** with downward sloping DD → but **very price-elastic** ∵ many substitutes
- No/low BTE → ∵ relatively mobile FoPs, low startup cost, replicable tech → many firms
- Imperfect knowledge of production methods & prices (eg. some locations are more favourable)

*Note: **No single market DD curve** exists for MPC, since **many prices prevail** due to product differentiation and imperfect knowledge amongst consumers.*

Profits of MPC firm

- **In SR** – supernormal/normal/subnormal profits all possible
- **In LR** – normal profits only → ∵ no/low BTE
  - *Similar diagram to adjustment in PC market, except with slanted DD = AR curve & an MR line*
  - Situation: supernormal/subnormal profits
  - Firms will be attracted into industry/forced to leave if TR < TVC → firm's DD falls/rises
  - Firm's own DD curve also becomes more price-elastic/inelastic → ∵ more/less substitutes
  - This results in a decrease/increase in price → reduction in existing firms' profits/losses
  - ∴ At new LR P_E, existing firms make normal profits

Criteria for desirability of a market structure (CEED)

- **C**onsumer choice – range of options for consumers to pick from → more choice is desirable
- **E**conomic efficiency – **both** allocative **and** productive efficiency
  - Allocative efficiency – achieved when **P = MC** → ∵ value of good = cost taken to produce it
  - Productive efficiency (for **firm**) – achieved when on **LRAC curve (X-efficiency)**
  - Productive efficiency (for **society**) – achieved when at **MES** → ∵ only here, resources are fully & efficiently utilized, as all available iEOS are exploited
- **E**quity (distributive efficiency) – fairness in distribution of wealth, income & opportunities
- **D**ynamic efficiency – innovation arising from investment of scarce resources into R&D
  - R&D creates new products/production methods → higher quality, wider range/quantity
  - Leads to increased social welfare

***Perfectly contestable market** – zero cost of entry and exit by rivals, can be done so very rapidly*

Theory of contestable markets

- Argues that price & O/P are determined not by mkt structure, but **by the threat of competition**
- Possibility of supernormal profit → **attract new firms easily** → usually highly mobile capital
- ∴ Incumbent firms (of any mkt structure) will keep prices down to normal profits & be X-eff.
- Failure to do the above **will** turn potential competition into reality → ∵ ease of entry
- Implications of contestable markets:
  - Firm(s) in any structure will behave competitively in LR → lower supernormal profits
  - Inefficient firms, including monopolies, cannot survive → must change or leave in LR
  - Encourages firms to compete perfectly → ∴ govt effort should make markets contestable by lowering entry & exit costs (eg. by granting more licenses) → allow entry of new firms

Price discrimination (PD)

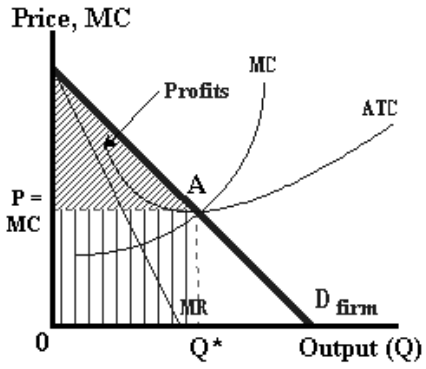
- 1˚/2˚ PD – charge the same consumer different prices for the same product
- 3˚ PD – charge different consumers different prices for the same product
- **This difference in pricing must not arise from differences in production cost**

Conditions for PD

- Control over market supply → from BTE to firms/consumer ignorance/high transport costs/etc.
- No possibility of resale between markets → otherwise, price equality restored by arbitrage
- Segmentable market with different PED → higher price for more price inelastic market

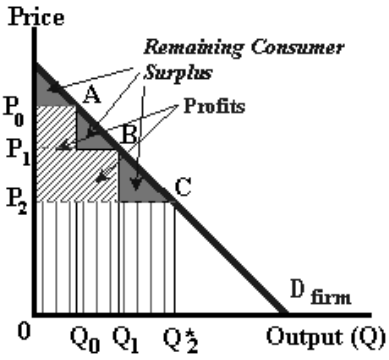
1˚/Perfect PD

- Charge maximum price consumer is willing to pay for each unit sold → all CS is captured
- Note that DD curve = AR = MR
- But, 1˚ PD almost impossible
  - Usually impractical to charge every consumer a different price
  - Consumers also won't reveal maximum price
- Technically, 1˚ PD is allocatively eff. (∵ P = MC at Q*)
- Examples: Auction sites



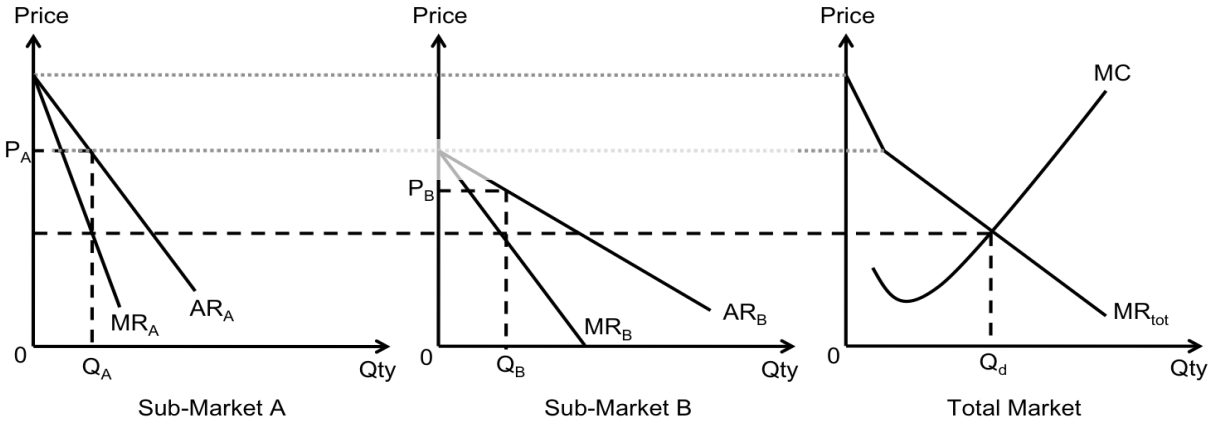
2˚ PD (Block pricing)

- Charge different prices for different blocks of goods purchased according to how much consumer buys
- Usually sets uniform price P_0 for initial quantity Q_0, followed by a concession of lower price P_1 for additional goods till Q_1, and so on
  - Due to higher PED of additional batches of goods → ∵ more substitutes for subsequent blocks
- Note step-like MR curve
- Examples: Printing services/electricity



3˚ PD

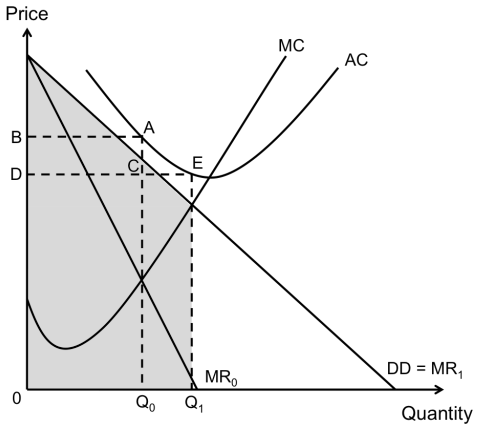
- Charge different prices to different consumers **due to non-cost differences**



- Total O/P set for each market so MR_{tot} = MC → divide O/P such that $MR_A = MR_B$
- Note that MR_{tot} more price elastic & horizontal summation of MR_A and MR_B
- Examples: MRT/bus fares for adults vs. senior citizens/students

Cost & benefits of PD

- Costs
  - Loss of CS → transferred to producer (most clear in 1˚/2˚ PD) → (but still allocatively eff.)
  - Monopolies usually X-ineff. ∵ huge profits → inefficient use of resources → affects welfare
- Benefits
  - Higher O/P & lower prices relative to uniform pricing → more consumers can afford goods
  - Provision of unprofitable goods (eg. pharmaceuticals)
    - Industries with AC > P make loss of ABCD with uniform pricing at profit-maximising MR_0 = MC
    - With 1˚ PD, new TR = shaded area, new TC = $DE0Q_1$ → supernormal profits → production of good
  - Higher profits → facilitate R&D → may benefit society

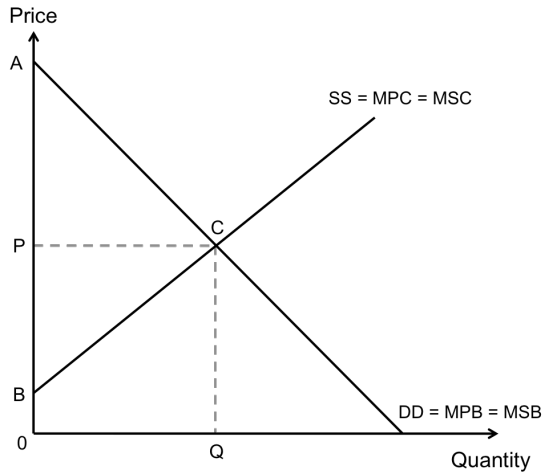


MARKET FAILURE

Market failure *– The failure of free market to achieve allocative efficiency*
Allocative efficiency (AE) *– When society produces & consumes G&S such that welfare is maxed*

How might the free market lead to efficient resource allocation?

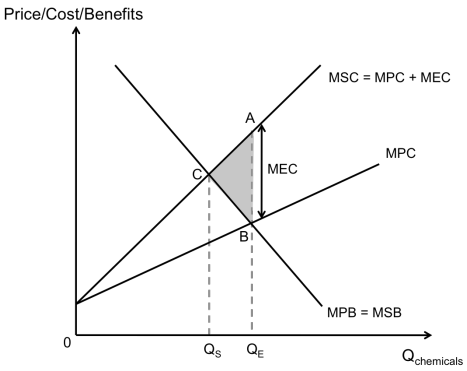
- DD curve represents marginal benefit (MB) derived from consuming additional unit of good
- SS curve represents marginal cost (MC)/opp cost of producing additional unit of good
- **If PC & no market failure,** Q is AE O/P level, where MSB = MSC → ∵ producers & consumers all **pursue self-interest** to maximize their net benefit of society from free market
- **At Q, P = MB = MC** → AE is achieved without any intervention
- AE also achieved when (CS+PS) is maximised
- Note that MPB = MSB as SB = sum of all PB



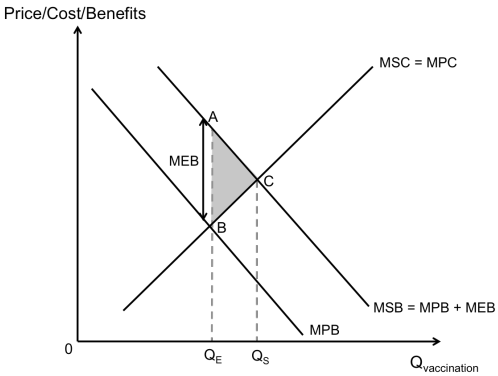
Externalities *– Effects on 3rd parties that they didn't pay/receive compensation for due to pursuit of self-interests by the immediate consumer & producer*

Sources of market failure

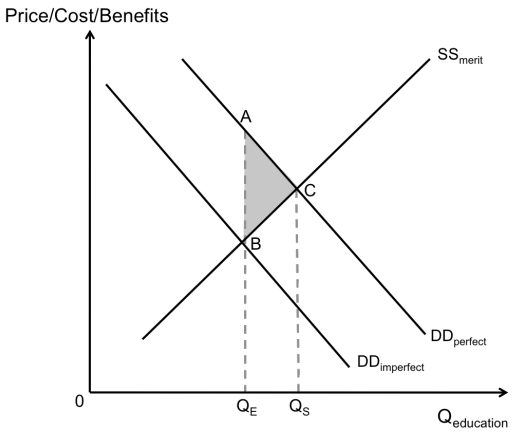
- Externalities → diverges MPC & MSC and MPB & MSB
  - Pursuit of self interest to maximise profits/satisfaction → ignore 3rd party costs/benefits
  - Positive/negative externalities in production
    - Benefits/costs on 3rd parties from production of goods/services by firms
    - Splitting of MSC = MPC curve by extent of marginal external cost (MEC)



    - Examples: R&D (+ve) → benefits of new tech for all & chemical plants (-ve) → pollution
    - Note: MEC at low chemical O/P is negligible → pivotal split of MSC & MPC
  - Positive/negative externalities in consumption
    - Benefits/costs on 3rd parties from consumption of goods/services by firms
    - Parallel splitting of MSB = MPB curve by extent of marginal external benefit (MEB)
    - Examples: Vaccination (+ve) → herd immunity & smoking (-ve) → 2nd-hand smoke
  - Deadweight loss (DWL) is given by shaded triangles ABC on diagram



- Merit/demerit goods → good deemed to be good/bad for consumers by govt
  - Examples: Education (merit good) & cigarettes (demerit good)
  - Imperfect information
    - Consumers misjudge PB & PC → consumer too much/little of the good
    - Govt takes on paternalistic role → judges that people don't act in their own best interest
    - These misjudgments **affect DD curves** → addressed by education/campaigns

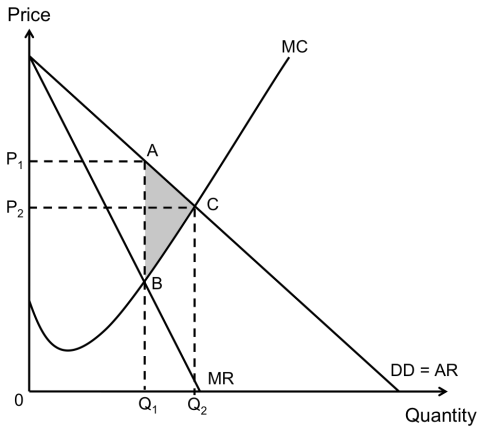


  - Externalities due to self-interest
    - Merit/demerit goods → generate +ve/-ve externalities in consumption
    - But, **pursuit of self-interest** → ignore externalities → consume Q_E instead of Q_S
  - Inability to pay **(merit goods only)** → identical graph to imperfect information
    - Free market relies on dollar votes to allocate resources → depends on individual income
    - Excessive income inequality → some are too poor to make dollar votes to affect DD → misallocation of resources
    - Merit goods, like education, must be available to all, **even those who cannot afford it**
    - Thus, government will intervene to help correct the inefficient free market outcome

- Public goods
  - ***Non-excludable –*** *Impossible/costly to exclude non-payers from consuming the good*
    - No one has incentive to pay for such goods & producers cannot collect payment for goods
    - Leads to **free-rider problem:** many free-riders → little/none of public good produced
    - Occurs even though people may value the public good very highly
  - ***Non-rivalrous –*** *Consumption by one consumer doesn't reduce supply available for others*
    - Market supply unaffected by additional consumers → MC = 0 → for AE, P = MC = 0 also
    - But, private profit-maximising firms will never produce at P = 0 → good not produced
    - If non-zero price → discourage some consumers from enjoying → bad for welfare/equity
  - Examples: National defence/radio broadcast signals

Types of goods	**Excludable**	**Non-excludable**
Rivalrous	Private goods (eg. food, clothes)	Common goods (eg. coal, timber)
Non-rivalrous	Club goods (eg. cinema, satellite TV)	Public goods (eg. street lighting, national defence)

- Market imperfections due to market dominance
  - Allocative inefficiency
    - Profit-max condition: P_1 = MC → O/P at Q_1
    - But, P_1 > BQ_1 → society values good more than resources used to produce it
    - Restrict O/P below Q_2 → DWL of area ABC
  - Productive inefficiency
    - May operate above LRAC → X-inefficient
    - Huge supernormal profits → continue to exist → wastage of scarce resources



- Imperfect information
  - Great ignorance & uncertainty → prevent economic agents from operating as they would
  - **Merit/demerit goods** → imperfect info on benefits/costs derived from consuming good
  - **Persuasive advertising** → oversell benefits of good → higher DD → overconsumption
  - **Asymmetric info** → producer has better info than consumer → advise unnecessary, expensive products for their own profit → DD higher than socially optimal

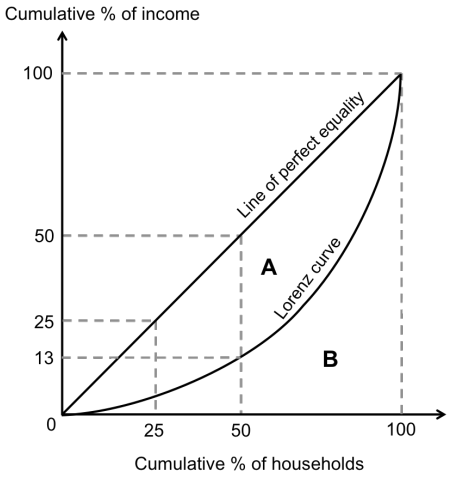
- Immobility of FoP
  - Occupational immobility
    - Barriers to FoP mobility between different industries → unemployed/inefficiently used
    - Usually applies to labour → specialised workers get outdated in sunset industries
  - Geographical immobility
    - Barriers preventing labour from moving into areas with labour shortages
    - Family/social ties, relocation costs, regional property prices, difference in cost of living
    - Unemployment → actual O/P < potential O/P, skills lost over time → wasted resources
  - Use PPC to show resources not fully utilised → productive inefficiency

- Excessive income inequality
  - Free market → promotes efficiency & profit-maximisation → income inequality → market failure + allocative inefficiency + distributive inefficiency + social issues

Wealth *– The total value of an individual's physical & financial assets*
Income *– The amount of money an individual receives per period of time*

Income inequality

- When some have incomes far in excess of what is necessary to have a comfortable life, while others struggle to buy basic necessities → ∵ G&S allocated according to income distribution
- Ability to pay depends on an individual's wage rate, assets & other institutional factors
- Represented by **Lorenz curve**
  - Greater deviance of Lorenz curve from line of perfect equality → greater degree of inequality
  - **Gini-coefficient** = Area of A / Total area of (A+B)
  - Note: Lorenz curve only as accurate as GDP & income data of country → countries may skew data



Causes of inequality

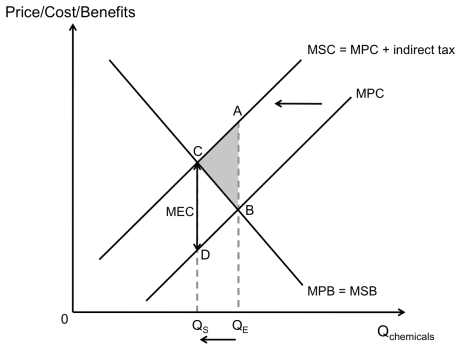
- Competitive markets → heighten inequality
  - Higher skill/education/productivity → higher wages → rich get richer
  - Lower skill/education, handicapped, discrimination → lower wages → poor get poorer
  - Wealthier individuals will end up dictating free market → aim to further enhance their wealth → worsen income inequality
  - Also caused by differences in accessibility to same quality of education
- Monopolies → firm gains part of lost CS → consumer loses more than producer gains → price-setting always earns higher income than the rest of society → inequality
- Globalisation → pressure of international competition → firms adopt more flexible labour policies → workers fired more easily → higher unemployment rates → greater inequality

GOVERNMENT INTERVENTION

Why do governments intervene?

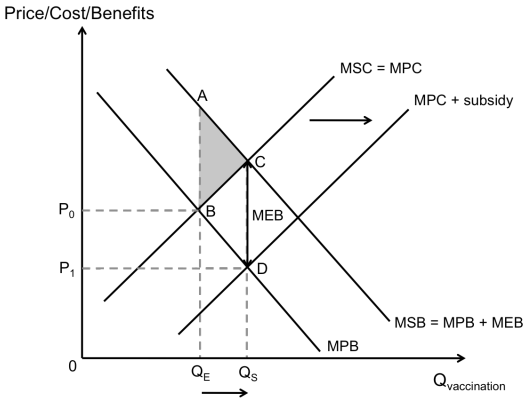
- To achieve economic goals → **efficiency** in resource allocation & **equity** in wealth distribution
- To correct market failure → ∵ free market mechanism may not lead to best outcome
- **But,** government intervention may fail & worsen market distortions → **government failure**

Methods of government intervention



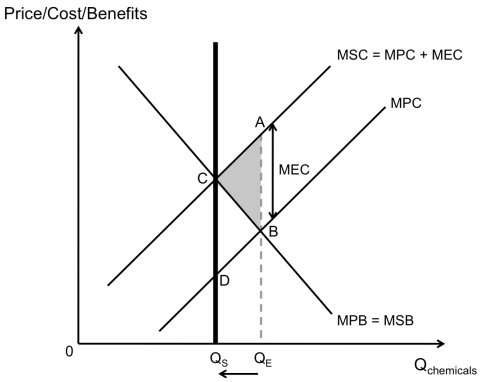
- **Specific taxes (-ve externalities, demerit goods)**
  - Charge monetary value per unit of O/P of harm imposed on society → compel firm to **internalise the external costs**
  - Usually a specific tax of **CD = MEC at Q_S** → raise firm's MPC → lower equilibrium quantity at socially-optimal Q_S → market correction
  - **Advantages:**
    - Provides revenue for other social development projects
    - Doesn't displace price mechanism → spur producers to develop alternative tech
  - **Limitations:**
    - Constrained by PED → very high taxes → politically unpopular
    - Difficult to valuate MEC accurately

- **Subsidisation (+ve externalities, merit goods)**
  - Pay producers amount equal to MEB at Q_S → lower private cost of R&D/production → equilibrium quantity increases to **socially-optimal** Q_S, where MSC = MSB → **internalized positive externality**
  - Price drops from P_0 to P_1 → more can afford it
  - Subsidy rarely made to consumer (eg. ActiveSG $100 credit) → administratively more tedious
  - **Advantages:**
    - Easily & flexibly implemented to increase production & consumption
    - Changes relative prices of goods without displacing price mechanism
  - **Limitations:**
    - High govt expenditure required → high taxes/opportunity costs
    - Difficult to valuate MEB accurately → may lead to govt failure ∵ imperfect info



- **Direct provision (+ve externalities, public goods, merit goods)**
  - Govt supplies the G&S directly for free/at a price
  - Govt decides how much of what goods to provide → lead to greatest social benefit
  - Demand estimated through surveys/votes → use in cost-benefit analysis
  - **Advantages:**
    - Control over quantity/quality/price of goods
  - **Limitations:**
    - Inefficient production → ∵ no profit-motive → little/no incentive to minimise costs
    - Govt fail to predict & provide correct quantity of goods → ∵ difficult to valuate MEB
    - Relies on tax revenue → incurs opportunity costs

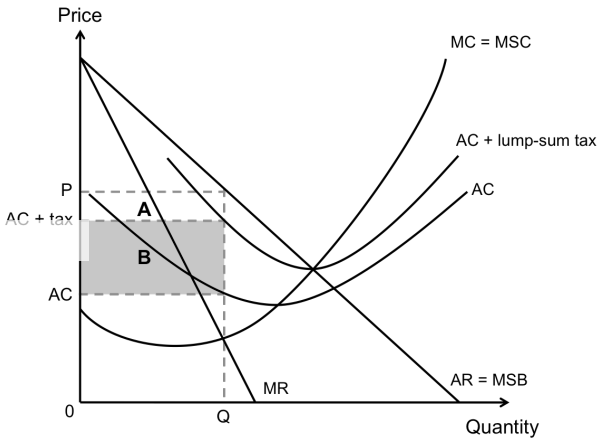
- **Quotas (-ve externalities)**
  - Limit on quantity produced at Q_S → MSC = MSB → DWL eliminated
  - **Advantages:**
    - No tax calculations or administrative work → simple to implement
    - *Greater* certainty in achieving targeted O/P → ∵ firms compelled by laws
  - **Limitations:**
    - Displaces price mechanism → relies on govt's predictions
    - No incentive to innovate to reduce externality → short-term



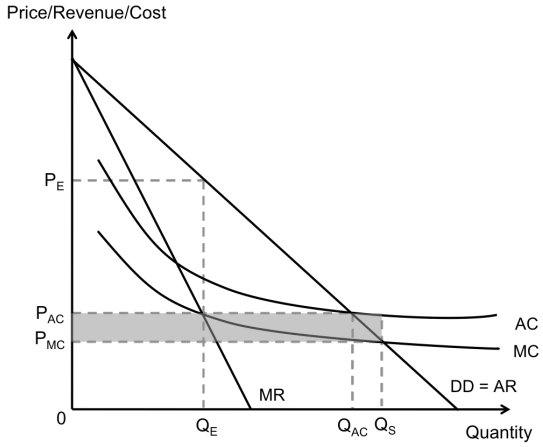
- **Tradable permit system (-ve externalities)**
  - Govt issues fixed number of permits to pollute fixed quantities of pollutants
  - Permits can be traded between firms → prices of permits fluctuate with market forces
  - Penalizes heavy polluters more than lighter ones → firm-specific
  - **Advantages:**
    - Effective at reaching targeted O/P → govt can also easily reduce number of permits to slowly decrease pollution
    - Promotes innovation of cheap, greener tech → ∵ profit-driven → want to reduce high abatement cost → compelled to pollute less & sell off extra permits for profit
  - **Limitations:**
    - Richer firms may see no need to cut back on pollution → ∵ they can afford costs
    - Reduces competition in market if smaller firms unable to pay/get better tech
    - Administratively costly if many polluters present

- **Education & campaigns (info failure, merit/demerit goods, externalities)**
  - Provide information through education & campaigns → real value of MSB revealed
  - Hopefully, DD moves towards socially desirable levels → socially optimal O/P
  - **Limitations:**
    - Expensive & takes long time to be effective → must take short-term measures (eg. taxes)
    - Difficulty in collecting & verifying required information → producer may hide info

- **Lump-sum taxes/subsidies (market dominance)**
  - Charge a lump-sum tax of area B on monopolist → reduce excessive profits → income equality
    - Increases AC (∵ lump-sum is a fixed cost) → P & Q stay constant as profits are still maxed by MC = MR → profits reduced from (A+B) to just A
    - **Advantage:** Reduce inequality
    - **Limitations:** Reduce incentive for R&D & conflict with economic growth & efficiency
  - **OR** give per unit subsidies → raise O/P, lower P
    - Per unit subsidy decreases AC & MC (∵ variable cost) → increases equilibrium O/P for MC = MR for profit-max → price decreased → product more affordable
    - **Limitation:** Further increases supernormal profits → worsen income distribution



- **Pricing regulations (market dominance)**
  - Govt requires prices set at MC or AC
  - **With MC-pricing,** AE is achieved (∵ P = MC), but firm suffers losses (shaded area)
    - Subsidies given or two-tier pricing allowed
  - **With AC-pricing,** firm breaks even, but $Q_{AC} < Q_S$ → AE not achieved, but less inefficient now
  - **Limitations:**
    - Dilemma to which pricing to use
    - Firms may distort/hide info to earn more



- **Regulation through laws (market dominance)**
  - Anti-trust laws → curb collusive behaviour by prohibiting price fixing, predatory pricing, etc.
  - Lemon laws → ensure guaranteed quality of product in monopolies (eg. LTA on bus services)
  - Regulations to maintain levels of competition (eg. Competition Commission of Singapore)
  - **Limitations:**
    - Enforcement is difficult & expensive → ∵ constant checking & harsh penalties needed
    - May be very difficult to prove collusion (esp. if it is tacit & off-book)
    - Prevent benefits of mergers (eg. lower prices/costs through iEOS)

- **Nationalisation (market dominance)**
  - Transfer of ownership from private sector to govt → ensure lower prices & higher O/P

- **Training schemes (FoP immobility)**
  - Invest in training schemes → equip workers with versatile skills → increase mobility
  - Govt can also subsidise vocational training → raise skill levels of unemployed → reduce structural unemployment & loss of potential O/P
  - Policies to increase awareness & information on job situations → workers make more rational choices
  - **Limitations:** Lengthy, costly & uncertain process → possible initial resistance from workers

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Government failure *– When govt intervention actually worsens market distortions & inefficiencies*

Causes of government failure

- Policy-making based on imperfect information
  - Impossible for govt to know exactly what the people want, gather **all** relevant info & predict every possible consequence
- Bureaucracy & inefficiency in govt intervention
  - Cost of administration & enforcement – govt may not use resources efficiently itself
  - Time lag – takes time to realise situation and formulate suitable solutions
  - Shifts in government policies – difficult for firms to plan effectively ahead with unpredictable intervention policies all the time
  - Policy myopia – politicians tend to look for short-term policies → worsen issue in LR
  - Disincentive effect – attempts to reduce inequality may worsen incentives/productivity

Note: Government failure is usually most effectively used as a reason in conclusions of essays.

APPLICATIONS TO SINGAPORE CONTEXT

Traffic congestion & air pollution (-ve ext. of production by drivers)

- Overconsumption of cars due to negative externalities (eg. exhaust fumes, congestion, pollution) → external costs of higher medical cost & loss of productivity in 3rd parties
- Singapore has limited land space, rising income & increased population → growing problem

Policies

1. Electronic Road Pricing (ERP) → taxation
   - Charge price equal to MEC at Q_S → encourage drivers to decide route accordingly
   - Everyone enjoys a smoother ride → internalization of external costs
   - **Advantages:**
     - Directly tackles car usage in a precise manner → ∵ ERP charges can be varied
     - Fair to people who contribute less/don't contribute to congestion
   - **Limitations:**
     - Unpopular → ∵ charging a price on a road that was previously free
2. Certificate of Entitlement (COE) → quota
   - Limits car ownership to by restricting vehicle growth rates to Q_S
   - Aimed at reducing congestion & air pollution → negative externalities
   - **Advantages:**
     - Effective in achieving its target of reducing congestion & air pollution
     - COE revenue used to finance other transport development projects → benefit society
   - **Limitations:**
     - Doesn't directly address car *usage* → ∵ just owning a car doesn't cause problems
     - Could increase car usage → ∵ drivers will use car intensively to get the most out of what they paid for
     - High price of car ownership → politically unpopular
3. Providing quality public transport system → improve substitutability of public transport
   - Ensure greater affordability, higher travel speed & predictability of arrival times
   - **Advantages:** Effective at minimizing road congestion & pollution
   - **Limitations:** Expensive & long time lag
4. Maximising road network capacity → wider choice of routes
   - Includes widening of current roads, tapping on telecomm & info tech to make road networks safe & more efficient
   - **Advantages:** Effective at minimizing road congestion & pollution
   - **Limitations:**
     - Singapore has limited land space
     - Doesn't tackle root cause of richer & growing population
     - Expensive & long time lag

Education (+ve ext. of consumption/merit good)

- Private benefits: increased wages, reduces inequality (social mobility), improves welfare of poor
- External benefits: more gracious society, skilled workforce, social stability, reduced crime rates
- Meritocracy is key → **equal opportunity to succeed** → social mobility
- Singapore is largely a knowledge-based economy → educated workers are important

Policies

1. Heavy subsidisation of education
   - Degree of subsidy decreases with increasing education level
   - Bursaries & scholarships also given → ensure everyone has **ability to pay** for education
   - Primary education provided completely free → ∵ social goal of equal opportunity for all
   - Case for secondary & tertiary education is weaker → ∵ external benefits << private benefits
   - **Limitations:**
     - Difficult to assess how much subsidy to give → ∵ MEB for different education levels vary
2. Compulsory Education Act (2003) → legislation
   - Makes it compulsory for all Singapore children to receive education till Primary 6
   - **Limitations:**
     - Difficult to enforce in larger countries
     - Using social workers to counsel troubled families may be a better way than imposing law

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Healthcare (imperfect info)

- Divided into primary care & hospital care
  - Primary care (includes preventive healthcare & education) → more common & cheaper
  - Market failure more serious for hospital care due to **more severe imperfect information**
- Primary care is left largely to the free market, while hospital care is mostly provided by govt

Policies

1. Government regulation of hospitals → govt regulation + subsidisation
   - MOH regulates no. of public hospitals, beds & doctors → minimise supplier-induced demand
   - Only essential, cost-effective & proven treatments are subsidised
   - MOH coordinates & controls the development on specialist disciplines & introduction of high-tech equipment → avoid unnecessary duplication of costly medical services
   - Public hospitals are govt-owned, non-profit companies → greater flexibility, but cost-eff.
     - Each hospital is given a block budget based on patient workload & case complexity → incentive to operate efficiently
2. Means-testing
   - As services in ward class B2 & C improve, differences in class A & B1 wards narrow
   - This attracts richer patients to lower classes for increased subsidization → not fair
   - Means-testing → ensure fair sharing of class B2 & C subsidies
     - All patients can choose their own ward class
     - Subsidies decrease by 1% for every $50 increase in patient's monthly income
3. Medisave, Medishield, Medifund (3M framework)
   - Medisave – compulsory saving scheme for financing of non-primary healthcare paid by individuals/immediate family members → incentive to economize on medical services
   - Medishield – insurance premiums paid through Medisave → risk-pooling
   - Medifund – safety net for patients too poor to pay despite all govt subsidies & 2Ms before